

Transient and lightning protection systems



TBS | Master catalogue 2016

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BETTERMANN



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Planning software

When a building protected by a lightning conductor is struck directly by lightning, then dangerous fires and damage may be caused between the building and the systems leading into it (power supply, data cables) due to large differences in potential. This online tool aids you in the selection and connection of suitable surge protection systems for your individual project and provides you with information on the OBO surge protection systems.

You can create your personal materials list, connection diagram and invitation to tender text quickly, efficiently and in a targeted manner for the complete surge protection in the fields of energy technology, photovoltaics, telecommunication, MSR, TV, HF and data technology, and export them easily into the Excel format for further processing.

System requirements:

Up-to-date standard browser
Internet access

Benefits

- Generation of materials lists, circuit diagrams and invitations to tender
- For quick and easy application
- Platform-independent
- Easy export function to the Excel format



Lightning protection guide. Safely routed.

Reference work and planning aid for electrical installation engineers and technical planners

At OBO Bettermann, we can look back on more than 90 years of experience in the field of lightning and surge protection. This experience and, of course, the latest standards and technical innovations have flowed into the company's new lightning protection guide. The brochure allows you to plan installations in the field of lightning and surge protection faster and more easily.

It contains a balanced mixture of basic knowledge and expert knowledge, as well as planning and selection aids for the protection of buildings and systems.

The new lightning protection guide can be requested by calling +49 (0)2373 89-1500 and is also available for download.

Topics

- Basic principles
- The external lightning protection system
- Air-termination and down-conductor systems
- Examples and selection aids for wind load calculation conform with Eurocode 1+3
- Earthing systems with foundation earther to current DIN 18014
- The internal lightning protection system
- Equipotential bonding systems
- Overvoltage protection systems
- Current standards
- New selection and planning aids
- Examples














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67.5

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OBO TBS seminars: First-hand knowledge

With a comprehensive programme of training courses and seminars on the subject of surge voltage and lightning protection systems, OBO is able to support its customers with specialist knowledge from a single source. Alongside the basic theoretical principles, the programme also deals with practical implementation in everyday applications. Special calculation and application examples round off the comprehensive programme of knowledge transfer.

Invitations to tender on the Internet at www.ausschreiben.de

More than 10,000 entries from the KTS, BSS, VBS, TBS, LFS, EGS and UFS ranges can be called up free of charge. Regular updates and extensions mean that you always have a comprehensive overview of the OBO products. All the current file formats (PDF, DOC, GAEB, HTML, TEXT, XML, ÖNORM) are available. www.ausschreiben.de

Invitations to tender, product information and data sheets

We can make life easier for you, with our comprehensive selection of materials designed for practical applications, which provide you with effective support with the planning and calculation of a project. These include:

- Invitations to tender
- Product information
- Information sheets
- Data sheets

Invitations to tender for lightning protection/earthing at the highest level: OBO manufacturers products to RAL GZ642-5 and is dedicated to compliance with the RAL directives. Lightning protection and earthing products can be used for invitations to tender according to RAL.

These documents are continually updated and can be downloaded at no charge at any time from the Internet download area at www.obo-bettermann.com.



Customer service and credibility

Friendliness, reliability and competence create acceptance, credibility and lasting working relationships. These shared values arise from OBO's consistent orientation around the wishes and needs of its customers. Close partnerships with customers is OBO's foremost priority.

Help and advice

Answers to questions about products and installation, planning advice for complex projects – OBO's staff will help you through every phase of your project, no matter what field it is in. We are constantly improving the support we provide in every phase of collaboration, laying the foundations for genuine partnerships.

Speed and reliability

Optimised procedures and highly developed logistics ensure that OBO products are in the right place at the right time, anywhere in the world. OBO offers comprehensive support for large-scale projects, from planning all the way to installation.



Lightning protection guide

Free order and download from www.obo.de

- Production location
- Subsidiary
- Representative



Minor cause, major effect: Damage caused by surge voltages



Our dependency on electrical and electronic equipment continues to increase, in both our professional or private lives. Data networks in companies or emergency facilities such as hospitals and fire stations are lifelines for an essential real time information exchange. Sensitive databases, e.g. in banks or media publishers, need reliable transmission paths.

It is not only lightning strikes that pose a latent threat to these systems. More and more frequently, today's electronic aids are damaged by surge voltages caused by remote lightning discharges or switching operations in large electrical systems. During thunderstorms too, high volumes of energy are instantaneously released. These voltage peaks can penetrate a building through all manner of conductive connections and cause enormous damage.



Financial implications of lightning and surge voltage damage



Financial loss can only be considered in isolation in cases where no legal or insurance requirements relating to personal safety apply.

Substantial losses result from the destruction of electrical devices, notably:

- Computers and servers
- Telephone systems
- Fire alarm systems
- Monitoring systems
- Lift, garage door and roller shutter drives
- Consumer electronics
- Kitchen appliances

Further costs can also be incurred due to outages and consequential damage in relation to:

- Loss of data
- Production outage
- Loss of contactability (Internet, telephone, fax)
- Defective heating systems
- Costs due to faults and false alarms in fire and burglar alarm systems

Financial losses are on the rise

Current statistics and estimates of insurance companies show: Damage levels caused by surges – excluding consequential or outage costs – long since reached drastic levels due to the growing dependency on electronic "aids". It's no surprise, then, that property insurers are checking more and more claims and stipulating the use of devices to protect against surges. Information on protection measures can be found in e.g. the German Directive VDS 2010.

Year	Amount of lightning and surge voltage damage	Paid damages for lightning and surge voltage damage
1999	490,000	€310 million
2006	550,000	€340 million
2007	520,000	€330 million
2008	480,000	€350 million
2009	490,000	€340 million
2010	330,000	€220 million
2011	440,000	€330 million
2012	410,000	€330 million
2013	340,000	€240 million
2014	410,000	€340 million

Number of instances of damage from lightning and surge voltages and amounts paid out by home and contents insurance companies; source: GDV · Extrapolation based on industry and risk statistics; numbers rounded to the nearest 10,000 or €10 million.

Lightning and surge protection standards

When planning and executing a lightning protection system, it is necessary to observe all relevant national annexes and take account of any special circumstances or applications and the safety stipulations in the relevant country-specific supplements.

A lightning and surge protection system consists of several systems, each tailored to each of the others. At its most basic, a lightning and surge protection system consists of one internal and one external lightning protection system.

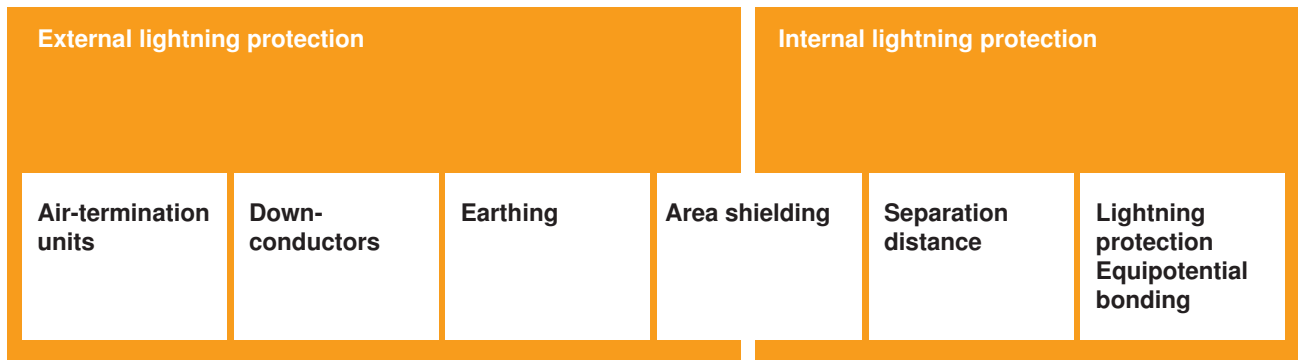
These, in turn, can be categorised as follows:

- Air-termination devices
- Down-conductors
- Earthing systems
- Area shielding
- Separation distance
- Lightning protection equipotential bonding system

These systems must be carefully selected for the application at hand, and used in a coordinated way. Installation of the systems takes place according to various application and product standards. The supplements to the international IEC guidelines and harmonised European versions of the various country-specific translations often contain additional informative information specific to the country in question.

Product standards

To ensure that the components can withstand the loads to which they are likely to be exposed in application, they must be checked against the respective product standard for external and internal lightning protection.



External and internal lightning protection systems

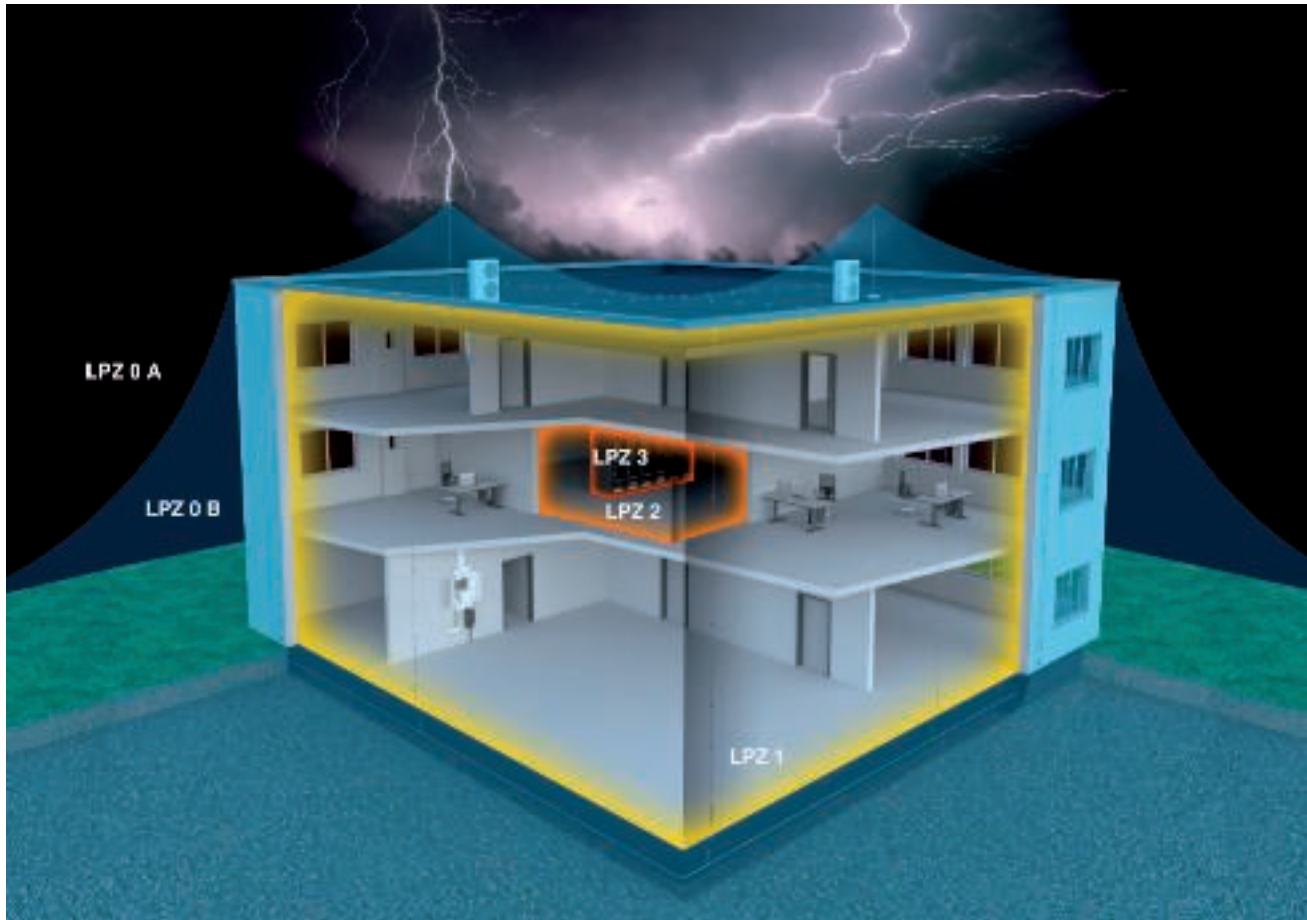
Standard	German supplement	Contents
VDE 0185-305-1 (IEC 62305-1)		Protection against lightning – Part 1: General principles
VDE 0185-305-2 (IEC 62305-2)		Protection against lightning – Part 2: Risk management
	1	Lightning risk in Germany
	2	Calculation aids for estimating the risk of damage for buildings
	3	Additional information on use of EN 62305-2
VDE 0185-305-3 (IEC 62305-3)		Protection against lightning – Part 3: Protection of structures and people
	1	Additional information on use of EN 62305-3
	2	Additional information for building structures
	3	Additional information for the testing and servicing of lightning protection systems
	4	Use of metal roofs in lightning protection systems
	5	Lightning and surge protection in PV power supply systems
VDE 0185-305-4 (IEC 62305-4)		Protection against lightning – Part 4: Electrical and electronic systems within structures
	1	Distribution of the lightning current
VDE 0675-6-11 (IEC 0675-6-11)		Low-voltage surge protection devices – Part 11: Surge protection devices connected to low-voltage power systems
VDE 0100-534 (IEC 60364-5-53)		Low-voltage electrical installations - Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control – Clause 534: Devices for protection against surge voltages
VDE 0100-443 (IEC 60364-4-44)		Low-voltage electrical installations – Part 4-44: Protection for safety – Protection against voltage disturbances and electromagnetic disturbances – Clause 443: Protection against surge voltages of atmospheric origin or due to switching
VDE 0100-712 (IEC 60364-7-712)		Requirements for operational premises, special rooms and systems – Solar photovoltaic (PV) power supply systems

Key lightning protection standards and specifications

Product standards	Contents
VDE 0185-561-1 (IEC 62561-1)	Lightning protection system components – Requirements for connection components
VDE 0185-561-2 (IEC 62561-2)	Lightning protection system components – Requirements for conductors and earthers
VDE 0185-561-3 (IEC 62561-3)	Lightning protection system components – Requirements for spark gaps
VDE 0185-561-4 (IEC 62561-4)	Lightning protection system components – Requirements for holders
VDE 0185-561-5 (IEC 62561-5)	Lightning protection system components – Requirements for inspection boxes and earther penetrations
VDE 0185-561-6 (IEC 62561-6)	Lightning protection system components – Requirements for lightning strike counters
VDE 0185-561-7 (IEC 62561-7)	Lightning protection system components – Requirements for earthing enhancing compounds
VDE 0675-6-11 (IEC 61643-11)	Surge protective devices connected to low-voltage power systems – Requirements and test methods
VDE 0845-3-1 (IEC 61643-21)	Surge protective devices connected to telecommunications and signalling networks

Lightning protection and surge protection components

Gradual surge reduction with lightning protection zones



Lightning protection zone concept

The lightning protection zone concept described in international standard IEC 62305-4 (DIN VDE 0185 Part 4) has proved to be practical and efficient. This concept is based on the principle

of gradually reducing surges to a safe level before they reach the terminal device and cause damage. In order to achieve this situation, a building's entire energy network is split into lightning protection zones (LPZ = Lightning Protection Zone). Installed at each

transition from one zone to another is a surge arrester for equipotential bonding. These arrestors correspond to the requirement class in question.




Lightning protection zone

LPZ 0 A	Unprotected zone outside the building. Direct lightning strike, no shielding against electromagnetic interference pulses LEMP (Lightning Electromagnetic Pulse).
LPZ 0 B	Through the area protected by the external lightning protection system. No shielding against LEMP.
LPZ 1	Zone inside the building. Low partial lightning energies possible.
LPZ 2	Zone inside the building. Low surges possible.
LPZ 3	Zone inside the building (can also be the metal housing of a consumer). No interference pulses through LEMP or surges present.

Choosing the right surge protection devices

The classification of surge protection devices into types means they can be matched to different requirements with regard to location, protection level and current-carrying capacity. The table provides an

overview of the zone transitions. It also shows which OBO surge protection devices can be installed in the energy supply network and their respective function.

Zone transition	Protection device and device type	Product example	Product figure
LPZ 0 B to LPZ 1	Protection device for lightning protection equipotential bonding in accordance with VDE 0185-305 (IEC 62305) for direct or close lightning strikes. Devices: Type 1 (Class I), e.g. MCD50-B Max. protection level according to standard: 4 kV OBO protection level: < 1.3 kV Installation e.g. in the main distributor/at building entry	MCD Item no.: 5096879	
LPZ 1 to LPZ 2	Protection device for lightning protection equipotential bonding in accordance with VDE 0185-305 (IEC 62305) for direct or close lightning strikes. Devices: Type 2 (Class II), e.g. V20 Max. protection level according to standard: 1.5 kV OBO protection level: < 1.3 kV Installation e.g. in the main distributor/at building entry	V20 Item no.: 5095253	
LPZ 2 to LPZ 3	Protection device, designed for surge protection of portable consumers at sockets and power supplies. Devices: Type 3 (Class III), e.g. ÜSM-A Max. protection level according to standard: 1.5 kV OBO protection level: < 1.3 kV Installation e.g. on the end consumer	ÜSM-A Art. no.: 5092451	

BET – testing centre for lightning protection, electrical engineering and support systems



Lightning current generator

BET with countless tasks

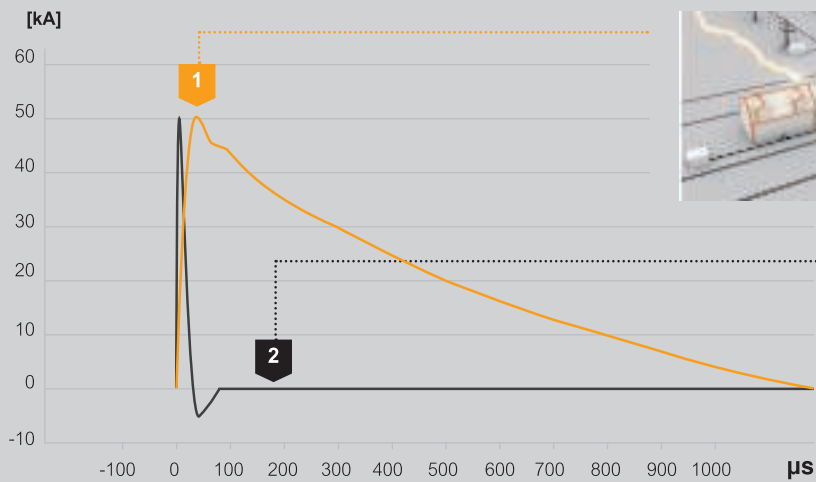
Whereas previously only lightning current, environmental and electrical testing had been possible at BET, the BET Test Centre is now also a competent partner for the testing of cable support systems. This combination has made it necessary to revise the meaning of the name. If BET previously stood for "Blitzschutz- und EMV-Technologiezentrum" (Lightning protection and EMC technology centre), since 2009 these letters have meant BET Test Centre for lightning protection, electrical engineering and support systems.

Test generator for lightning current tests

The test generator planned in 1994 and completed in 1996 makes it possible to carry out lightning current tests at up to 200 kA. The generator was planned and constructed in cooperation with Soest Technical College. Due to the intensive planning and scientific support in the construction of the test system, it has worked for 20 years without errors and meets current standardised test requirements.

Testing tasks

The main load of the testing generator is generated through the testing of products from the TBS product division. For this, developmental tests of new developments, modifications to existing OBO products and also comparison tests with competitive products are carried out. These include lightning protection components, surge protection devices and lightning arrestors. Tests for lightning protection components are carried out according to IEC 62561, for spark gaps according to IEC 62561 and for lightning and surge protection devices according to IEC 61643-11. This is only a small amount of the testing standards used for tests in the BET Test Centre.



10/350 μs



8/20 μs

- | | |
|----------|--|
| 1 | Pulse shape 1: Direct lightning strike, 10/350 μs simulated lightning pulse |
| 2 | Pulse shape 2: Remote lightning strike or switching operation, 8/20 μs simulated current pulse (surge voltage) |

Types of pulse and their characteristics

Testing types for lightning and surge protection

Both lightning current tests and surge voltage tests can be carried out at up to 20 kV. A hybrid generator is used for these tests, which was also developed as part of a cooperation with the Soest Technical College. EMC testing of cable support systems can also be carried out using this test generator. All kinds of cable routing and cable support systems of up to 8 m length can be tested without any difficulties. Tests for electrical conductivity according to IEC 61537 are also carried out.

Simulation of real environmental conditions

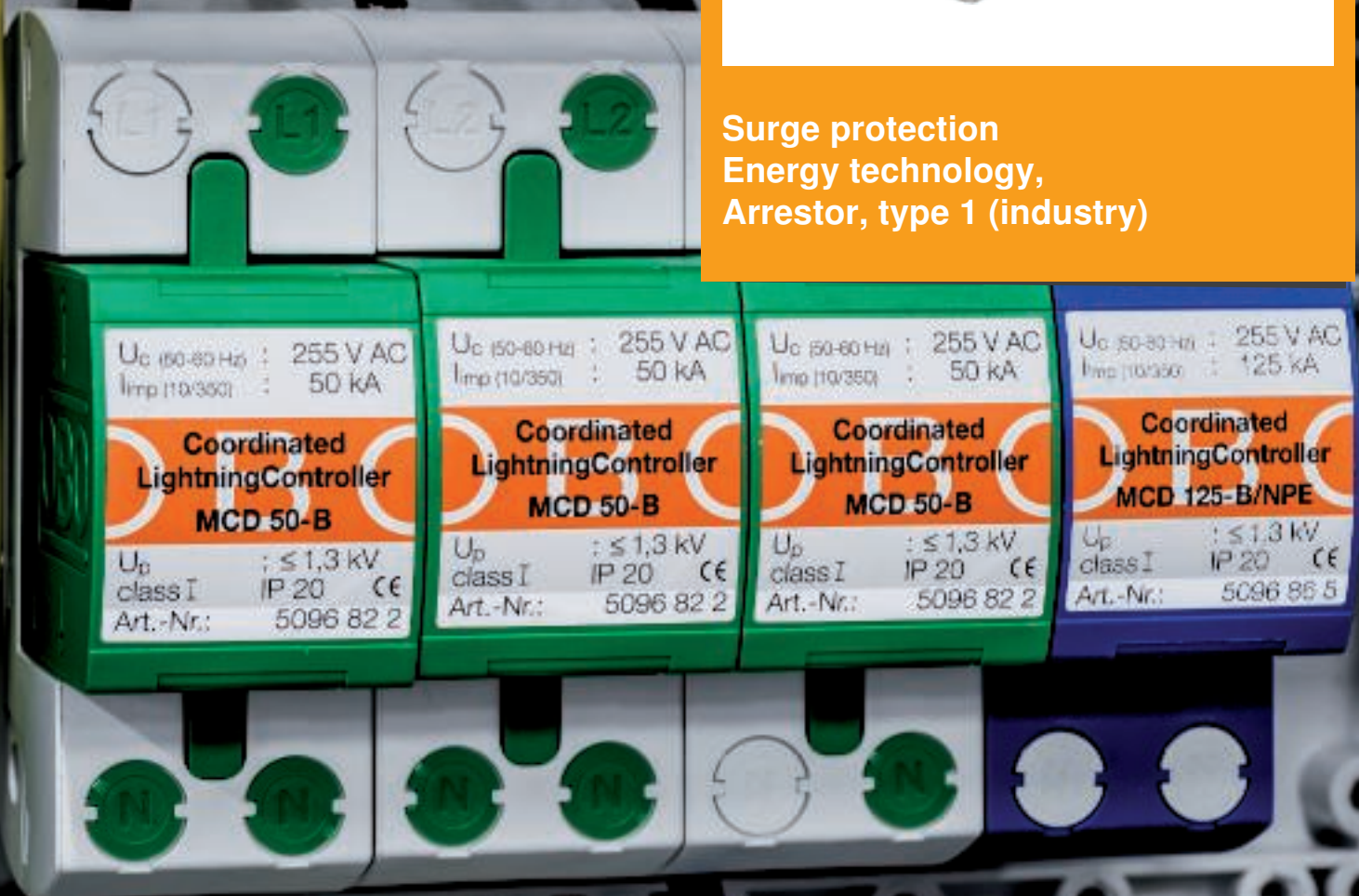
To carry out standardised tests on components intended for external use, they must be pretreated under real environmental conditions. This takes place in a salt spray trough and a sulphur dioxide testing chamber. Depending on the test, the test length and the concentration of the salt spray or sulphur dioxide in the testing chambers may vary. This means that it is possible to conduct tests according to IEC 60068-2-52, ISO 7253, ISO 9227 and EN ISO 6988.

Testing cable support systems

The well-known KTS testing system, newly installed in the BET Test Centre, allows the investigation of the load capacities of any cable support system manufactured by OBO. The basis for this is IEC 61537 and VDE 0639. In the BET Test Centre, OBO Bettermann has a testing department in which products can be tested according to standards, even during the development phase.



Surge protection
Energy technology,
Arrestor, type 1 (industry)








Planning aids, surge protection energy technology

Selection aid, energy technology









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Selection aid, energy technology














AC combination arrester and surge protection; type 1, type 1+2, type 2 and type 3

		Installation location 1 Installation in the main distributor box / combined distributor Basic protection / type 1, type 2				
Initial situation	Building type	Description	Type	Item no.	Test mark	Product figure
<ul style="list-style-type: none"> No external lightning protection system Earthing cable connection 	Private building	TN-/TT Type 2 + 3 2.5 Division Secondary counter zone	V10 Compact	5093 38 0 Page: 251		
		TN-/TT Type 2 + 3 4 Division Secondary counter zone	V10-C 3+NPE	5093 39 1 Page: 253		
	Multiple dwelling/ industry, commerce	TN-/TT Type 2 4 Division Secondary counter zone	V20 3+NPE	5095 25 3 Page: 210	VDE ÖVE UL	
		V20 3+NPE+FS with remote signalling	5095 33 3 Page: 211	VDE ÖVE UL		
<ul style="list-style-type: none"> External lightning protection system (according to IEC 62305) 	Buildings of lightning protection classes III and IV (e.g. housing, offices and commercial buildings)	TN-/TT Type 1 + 2 4 Division Secondary counter zone	V50 3+NPE	5093 52 6 Page: 144	VDE ÖVE UL	
		V50 3+NPE+FS with remote signalling	5093 53 3 Page: 145	VDE ÖVE UL		
<ul style="list-style-type: none"> Outdoor connection 	Buildings of lightning protection classes I to IV (e.g. industry)	TN-C Type 1 6 Division Pre-metered or secondary counter zone	MCD 50-B 3	5096 87 7 Page: 100		
		TN-S Type 1 8 Division Pre-metered or secondary counter zone	MCD 50-B 3+1	5096 87 9 Page: 98		

Installation location 2
Installation in the sub-distributor
Medium protection / type 2
Only required if distance $\geq 10\text{m}$

Description	Type	Item no.	Test mark	Product figure
TN/TT Type 2 + 3 2.5 Division	V10 Compact	5093380 Page: 251		
	V10 Compact FS, with remote signalling	5093382 Page: 254		
TN/TT Type 2 4 Division	V20 3+NPE	5095253 Page: 210	VDE ÖVE UL	
	V20 3+NPE+FS with remote signalling	5095333 Page: 211	VDE ÖVE UL	
TN/TT Type 2 4 Division	V20 3+NPE	5095253 Page: 210	VDE ÖVE UL	
	V20 3+NPE+FS with remote signalling	5095333 Page: 211	VDE ÖVE UL	
TN/TT Type 2 4 Division	V20 3+NPE	5095253 Page: 210	VDE ÖVE UL	
	V20 3+NPE+FS with remote signalling	5095333 Page: 211	VDE ÖVE UL	

Installation location 2
Installation before the terminal
Fine protection / type 3

Description	Type	Item no.	Product figure
Plug-in	FC-D	5092 80 0 Page: 270	
	FC-TV-D	5092 80 8 Page: 271	
	FS-SAT-D	5092 81 6 Page: 272	
	FC-TAE-D	5092 82 4 Page: 273	
	FC-ISDN-D	5092 81 2 Page: 274	
	FC-RJ-D	5092 82 8 Page: 275	
	CNS-3-D-D	5092 70 1 Page: 276	
Fixed installation	ÜSM-A	5092 45 1 Page: 278	
	ÜSM-A ST-230 1P+PE	5092 44 1 Page: 281	
	ÜSS 45-o-RW	6117 47 3 Page: 282	
Series installation in distributor	V10 Compact L1/L2/L3/N	5093 38 0 Page: 251	
	VF230-AC/DC	5097 65 0 Page: 289	
	VF230-AC-FS with remote signalling	5097 85 8 Page: 291	



**Surge protection
Photovoltaics,
Arrestor type 1+2, type 2**



Planning aids, contents lightning and surge protection, photovoltaics

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DC combination arrester, type 1+2 and data protection devices	27

Coordinated protection. The ProtectPlus system kit.

A well-thought-out system for the whole electrical infrastructure of a photovoltaic system – that's ProtectPlus. Different components provide comprehensive protection, which allows both the erection engineer and the system operator to sleep in peace.



External lightning protection systems

Lightning currents are intercepted and run safely to the earth with the following systems:

- Air-termination rods and masts
- Insulated lightning protection
- Insulated isCon® conductor
- Flat and round conductors
- Cable brackets
- Connection clamps and connection terminals

Earthing systems

Our products for perfect earthing:

- Flat and round conductors
- Connectors
- Connection terminals
- Earth entries
- Deep, ring and foundation earthers
- Corrosion protection



Equipotential bonding systems

Equipotential bonding systems are the link between external lightning protection, surge protection and earthing. They are available in the following variants:

- For indoor use
- For outdoor use
- For industrial use



Overvoltage protection systems

A product range for any application:

- Lightning arrestor/combination arrestor
- Surge protection for energy and data technology
- Complete system solutions, terminated and premounted in the housing
- Combination and surge arrestor for photovoltaics, DC side



Cable support systems

Quick-mounting, safe cable routing with:

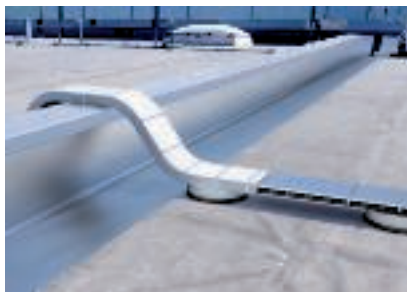
- Cable trays
- Mesh cable trays
- Cable ladders
- Vertical ladders
- Suspended supports
- Wall and support brackets



Cable routing systems

Tidy cable routing within the building can be achieved using

- Wall and ceiling ducts
- Cable and pipe fastening systems made of plastic and metal
- Screw-in and knock-in systems
- Rail systems



Fire protection systems

Our fire protection system consists of the following components:

- Insulation
- Weatherproof fire protection bandages
- Systems for emergency and escape routes

Four steps to comprehensive protection

Step 1:

Check the separation distance

If the required separation distance cannot be complied with, then the metallic parts must be interconnected to be able to carry lightning current.

Step 2:

Check the protection measures

Example: measures for lightning protection equipotential bonding are used on the DC and AC side, e.g. lightning arrester (type 1).

Step 3:

Include data cables









Data cables must be included in the protection concept.

Step 4:

Carrying out the equipotential bonding














Local equipotential bonding must be provided on the inverter.













Overview of protection measures					
Initial situation	Measure	Separation distance according to IEC 62305 maintained	Equipotential bonding	Surge protection	Sample product picture
<ul style="list-style-type: none"> External lightning protection system (according to IEC 62305) 	Adapt the lightning protection system according to IEC 62305	Yes	min. 6 mm ²	DC: Type 2	
				AC: Type 1	
		No	min. 16 mm ²	DC: Type 1	
				AC: Type 1	
<ul style="list-style-type: none"> No outside lightning protection system Earthing cable connection 	Requirements' testing: LBO, Vds 2010, risk analysis, ...	-	min. 6 mm ²	DC: Type 2	
				AC: Type 2	





Selection aid

Photovoltaic system solutions

Energy technology, type 2, protection of the DC side								
Initial situation	Max. DC voltage	Max. number of MPP per inverter	Max. number of strings per MPP terminal	Connection (DC side)	Version	Type	Item no.	Product figure
<ul style="list-style-type: none"> No external lightning protection system Earthing cable connection <p>The following are required:</p> <ul style="list-style-type: none"> Surge voltage protection, type 2 Lightning protection equipotential bonding 6.5 mm² 	600 V	1	1In/1Out	MC 4 connector		VG-C DCPH-Y1000	5088 67 0	
	1000 V	1	1In/1Out	MC 4 connector		VG-C DCPH-Y1000	5088 67 2	
	1	2	Terminals	Circuit breaker	VG-C DC-TS1000	5088 66 0 Page: 321		
	1	4	Terminals	4 fuse holders, unequipped	VG-C PV1000KS4	5088 65 4 Page: 318		
	1	8	Terminals		VG-C DCPH1000-4K	5088 65 0 Page: 323		
	1	10	Terminals		VG-C DCPH-MS1000	5088 69 1		
	2	4	Terminals		VG-CPV1000K 22	5088 56 8 Page: 313		
	2	6	Terminals		VG-CPV 1000K 330	5088 58 2 Page: 308		
	3	6	Terminals		VG-CPV 1000K 333	5088 58 5 Page: 309		
	2	6	Terminals		VG-CPV 1000K 330	5088 58 2 Page: 308		
	3	2In/1Out	MC 4 connector		VG-C DCPH1000-31	5088 64 8		
	3	6	Terminals		VG-CPV 1000K 333	5088 58 5 Page: 309		

You can find the selection aid for AC combination arrestors and surge protection in the chapter Surge Protection in Energy Technology.

Energy technology, type 1+2, protection of the DC side								
Initial situation	Max. DC voltage	Max. number of MPP per inverter	Max. number of strings per MPP terminal	Connection (DC side)	Version	Type	Item no.	Product figure
<ul style="list-style-type: none"> External lightning protection system according to DIN EN 0185-305 <p>The following are required:</p> <ul style="list-style-type: none"> Lightning and surge protection Type 1+2 Lightning protection equipotential bonding 16 mm² Separating distance could not be maintained 	600 V	1	1 0	Terminal		VG-BC DCPH-MS600	5088 69 3	
	900 V	1	1In/1Out	MC 4 connector		VG-BC DCPH-Y900	5088 67 8	
	1	2	Terminals	Circuit breaker	VG-BC DC-TS900	5088 63 5 Page: 320		
	1	8	Terminals		VG-BC DCPH900-4K	5088 63 2 Page: 322		
	1	1 0	Terminals		VG-BC DCPH-MS900	5088 69 2		
	2	4	Terminals		VG-BCPV900K 22	5088 56 6 Page: 312		
	2	6	Terminals		VG-BCPV 900K 330	5088 57 6 Page: 306		
	3	2In/1Out	MC 4 connector		VG-BC DCPH900-31	5088 62 9		
	3	6	Terminals		VG-BCPV 900K 333	5088 57 9 Page: 307		

Data technology						
Initial situation		RJ 45	Terminal	Type	Item no.	Product figure
	<ul style="list-style-type: none"> No external lightning protection system Earthing cable connection 	●		ND-CAT6A/EA	5081 80 0 Page: 366	
	<ul style="list-style-type: none"> External lightning protection system (according to DIN EN 62305) 		●	FRD 24 HF	5098 57 5 Page: 395	



Surge protection
Data and information technology

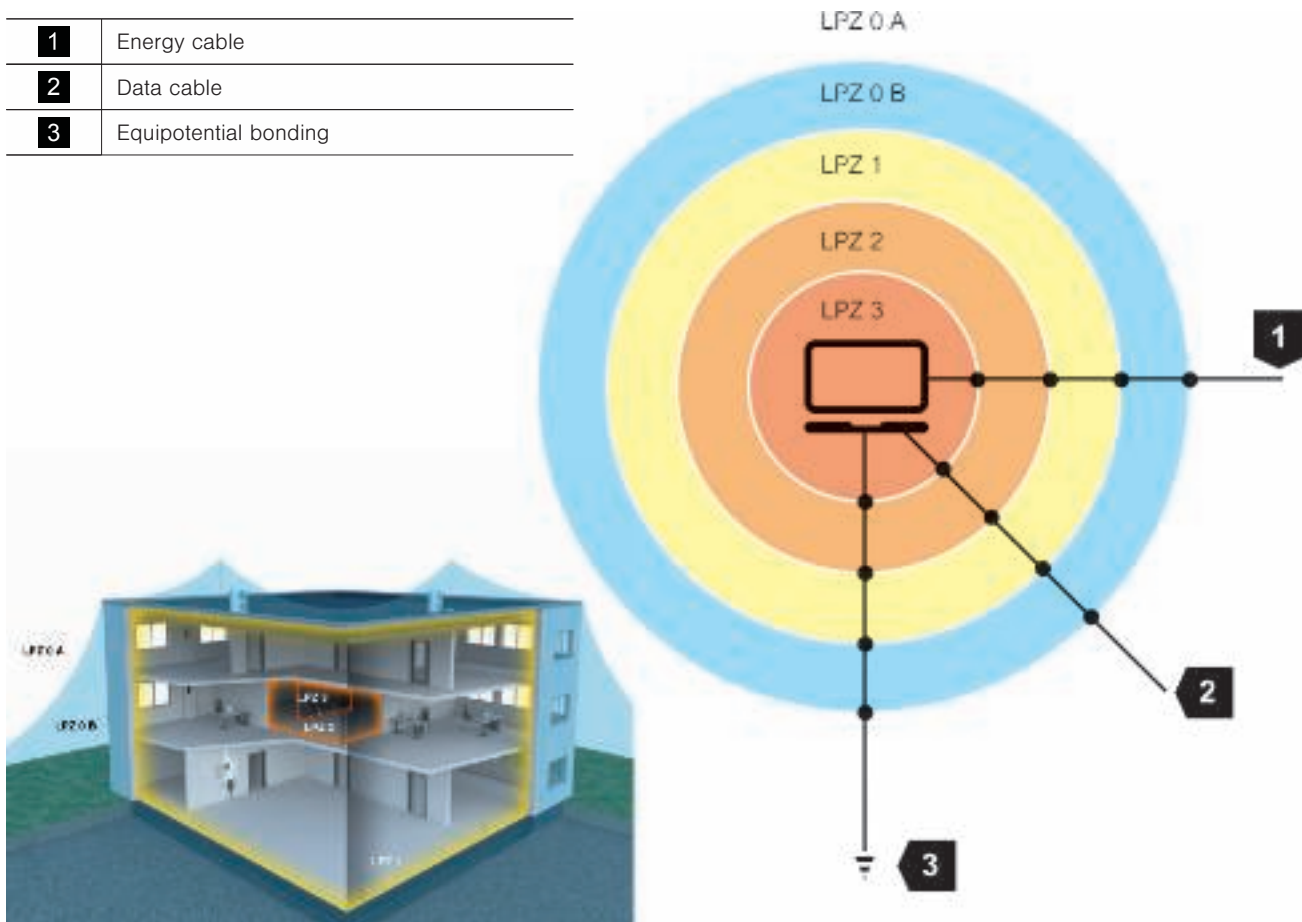


Planning aids, surge protection device for data and information technology

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Surge protection systems for data and information technology

1	Energy cable
2	Data cable
3	Equipotential bonding



Protection principle based on lightning protection zone concept

Data and information technology systems are used in many different applications. Almost every electronic system used to process information is considered extremely important. Ever increasing volumes of data are being stored and must be accessible at all times at very short notice. It has become even more important to protect these systems too against dangerous surges. In order to prevent failure or even destruction of these systems, they must be integrated into the lightning and surge protection concept.

Planning methods – Basic principles

These days, communication and IT systems are the lifelines of almost every company. In the worst-case scenario, surge voltages, caused by galvanic, capacitive or inductive couplings in data cables, can destroy IT equipment and communication technology. To avoid such failures, suitable protection measures have to be taken.

In practice, the wide range of standard information, telecommunication and measurement systems often makes the selection of

the right surge protection device complex. The following factors must be taken into account:

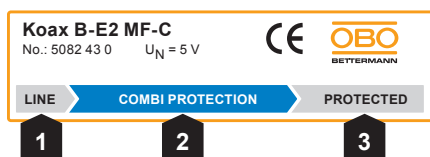
- The connection system of the protection device must fit the device to be protected.
- Parameters such as the highest signal level, highest frequency, maximum protection level and the installation environment must be taken into account.
- The protection device may only exert the minimum of impacts, such as attenuation and reflection, on the transmission path.

Data cable protection devices and labelling



1	Unprotected side
2	Protection class, basic protection
3	Protected side/device

LPZ 0 B - 2, final code B = basic protection, red colour coding



1	Unprotected side
2	Protection class, combination protection
3	Protected side/device

LPZ 0 B - 3, final code C = Combi Protection, blue colour coding



1	Unprotected side
2	Protection class, fine protection
3	Protected side/device

LPZ 1 - 3, final code: F = fine protection, green colour coding

Basic protection

Basic protection devices are lightning arrestors of class 1 that can directly arrest lightning currents and surge voltages. The single-stage protection circuit contains gas arresters. These devices are installed where the lines enter the buildings. They serve to arrest lightning current with waveform 10/350 μs coupled from outside the building via the data cables.

Combined protection

The combined protection devices limit the transients with gas-discharge protectors or transzorb diodes, which are decoupled through resistors. These correspond to classes 1, 2 and 3 or categories D1 and C2 as defined in the standard DIN EN 61643-21. The devices can be installed as basic protection where the lines enter the building, or as fine protection directly before the terminal device. In the latter case it should be noted that the distance to the device needing protection should not exceed 10 metres. If it does, then a further fine protection device should be installed before the device.

Fine protection

The fine protection devices use transzorb diodes to limit surge impulses. The devices are earthed with powerful gas discharge protectors. The decoupling required for basic and fine protection is achieved when the line section between basic and fine protection device is at least five metres. Fine protection devices should always be installed on the device to be protected itself.

Selection aid, HF, video and satellite TV

Technology	Connection	Protected wires	Frequency range	Type	Gender	Item no.	Protection rating
CATV	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/connector	5093 27 2	Combined protection
DCF 77	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
DCS 1800	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/connector	5093 98 8	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
DOCSIS	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/connector	5093 27 2	Combined protection
DVB-T / terrestrial	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/connector	5093 27 2	Combined protection
	F	1	0.5 - 2.8 GHz	TV4+1	connector	5083 40 0	Fine protection
Radio installations	UHF	1	0 - 1.3 GHz	S-UHF	plug/connector	5093 02 3	Combined protection
					connector/connector	5093 01 5	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/connector	5093 98 8	Combined protection
	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/connector	5093 27 2	Combined protection
	TNC	1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection
	GPS	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7
BNC		1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
N		1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/connector	5093 98 8	Combined protection
7/16		1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
TNC		1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection

Selection aid, HF, video and satellite TV

Technology	Connection	Protected wires	Frequency range	Type	Gender	Item no.	Protection rating
GSM 900 / 1800	SMA	1	0 - 3.7 GHz	DS-SMA	connector/ connector	5093 27 7	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/ connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/ connector	5093 98 8	Combined protection
	TNC	1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
LTE	SMA	1	0 - 3.7 GHz	DS-SMA	connector/ connector	5093 27 7	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/ connector	5093 98 8	Combined protection
	TNC	1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
PCS 1900	SMA	1	0 - 3.7 GHz	DS-SMA	connector/ connector	5093 27 7	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/ connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/ connector	5093 98 8	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
Satellite TV	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/ connector	5093 27 2	Combined protection
	F	1	0.5 - 2.8 GHz	TV4+1	connector	5083 40 0	Fine protection
	F	3	0 - 863 MHz	FC-SAT-D	plug/connector	5092 81 6	Fine protection
C band	N	1	0 - 6 GHz	DS-N-6	plug/connector	5093 98 8	Combined protection
Sky DSL	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/ connector	5093 27 2	Combined protection
TETRA / BOS	SMA	1	0 - 3.7 GHz	DS-SMA	connector/ connector	5093 27 7	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/ connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/ connector	5093 98 8	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection

Selection aid, HF, video and satellite TV

Technology	Connection	Protected wires	Frequency range	Type	Gender	Item no.	Protection rating
TV	F	1	0 - 863 MHz	DS-F	plug/connector	5093 27 5	Combined protection
					connector/connector	5093 27 2	Combined protection
	F	3	0 - 863 MHz	FC-TV-D	plug/connector	5092 80 8	Fine protection
UMTS	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7	Combined protection
	BNC	1	0 - 2.2 GHz	DS-BNC	plug/connector	5093 25 2	Combined protection
					connector/connector	5093 23 6	Combined protection
					plug/plug	5093 26 0	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/connector	5093 98 8	Combined protection
	TNC	1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection
	7/16	1	0 - 3 GHz	DS-7 16	plug/connector	5093 17 1	Combined protection
Video/CCTV	BNC	1	0 - 65 MHz	Coax B-E2 MF-F	plug/connector	5082 43 2	Fine protection
				Coax B-E2 MF-C	plug/connector	5082 43 0	Combined protection
	BNC	1	0 - 160 MHz	Koax B-E2 FF-F	plug/plug	5082 43 4	Fine protection
WLAN (2.4 GHz)	SMA	1	0 - 3.7 GHz	DS-SMA	connector/connector	5093 27 7	Combined protection
	N	1	0 - 3 GHz	DS-N	plug/connector	5093 99 6	Combined protection
					connector/connector	5093 98 8	Combined protection
	TNC	1	0 - 4 GHz	DS-TNC	plug/connector	5093 27 0	Combined protection
WLAN (> 5 GHz) standard: a/h, n, ac	N	1	0 - 6 GHz	DS-N-6	plug/connector	5093 98 8	Combined protection
WiMAX	N	1	0 - 6 GHz	DS-N-6	plug/connector	5093 98 8	Combined protection

Selection aid, data technology

Technology	Connection	Protected wires	Type	Item no.	Protection rating	
Arcnet	BNC	1	CoaxB-E2 FF-F	5082 43 4	Fine protection	
	BNC	1	CoaxB-E2 MF-F	5082 43 2	Fine protection	
	BNC	1	CoaxB-E2 MF-C	5082 43 0	Combined protection	
ATM	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
	RJ45	8	RJ45 S-ATM 8-F	5081 99 0	Fine protection	
Ethernet	up to class 6A / EA	RJ45	ND-CAT6A/EA	5081 80 0	Fine protection	
	up to class 5 / D	RJ45	RJ45 S-ATM 8-F	5081 99 0	Fine protection	
	10 Base 2 / 10 Base 5	BNC	1	CoaxB-E2 FF-F	5082 43 4	Fine protection
		BNC	1	CoaxB-E2 MF-F	5082 43 2	Fine protection
		BNC	1	CoaxB-E2 MF-C	5082 43 0	Combined protection
FDDI, CDDI	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
	RJ45	8	RJ45 S-ATM 8-F	5081 99 0	Fine protection	
Industrial Ethernet	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
	RJ45	8	RJ45 S-ATM 8-F	5081 99 0	Fine protection	
	Wire-to-terminal connection	20	LSA-B-MAG	5084 02 0	Basic protection	
	Wire-to-terminal connection	2	LSA-BF-180	5084 02 4	Combined protection	
	Wire-to-terminal connection	2	LSA-BF-24	5084 02 8	Combined protection	
Power over Ethernet	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
Token Ring	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
	RJ45	8	RJ45 S-ATM 8-F	5081 99 0	Fine protection	
	BNC	1	CoaxB-E2 FF-F	5082 43 4	Fine protection	
	BNC	1	CoaxB-E2 MF-F	5082 43 2	Fine protection	
	BNC	1	CoaxB-E2 MF-C	5082 43 0	Combined protection	
RS232, V24	Wire-to-terminal connection	2	MDP-2 D-24-T	5098 42 2	Combined protection	
	Wire-to-terminal connection	4	MDP-4 D-24-EX	5098 43 2	Combined protection	
	Wire-to-terminal connection	2	FDB-2 24-M	5098 38 0	Combined protection	
	Wire-to-terminal connection	2	FDB-2 24-N	5098 39 0	Combined protection	
	Wire-to-terminal connection	2	FRD 24 HF	5098 57 5	Fine protection	
	Wire-to-terminal connection	4	MDP-4 D-24-T	5098 43 1	Combined protection	
	Wire-to-terminal connection	4	MDP-4 D-24-EX	5098 43 2	Combined protection	
	Wire-to-terminal connection	4	ASP-V24T 4	5083 06 0	Fine protection	
	Connector	9	SD09-V24 9	5080 05 3	Fine protection	
	Connector	15	SD15-V24 15	5080 15 0	Fine protection	
VG AnyLAN	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
Voice over IP	RJ45	8	ND-CAT6A/EA	5081 80 0	Fine protection	
4-wire information technology systems	RJ45	4	RJ45 S-E100 4-B	5081 00 1	Basic protection	
	RJ45	4	RJ45 S-E100 4-C	5081 00 3	Combined protection	
	RJ45	4	RJ45 S-E100 4-F	5081 00 5	Fine protection	

Selection aid, telecommunications

Technology	Connection	Protected wires	Mounting / Note	Type	Item no.	Protection rating
a/b - analogue	RJ11	4	Various	RJ11-TELE 4-C	5081 97 5	Combined protection
	RJ11	4	Various	RJ11-TELE 4-F	5081 97 7	Fine protection
	RJ45	4	Various	RJ45-TELE 4-C	5081 98 2	Combined protection
	RJ45	4	Various	RJ45-TELE 4-F	5081 98 4	Fine protection
	Wire-to-terminal connection	2	Hat rail	TD-2/D-HS	5081 69 4	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I	5081 69 0	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I-TAE-F	5081 69 2	Combined protection
	Wire-to-terminal connection	2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
	TAE / RJ11 / connector	2	Socket	FC-TAE-D	5092 82 4	Fine protection
	ADSL	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0
Wire-to-terminal connection		2	LSA	LSA-BF-180	5084 02 4	Combined protection
Wire-to-terminal connection		2	Hat rail	TD-2/D-HS	5081 69 4	Combined protection
Wire-to-terminal connection		4	Wall mounting	TD-4/I	5081 69 0	Combined protection
Wire-to-terminal connection		4	Wall mounting	TD-4/I-TAE-F	5081 69 2	Combined protection
Wire-to-terminal connection		2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
Wire-to-terminal connection		2	Hat rail	TKS-B	5097 97 6	Basic protection
ADSL2+	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
SDSL / SHDSL	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
VDSL	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection


Selection aid, telecommunications

Technology	Connection	Protected wires	Mounting / Note	Type	Item no.	Protection rating
VDSL2	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Wall mounting	TD-2D-V	5081 69 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
ISDN basic connection (U_{k0})	Wire-to-terminal connection	2	Hat rail	TD-2/D-HS	5081 69 4	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I	5081 69 0	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I-TAE-F	5081 69 2	Combined protection
	Wire-to-terminal connection	20	LSA / can only be used WITH LSA-A-LEI or LSA-T-LEI	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA / can only be used WITH LSA-A-LEI or LSA-T-LEI	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
	RJ11	4	Various	RJ11-TELE 4-C	5081 97 5	Combined protection
ISDN basic connection (U_{k0})	RJ11	4	Various	RJ11-TELE 4-F	5081 97 7	Fine protection
	RJ45	4	Various	RJ45-TELE 4-C	5081 98 2	Combined protection
	RJ45	4	Various	RJ45-TELE 4-F	5081 98 4	Fine protection
ISDN basic connection (S_0)	RJ45	8	Various	ND-CAT6A/EA	5081 80 0	Fine protection
	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	LSA	LSA-BF-24	5084 02 8	Combined protection
	RJ11 / connector	4	Socket	FC-ISDN-D	5092 81 2	Fine protection
ISDN Primary Rate Interface (S_{2m}/U_{2m})	RJ11	4	Various	RJ11-TELE 4-C	5081 97 5	Combined protection
	RJ11	4	Various	RJ11-TELE 4-F	5081 97 7	Fine protection
	RJ45	4	Various	RJ45-TELE 4-C	5081 98 2	Combined protection
	RJ45	4	Various	RJ45-TELE 4-F	5081 98 4	Fine protection
	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
Datex-P	Spring terminal	4	Hat rail	MDP-4 D-24-T-10	5098 43 3	Combined protection
G.703 / G.704	RJ45	8	Various	RJ45 S-ATM 8-F	5081 99 0	Fine protection
	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	LSA	LSA-BF-24	5084 02 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
	Wire-to-terminal connection	2	Hat rail	TD-2/D-HS	5081 69 4	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I	5081 69 0	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I-TAE-F	5081 69 2	Combined protection

Selection aid, telecommunications


Technology	Connection	Protected wires	Mounting / Note	Type	Item no.	Protection rating
E1	RJ45	8	Various	RJ45 S-ATM 8-F	5081 99 0	Fine protection
	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	LSA	LSA-BF-24	5084 02 8	Combined protection
Various telecom systems	Wire-to-terminal connection	20	LSA	LSA-B-MAG	5084 02 0	Basic protection
	Wire-to-terminal connection	2	LSA	LSA-BF-180	5084 02 4	Combined protection
	Wire-to-terminal connection	2	LSA	LSA-BF-24	5084 02 8	Combined protection
	Wire-to-terminal connection	2	Hat rail	TKS-B	5097 97 6	Basic protection
	Wire-to-terminal connection	2	Hat rail	TD-2/D-HS	5081 69 4	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I	5081 69 0	Combined protection
	Wire-to-terminal connection	4	Wall mounting	TD-4/I-TAE-F	5081 69 2	Combined protection
	RJ11	4	Various	RJ11-TELE 4-C	5081 97 5	Combined protection
	RJ11	4	Various	RJ11-TELE 4-F	5081 97 7	Fine protection
	RJ45	4	Various	RJ45-TELE 4-C	5081 98 2	Combined protection
	RJ45	4	Various	RJ45-TELE 4-F	5081 98 4	Fine protection
	RJ45	8	Various	RJ45 S-ATM 8-F	5081 99 0	Fine protection
	RJ45	8	Various	ND-CAT6A/EA	5081 80 0	Fine protection
	RJ11 / connector	4	Socket	RC-RJ-D	5092 82 8	Fine protection

Selection aid, measurement and control systems

Interface	Connection	Protected wires	Mounting		FS ¹	Type	Item no.	Protection rating	
(0)4 - 20 mA	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection	
	Spring terminal	2	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection	
	Spring terminal	4	Hat rail			MDP-4 D-24-T	5098 43 1	Combined protection	
	Spring terminal	4	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection	
	Wire-to-terminal connection	2	Thread – metric	✓		FDB-2 24-M	5098 38 0	Fine protection	
	Wire-to-terminal connection	2	Thread – NPT	✓		FDB-2 24-N	5098 39 0	Fine protection	
	Wire-to-terminal connection	2	LSA			LSA-B-MAG	5084 02 0	Basic protection	
	Wire-to-terminal connection	2	LSA			LSA-BF-24	5084 02 8	Combined protection	
	Screw terminal	2	Hat rail			FLD 24	5098 61 1	Fine protection	
0-10 V	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection	
	Spring terminal	2	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection	
	Wire-to-terminal connection	2	Thread – metric	✓		FDB-2 24-M	5098 38 0	Fine protection	
	Wire-to-terminal connection	2	Thread – NPT	✓		FDB-2 24-N	5098 39 0	Fine protection	
	Screw terminal	2	Hat rail			FLD 24	5098 61 1	Combined protection	
Various DC circuits	Earth potential-free	Spring terminal	2	Hat rail			FLD 5	5098 60 0	Combined protection
		Spring terminal	2	Hat rail			FLD 12	5098 60 3	Combined protection
		Spring terminal	2	Hat rail			FLD 24	5098 61 1	Combined protection
		Spring terminal	2	Hat rail			FLD 48	5098 63 0	Combined protection
		Spring terminal	2	Hat rail			FLD 60	5098 63 8	Combined protection
		Spring terminal	2	Hat rail			FLD 110	5098 64 6	Combined protection
	Common reference potential	Spring terminal	2	Hat rail			FLD 2-5	5098 86 7	Combined protection
		Spring terminal	2	Hat rail			FLD 2-12	5098 80 8	Combined protection
		Spring terminal	2	Hat rail			FLD 2-24	5098 81 6	Combined protection
		Spring terminal	2	Hat rail			FLD 2-48	5098 82 4	Combined protection
		Spring terminal	2	Hat rail			FLD 2-110	5098 85 9	Combined protection
Various frequency-dependent circuits	Earth potential-free	Spring terminal	2	Hat rail			FRD 5 HF	5098 57 1	Combined protection
		Spring terminal	2	Hat rail			FRD 24 HF	5098 57 5	Combined protection
		Spring terminal	2	Hat rail			FRD 5	5098 49 2	Combined protection
		Spring terminal	2	Hat rail			FRD 12	5098 50 6	Combined protection
		Spring terminal	2	Hat rail			FRD 24	5098 51 4	Combined protection
		Spring terminal	2	Hat rail			FRD 48	5098 52 2	Combined protection
		Spring terminal	2	Hat rail			FRD 110	5098 55 7	Combined protection
Various frequency-dependent circuits	Common reference potential	Spring terminal	2	Hat rail			FRD 2-24	5098 72 7	Combined protection


¹ Remote signalling

Selection aid, measurement and control systems

Interface	Connection	Protected wires	Mounting		FS ¹	Type	Item no.	Protection rating
RS232, V24	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	4	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
	Spring terminal	4	Hat rail			MDP-4 D-24-T	5098 43 1	Combined protection
	Spring terminal	4	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
	Wire-to-terminal connection	2	Thread – metric	✓		FDB-2 24-M	5098 38 0	Fine protection
RS232, V24	Wire-to-terminal connection	2	Thread – NPT	✓		FDB-2 24-N	5098 39 0	Fine protection
	Screw terminal	2	Hat rail			FRD 24 HF	5098 57 5	Fine protection
	Screwless terminal	4	Miscellaneous			ASP-V24T 4	5083 06 0	Fine protection
	SUB-D-9	9	Connector			SD09-V24 9	5080 05 3	Fine protection
	SUB-D-15	15	Connector			SD15-V24 15	5080 15 0	Fine protection
RS422, V11	Wire-to-terminal connection	2	Thread – metric	✓		FDB-2 24-M	5098 38 0	Fine protection
	Wire-to-terminal connection	2	Thread – NPT	✓		FDB-2 24-N	5098 39 0	Fine protection
	Screw terminal	2	Hat rail			FRD 24	5098 51 4	Combined protection
	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	2	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
	Spring terminal	4	Hat rail			MDP-4 D-24-T	5098 43 1	Combined protection
	Spring terminal	4	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
RS485	Spring terminal	2	Hat rail			MDP-2 D-5-T	5098 40 4	Combined protection
	Spring terminal	2	Hat rail	✓		MDP-4 D-5-EX	5098 43 2	Combined protection
	Spring terminal	4	Hat rail			MDP-4 D-5-T	5098 41 1	Combined protection
	Spring terminal	4	Hat rail	✓		MDP-4 D-5-EX	5098 43 2	Combined protection
	Screw terminal	2	Hat rail			FRD 5 HF	5098 57 1	Combined protection
	SUB-D-9	9	Connector			SD-09-V11 9	5080 06 1	Fine protection
Binary signals, earth potential-free	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	2	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
	Wire-to-terminal connection	2	Thread – metric			FDB-2 24-M	5098 38 0	Combined protection
Binary signals, earth potential-free	Wire-to-terminal connection	2	Thread – NPT			FDB-2 24-N	5098 39 0	Combined protection
	Screw terminal	2	Hat rail			FRD 5 HF	5098 57 1	Combined protection
	Screw terminal	2	Hat rail			FRD 5	5098 49 2	Combined protection
	Screw terminal	2	Hat rail			FLD 5	5098 60 0	Combined protection
Binary signals, common reference potential	Screw terminal	2	Hat rail			FRD 2-24	5098 72 7	Combined protection
	Screw terminal	2	Hat rail			FLD 2-24	5098 81 6	Combined protection


¹ Remote signalling

Selection aid, measurement and control systems

Interface	Connection	Protected wires	Mounting		FS ¹	Type	Item no.	Protection rating
2-pin power supplies 5V	Spring terminal	4	Hat rail			MDP-4 D-5-T-10	5098 41 3	Combined protection
2-pin power supplies 12 V	Screw terminal	2	Hat rail			VF12-AC-DC	5097 45 3	Fine protection
	Screw terminal	2	Hat rail		✓	VF12-AC/DC-FS	5097 45 4	Fine protection
2-pin power supplies 24 V	Screw terminal	2	Hat rail			VF24-AC/DC	5097 60 7	Fine protection
	Screw terminal	2	Hat rail		✓	VF24-AC/DC-FS	5097 82 0	Fine protection
2-pin power supplies 48 V	Screw terminal	2	Hat rail			VF48-AC/DC	5097 61 5	Fine protection
	Screw terminal	2	Hat rail		✓	VF48-AC/DC-FS	5097 82 2	Fine protection
2-pin power supplies 60 V	Screw terminal	2	Hat rail			VF60-AC/DC	5097 62 3	Fine protection
	Screw terminal	2	Hat rail		✓	VF60-AC/DC-FS	5097 82 4	Fine protection
2-pin power supplies 110 V	Screw terminal	2	Hat rail			VF110-AC/DC	5097 63 1	Fine protection
2-pin power supplies 230 V	Screw terminal	2	Hat rail			VF230-AC/DC	5097 65 0	Fine protection
	Screw terminal	2	Hat rail		✓	VF230-AC-FS	5097 85 8	Fine protection
	Screw terminal	2	Hat rail		✓ ²	VF2-230-AC/DC-FS	5097 93 9	Fine protection
PT 100	Spring terminal	2	Hat rail			FLD 5	5 98 60 0	Combined protection
	Spring terminal	2	Hat rail			FLD 2-5	5098 79 4	Combined protection
	Spring terminal	4	Hat rail			MDP-4 D-5-T-10	5098 41 3	Combined protection
PT 1000	Spring terminal	2	Hat rail			FLD 5	5098 60 0	Combined protection
	Spring terminal	2	Hat rail			FLD 2-5	5098 79 4	Combined protection
	Spring terminal	4	Hat rail			MDP-4 D-5-T-10	5098 41 3	Combined protection
TTL	Spring terminal	2	Hat rail			FRD 12	5098 60 3	Combined protection
	Spring terminal	2	Hat rail			MDP-2 D-24-T	5098 42 2	Combined protection
	SUB-D-9	9	Connector			SD09-V24 9	5080 05 3	Fine protection
	SUB-D-15	15	Connector			SD15-V24 15	5080 15 0	Fine protection


¹ Remote signalling, ² leakage current-free

Selection aid, bus systems

Interface	Connection	Protected wires	Mounting		Testable	FS ¹	Type	Item no.	Protection rating
ADVANT	Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
ARCNET	RJ45	8	Hat rail				ND-CAT6A/EA	5081 80 0	Fine protection
AS-I	Data cable	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T-10	5098 42 5	Combined protection
	Supply voltage	Spring terminal	2	Hat rail		✓	VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0
BITBUS	Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
BLN	Spring terminal	2	Hat rail		✓		MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	2	Hat rail				FRD 24 HF	5098 57 5	Fine protection
CAN bus	Data cable	Spring terminal	3	Hat rail		✓	MDP-3 D-5-T	5098 40 7	Combined protection
	Power supply	Spring terminal	2	Hat rail		✓	VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0
CAN open	Data cable	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
	Supply voltage	Spring terminal	2	Hat rail		✓	VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0
C-BUS	Spring terminal	2	Hat rail				MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	2	Hat rail				FRD 24 HF	5098 57 5	Combined protection
CC-Link	Data cable	Spring terminal	4	Hat rail		✓	MDP-4-D-24-T	5098 43 1	Combined protection
	Supply voltage	Spring terminal	2	Hat rail		✓	VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0
Data Highway Plus	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection	
Device Net	Data cable	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
	Supply voltage	Spring terminal	2	Hat rail		✓	VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0
Dupline	Spring terminal	2	Hat rail		✓		MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	2	Hat rail				FRD 24 HF	5098 57 5	Combined protection
eBUS	Spring terminal	2	Hat rail		✓		MDP-2 D-48-T	5098 44 2	Combined protection
	Spring terminal	2	Hat rail				FRD 48	5098 52 2	Fine protection
EIB	Spring terminal	2	Hat rail		✓		MDP-2 D-24-T-10	5098 42 5	Combined protection
	Spring terminal	4	Hat rail		✓		MDP-4 D-24-T-10	5098 43 3	Combined protection
	Spring terminal	2	Hat rail				TKS-B	5097 97 6	Basic protection
ET 200	Spring terminal	2	Hat rail				FRD 5	5098 49 2	Fine protection
	Spring terminal	2	Hat rail		✓		MDP-2 D-5-T	5098 40 4	Combined protection
	Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
FIPIO / FIPWAY	Spring terminal	4	Hat rail		✓		MDP-4 D-5-T	5098 41 1	Combined protection
Foundation Fieldbus	Spring terminal	2	Hat rail		✓		MDP-2 D-48-T	5098 45 0	Combined protection
	Spring terminal	2	Hat rail	✓	✓		MDP-4 D-48-EX	5098 45 2	Combined protection
	Spring terminal	2	Thread – metric	✓			FDB-2 24-M	5098 38 0	Combined protection
	Spring terminal	2	Thread – NPT	✓			FDB-2 24-N	5098 39 0	Combined protection

¹ Remote signalling

Selection aid, bus systems


Interface	Connection	Protected wires	Mounting		Testable	Surge voltage protection	Item number	Protection rating
FSK	Spring terminal	2	Hat rail			FRD 5	5098 49 2	Fine protection
	Spring terminal	2	Hat rail	✓		MDP-2 D-5-T	5098 40 4	Combined protection
Genius	Spring terminal	4	Hat rail	✓		MDP-4 D-24-T	5098 43 1	Combined protection
HARD	Spring terminal	2	Hat rail			FRD 24	5098 51 4	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T	5098 42 2	Combined protection
	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
	Spring terminal	4	Hat rail	✓		MDP-4 D-24-EX	5098 43 2	Combined protection
	Wire-to-terminal connection	4	Thread – metric	✓		FDB-2 24-M	5098 38 0	Fine protection
	Wire-to-terminal connection	4	Thread – NPT	✓		FDB-2 24-N	5098 39 0	Fine protection
IEC bus	Spring terminal	4	Hat rail		✓	MDP-4 D-5-T	5098 41 1	Combined protection
Interbus Inline (I/O)s	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 42 2	Combined protection
Interbus (Loop)	Spring terminal	2	Hat rail		✓	MDP-4 D-24-T-10	5098 43 3	Combined protection
KNX	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T-10	5098 42 5	Combined protection
	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T-10	5098 43 3	Combined protection
	Spring terminal	2	Hat rail			TKS-B	5097 97 6	Basic protection
LON	Spring terminal	2	Hat rail			FRD 48	5098 52 2	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-48-T	5098 44 2	Combined protection
LRE	Spring terminal	2	Hat rail			FRD 5	5098 49 2	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-5-T	5098 40 4	Combined protection
LUXMATE	Spring terminal	4	Hat rail			MDP-4 D-5-T	5098 41 1	Combined protection
M-BUS	Spring terminal	2	Hat rail			FRD 24	5098 51 4	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T	5098 42 2	Combined protection
Melsec Net 2	BNC	1	Miscellaneous			DS-BNC m/f	5093 25 2	Basic protection
	BNC	1	Miscellaneous			DS-BNC f/f	5093 23 6	Basic protection
	BNC	1	Miscellaneous			DS-BNC f/m	5093 26 0	Basic protection
MODBUS	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
MPI bus	Spring terminal	2	Hat rail			FRD 5	5098 49 2	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-5-T	5098 40 4	Combined protection
	Spring terminal	4	Hat rail		✓	MDP-4 D-5-T	5098 41 1	Combined protection
N1 LAN	Spring terminal	2	Hat rail			FRD 5	5098 49 2	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-5-T	5098 40 4	Combined protection
	Spring terminal	20	Hat rail			LSA-B-MAG	5084 02 0	Basic protection
	Spring terminal	2	Hat rail			LSA-BF-24	5084 02 8	Combined protection
N2 bus	Spring terminal	2	Hat rail			FRD 2-5	5098 79 4	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-5-T	5098 40 4	Combined protection
novaNet	Spring terminal	2	Hat rail			FRD 12	5098 60 3	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T	5098 42 2	Combined protection

Selection aid, bus systems

Interface		Con- nec- tion	Protected wires	Moun- ting		Testa- ble	FS ¹	Surge protection	Item number	Protection rating
P bus, pro- cess Bus, Panel Bus	Data cable	Spring terminal	2	Hat rail				FRD 24 HF	5098 57 5	Combined protection
		Spring terminal	2	Hat rail		✓		MDP-2 D-24-T	5098 42 2	Combined protection
	Supply voltage	Spring terminal	2	Hat rail		✓		VF24-AC/DC	5097 60 7	Fine protection
		Spring terminal	2	Hat rail		✓	✓	VF24-AC/DC-FS	5097 82 0	Fine protection
P-NET		Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
Procontic CS31		Spring terminal	2	Hat rail				FRD 12	5098 60 3	Combined protection
		Spring terminal	2	Hat rail		✓		MDP-2 D-24-T	5098 42 2	Combined protection
Procontic T200		Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
Profibus DP		Spring terminal	2	Hat rail		✓		MDP-2 D-5-T	5098 40 4	Combined protection
		Screw terminal	2	Hat rail				FRD 5 HF	5098 57 1	Combined protection
		SUB-D-9	9	Connector				SD09-V24 9	5080 05 3	Fine protection
Profibus PA		Spring terminal	2	Hat rail		✓		MDP-2 D-48-T	5098 44 2	Combined protection
		Spring terminal	4	Hat rail	✓			MDP-4 D-48-EX	5098 45 2	Combined protection
		Wire-to- terminal connection	2	Thread – metric	✓			FDB-2 24-M	5098 38 0	Fine protection
		Wire-to- terminal connection	2	Thread – NPT	✓			FDB-2 24-N	5098 39 0	Fine protection
Profinet		Spring terminal	8	Hat rail				ND-CAT6A/EA	5081 80 0	Fine protection
SafetyBUS p		Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
SDLC		Spring terminal	4	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
SIGMALOOP (SIGMASYS)		Spring terminal	2	Hat rail				FRD 24	5098 51 4	Combined protection
		Spring terminal	2	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
SIGMANET (SIGMASYS)		Spring terminal	2	Hat rail				FRD 24	5098 51 4	Combined protection
		Spring terminal	2	Hat rail		✓		MDP-4 D-24-T	5098 43 1	Combined protection
SINEC L1		Spring terminal	4	Hat rail		✓		MDP-4 D-5-T	5098 41 1	Combined protection

¹ Remote signalling

Selection aid, bus systems

Interface	Connection	Protected wires	Mounting		Testable	Type	Item no.	Protection rating
SINEC L2	Spring terminal	2	Hat rail			FRD 5 HF	5098 57 1	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-4 D-5-T	5098 41 1	Combined protection
	SUB-D-9	9	Connector			SD09-V24 9	5080 05 3	Fine protection
SS97 SINIX	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
SUCONET	Spring terminal	4	Hat rail		✓	MDP-4 D-24-T	5098 43 1	Combined protection
	Crimp clamp	20	LSA			LSA-B-MAG	5084 02 0	Basic protection
	Crimp clamp	2	LSA			LSA-BF-24	5084 02 8	Fine protection
TTL	Spring terminal	2	Hat rail			FRD 24	5098 51 4	Combined protection
	Spring terminal	2	Hat rail		✓	MDP-2 D-24-T	5098 42 2	Combined protection
	SUB-D-9	9	Connector			SD09-V24 9	5080 05 3	Fine protection
	SUB-D-15	15	Connector			SD15-V24 15	5080 15 0	Fine protection
U bus	Spring terminal	4	Hat rail			2x TKS-B	5097 97 6	Basic protection



Protection and spark gaps
Ex approval

Planning aids, protection and spark gaps

Protection and spark gaps/ATEX approval	48
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Protection and spark gaps/ATEX approval



Task

OBO isolating and protective spark gaps are designed to isolate electrical system components, which under normal operating conditions are not connected together. If lightning strikes cause a potential increase in one of the electrical system components, the isolating spark gap guarantees a conductive connection and therefore equipotential bonding.

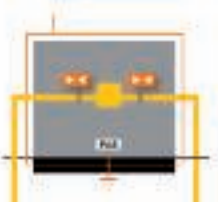







Function

As their name suggests, isolating and protective spark gaps comprise a spark gap. This gap transfers from the insulating to the current-permeable condition when an electric arc is ignited by a surge voltage. An isolating spark gap differs from a protective spark gap in its purpose for use. Isolating spark gaps isolate varying earth potentials, while the protective spark gaps are used only in roof standard open-wire lines.

Applications

- For producing an indirect connection between insulating flanges (cathodic corrosion protection).
- For bridging insulating flanges, also in ex-protected areas (tested in accordance with ATEX Directive 94/9/EC).
- Avoidance of drag in residual voltages, especially TT systems.
- For lightning protection equipotential bonding according to DIN VDE 0185-305 (IEC 62305).
- For connecting different earthing systems, the aim being to make optimum use of all earthers for lightning protection equipotential bonding.
- As a measure that saves isolating connections for measuring and test purposes.

Installation principle for protection and spark gaps

Overview				
Application	Description	Type	Item no.	Product figure
Isolating spark gaps for insulating flange 	<ul style="list-style-type: none"> • e.g. in a gas pressure control station • Particularly for Ex areas • For bridging of insulating flanges or insulating threaded joints which can carry lightning currents 	Type 480	5240034 5240077 5240069 Page: 442	
Isolating spark gaps for potential isolation 	<ul style="list-style-type: none"> • Several earthing systems in one building, e.g. foundation earther and deep earther • Connection via spark gap • N electrochemical corrosion • Entire earther surface is effective in the event of a direct lightning strike 	Type 481	5240085 Page: 443	
Open-wire connection 	<ul style="list-style-type: none"> • Roof stand spark gap for insulation • Largest possible distance between the roof stand of a low voltage free cable and a lightning protection system • Distance < 0.5 m: encapsulated spark gap in agreement with the power supply company 	Type 482	5240050 Page: 443	
Coupling of earthing systems 	<ul style="list-style-type: none"> • Several earthing systems on one building • If the operation of special electronic equipment requires a separate earthing system, then this functional earth must be connected to the operating earth • Prevention of dangerously high voltage differences • An additional throttle is fitted to keep high-frequency voltages away from the functional earthing 	Type FS-V20	5099803 Page: 443	



Measuring and testing systems

HINWEIS!
Isolierter Blitzschutz mit dem
OBO isCon®-System.
Änderungen sind nur von einer
Blitzschutzfachkraft
durchzuführen!



Measuring and testing systems



Life Control testing unit



ISOLAB testing device

Testing surge protection devices within data cables

Often, it is necessary to check the functionality of the surge protection devices within the data cable. Of particular importance is that the actual testing of the protection devices has no negative impact on the data signal.

Testing of the arrester upper parts V50, V25, V20 and V10

The ISOLAB testing unit allows the checking of the arrester upper parts V50, V25, V20 and V10. A rotary controller allows the selection of the appropriate OBO Bettermann arrester. Then, the upper part of the appropriate combination and/or surge arrester is placed in the appropriate opening in the device. The function of the varistor is then checked by pressing the test button. Besides arrester testing, the ISOLAB also allows insulation testing according to VDE 0100-610.

The Life Control testing unit, developed by OBO Bettermann, allows testing of the protection devices when installed, without influencing the data signal. A thin testing pin creates the contact with the integrated lightning barrier. The integrated microprocessor displays the test result on the OLED display and also emphasises it with acoustic signals. A connectable LED within the testing pin is an additional feature, allowing orientation, even in the darkest switchgear cabinet.

A high-quality testing case for safe transport and the documentation of the testing results are a component part of this innovation from OBO Bettermann.



The LSC I+II lightning strike and surge counter measures and permanently saves lightning and pulse currents (10/350, 8/20) and saves this event together with the date and time.

Testing of lightning protection systems with the PCS system

The peak current sensor (PCS) records and stores pulsed currents in the form of a magnetic card. This is a method of monitoring whether lightning has hit the lightning protection and which maximum lightning current has occurred. If the PCS system is mounted between the interface from equipotential bonding to earthing system, the coupled lightning current in a building can also be measured. The results can provide information on potential damage in the



electrical installation. The PCS card is mounted by snapping a card holder onto the round conductor at a defined distance. The measuring range of the card is between 3 and 120 kA. The magnetic card reader offers the option of evaluating peak current sensors. The appropriate peak current value is shown on the display. Alternatively, OBO Bettermann can read it off for you. In this case please contact your OBO Bettermann agency or subsidiary.

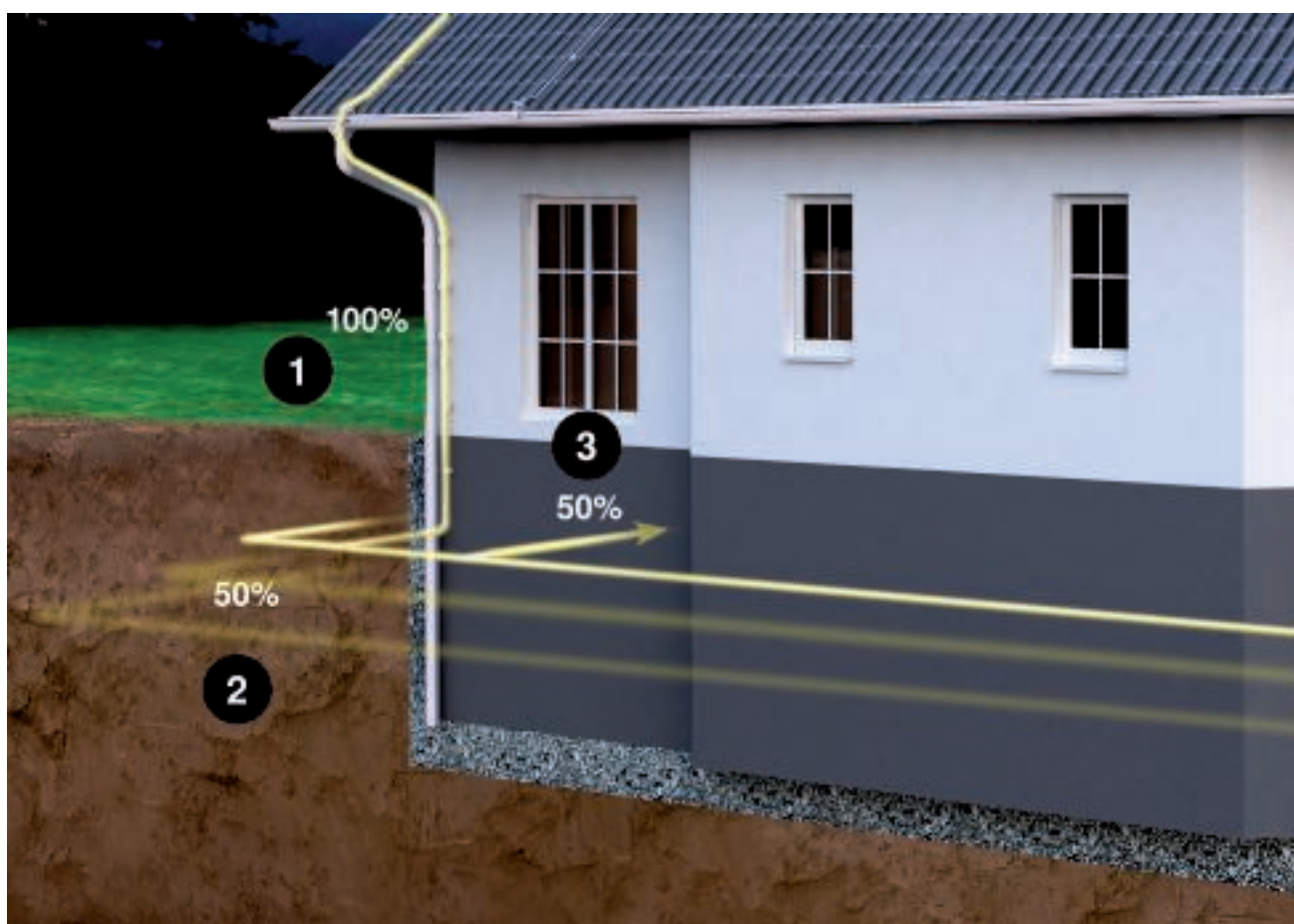


Equipotential bonding systems
Indoors and outdoors
Industrial area and Ex area

Planning aids, equipotential bonding systems

Equipotential bonding planning

56



Path of the lightning current: 1 = 100%, 2 = 50%, 3 = max. 50%

Tasks and function of internal lightning protection

The task of an internal lightning protection system is to prevent dangerous sparking within the building to be protected. Sparking can occur especially when high potential differences with metallic or electrically operated system components occur due to a conductor (arrestor) passing from the lightning current. Electrical energy and information technology systems in particular require special protection, as a direct connection between the external lightning protection system and the building installation exists via the earthing system and the equipotential bonding. In order to avoid damage inside the building, a lightning protection

equipotential bonding in accordance with DIN EN 62305 (IEC 62305) is necessary.

System components to be connected

In addition, the following system components must be connected to the equipotential bonding:

- Metal carcass of the structure
- Metal installations
- External conductive components
- Electrical energy and information technology systems

Installing the equipotential bonding

The equipotential bonding should be installed at the basement or at

ground level. The electrical energy and information technology lines must be connected to the equipotential bonding via type 1 lightning current arrestors. The arrestors must be connected to the equipotential bonding as close as possible to where the lines enter the building. The surge arrestor connection must comply with DIN VDE 0100-534. The following cross-sections apply as minimum dimensions for connections in the lightning protection equipotential bonding (unless larger cross-sections are specified in other standards):

- Copper: 16 mm²
- Aluminium: 25 mm²
- Steel: 50 mm²

Minimum dimensions of cables, protection class I to IV

Material	Cross-section of cables, which interconnect different equipotential bonding busbars or which connect to the earthing system	Cross-section of cables, which connect the internal metallic installations with the equipotential bonding busbar
Copper	16 mm ²	6 mm ²
Aluminium	25 mm ²	10 mm ²
Steel	50 mm ²	16 mm ²

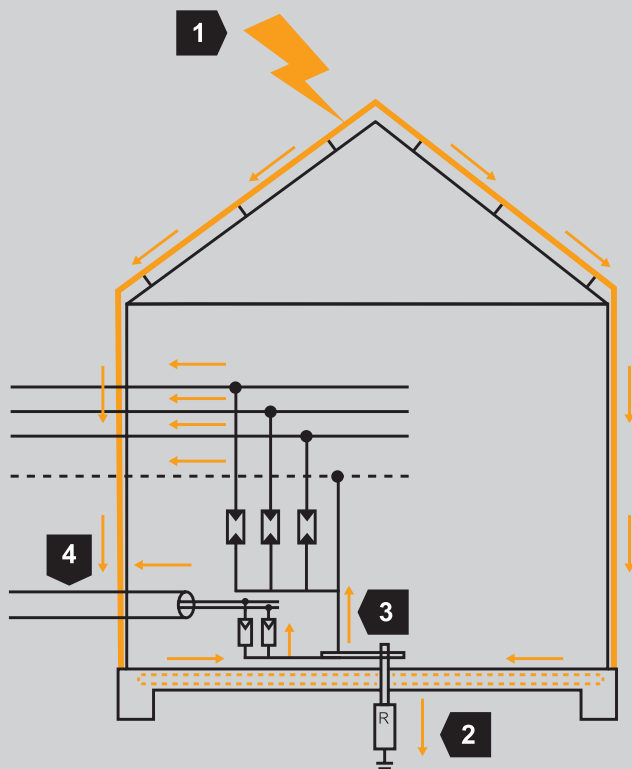
Equipotential bonding systems

Very large surge voltages are caused mainly by lightning strikes on or close to energy systems. Even from several hundred metres away, lightning currents can also cause impermissible surge voltages in conductor loops, through either capacitive, inductive or galvanic coupling. Large surge voltages are coupled over a radius of up to 2 km. Switching operations involving inductive loads create dangerous surge voltages in the medium and low-voltage power networks.

Lightning discharges (LEMP: Lightning Electro Magnetic Impulse)

The international lightning protection standard IEC 62305 describes how direct lightning strikes of up to 200 kA are safely arrested. The current is coupled into the earthing system and, due to the voltage drop at the earthing resistor, half of the lightning current is coupled into the internal installation. The partial lightning current then divides itself among the power lines entering the building (number of cores of power line entering building), while around 5% enters data cables.

The voltage drop at the earthing resistor is calculated from the product of the partial lightning current (i) and the earthing resistance (R). This is then the potential difference between the local earth (equipotential bonding) and the live cables, which are earthed some distance away.



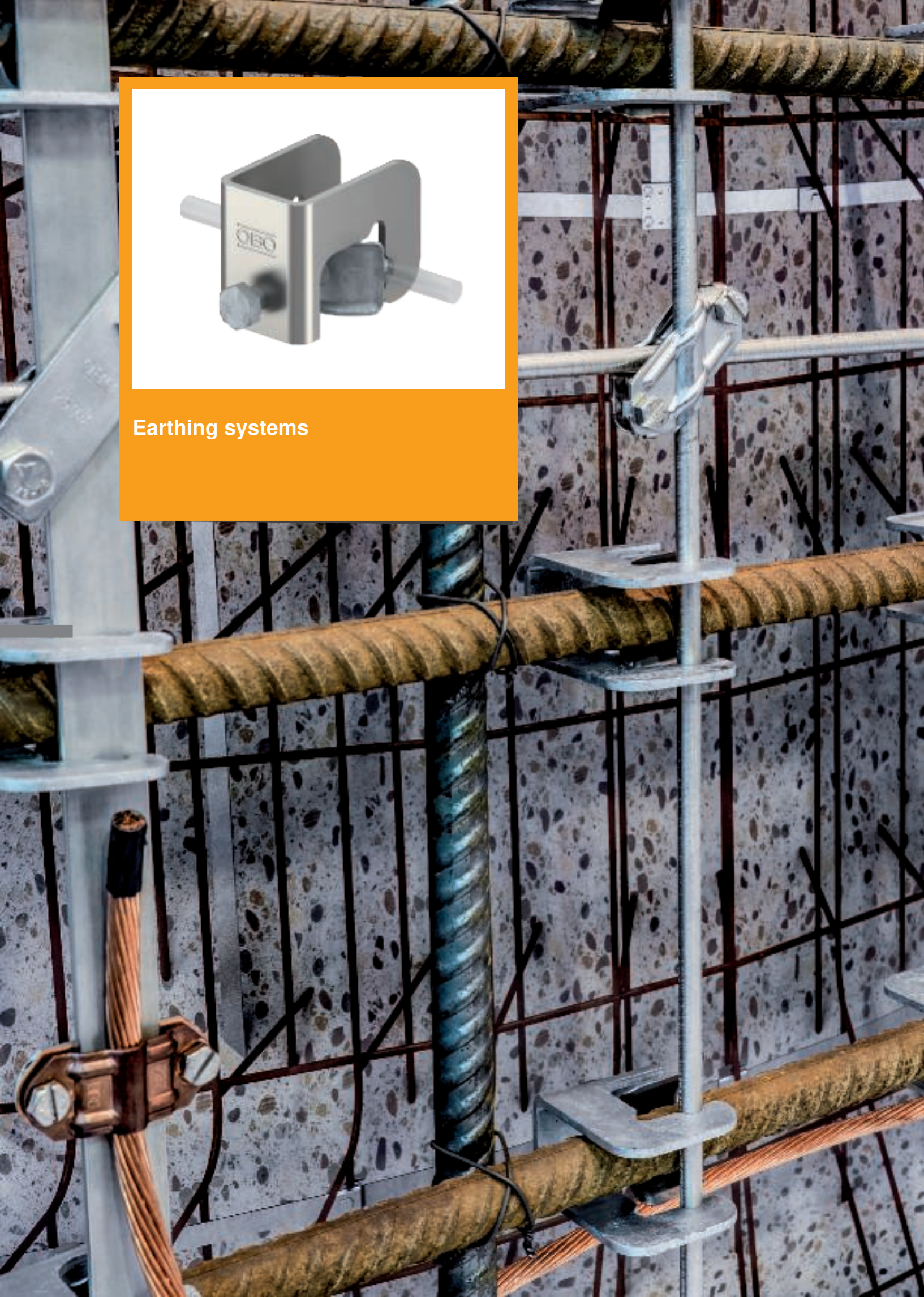
The highest surges are caused by lightning strikes. According to VDE 0185-305 (IEC 62305), lightning strikes are simulated with lightning surge currents of up to 200 kA (10/350 μ s).

1	Lightning strike	100 %	$i_{imp} = \max 200 \text{ kA}$ (IEC 62305)
2	Earthing system	~ 50%	$I = 100 \text{ kA}$ (50%)
3	Electrical installation	~ 50%	$I = 100 \text{ kA}$ (50%)
4	Data cable	~ 5%	$I = 5 \text{ kA}$ (5%)

Typical distribution of lightning current



Earthing systems



Planning aids, earthing systems

Basic principles of earthing	60
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Selection aid, ring earth electrodes	65

Decision aid for determining the grid width of ring or foundation earthers



Installing a foundation earther

The standards specify that each system must include an earthing system.

What do we mean by an "earthing system"?

We can find the required definitions in DIN VDE 0100-200 (IEC 60050-826) – Low-voltage electrical installations: Terms.

- "Totality of the electrical connections and equipment used to earth a network, a system or a resource." Also:
- "Conductive element, embedded in the earth or in another specific conductive medium in electrical contact with the earth."

The tasks of an earthing system are:

- Arresting of the lightning current into the earth
- Equipotential bonding between the down-conductor
- Equipotential bonding near conductive walls of the building structure

Consequences of an improperly created earthing system:

- Dangerous surge voltages at the equipotential bonding
- No even potential course on the earthing system
- Destruction of the foundation through insufficient arresting area of the energy-rich lightning current.
- Destruction of the foundation through improperly made connections (no terminal connection)
- Electrical decoupling of high amounts of lightning energy

Earther arrangement to VDE 0185-305-3 (IEC 62305)

Type A

- Horizontal earther
- Vertical earther (deep earther or earthing rod)

Type B

- Ring earthers (surface earthers)
- Foundation earthers

External and internal lightning protection systems

Planning methods

VDE 0185-305-3 (IEC 62305-3) demands continuous lightning protection equipotential bonding. This means individual earthing systems must be connected together to create a global earthing system.

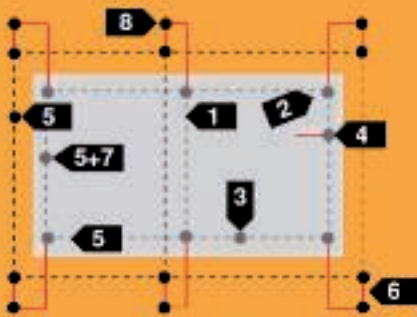
The standard differentiates between type A and type B earthing systems. Type A earthers are vertical or horizontal earthers (deep earthers, earthing rods). A type B earther is any surface earther (ring earthers, foundation earthers).

Foundation earther – without lightning protection



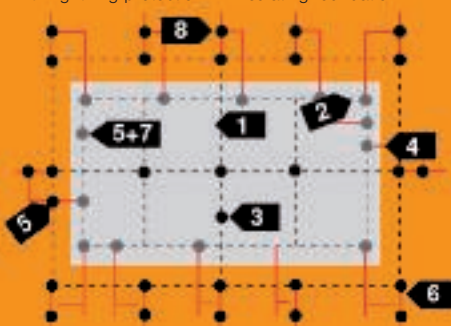
Functional equipotential bonding conductor and ring earth electrodes

Without lightning protection Insulating foundation



Functional equipotential bonding conductor and ring earth electrodes

With lightning protection Insulating foundation



Earthing material, for use in concrete:

- Surrounded by min. 5 cm of concrete on all sides; ≤ 2 m connect to reinforcement
- Grid width max. 20 x 20 m; with EMC protection to VDE 0185-305-4: 5 x 5 m
- Unreinforced foundation: Material no. 1.4571/1.4404, V4A

	Type	Item no.	Description
1	5052	5019 34 7	Strip steel 30x3.5 mm FT
2	250 A-FT	5313 01 5	Connector, strip steel with reinforcement FT
3	1814 FT	5014 46 8	Terminal on reinforcement to \varnothing 14 mm
3	1814 FT D37	5014 46 9	For reinforcements \varnothing 16–37 mm
4	205 B-M10 VA	5420 00 8	Fixed earthing terminal M10
8	ProtectionBall	5018 01 4	Protective cap for connection straps

Earthing and connection material, for use in the earth or cleanliness layer

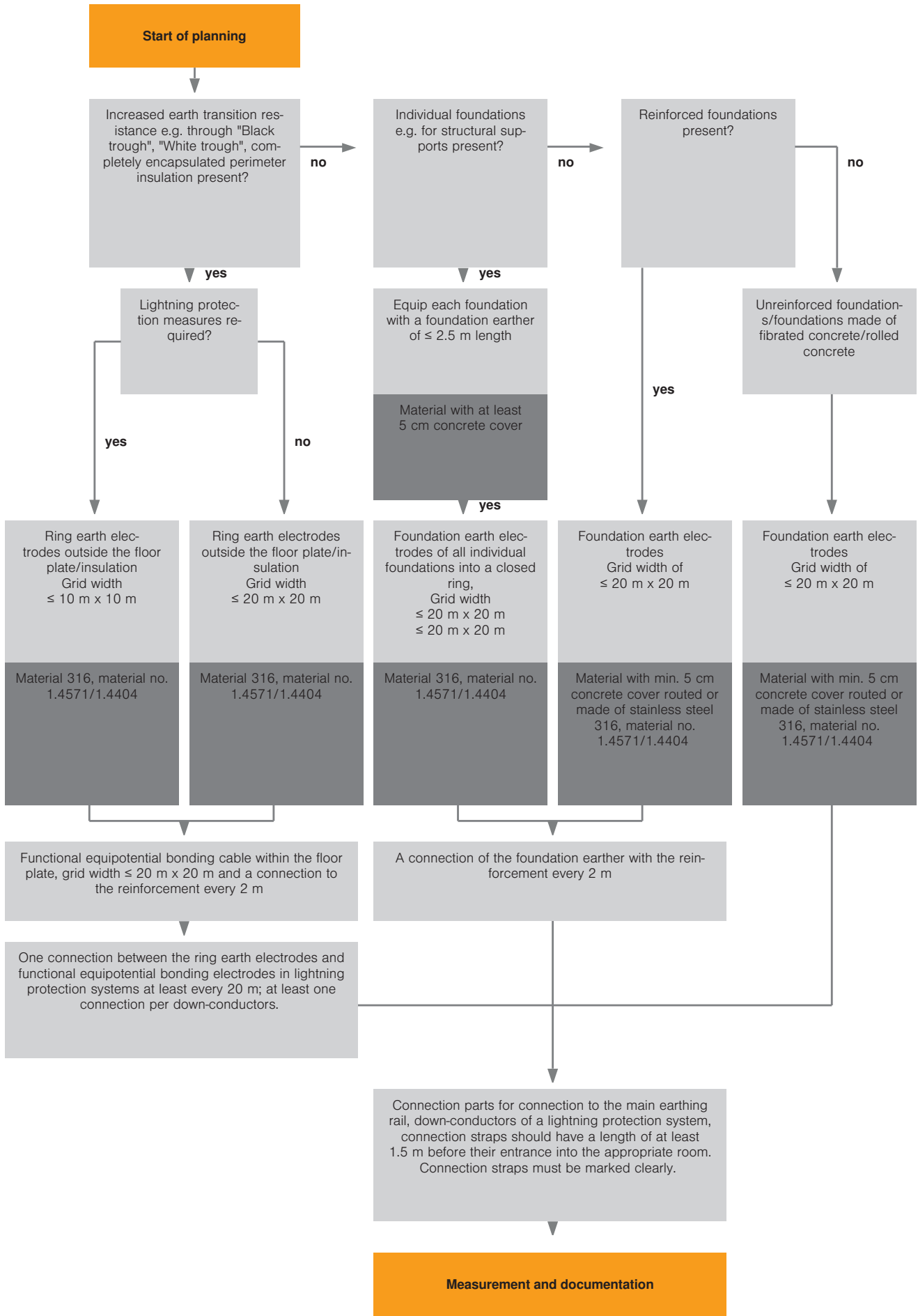
- Material no. 1.4571/ 1.4404, V4A; clamps in earth with corrosion protection strip
- Min. 0.8 m deep, routing outside drainage shaft, frost apron (moist area)
- Grid: Without lightning protection: 20 x 20 m, connection between earth and concrete: Every 20 m, with lightning protection: 10 x 10 m, connection between earth and concrete: Every down-conductor

	Type	Item no.	Description
5	RD 10 V4A	5021 64 2	Round conductor \varnothing 10 mm V4A
6	250 V4A	5312 92 5	Terminal for round conductor and strip steel












Material for equipotential bonding

	Type	Item no.	Description
7	1801 VDE	5015 65 0	Equipotential busbar, industrial











Decision aid for determining the grid width of ring or foundation earthers










Selection aid, foundation earthers

Foundation earthers				
Application	Designation	Type	Item no.	Product figure
Foundation earthers for lightning protection measures according to VDE 0185-305-3 (IEC 62305) and for protection measures against electric shocks according to DIN 18014	Flat conductor, galvanised steel, 30 m	5052 DIN 30X3.5	5019 34 5 Page: 480	
	Round conductor, galvanised steel, 80 m	RD 10	5021 10 3 Page: 481	
	Spacer, 250 mm long, galvanised steel	1 81 1	5014 01 8 Page: 501	
	Spacer, 400 mm long, galvanised steel	1811 I	5014 02 6 Page: 501	
	Cross-connector for flat conductors and round conductors, galvanised steel	25 0	5312 90 6 Page: 497	
	Cross-connector for flat conductor, galvanised steel	256 A-DIN 30 FT	5314 65 8 Page: 494	
	Parallel clamp, galvanised steel	259 A FT	5315 51 4 Page: 499	
	Connection terminal for reinforcing steels, galvanised steel	1814 FT	5014 46 8 Page: 500	
	Round conductor, galvanised steel with PVC jacketing, 75 m	RD 10-PVC	5021 16 2 Page: 481	
	Wall penetration, sealed against pressurised water	DW RD10	2360 04 1 Page: 500	
	Wall penetration, sealed against pressurised water	DW FL30x3.5	2360 04 3 Page: 500	

Selection aid, ring earthers for lightning protection measures

Ring earther				
Application	Designation	Type	Item no.	Product figure
Ring earther for lightning protection measures according to VDE 0185-305-3 (IEC 62305) Not suitable for loamy or wet soil!	Flat conductor, galvanised steel, 30 m	5052 DIN 30X3.5	5019 34 5 Page: 480	
	Flat conductor, galvanised steel, 60 m	5052 DIN 30X3.5	5019 34 7 Page: 480	
	Round conductor, galvanised steel, 80 m	RD 10	5021 10 3 Page: 481	
	Cross-connector for flat conductors and round conductors, galvanised steel	252 8-10 FT	5312 31 0 Page: 495	
	Cross-connector for flat conductor, galvanised steel	256 A-DIN 30 FT	5314 65 8 Page: 494	
Ring earther for lightning protection measures according to VDE 0185-305-3 (IEC 62305) Usable universally in many environments.	Flat conductor, stainless steel V4A, 25 m	5052 V4A 30X3.5	5018 73 0 Page: 480	
	Flat conductor, stainless steel V4A, 50 m	5052 V4A 30X3.5	5018 70 6 Page: 480	
	V4A stainless steel round conductor, 50 m	RD 10-V4A	5021 64 2 Page: 482	
	V4A stainless steel round conductor, 80 m	RD 10-V4A	5021 64 7 Page: 482	
	Cross-connector for flat conductors and round conductors, V4A	252 8-10 V4A	5312 31 8 Page: 495	
	Cross-connector for flat conductor, V4A	256 A-DIN 30 V4A	5314 65 9 Page: 494	
	Plastic corrosion protection strip, 10 m	356 50	2360 05 5 Page: 505	

Selection aid, ring earthers for protection measures against electric shocks

Ring earther				
Application	Designation	Type	Item no.	Product figure
Ring earthers for protection measures against electric shocks according to DIN 18014	Flat conductor, stainless steel V4A, 25 m	5052 V4A 30X3.5	5018 73 0 Page: 480	
	Flat conductor, stainless steel V4A, 50 m	5052 V4A 30X3.5	5018 70 6 Page: 480	
	V4A stainless steel round conductor, 50 m	RD 10-V4A	5021 64 2 Page: 482	
	V4A stainless steel round conductor, 80 m	RD 10-V4A	5021 64 7 Page: 482	
	Cross-connector for flat conductors and round conductors, V4A	252 8-10 V4A	5312 31 8 Page: 495	
	Cross-connector for flat conductor, V4A	256 A-DIN 30 V4A	5314 65 9 Page: 494	
	Plastic corrosion protection strip, 10 m	356 50	2360 05 5 Page: 505	



Air-termination and down-conductor systems



Planning aids, air-termination and down-conductor systems

Lightning protection classes	68
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Lightning protection classes

Lightning protection classes and allocation

Before a lightning protection system is planned, the object to be protected must be assigned to one of four lightning protection classes. Efficiency in lightning protection class I is the highest at 98% and in lightning protection class IV the lowest at 81% (see table of hazard parameters). The cost of erecting a lightning protection system (e.g. necessary protection angles, distances from loops, protection profiles, distances from down-conductors) is more involved for lightning protection class I systems than for lightning protection class IV systems.

VdS Directive

The required lightning protection class is determined by assessing the damage risk in accordance with DIN EN 62305-2 (IEC 62305-2), unless specified in regulations. Directive VdS 2010 (risk-oriented lightning and surge protection), published by Gesamtverband der Deutschen Versicherungswirtschaft e. V. (GDV) offers alternative method of determining the lightning protection class.



You can obtain further information under www.vds.de, via the OBO Hotline +49 (0)2373 89-1700 or at www.obo-bettermann.com.

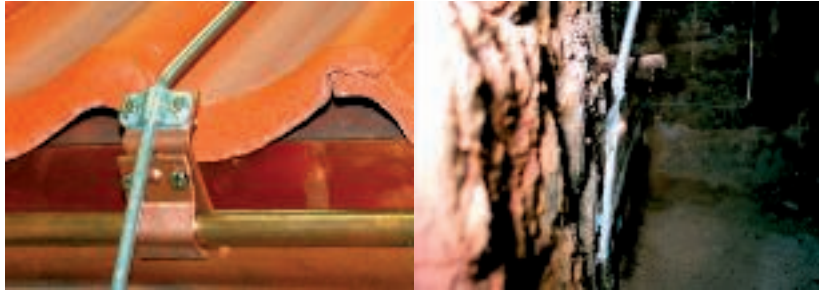
Hazard parameters in dependence of lightning protection classes

Lightning protection class	Peak lightning current value min.	Peak lightning current value max.	Capture probability
I	3 kA	200 kA	98%
II	5 kA	150 kA	95%
II	10 kA	100 kA	88%
IV	16 kA	100 kA	81%

Lightning protection classes based on Directive VdS 2010

Application	Lightning protection class
Computer centres, military applications, nuclear power stations	I
Ex zones in industry and the chemicals sector	II
Photovoltaic systems > 10 kW	III
Museums, schools, hotels with more than 60 beds	III
Hospitals, churches, storage facilities, meeting places accommodating more than 100 to 200 people	III
Administrative buildings, sales points, offices and bank buildings of over 2,000 m ²	III
Residential buildings with more than 20 apartments, multi-storey buildings over 22 m high	III
Photovoltaics (< 10 KW)	III

Materials for external lightning protection



Substances and material

The following materials are preferred for use in external lightning protection systems: hot galvanised steel, rust-proof steel (VA), copper and aluminium.

Corrosion

A risk of corrosion occurs especially when joining different material types. Therefore, no copper parts may be installed above galvanised surfaces or above aluminium parts as copper particles worn away by rain or other environmental influences can penetrate the galvanised surface. In addition, a galvanic element occurs, which accelerates corrosion of the contact surface.

Examples

As you can see from the examples, the copper connection on the steel water pipe is corroded and could become detached. If two different materials that are not recommended need to be joined, bi-metal connectors can be used. The example shows the use of bi-metal connectors on a copper gutter to which an aluminium round conductor is attached. Points at increased risk of corrosion, such as insertion points into the concrete

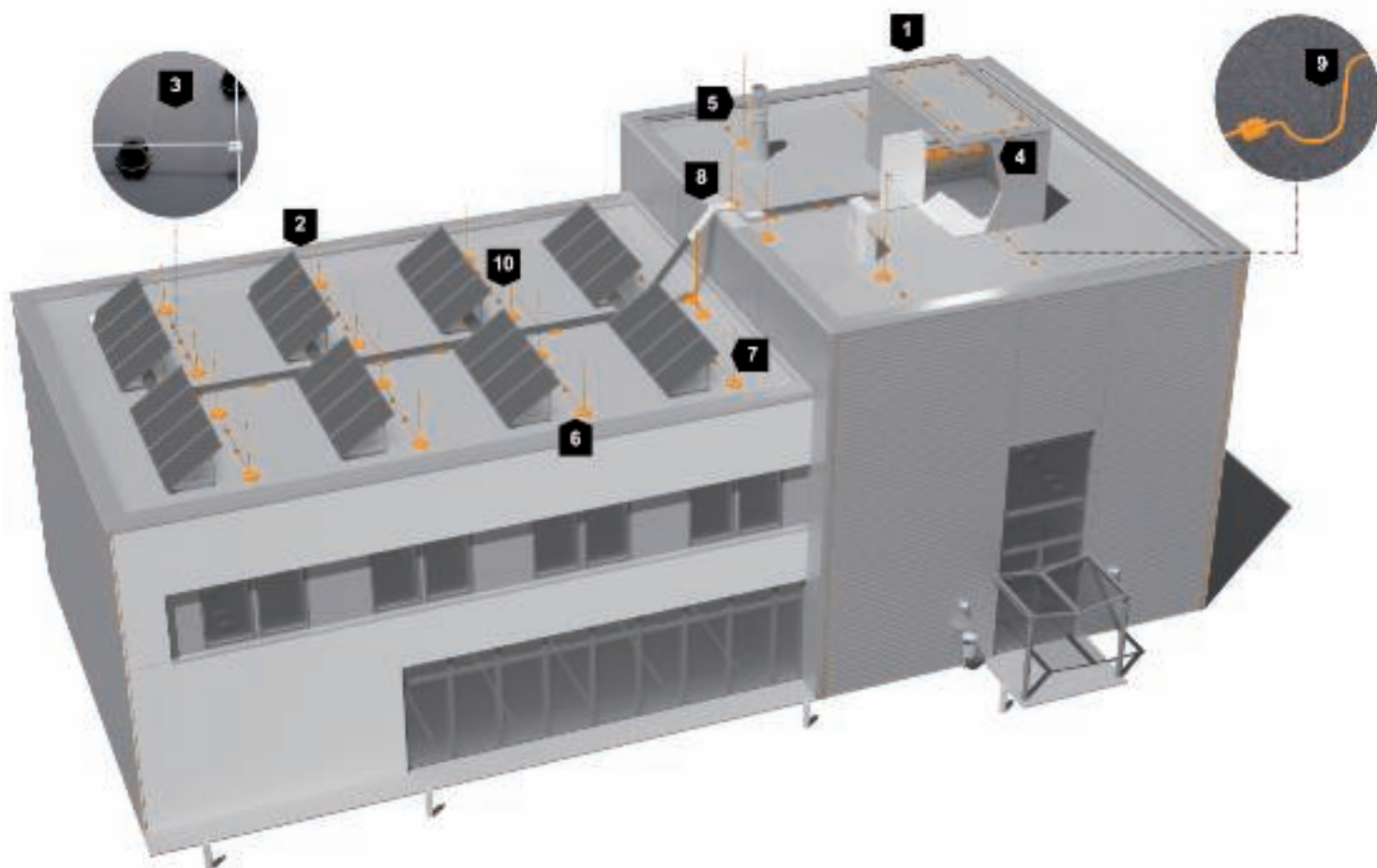
or soil, must be corrosion-protected. A suitable coating must be applied as corrosion protection to connection points in the ground. Aluminium must not be placed directly (without a distance) on, in or under plaster, mortar or concrete or in the earth – the potential consequences of doing so are shown in our example. In the "Material combinations" table, possible metal combinations are evaluated with regard to contact corrosion in air.

Material combinations without increased risk of corrosion

	Steel, galvanised	Aluminium	Copper	Stainless steel	Titanium	Tin
Steel, galvanised	Yes	Yes	No	Yes	Yes	Yes
Aluminium	Yes	Yes	No	Yes	Yes	Yes
Copper	No	No	Yes	Yes	No	Yes
Stainless steel	Yes	Yes	Yes	Yes	Yes	Yes
Titanium	Yes	Yes	No	Yes	Yes	Yes
Tin	Yes	Yes	Yes	Yes	Yes	Yes

Installation principle, building with flat roof

In buildings with flat roofs, the grid method is generally used. Roof structures such as PV systems, air-conditioning units, roof dome lights and ventilators are protected with additional air-termination rods.



1	Terminal block
2	Bridging component
3	Roof conductor holder
4	Cable bracket
5	Insulated spacer
6	Air-termination system stand
7	Air-termination rod
8	Fire protection bandage over insulated parapet cover
9	Expansion piece
10	Vario quick connector

Installation principle, building with a pitched/gabled roof

The exposed points, e.g. the ridge, chimneys and any roof structures, must be protected with air-termination systems.



1	Roof conductor holder for ridge tiles
2	Vario quick connector
3	Roof conductor holder
4	Round conductor
5	Air-termination rod
6	Cable bracket
7	Gutter clamp



The wind load describes how wind will affect the buildings and installed systems. It must be taken into account during planning.

Determining the wind load

For decades, wind load has been an important consideration for OBO Bettermann in relation to external lightning protection. Today's calculation models and air-termination rod systems are the result of numerous studies and years of R&D experience.

The previous German standards in this area – DIN 1055:2005 Part 4: Wind loads and Part 5: Snow and ice loads, and DIN 4131: Steel antenna mounts – dealt with all load assumptions for mounts in Germany.

The Eurocodes (EC) are the result of European standardisation in the construction field. EC 0 to EC 9 cover the documents in the series DIN EN 1990 to 1999. These are supplemented by the various national annexes (NA). The NAs contain provisions that go beyond the Eurocode rules, i.e. the provisions that were previously part of the national standards.

Following the publication of the national annexes to the ECs, the old standards became invalid, following appropriate coexistence phases.

Old standard	New standard
DIN 1055:2005-03 Part 4: Wind loads	Eurocode 1: DIN EN 1991-1-4:2010-12: Parts 1-4: General effects; wind loads + DIN EN 1991-1-4/NA: 2010-12
DIN 1055:2005-03 Part 5: Snow and ice loads	DIN EN 1991-1-3: 2010-12 -; Parts 1–3: General effects; snow loads + DIN EN 1991-1-3/NA: 2010-12
DIN V 4131:2008-09 Steel antenna mounts	Eurocode 3: DIN EN 1993-3-1: 2010-12: Parts 3-1: Towers, masts and chimneys – Towers and masts + DIN EN 1993-3-1/NA: 2010-12

Example of German national standards for the calculation of wind load

1st step: Determining the wind zone

The second factor that needs to be known when determining the wind load is the wind load zone in which the object is located.

The standards contain no statements regarding the following aspects:

- Framework masts and towers with non-parallel main legs,
- Guyed masts and chimneys,
- Cable-stayed and suspension bridges,
- Torsional vibrations.

Zone	Wind speed in m/s	Speed pressure in kN/m ²
1	22.5	0.32
2	25.0	0.39
3	27.5	0.47
4	30.0	0.56

Basic speeds and speed pressures



Wind zones in Germany according to DIN EN 1991-1-4 NA

2nd step: Determining the terrain category (TC)

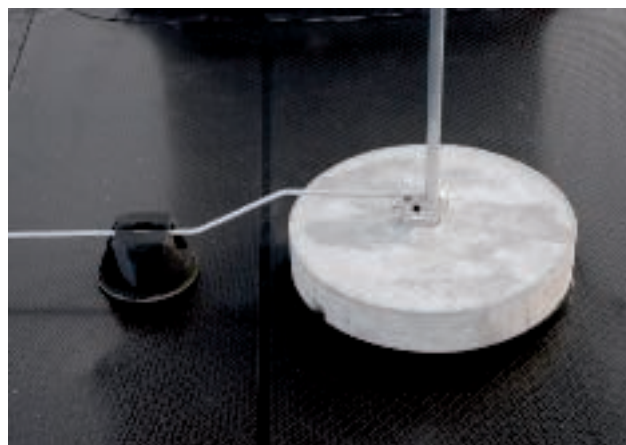
Terrain-specific loads and dynamic pressures are an important element in calculating wind loads.

Terrain category (TC)	Definition
Terrain category I	Open sea; lakes with at least 5 km of open water in the wind direction; even, flat land without obstacles
Terrain category II	Terrain with hedges, individual farmsteads, buildings or trees, e.g. agricultural area
Terrain category III	Suburbs, industrial or commercial areas; forests
Terrain category IV	Urban areas in which at least 15% of the area is built up with buildings whose average height is higher than 15 m

Terrain categories according to DIN EN 1991-1-4

3rd step: Determining the maximum gust speed

The tilt and slip resistance of air-termination rods must always be determined on a project-by-project basis. The reference height is the building height and two thirds of the length of the air-termination rod. The maximum gust speed at the project location must be determined.



Air-termination rod with stand

Gust speed in wind zone I				
Reference height in metres	TC I in kph	TC II in kph	TC III in kph	TC IV in kph
0	112	105	100	93
5	122	108	100	93
10	136	124	103	93
16	136	124	111	93
20	139	128	115	98
30	145	134	122	106
40	149	139	128	112
70	157	148	139	126
100	162	155	147	135

Gust speeds, wind zone I

Gust speed in wind zone II				
Reference height in metres	TC I in kph	TC II in kph	TC III in kph	TC IV in kph
0	124	117	111	104
5	136	120	111	104
10	145	131	114	104
16	152	138	123	104
20	155	142	127	109
30	161	149	136	118
40	165	154	142	125
70	174	165	155	139
100	180	172	163	150

Gust speeds, wind zone II

Gust speed in wind zone III				
Reference height in metres	TC I in kph	TC II in kph	TC III in kph	TC IV in kph
0	137	129	122	114
5	149	132	122	114
10	159	144	126	114
16	167	152	135	114
20	170	156	140	119
30	177	164	149	129
40	182	170	156	137
70	192	181	170	153
100	198	189	180	165

Gust speeds, wind zone III

Gust speed in wind zone I				
Reference height in metres	TC I in kph	TC II in kph	TC III in kph	TC IV in kph
0	149	140	133	124
5	163	144	133	124
10	174	157	137	124
16	182	166	148	125
20	186	170	153	130
30	193	179	163	141
40	198	185	170	150
70	209	198	185	167
100	216	206	196	180

Gust speeds, wind zone IV

4th step: Determining what concrete blocks are required

Based on the maximum gust speed, the number and size (10 or 16 kg) of concrete blocks required can be determined for the air-termination rod used. The value in the tables must lie above the maximum gust speed for the location.

An example

The maximum gust speed at the location is 142 km/h.

A tapered pipe air-termination rod of type 101 VL2500 and height 2.5 m is used.

Because the value in Table 2.15 must be higher than the maximum gust speed at the location (i.e. in this case more than 142 km/h), the next possible value is 164. Three concrete blocks, each of weight 16 kg, must therefore be used.

Number of concrete blocks for tapered pipe air-termination rods

Air-termination rod height in m	1.5	2	2.5	3	3.5	4	Concrete blocks required
Type	101 VL1500	101 VL2000	101 VL2500	101 VL3000	101 VL3500	101 VL4000	
Item no.	5401 98 0	5401 98 3	5401 98 6	5401 98 9	5401 99 3	5401 99 5	
Wind speed kph	117	-	-	-	-	-	1 x 10 kg
	164	120	95	-	-	-	2 x 10 kg
	165	122	96	-	-	-	1 x 16 kg
	-	170	135	111	95	-	2 x 16 kg
	-	208	164	136	116	102	3 x 16 kg

Number of concrete blocks for air-termination rod, one end rounded

Air-termination rod height in m	1	1.5	2	2.5	3	Concrete blocks required
Type	101 ALU-1000	101 ALU-1500	101 ALU-2000	101 ALU-2500	101 ALU-3000	
Item no.	5401 77 1	5401 80 1	5401 83 6	5401 85 2	5401 87 9	
Wind speed kph	97	-	-	-	-	1 x 10 kg
	196	133	103	-	-	1 x 16 kg
	-	186	143	117	100	2 x 16 kg
	-	-	173	142	121	3 x 16 kg

Number of concrete blocks for air-termination rod, one end rounded with connection strap

Air-termination rod height in m	1	1.5	Concrete blocks required
Type	101 A-L 100	101 A-L 150	
Item no.	5401 80 8	5401 85 9	
Wind speed kph	100	-	1 x 10 kg
	192	129	1 x 16 kg
	-	177	2 x 16 kg
	-	214	3 x 16 kg

Number of concrete blocks for insulated VA and AI air-termination rods

Air-termination rod height in m	4	6	4	6	Concrete blocks required
Material	VA	VA	AI	AI	
Item no.	5408 94 2	5408 94 6	5408 94 3	5408 94 7	
Item no. of appropriate air-termination rod stand	5408 96 8	5408 96 9	5408 96 6	5408 96 7	
Wind speed kph	120	94	120	92	3 x 16 kg
	161	122	163	122	6 x 16 kg
	194	145	197	147	9 x 16 kg
	222	165	227	168	12 x 16 kg
	246	182	252	187	15 x 16 kg

Number of concrete blocks for insulated air-termination rods with exit

Air-termination rod height in m	4	6	8	10	Concrete blocks required
Item no.	5408 93 8	5408 94 0	5408 88 8	5408 89 0	
Item no. of appropriate air-termination rod stand	5408 93 0	5408 93 2	5408 90 2	5408 90 2	
Wind speed kph	110	85	93	82	3 x 16 kg
	148	111	116	102	6 x 16 kg
	178	132	134	119	9 x 16 kg
	204	151	151	133	12 x 16 kg
	227	167	166	146	15 x 16 kg

**Number of concrete blocks for isFang air-termination rod with VA tri-
pod**

Air-termination rod height in m	4	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	Concrete blocks required
Air-termination rod item no.	5402 86 4	5402 86 6	5402 86 8	5402 87 0	5402 87 2	5402 87 4	5402 87 6	5402 87 8	5402 88 0	
Item no. of appropriate air-termination rod stand	5408 96 8	5408 96 8	5408 96 8	5408 96 8	5408 96 9	5408 96 9	5408 96 9	5408 96 9	5408 96 9	
Wind speed kph	143	124	110	99	104	96	89	83	78	3 x 16 kg
	193	168	148	133	138	127	117	109	102	6 x 16 kg
	232	202	178	159	165	151	139	129	121	9 x 16 kg
	266	231	203	182	188	172	159	147	138	12 x 16 kg
	296	257	226	202	208	191	176	163	152	15 x 16 kg





OBO isCon® system
Insulated lightning protection

Planning aids, insulated lightning protection

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Installation principle, Ex areas	83
Ex areas	84

isFang air-termination rod system

Quickly and simply installed

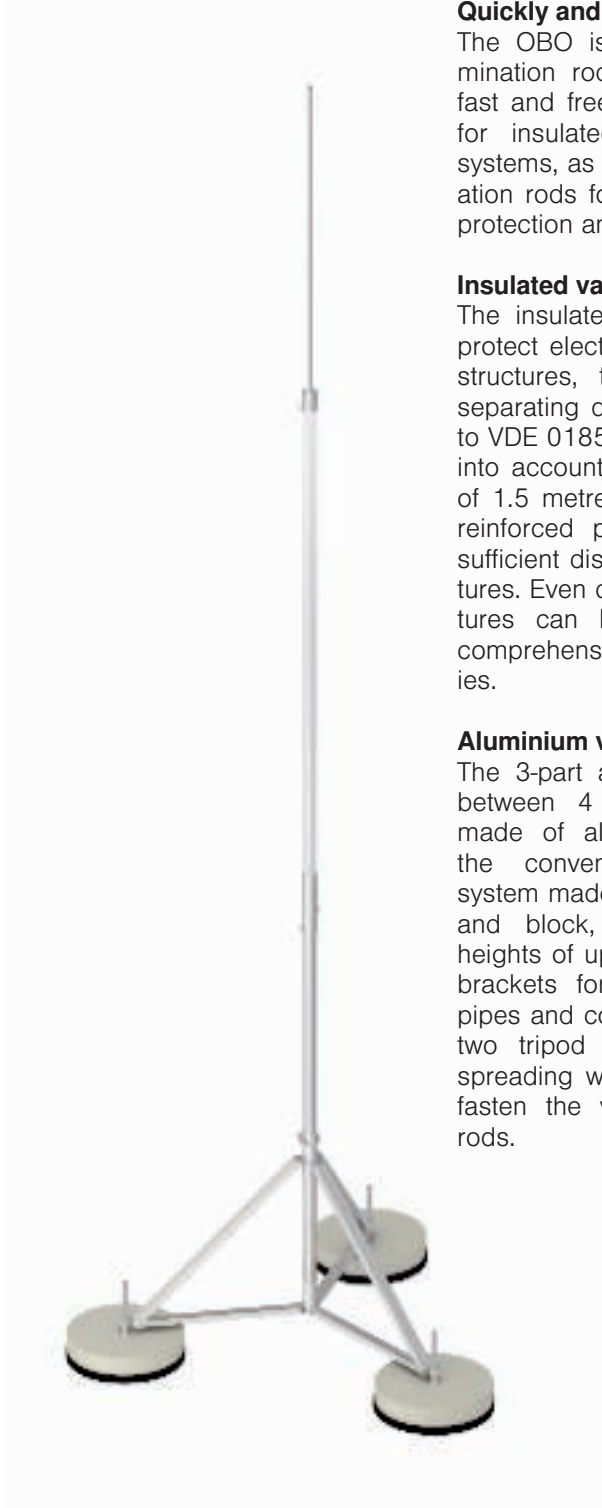
The OBO isFang modular air-termination rod system can offer a fast and freely terminable solution for insulated air-termination rod systems, as well as high air-termination rods for the largest possible protection angle.

Insulated variant

The insulated air-termination rods protect electrical and metallic roof structures, taking the calculated separating distance (s), according to VDE 0185-305-3 (IEC 62305-3), into account. An insulated section of 1.5 metres made of fibre-glass reinforced plastic (GFK) ensures sufficient distance to all roof structures. Even complex building structures can be protected by the comprehensive system accessories.

Aluminium variant

The 3-part air-termination rods of between 4 and 8 metres and made of aluminium complement the conventional air-termination system made of air-termination rod and block, which is used for heights of up to 4 metres. Various brackets for mounting on walls, pipes and corner pipes, as well as two tripod stands with different spreading widths, are available to fasten the various air-termination rods.



OBO isCon® system



1	Weakly conductive EVA (ethylene vinyl acetate copolymer), UV-resistant
2	Conductive PEX (cross-linked polyethylene)
3	Insulating PEX (cross-linked polyethylene)
4	35 mm ² copper cable

Structure of the high-voltage-resistant OBO isCon® insulated down-conductor

In complex installations, the required separating distance can often no longer be implemented with conventional down-conductors, as the structural conditions do not permit the required distances between the air-termination systems and the electrical installations. Insulated lightning protection systems, such as the OBO isCon® conductor, are used to maintain the required separating distance.

Tested: 0.75 m separation distance and up to 150 kA lightning current

After first potential connection behind the connection element, the isCon® cable reflects an equivalent separation distance of up to 0.75 metres in the air according to VDE 0185-305-3 (IEC 62305). This means that installation is possible directly on metallic and electrical structures. There is no direct arcing between the down-conductor and the building to be protected.

Total flexibility on the construction site

The OBO isCon® conductor can be used flexibly. The isCon® conductor is delivered on disposable cable rolls. This means that the user can cut them to the exact size they require and terminate them as necessary. This means: no ordering of pre-terminated conductors, but rather flexible working according to actual conditions on the construction site. Special knowledge is required to be able carry out the planning and routing of the isCon® correctly. This knowledge is imparted by the current installation instructions, but can also be deepened in special OBO workshops.

OBO isCon®-System: air-termination system and down-conductor



The air-termination system

The routing of the air-termination system is planned taking DIN EN 62305-3 (VDE 0185-305-3) Section 5.2 into account. The area to be protected must be designed specially according to the height and arrangement of the air-termination system.

The down-conductor

Only the connection element may be connected to the air-termination or forwarding down-conductor of the external lightning protection. The cable must be located in the protection area of the air-termination system and be fastened at a maximum distance of one metre using the installation material indicated. If cables are routed in the building, then specified protection measures, such as fire insulation, must be taken into account.

Separation distance

Calculation of the separating distance according to DIN EN 62305-3 (VDE 0185-305-3) Section 6.3 at the point the isCon® conductor is connected. The length (l) should be measured from the connection point of the isCon® conductor to the next level of the lightning protection equipotential bonding (e.g. earthing system). Check whether the calculated separating distance (s) is less than the specified equivalent separating distance of the isCon® conductor. If the specified separating distance is exceeded, then additional down-conductors must be installed.

Maximum lengths of the isCon conductor at s = 0.75 m

LPS – lightning protection class	Number of down-conductors	Length at s=0.75 m
I	1	-
	2	14.20
	3 and more	21.30
II	1	12.50
	2	18.94
	3 and more	28.40
III	1	18.75
	2	28.40
	3 and more	42.61

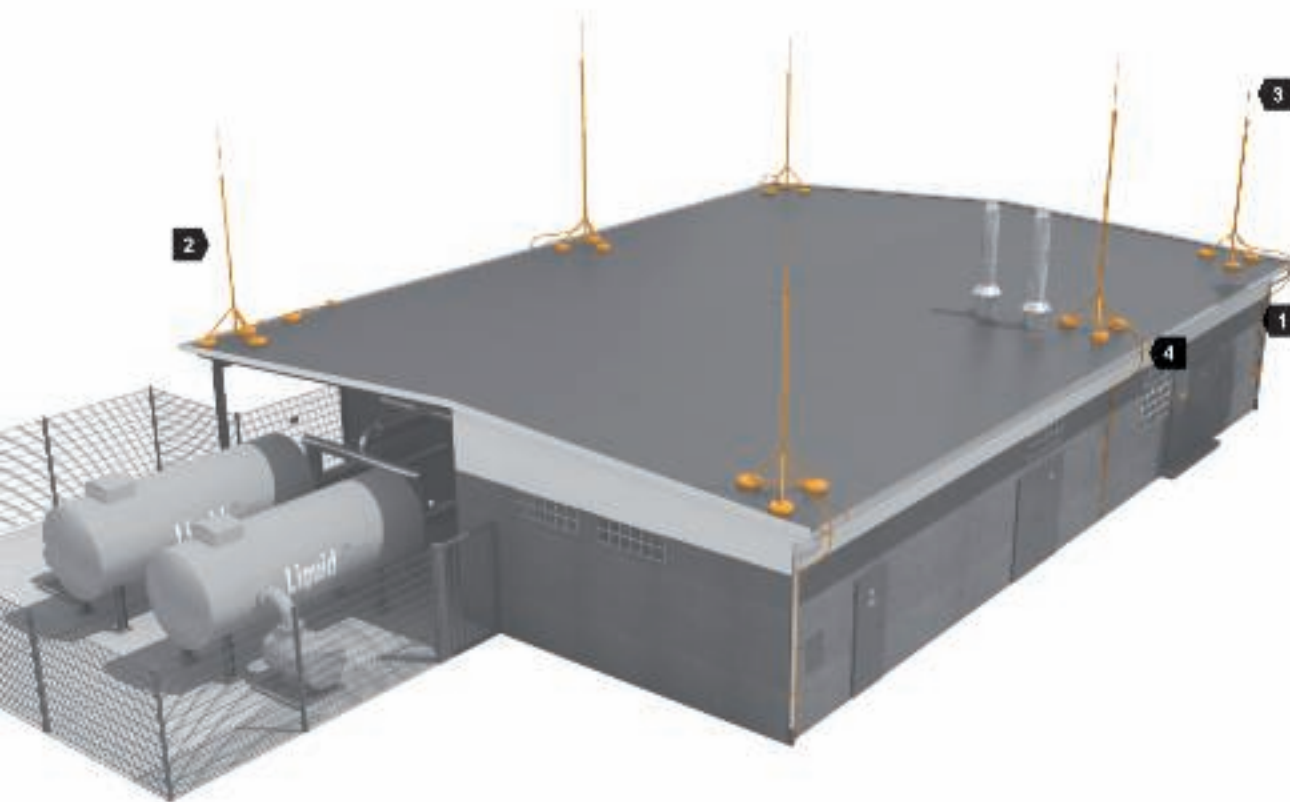
An exact calculation of the separating distance proves the possible use of the isCon conductor.

COMMENT: The values in the table apply to all type B earthers and to those type A earthers in which the earth resistance of the neighbouring earther electrodes does not differ by more than a factor of 2. If the earther resistance of individual electrodes deviates by more than a factor of 2, $k_c = 1$ should be assumed.

Source: Table 12 DIN EN 62305-3:2011

Installation principle, isCon in potentially explosive areas

In the Ex zones 1 and 21, after the first potential connection, the OBO isCon® conductor should be connected at regular distances (0.5 metres) using a metallic cable bracket (e.g. isCon H VA or PAE) to the equipotential bonding. If there is a lightning strike, lightning current may not flow through the equipotential bonding and it must be in the protection angle of the lightning protection system.



1	isCon® conductor
2	4 m isFang air-termination rod with external isCon® conductor
3	6 m isFang air-termination rod with external isCon® conductor
4	Potential connection

OBO isCon® system: Ex areas



Installation in potentially explosive areas

When planning and running a lightning protection system through Ex zones, the following rules must particularly be taken into account:

- DIN EN 62305-3 – Appendix D – "Additional information for lightning protection systems for structure in areas with the risk of explosion"
- VDE 0185-305-3 – Supplementary sheet 2 – "Additional information for special structures"

For Ex systems with Ex zone 2 and 22, supplementary sheet 2 (VDE 0185-305-3, Point 4.3) states that an Ex atmosphere will only occur in rare, unforeseen circumstances. Therefore, it is possible to position interception units in Ex zone 2 and 22, taking Appendix D in DIN EN 62305-3 (VDE 0185-305-3) into account.

In the Ex zones 1 and 21, after the first potential connection, the OBO isCon® conductor should be connected at regular distances (0.5 metres) using a metallic conductor bracket (e.g. isCon H VA or PAE) to the equipotential bonding. If there is a lightning strike, lightning current may not flow through the equipotential bonding and it must be in the protection angle of the lightning protection system.



Secure screw connectors against loosening.

OBO isCon® system: application examples



Application example: soft-covered roofs

Soft-covered roofs, for example with straw, thatch or reeds, require increased protection against lightning strikes and the resulting risk of fire.

In order to meet the aesthetic requirements of the client, a lightning protection system using an isCon® conductor is recommended. The air-termination system is implemented using interception rods, which allow the conductor to be routed in their interior (type isFang IN). The grey variant of the isCon® conductor guarantees a high degree of protection and should be used for soft roofs. In this way, the conductor can be routed under the soft roof.

Observe the OBO isCon® system manual for detailed mounting instructions.


















Application example: mobile telecommunications system

Installations such as mobile telecommunications systems must be included in the lightning protection concept, particularly in the case of refitting work.






Spatial restrictions, as well as the influence of transmission signals, can be overcome by constructing the lightning protection system using an isCon® conductor. Simple inclusion in the existing lightning protection system as well as separate lightning protection can be implemented simply and in accordance with the standards.

Aesthetic aspects







In easily visible areas, as well as wherever aesthetics are important, we recommend routing the isCon® conductor in air-termination rods. Equipotential bonding after the first 1.5 metres takes place in the rod. The entire retaining pipe is earthed, guaranteeing comprehensive equipotential bonding. A simple and visually perfect installation solution.

	Lightning current-tested
	Lightning current-tested, Class H (100 kA)
	ELEKTROTECHNICKÝ ZKUŠEBNÍ ÚSTAV, Czech Republic
	ATEX certificate for explosive areas
	Russia, GOST The State Committee for Standards
	KEMA-KEUR, Netherlands
	Indication of metric products
	MAGYAR ELEKTROTECHNIKAI ELLENŐRZŐ INTÉZET Budapest, Hungary
	Österreichischer Verband für Elektrotechnik, Austria
	Underwriters Laboratories Inc., USA
	Eidgenössisches Starkstrominspektorat, Switzerland
	Underwriters Laboratories Inc., USA
	Verband der Elektrotechnik, Elektronik, Informationstechnik e.V., Germany
	German Association of Electricians, tested safety
	5-year warranty
	Halogen-free; without chlorine, fluorine and bromine
	INMETRO, Brazil



















Lightning protection classes

 Type 1	Protection device to DIN EN 61643-11 or IEC 61643-11
 Type 1+2	Combination protection device made of type 1 and type 2
 Type 2	Protection device to DIN EN 61643-11 or IEC 61643-11
 Type 2+3	Protection device to DIN EN 61643-11 or IEC 61643-11
 Type 3	Protection device to DIN EN 61643-11 or IEC 61643-11










Lightning protection zone

 LPZ 0-1	Transition from LPZ 0 to LPZ 1
 LPZ 0-2	Transition from LPZ 0 to LPZ 2
 LPZ 0-3	Transition from LPZ 0 to LPZ 3
 LPZ 1-2	Transition from LPZ 1 to LPZ 2
 LPZ 1-3	Transition from LPZ 1 to LPZ 3
 LPZ 2-3	Transition from LPZ 2 to LPZ 3








Applications

 FS	Remote signalling
 AS	Acoustic signalling
 ISDN	Integrated Service Digital Network, ISDN applications
 DSL	Digital Subscriber Line, DSL applications
 Analog TK	Analogue telecommunication
 Cat 5	Category 5 TwisterPair
 Cat 6	Channel Performance to American EIA/TIA standard
 MSR	Measuring, controlling and regulating systems
 TV	TV applications
 SAT	SAT-TV applications
 Mu	MultiBase base
 LifeControl	LifeControl
 EX	Intrinsically safe protection device for areas with a risk of explosions
 Class En	Channel Performance to ISO / IEC 11801
 PoE	Power over Ethernet
 230/400 V System	230/400 V system
 IP 54	Protection rating IP 54
 IP 65	Protection rating IP 65








Metals

 Alu	Aluminium
 VA	Stainless steel, grade 304
 VA	Stainless steel, grade 316
 VA	Stainless steel, grade 316 L
 VA	Stainless steel, grade 316 Ti
 Cu	Copper
 CuZn 37	Brass
 St	Steel
 TG	Cast iron
 Zn	Die-cast zinc

Plastics

 GFK	Fibre-glass-reinforced plastic
 P	Petrolatum
 PA	Polyamide
 PC	Polycarbonate
 PE	Polyethylene
 PP	Polypropylene
 PS	Polystyrene

Surfaces

 FS	Strip-galvanised
 F	Hot galvanised
 G	Electro-galvanised
 FT	Hot-dip galvanised
 Cu	Copper-plated
 N	Nickel-plated
 ZD	Galvanised, Deltatone 500

Alu — Aluminium

VA (1.4301) — Stainless steel, grade 304

VA (1.4401) — Stainless steel, grade 316

VA (1.4404) — Stainless steel, grade 316 L

VA (1.4571) — Stainless steel, grade 316 Ti

Cu — Copper

CuZn — Brass

St — Steel

TG — Cast iron

Electro-galvanised

Zn — Die-cast zinc

GFK — Fibre-glass-reinforced plastic

Temperature resistance:
-50 to 130 °C.

Resistant to

High chemical resistance
Corrosion resistance
UV light resistance

PETR — Petrolatum

PA — Polyamide

Temperature resistance:
permanently up to approx. 90 °C, briefly up to about 130 °C
and to about minus 40 °C*.

Chem. resistance generally as for polyethylene.

Resistant to

Petrol, benzene, diesel oil, acetone, solvents for paints and lacquers,
oils and greases.

Unstable with

Bleach, most acids, chlorine.

Risk of tension cracking

Low in air-humid conditions; only with some aqueous salt solutions.
Highly desiccated parts (high temperature and extremely low air
humidity) are highly sensitive to fuels and various solvents.

PA/PP — Polyamide/Polyethylene

PC — Polycarbonate

Temperature resistance:
permanently up to approx. 110 °C (in water 60 °C), briefly up to 125
°C, and to below minus 35 °C.

Resistant to

Petrol, turpentine, most weak acids.

Unstable with

Acetone, benzene, chlorine, methylene chloride, most concentrated
acids.

Risk of tension cracking

Relatively low.

Media which can cause tension cracking include benzene, aromatic
hydrocarbons, methanol, butanol, acetone, turpentine.

PE — Polyethylene

Temperature resistance:
hard types permanently up to about 90 °C, briefly up to about 105 °C,
soft types permanently up to about 80 °C, briefly up to about 100 °C
and to about minus 40 °C*.

Resistant to

Alkalis and inorganic acids.

Conditionally resistant to

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Unstable with

Chlorine, hydrocarbons, oxidising acids.

Risk of tension cracking

Relatively high.

Stress cracks can be caused by, among other things, acetone, various
alcohols, formic acid, ethanol, petrol, benzene, butyric acid, acetic acid,
formaldehyde, various oils, petroleum, propanol, nitric acid,
hydrochloric acid, sulphuric acid, soap solutions, turpentine,
trichloroethylene, citric acid.

PP — Polypropylene

Temperature resistance:
permanently up to approx. 90 °C, briefly up to about 110 °C
and to about minus 30 °C*.

Chem. resistance generally as for polyethylene.

Resistant to

Alkalis and inorganic acids.

Conditionally resistant to

Acetone, organic acids, petrol, benzene, diesel oil, most oils.

Unstable with

Chlorine, hydrocarbons, oxidising acids.

Risk of tension cracking

Low, only with some acids such as chromic acid, hydrofluoric acid and
hydrochloric acid, as well as nitrogen oxide.

PS — Polystyrene

Temperature resistance:

Because of its relatively high sensitivity to the effects of chemicals, its
use is not recommended at temperatures above normal room
temperature, about 25 °C.

Resistance to cold: to about minus 40 °C*.

Resistant to

Alkalis, most acids, alcohol.

Conditionally resistant to

Oils and greases.

Unstable with

Butyric acid, concentrated nitric acid, concentrated acetic acid,
acetone, ether, petrol and benzene, solvents for paints and lacquers,
chlorine, diesel fuel.

Risk of tension cracking

Relatively high.

Stress cracks can be caused by, amongst other things, acetone, ether,
petrol, cyclohexane, heptane, methanol, propanol and the softeners
used in some PVC cable mixes.

*The minus values apply only for parts in the quiescent condition with
no severe impact stress.

There is no plastic that is resistant to every chemical. The agents listed
are only a small selection. Plastic parts are especially at risk in the
presence of chemicals and high temperatures. Stress cracks may
occur. If in doubt, please consult us and/or ask for a detailed chemical
resistance table.

Stress crack formation: stress cracks may occur if plastic parts under
tension are exposed to chemicals at the same time. Parts made of
polystyrene and polyethylene are particularly susceptible. Stress cracks
may even be caused by agents to which the plastic in question is
resistant in the absence of stress. Typical examples of parts under
constant stress when used as intended: grip clips, intermediate
supports of cable glands, ribbon clips.

Tightening torques

M5 = 4 Nm

M6 = 6 Nm

M8 = 12 Nm

M10 = 20 Nm

Detailed data can be provided on request.

100% response lightning impulse voltage

The 100% response lightning impulse voltage is the value of the lightning impulse voltage 1.2/50 μ s, causing the arrester to switch. With this testing voltage, the surge protection device must respond ten times to ten loads.

Arrestor

Arrestors are resources, which primarily consist of voltage-dependent resistors and/or spark gaps. Both elements can be switched in series or in parallel or used individually.

Arrestors are used to protect other electrical resources and electrical systems against surge voltages.

Arrestor measured voltage V_c

For arrestors without a spark gap, the measured voltage is the maximum permitted effective value of the mains voltage on the arrester terminals. The measured voltage may constantly be applied to the arrester without changing its operational characteristics.

Back-up fuse before the arrestors

There must be a back-up fuse before the arrestors. If the upstream fuse is greater than the maximum approved back-up fuse of the arrester elements (see technical data of the device), the arrester must be protected selectively with the required value.

Cut-off unit

The cut-off unit cuts the arrester off from the mains or the earthing system if it is overloaded, thus preventing a fire risk and also signalling the switch-off of the protection device.

Equipotential bonding

Electrical connection, which brings the bodies of electrical resources and other conductive parts to the same or almost the same potential.

Equipotential busbar (PAS)

A terminal or rail, intended to connect the protective conductor, the equipotential bonding conductor and, if necessary, the conductor for function earthing with the earthing cable and the earthers.

Error current protection unit (RCD)

Resource for protection against electric shocks and fire protection (e.g. FI protection switches).

Lightning protection equipotential bonding system

The lightning protection equipotential bonding is a key measure in reducing the risk of fire and explosion on the room or building to be protected. The lightning protection equipotential bonding is achieved using equipotential bonding cables or arrestors, which connect the external lightning protection system, metallic parts of the building or room, the installation, the other conductive parts and the electrical energy and telecommunications systems.

Lightning protection system (LPS)

A lightning protection system (LPS) is considered as the entire system used to protect a room or building against the impact of a lightning strike. This includes both internal and external lightning protection.

Lightning protection zone (LPZ)

Lightning protection zones are those areas in which the electromagnetic environment of the lightning is to be defined and mastered. At the zone transitions, all cables and metallic parts must be integrated into the equipotential bonding system.

Lightning surge current (Iimp)

A lightning surge current (lightning current carrying capacity per path) is a standardised surge current curve of the shape 10/350 μ s. With its parameters

- Peak value
- Charge
- Specific energy

it represents the load from natural lightning currents. Type 1 lightning current arrestors (previously requirement class B) must be able to arrest such lightning currents without being destroyed.

Line follow current quenching (If)

The follow current – also called network follow current – is the current which flows through the surge protection device after an arresting operation and is supplied by the network. The follow current is considerably different from the continuous operating current. The level of the network follow current is dependent on the feed line from the transformer to the arrester.

Nominal current (In)

The nominal current is the maximum permitted operating current which may be run continually through the appropriately labelled connection terminals.

Nominal discharge surge current (In)

Peak value of the current flowing through the arrester with the wave shape 8/20. It is used to classify the testing of surge arrestors of type 2 (formerly requirements Class C).

Nominal frequency (fn)

The nominal frequency is that frequency for which a resource is measured, by which it is called and upon which other nominal parameters refer.

Nominal voltage (Vn)

The rated voltage is the voltage value for which a resource is designed. In so doing it might be a direct voltage value or the effective value of a sine-form alternating voltage.

Surge protection device (SPD)

A device intended for the limitation of transient surge voltages and arresting of surge voltages. It contains at least one non-linear construction element. In general speech, surge protection devices are also termed arrestors.

Protection level (Up)

The protection level is the highest current voltage value on the terminals of the surge protection device before response.

Residual voltage (Vres)

The peak voltage value, occurring via the terminals of the surge protection device during or immediately after the arresting surge current has flowed.

Short-circuit resistance

The surge protection device must be able to conduct the short-circuit current, until it is either interrupted by the device itself or by an internal or external cut-off unit or by mains-side over-current protection (e.g. back-up fuse).

Response time (ta)

The response time primarily characterises the response behaviour of the individual protection elements used in arrestors. Depending on the slope du/dt of the surge voltage or di/dt of the surge current, the response times may vary within specific limits.

SPD

Surge protection device.

Surge arrester, type 1

Arrestors, which, due to their special structure, are able to arrest lightning currents or partial lightning currents during direct strikes.

Surge arrester, type 2

Arrestors, which are able to arrest surge voltages caused by remote or nearby strikes or switching actions.

Surge arrester, type 3

Arrestors, used for surge protection of individual consumers or consumer groups and are employed directly on sockets.

Surge voltage

A surge voltage is a voltage occurring briefly between conductors or between a conductor and the earth, which exceeds the highest permissible operating voltage value by a long way, but does not have the operating frequency. It can be created by storms or by earthing or short-circuits.

Temperature range

The operating temperature specifies within which temperature limits the perfect function of the surge protection device is guaranteed.

Transmission frequency (fg)

The transmission frequency specifies up to which frequency the insertion damping of the employed resource is less than 3 dB.

Volume resistance per path, series resistance

The volume resistance per path specifies the ohmic resistance increase of the conductor path per wire caused by the use of the surge protection device.



Surge protection
Energy technology,
Arrestor, type 1 (industry)



U_c (50-60 Hz) : 255 V AC
 I_{imp} (10/350) : 50 kA

**Coordinated
Lightning Controller
MCD 50-B**

U_p : $\leq 1,3$ kV
class I IP 20 CE
Art.-Nr.: 5096 82 2

U_c (50-60 Hz) : 255 V AC
 I_{imp} (10/350) : 50 kA

**Coordinated
Lightning Controller
MCD 50-B**

U_p : $\leq 1,3$ kV
class I IP 20 CE
Art.-Nr.: 5096 82 2

U_c (50-60 Hz) : 255 V AC
 I_{imp} (10/350) : 50 kA

**Coordinated
Lightning Controller
MCD 50-B**






U_p : $\leq 1,3$ kV
class I IP 20 CE
Art.-Nr.: 5096 82 2

U_c (50-60 Hz) : 255 V AC
 I_{imp} (10/350) : 125 kA

**Coordinated
Lightning Controller
MCD 125-B/NPE**

U_p : $\leq 1,3$ kV
class I IP 20 CE
Art.-Nr.: 5096 86 5

Surge protection device for energy technology, arrester, type 1 (industry)

	Combination arrester	98
	Combination arrester in VG housing	106
	Lightning current arrester	110
	Lightning current arresters for 400/690 V networks	119
	Accessories, upper parts and bases	115



c RU IS
MCF 35-1+FS-440
No. 04 000 004
5086 974
Lightning protection
for 400/690V
power supply systems
U_n 440 V AC system
I_{ca} 35 kA AC system
I_{ca} 35 kA AC system
U₁ 2.5 kV
SPD L/PE/N III
400 A g/gG
CE 0589
0589-P1-0446
Schnellabschaltung
fast-lock device
NEM 023g
OBO Bettermann
Menden, Germany

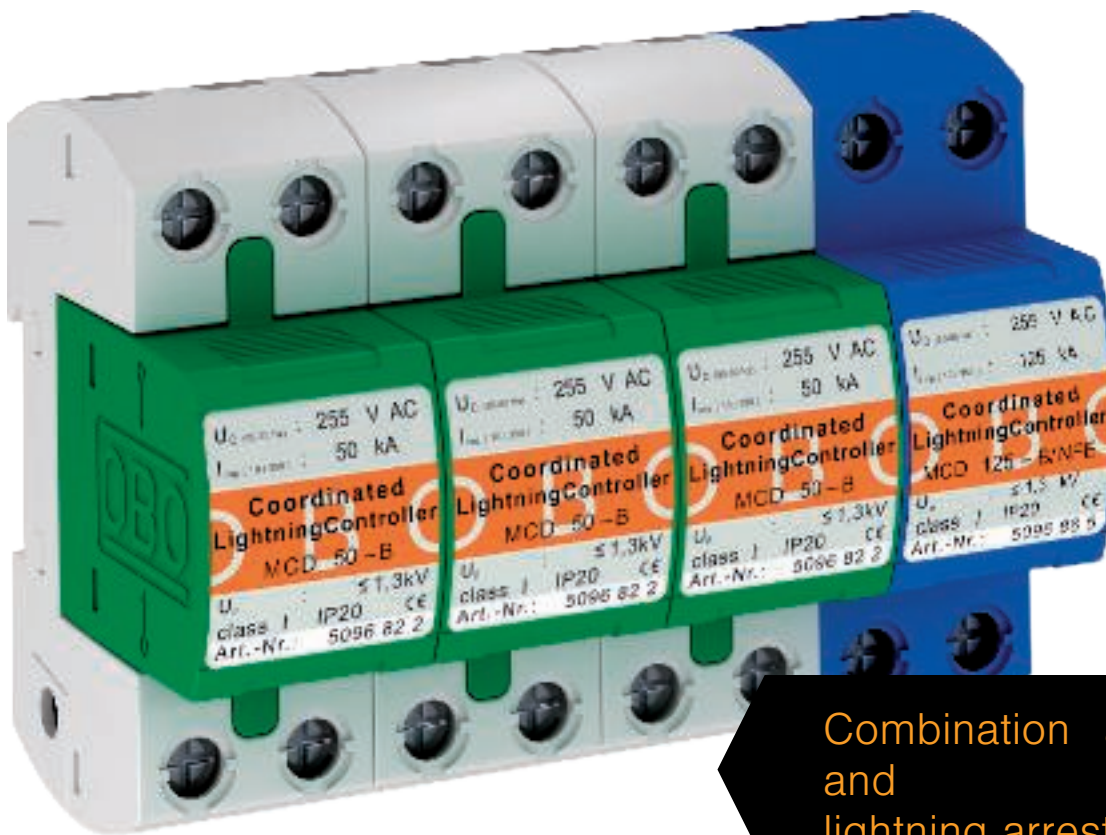
c RU IS
MCF 35-1+FS-440
No. 04 000 004
5086 974
Lightning protection
for 400/690V
power supply systems
U_n 440 V AC system
I_{ca} 35 kA AC system
I_{ca} 35 kA AC system
U₁ 2.5 kV
SPD L/PE/N III
400 A g/gG
CE 0589
0589-P1-0446
Schnellabschaltung
fast-lock device
NEM 023g
OBO Bettermann
Menden, Germany

c RU IS
MCF 35-1+FS-440
No. 04 000 004
5086 974
Lightning protection
for 400/690V
power supply systems
U_n 440 V AC system
I_{ca} 35 kA AC system
I_{ca} 35 kA AC system
U₁ 2.5 kV
SPD L/PE/N III
400 A g/gG
CE 0589
0589-P1-0446
Schnellabschaltung
fast-lock device
NEM 023g
OBO Bettermann
Menden, Germany



Surge protection device for energy technology, arrester, type 1 (industry)

- + Connectable lightning current and surge arrestors
- + High arresting capacity up to 50 kA (10/350) per pole
- + Combination arrestors for buildings with lightning protection system
- + Simple standard hat rail mounting
- + Labelled connections
- + Usable in systems with lightning protection class 1-4



Combination arrestors and lightning arrestors

Function and areas of use

The combination lightning current arrestors MCD 50 meet the type 1 requirement class according to IEC 61643-11. These devices protect

low-voltage consumer systems from overvoltages of all types and are available in single-pole to four-pole versions. The voltage-limiting, high-performance spark gaps

provide several benefits. A short response time, a low protection level and high current leakage capability with long service life.



Type 1, combination arrester MCD



1-pole

Volts	Item no.	Page
255	5096 84 9	102



3-pole

Volts	Item no.	Page
255	5096 87 7	100



3-pole + NPE

Volts	Item no.	Page
255	5096 87 9	98



NPE

Volts	Item no.	Page
255	5096 86 5	104

Type 1, combination arrester MCD with function display



1-pole with OS

Volts	Item no.	Page
255	5096 85 2	103



3-pole with OS

Volts	Item no.	Page
255	5096 83 5	101



3-pole + NPE with OS

Volts	Item no.	Page
255	5096 83 6	99

Type 1, combination arrester MCD, upper parts



Upper part

Volts	Item no.	Page
255	5096 82 2	115



Upper part with OS

Volts	Item no.	Page
255	5096 82 7	115

Type 1, combination arrester MCD in VG housing



3-pole in VG housing

Volts	Item no.	Page
255	5096 87 4	108



3-pole + NPE, in VG housing

Volts	Item no.	Page
255	5096 87 5	107



Type 1, combination arrester MC



1-pole

Volts	Item no.	Page
255	5096 84 7	113



3-pole

Volts	Item no.	Page
255	5096 87 6	111



3-pole + NPE

Volts	Item no.	Page
255	5096 87 8	110



NPE

Volts	Item no.	Page
255	5096 86 3	112

Type 1, lightning arrester MC with function display Type 1, lightning current arrester MC, upper parts



1-pole with OS

Volts	Item no.	Page
255	5096 85 1	114



Upper part

Volts	Item no.	Page
255	5096 82 0	115



Upper part with OS

Volts	Item no.	Page
255	5096 82 5	115

Type 1, lightning arrester MC in VG housing



3-pole in VG housing

Volts	Item no.	Page
255	5089 21 2	109



3-pole + NPE in VG housing

Volts	Item no.	Page
255	5089 20 0	106

Type 1, lightning arrester MCF 35



1-pole with FS

Volts	Item no.	Page
440	5096 97 4	119



3-pole with FS

Volts	Item no.	Page
440	5096 97 6	120

Combination arrester, 3-pole + NPE



Highest continuous voltage

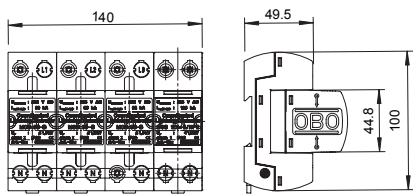
Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3+1	255	3 + NPE	1	168,000	5096879

/pc.

Combination arrester, 4-pole, for use in TN-S and TT networks.

Completely pre-terminated and ready for connection, consisting of:
 MCD 50-B: Coordinated lightning current arrester, type 1 (Class B) to EN 61643-11 and
 MCD 125-B/NPE: Coordinated N-PE spark gap, type 1 (Class B) to EN 61643-11 for use in TN- and TT systems. Interface 0 to 1 according to lightning protection zone concept according to IEC 61312-1 and VDE 0185-305 (IEC 62305).

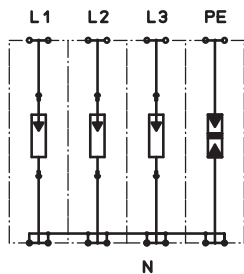
Dimensions



- Arresting capacity 50 kA (10/350 μ s) per pole (L-N)
- Arresting capacity 125 kA (10/350 μ s) per pole (N-PE)
- Conforms to VDN Directive 2nd Edition 2004
- Protection level < 1.3 kV
- Line follow current quenching 25 kA Ipeak
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap

Application: Lightning protection equipotential bonding in buildings with external lightning protection of Class I to IV and in standard distributor housings.

Connection options



MCD 50-B 3+1

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Voltage protection level	U_p	1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Combination arrester, 3-pole + NPE with function display



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3+1-OS	255	3 + NPE	1	172,000	5096836

/pc.

Combination arrester, 4-pole, with visual function display, for use in TN-S and TT networks.

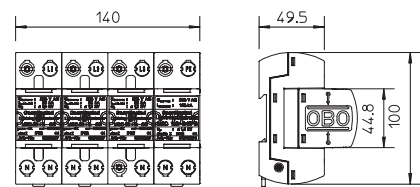
Completely pre-terminated and ready for connection, consisting of:
 MCD 50-B_OS: Type 1 (Class B) coordinated lightning current arrester to DIN EN 61643-11.
 MCD 125-B/NPE: Coordinated N-PE spark gap, type 1 (Class B) to EN 61643-11 for use in TN-S and TT systems. Interface 0 to 1 according to lightning protection zone concept according to IEC 61312-1 and DIN VDE 0185-305.

- Arresting capacity 50 kA (10/350 μs) per pole (L-N)
- Arresting capacity 125 kA (10/350 μs) per pole (N-PE)
- Power consumption < 26 mW/pole
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap
- Can be used in standard distributor housings.

Application: Lightning protection equipotential bonding for buildings, even with external lightning protection of classes I to IV in standard distribution housings.



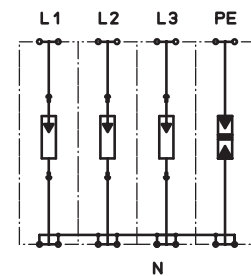
Dimensions



MCD 50-B 3+1-OS

Nominal voltage	U _N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	50 kA
Total discharge current (10/350)	I _{total}	125 kA
Nominal discharge current (8/20)	I _n	50 kA
Arrester surge current (8/20) [total]	I _{Total 8/20}	125 kA
Voltage protection level	U _p	1,3 kV
Response time	t _A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I _{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	θ	-40 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Connection options



Combination arrester, 3-pole



Highest continuous voltage V Version

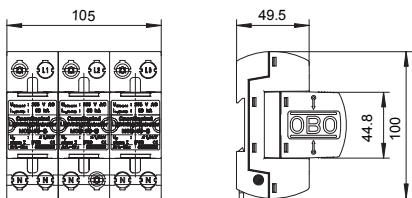
Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3	255	3-pole	1	117,000	5096877

/pc.

Combination arrester, 3-pole, for use in TN-C networks.

Completely pre-terminated and ready for connection, consisting of:
 MCD 50-B: Type 1 (Class B) coordinated lightning current arrester to DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and DIN VDE 0185-305.

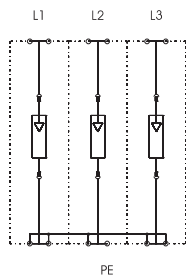
Dimensions



- Arresting capacity 50 kA 10/350 μ s per pole
- Conforms to VDN Directive 2nd Edition 2004
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap
- Can be used in standard distributor housings.

Application example: Compact surge protection concepts and installations of requirement class B+C arresters in a distributor without decoupling inductances and/or line lengths, e.g. direct on mobile radio system.

Connection options



MCD 50-B 3

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	150 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Voltage protection level	U_p	1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 °C
Division unit TE (17.5 mm)		6
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Combination arrestor, 3-pole with function display



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3-OS	255	3-pole	1	118,000	5096835

/pc.

Combination arrestor set, 3-pole, with visual function display, for use in TN-C networks:

Completely pre-terminated and ready for connection, consisting of:

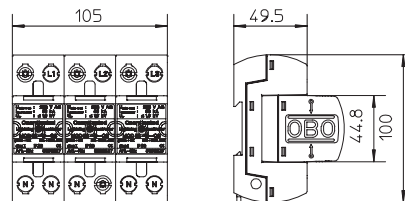
MCD 50-B-OS: Type 1 (Class B) coordinated lightning current arrestors to DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305.

- Arresting capacity 50 kA 10/350 μ s per pole
- Power consumption < 26 mW/pole
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap
- Can be used in standard distributor housings

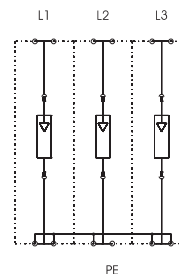
Application example: Compact surge protection concepts and installations of arrestors of requirements Class B+C in a distributor without decoupling inductances or cable lengths, e.g. directly on the mobile radio transmission system technology.



Dimensions



Connection options



MCD 50-B 3-OS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	150 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Voltage protection level	U_p	1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 °C
Division unit TE (17.5 mm)		6
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Surge protection, arrestor, type 1 (industry)



Combination arrester, 1-pole



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
MCD 50-B	255	1-pole	1	34,400	5096849

/pc.

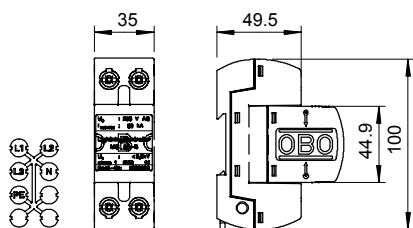
Combination arrester, 1-pole, for use in TN-S and TT networks:

MCD 50-B: Type 1 (Class B) coordinated lightning current arresters to DIN EN 61643-11. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305.

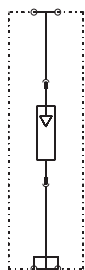
- Arresting capacity 50 kA (10/350 μs) per pole
- Conforms to VDN Directive 2nd Edition 2004
- Protection level < 1.3 kV
- Line follow current quenching 25 kA Ipeak
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: Can be used in standard distributor housings.

Application example: Compact surge protection concepts in a separate housing. Installation of requirement class B+C arresters in a distributor without decoupling inductances and/or line lengths, e.g. direct on mobile radio system.

Dimensions



Connection options



MCD 50-B

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Combination arrester, 1-pole with function display



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B-OS	255	1-pole	1	34,800	5096852

/pc.

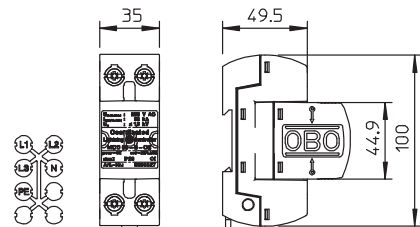
Combination arrester, 1-pole, for use in TN and TT networks:

MCD 50-B-OS: Coordinated lightning current arrester, Type 1 (Class B) to EN 61643-11 with visual function display. For interface 0 to 2 (LPZ) in accordance with lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305.

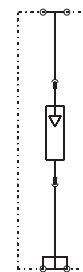
- Arresting capacity 50 kA (10/350 μs) per pole
- Power consumption < 26 mW/pole
- Protection level < 1.3 kV
- Line follow current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap
- Can be used in standard distributor housings.

Application example: Compact surge protection concepts and installations of requirement class B+C arrestors in a distributor without decoupling inductances and/or line lengths, e.g. direct on mobile radio system.

Dimensions



Connection options



MCD 50-B-OS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Voltage protection level	U_p	1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, 1-pole NPE



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 125-B NPE	255	NPE	1	46,500	5096865

/pc.

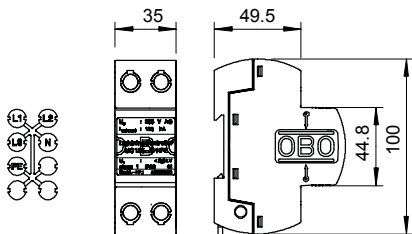
arrester for use in TN-S and TT systems.

MCD 125-B/NPE: as coordinated N-PE discharge gap, Type 1 (Class B) IEC 61643. For interface 0 to 1 (LPZ) according to lightning protection zone concept to IEC 61312-1 and/or DIN VDE 0185-305 for use as discharge gap between N and PE.

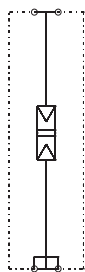
- Protection capability 125 kA 10/350 μ s
- Conforms to VDN Directive, 2nd Edition 2004
- Including plug caps for identifying the connections
- Protection level < 1.3 kV
- Enclosed, non-extinguishing discharge gap: can be used in normal commercial distributor housings

Application example: compact overvoltage protection concepts in a separate housing. Installation of arrestors of requirement Class B+C in a distributor without decoupling inductivity and/or line lengths, e.g. direct on mobile radio system.

Dimensions



Connection options



MCD 125-B NPE

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	125 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	125 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	0.1 kA
Maximum back-up fuse		— A
Temperature range	ϑ	-40 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²





VG housing with MC 50-B/3+1



Highest continuous voltage

Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG 4-B TNS+TT	255	3 + NPE	1	290,000	5089200

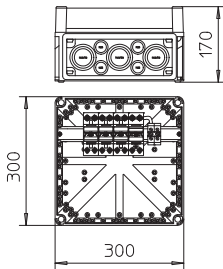
/pc.

VG...: Lightning arrester system solution Type 1 (Class B) to DIN EN 61643-11.

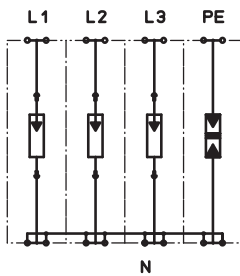
- LightningController MC 50-B/VDE and MC 125-B/NPE installed in insulating housing IP 65, sealable housing
- Pulsed current 100 kA 10/350 μ s BET-tested
- Conforms to requirements of VDN Directive, 2nd Edition 2004
- Protection level < 2.0 kV
- Enclosed, non-extinguishing discharge gap
- Suitable for TNS and TT network systems

Application example: the system solution is used in the pre-meter area according to VDN Directive, 2nd Edition 2004.

Dimensions



Connection options



VG 4-B TNS+TT

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Voltage protection level	U_p	<2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP54
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



VG housing with MCD 50-B/3+1



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3+1-VG	255	3 + NPE	1	290,000	5096875

/pc.

Combination arrester, pre-installed in IP65 housing for use in TN-S and TT networks.

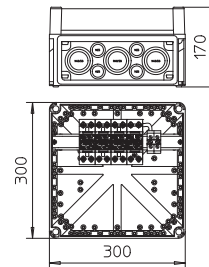
VG...: Lightning arrester system solution type 1 (Class B) according to DIN EN 61643-11.

- LightningController MCD 50-B and MC 125-B/NPE installed in insulating housing IP 65, sealable housing
- Pulsed current 125 kA 10/350 μ s BET-tested
- Conforms to requirements of VDN Directive, 2nd Edition 2004
- Protection level < 1.3 kV
- Enclosed, non-extinguishing spark gap
- Suitable for TN-S and TT network systems

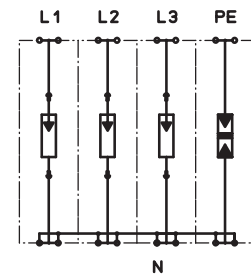
Application example: the system solution is used in the pre-meter area according to VDN Directive, 2nd Edition 2004.



Dimensions



Connection options



MCD 50-B 3+1-VG

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP54
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



VG housing with MCD 50-B/3



Highest continuous voltage V

Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCD 50-B 3-VG	255 3-pole	1	315,000	5096874

/pc.

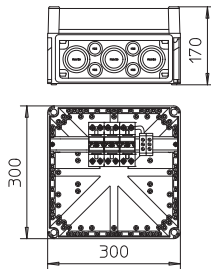
Combination arrester, pre-installed in IP65 housing for use in TN-C networks.

VG...: Lightning arrester system solution type 1 (Class B) according to EN 61643-11.

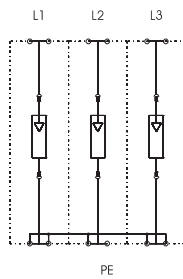
- LightningController MCD 50-B installed in insulating housing IP 65, sealable housing
- Pulsed current 150 kA 10/350 μ s BET-tested
- Protection level < 1.3 kV
- Enclosed, non-extinguishing spark gaps
- Suitable for TN-C network systems

Application example: the system solution is used in the pre-meter area according to VDN Directive 2nd Edition 2004.

Dimensions



Connection options



MCD 50-B 3-VG

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	150 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP54
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



VG housing with MC 50-B/3



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG 3-B TNC	255	3-pole	1	315,000	5089212

/pc.

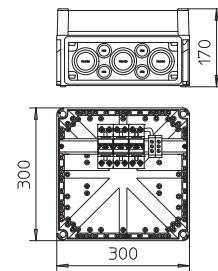
VG...: Lightning arrester system solution Type 1 (Class B) to DIN EN 61643-11.

- LightningController MC 50-B/VDE installed in insulating housing IP 65, sealable housing
- Pulsed current 100 kA 10/350 µs BET-tested
- Conforms to requirements of VDN Directive, 2nd Edition 2004
- Protection level < 2.0 kV
- Enclosed, non-extinguishing discharge gap
- Suitable for TNC network systems

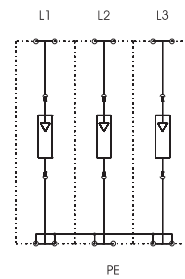
Application example: the system solution is used in the pre-meter area according to VDN Directive, 2nd Edition 2004.



Dimensions



Connection options



VG 3-B TNC

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	150 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Voltage protection level	U_p	<2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP54
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Lightning current arrester, 3-pole + NPE



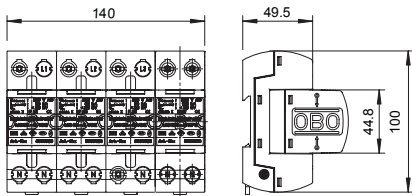
Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 50-B 3+1	255	3 + NPE	1	168,000	5096878

/pc.

LightningController-Set, 4-pole, for use in TN-S and TT networks:

Completely pre-terminated and ready for connection, consisting of:
 MC 50-B VDE: Lightning current arrester, type 1 (Class B) to EN 61643-11 for interface 0 to 1 (LPZ) according to lightning protection zone concept to IEC 61313-1 and DIN VDE 0185-305.
 MC 125-B/NPE: N-PE spark gap, type 1 (Class B) to IEC 61643 for use in TN-S and TT systems.

Dimensions

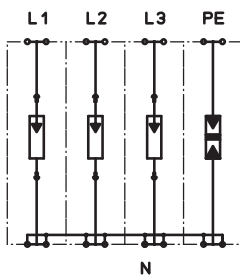


- VDE test marks
- Conforms to VDN Directive 2nd Edition 2004
- Cover and base, plug-in cover
- Arresting capacity 125 kA 10/350 μs
- Voltage protection level < 2,0 kV
- Line following current quenching 25 kA Ipeak
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: can be used in standard distributor housings

Application example: Lightning current arrester in accordance with VDN Directive 2nd Edition 2004 for pre-meter area.

Note: Required as decoupling length for surge voltage protection of 5 m of cable.

Connection options



MC 50-B 3+1

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	125 kA
Voltage protection level	U_p	< 2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		8
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Lightning current arrester, 3-pole



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 50-B 3	255	3-pole	1	117,000	5096876

/pc.

LightningController set, 3-pole, for use in TN-C networks:

Completely pre-terminated and ready for connection, consisting of:
 MC 50-B VDE: Type 1 (Class B) lightning current arrester in accordance with DIN EN 61643-11 for interface 0 to 1 (LPZ) to and/or in accordance with lightning protection concept to IEC 61312-1 and/or DIN V VDE V 0185-305 (IEC 62305)

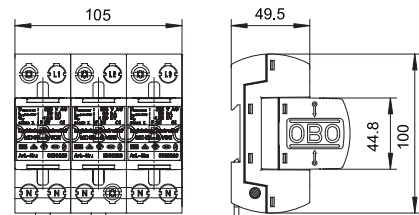
- VDE test marks
- Conforms to VDN Directive 2nd Edition 2004
- Cover and base, plug-in cover
- Arresting capacity 50 kA (10/350 μs) per pole
- Voltage protection level < 2,0 kV
- Line following current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: can be used in standard distributor housings

Application example: Industrial plants; lightning current arrester in accordance with VDN Directive 2nd Edition 2004 for pre-meter area.

Note: Required as decoupling length for surge voltage protection of 5 m of cable.



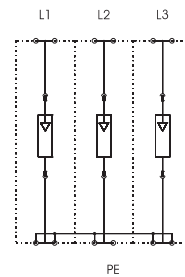
Dimensions



MC 50-B 3

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	150 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	150 kA
Voltage protection level	U_p	< 2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		6
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Connection options



Lightning current arrester, 1-pole NPE



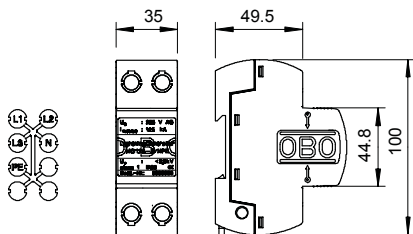
Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 125-B NPE	255	NPE	1	52,000	5096863

/pc.

MC 125-B/NPE: For use in TN-S and TT systems as N-PE discharge gap, type 1 (Class B) IEC 61643, for interface 0 to 1 (LPZ) according to lightning protection zone concept to IEC 61312-1 and/or DIN V VDE V 0185 Part 4 for use as discharge gap between N and PE.

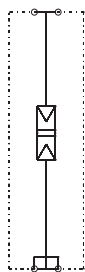
- VDE test mark
- Conforms to VDN Directive, 2nd Edition 2004
- Protection capability 125 kA 10/350 μ s
- Including plug caps for identifying the connections
- Protection level <2.5 kV
- Enclosed, non-extinguishing discharge gap: can be used in normal commercial distributor housings

Dimensions



Application example: lightning arrester in accordance with VDN Directive for pre-meter area.
Note: required as de-coupling length for overvoltage protection of 5 m of cable.

Connection options



MC 125-B NPE

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	125 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	125 kA
Voltage protection level	U_p	< 2,5 kV
Response time	t_A	< 100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	0.1 kA
Maximum back-up fuse		— A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Lightning current arrester, 1-pole



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 50-B VDE	255	1-pole	1	34,400	5096847

/pc.

MC 50-B VDE: Type 1 (Class B) lightning current arrester in accordance with DIN EN 61643-11 for interface 0 to 1 (LPZ) to and/or in accordance with lightning protection concept to IEC 61312-1 and/or DIN V VDE V 0185-305 (IEC 62305)

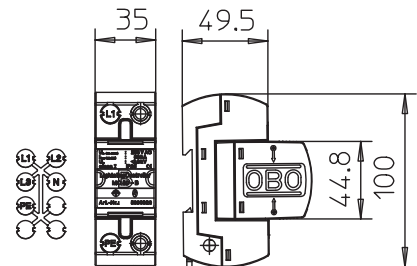
- VDE test marks
- Conforms to VDN Directive 2nd Edition 2004
- Cover and base, plug-in cover
- Arresting capacity 50 kA (10/350 μs) per pole
- Protection level < 2.0 kV
- Line following current quenching 25 kA I_{peak}
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: can be used in standard distributor housings

Application example: Industrial plants; lightning current arrester in accordance with VDN Directive 2nd Edition 2004 for pre-meter area.

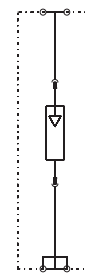
Note: Required as decoupling length for surge voltage protection of 5 m of cable.



Dimensions



Connection options



MC 50-B VDE

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Voltage protection level	U_p	< 2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Lightning current arrester, 1-pole with function display



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 50-B-OS	255	1-pole	1	34,800	5096851

/pc.

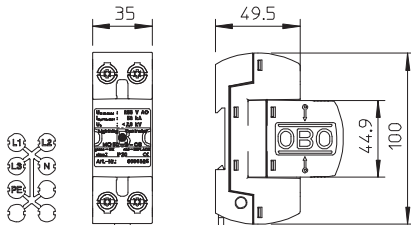
MC 50-B:OS: Type 1 (Class B) lightning current arrester with visual function display in accordance with DIN EN 61643-11 for interface 0 to 1 (LPZ) in accordance with lightning protection concept to IEC 61313-1 and VDE 0185-305 (IEC 62305)

- Cover and base, plug-in base
- Arresting capacity 50 kA (10/350 μs) per pole
- Protection level < 2.0 kV
- Power consumption < 26 mW/pole
- Line following current quenching 25 kA Ipeak
- Incl. plug caps for identifying the connections
- Encapsulated, non-extinguishing spark gap: Can be used in standard distributor housings

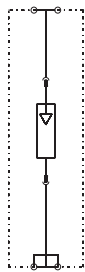
Application example: Industrial systems.

Note: Required as decoupling length for surge voltage protection of 5 m of cable.

Dimensions



Connection options



MC 50-B-OS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→1
Impulse discharge current (10/350)	I_{imp}	50 kA
Total discharge current (10/350)	I_{total}	50 kA
Nominal discharge current (8/20)	I_n	50 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	50 kA
Voltage protection level	U_p	< 2,0 kV
Response time	t_A	<100 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		500 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Combination arrester upper part



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
MCD 50-B 0	255	1-pole	1	19,200	5096822

/pc.



MCD 50-B/0: Coordinated LightningController, cover.

Upper part, combination arrester with function display



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
MCD 50-B 0-OS	255	1-pole	1	19,500	5096827

/pc.



MCD 50-B/0 OS: Coordinated LightningController, upper part with optical function indication

Upper part, lightning current arrester



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
MC 50-B 0 VDE	255	1-pole	1	24,000	5096820

/pc.



MC 50-B/0: LightningController, upper part

Upper part, lightning current arrester with function display



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
MC 50-B 0-OS	255	1-pole	1	19,500	5096825

/pc.



MC 50-B/0 OS: LightningController, upper part
Capacity: < 1mW





Accessories, upper parts and bases

Lightning arrester/combination arrester base



Version

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
MC 50-B U VDE 1-pole	1	18,000	5096839

/pc.

MC 50-B/U: LightningController bottom section fit type:

- MC 50-B VDE
- MCD 50-B
- Including plug caps for identifying the connections

Decoupling inductivity



Rated current

Type	A	Version	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
LC 63 63	1-pole	63 A		1	43,500	5096970

/pc.

LC 63: Decoupling inductivity.

- Compact design in a 35 mm housing
- Two connection options for input and output
- Nominal load current 63 A
- Nominal inductivity 5 μ H

Application example: in combination with MC 50-B VDE and V 20-C for line lengths of less than 5 m.

Accessories for lightning current arrester



Version

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
MC V3 3-pole	10	1,700	5096884
MC V4 4-pole	10	2,300	5096886

Cu Copper

/pc.

MC-V...: Copper bridge 16 mm², suitable for bridging MC arrestors in side channel.

- V3 for 3-pole circuits
- V4 for 4-pole circuits





Surge protection device for energy technology, arrester, type 1 (industry)

- + Lightning current and surge arrestors
- + High arresting capacity up to 35 kA (10/350) per pole
- + Arrestors for buildings with lightning protection system
- + Visual status display
- + With remote signalling
- + Simple standard DIN rail mounting
- + Labelled connections
- + Usable in systems with lightning protection class I-IV



Lightning current and surge arrester MCF 35

Function and areas of use

The MCF lightning current arrestors meet the type 1 requirement class according to IEC 61643-11. These devices protect low-voltage systems against any kind of surge voltages. The voltage-

limiting carbon spark gap provides multiple benefits. A short response time, a low protection level and high current leakage capability with long service life. In addition, the devices do not produce any line follow current. If circum-

stances are uncertain and there is a risk of fire from overloads, the cut-off unit disconnects the arrester safely from the mains.

Lightning arrester MCF 35, 400/690 V, 1-pole with IR



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCF 35-1+FS-440	440	1-pole	1	98,000	5096974

AIG Cast aluminium /pc.

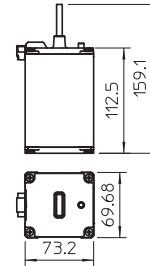
Lightning arrester type 1

- For lightning protection equipotential bonding to DIN EN 62305 (IEC 62305)
- Lightning current arresting capacity 35 kA (10/350) per pole
- Follow current extinguishing 50 kA_{eff}, arrester back-up fuse up to 400 A gL/gG
- Encapsulated, non-extinguishing spark gap arrester for use in distributor housings
- Cut-off unit with visual indicator
- Remote signalling with potential-free changeover contact

Application: Without exception for 400/690 V network systems



Dimensions



Connection options



MCF 35-1+FS-440

Nominal voltage	U_N	400 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Impulse discharge current (10/350)	I_{imp}	35 kA
Voltage protection level	U_p	2,5 kV
Protection rating		IP20
Follow current quenching capacity (eff) [N-PE]	I_n	50 kA
Maximum back-up fuse		400 A
Temperature range	ϑ	-40 - +85 °C





Lightning arrester MCF 35, 400/690 V for power networks

Lightning arrester MCF 35, 400/690 V, 3-pole with IR

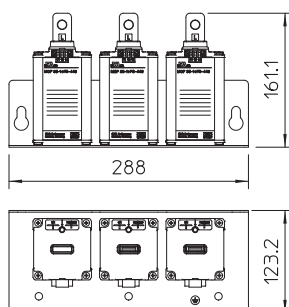


Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCF 35-P3+FS-440	440	3-pole	1	400,000	5096976
AIG Cast aluminium /pc.					

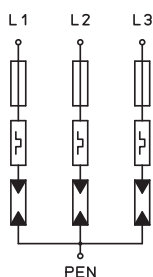
Lightning arrester type 1

- Fully assembled 3-pole connection unit
 - For lightning protection equipotential bonding according to DIN EN 62305 (IEC 62305)
 - Lightning current arresting capacity 35 kA (10/350) per pole
 - Line following current quenching 50 kA_{eff}, arrester back-up fuse up to 400 A gL/gG
 - Encapsulated, non-extinguishing spark gap arrester for use in distributor housings
 - Cut-off unit with visual indicator
 - Remote signalling with potential-free changeover contact
 - For finished mounting on bonding rails and walls
- Application: Without exception for 400/690 V power systems

Dimensions



Connection options



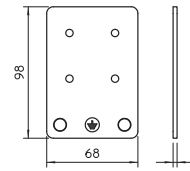
MCF 35-P3+FS-440

Nominal voltage	U _N	400 V
SPD to EN 61643-11		Type 1
SPD to IEC 61643-11		Class I
Impulse discharge current (10/350)	I _{imp}	35 kA
Voltage protection level	U _p	2,5 kV
Protection rating		IP20
Follow current quenching capacity (eff) [N-PE]	I _{fr}	50 kA
Maximum back-up fuse		400 A
Temperature range	θ	-40 - +85 °C

Mounting plate, 1-pole



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCF-MS-P1	1-pole	1	19,600	5096992
V2A Stainless steel, grade 304 /pc.				



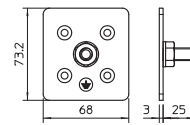
Mounting plate 1-pole

- Mounting plate for installation of the arrester MCF 35-1+FS-440
- Prefabricated hole pattern for mounting the arrester on busbars
- Required screws for installation the arrester enclosed

Mounting plate, 1-pole, M10



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCF-MS-M10	1-pole	1	14,200	5096990
V2A Stainless steel, grade 304 /pc.				



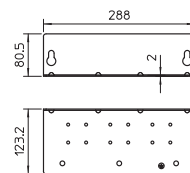
Mounting plate with threaded connector M10

- Mounting plate with threaded M10 connector to install the arrester MCF 35-1+FS-440
- M10 bolts for direct installation of the arrester on busbars
- Required screws for installation enclosed

Mounting plate, 3-pole



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MCF-MS-P3	3-pole	1	99,800	5096994
V2A Stainless steel, grade 304 /pc.				



Mounting plate 3-pole

- Mounting plate 3-pole for installation of the arrester MCF 35-1+FS-440
- Prefabricated hole pattern for mounting the arrester on busbars
- Suitable for wall mounting
- Required screws for installation enclosed





Surge protection
Energy technology
Arrestor type 1+2



Diese Anlage ist mit
Überspannungsschutzgeräten
ausgerüstet.

OBO
BETTERMANN


Bei Isolationsmessungen bitte die OBO
Schutzmodule herausziehen bzw.
abklemmen.

System contains overvoltage protection
devices. Please remove or disconnect the
OBO protectors during isolation tests.

Art.-Nr. 4100 5393



Surge protection device for energy technology, arrestor, type 1+2 (office and housing)

	Combination arrester	128
	Upper parts V50	164
	Combination arrester, protection set for TN and TT network systems	167
	Combination arrester V50 in housing	178

Surge protection energy technology, arrester, type 1+2: The plus of the V50 family

- + Connectable lightning current and surge arrestors
- + High arresting capacity up to 50 kA (10/350)
- + Visual status display
- + Available with optional remote signalling
- + Vibration-proof
- + Type 1+2, for buildings with lightning protection
- + Simple standard DIN rail mounting
- + Labelled connections
- + Usable in systems with lightning protection class III + IV
- + Connectable NPE module
- + Voltage encoding



Surge arrester V50

Function and areas of use

The combination lightning current and surge arrestors V50 meet the type 1+2 requirement class according to IEC 61643-11. These devices protect low-voltage consumer systems from overvoltages of all types and are available in

single-pole to four-pole versions. The use of high-performance varistors permits a rapid response time and a low protection level, without any line follow current. If circumstances are uncertain and there is a risk of fire from an overload, the internal cut-off unit disconnects the

arrester from the mains if necessary. In addition, the QR code printed on the arrester allows direct access to the online installation instructions.

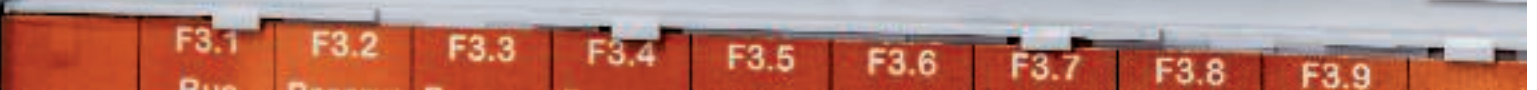
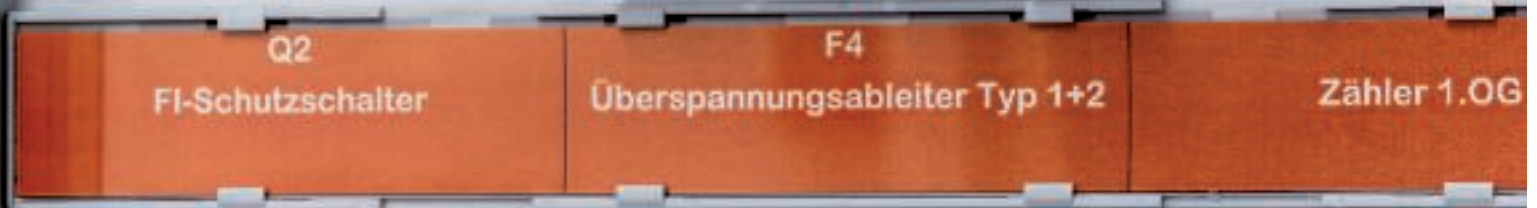
Diese Anlage ist mit
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OBO
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Schutzmodule herausziehen bzw.
abklemmen.

System contains overvoltage protection
devices. Please remove or disconnect the
OBO protectors during isolation tests.

Mod.-Nr. 4100 8383



Type 1+2, combination arrester V50



1-pole

Volts	Item no.	Page
150	5093 44 0	128
280	5093 50 0	136
320	5093 54 0	148
385	5093 57 2	156



3-pole

Volts	Item no.	Page
150	5093 44 2	130
280	5093 51 1	138
320	5093 54 2	150
385	5093 57 4	158



4-pole

Volts	Item no.	Page
280	5093 51 3	140

Type 1+2, combination arrester V50 with remote signalling



1-pole

Volts	Item no.	Page
150	5093 44 6	129
280	5093 50 2	137
320	5093 54 6	149
385	5093 57 8	157



3-pole + FS

Volts	Item no.	Page
150	5093 44 8	131
280	5093 51 6	139
320	5093 54 8	151
385	5093 58 0	159



4-pole + FS

Volts	Item no.	Page
280	5093 51 8	141

Protection set MCD



3-pole

Volts	Item no.	Page
255	5089 75 4	170
320	5089 75 5	172



3-pole, leakage current-free

Volts	Item no.	Page
255	5089 76 8	176

Protection set MCD with remote signalling



3-pole + FS

Volts	Item no.	Page
255	5089 75 6	171
320	5089 75 7	173



3-pole, leakage current-free + FS

Volts	Item no.	Page
255	5089 77 5	177

Type 1+2, combination arrester V50 + NPE



1-pole + NPE

Volts	Item no.	Page
150	5093 45 2	132
280	5093 52 2	142
320	5093 55 2	152
385	5093 58 4	160



2-pole + NPE

Volts	Item no.	Page
280	5093 52 4	146



3-pole + NPE

Volts	Item no.	Page
150	5093 45 4	134
280	5093 52 6	144
320	5093 55 4	154
385	5093 58 6	162



V50 in the housing

Volts	Item no.	Page
280	5093 59 4	178
280	5093 59 6	179

Type 1+2, combination arrester V50 + NPE with remote signalling



1-pole + NPE + FS

Volts	Item no.	Page
150	5093 46 0	133
280	5093 53 1	143
320	5093 56 0	153
385	5093 59 0	161



3-pole + NPE + FS

Volts	Item no.	Page
150	5093 46 2	135
280	5093 53 3	145
320	5093 56 2	155
385	5093 59 2	163



Upper part

Volts	Item no.	Page
150	5093 50 5	164
280	5093 50 8	164
320	5093 50 9	164
385	5093 51 0	165



Cover NPE-C50

Volts	Item no.	Page
255	5095 60 9	165

Protection set MCD + NPE



1-pole + NPE

Volts	Item no.	Page
255	5089 74 8	167



3-pole + NPE

Volts	Item no.	Page
255	5089 76 1	168



3-pole, leakage current-free + NPE

Volts	Item no.	Page
255	5089 77 0	174

Protection set MCD + NPE with remote signalling



3-pole + NPE + FS

Volts	Item no.	Page
255	5089 76 3	169



3-pole, leakage current-free + NPE + FS

Volts	Item no.	Page
255	5089 77 7	175

Combination arrester V50 in 150 V, type 1+2

Combination arrester V50, 1-pole 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1-150	150	1	IP20	1	15,400	5093440

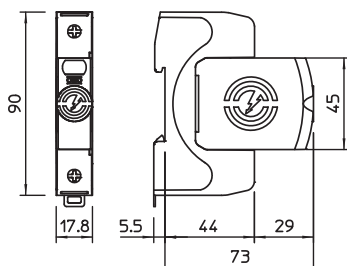
PA Polyamide /pc.

Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_C 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+FS-150	150	1	IP20	1	15,600	5093446

PA Polyamide /pc.

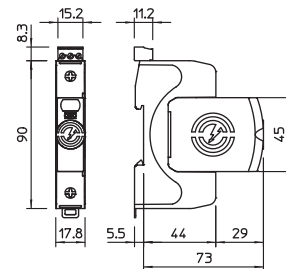
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-1+FS-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 150 V, type 1+2

Combination arrester V50, 3-pole 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3-150	150	3	IP20	1	43,500	5093442

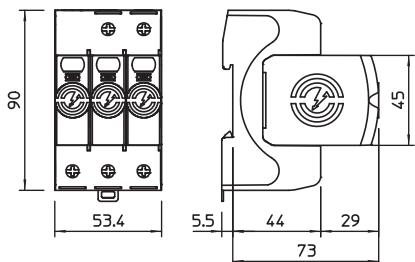
PA Polyamide /pc.

Lightning current combination arrester, type 2

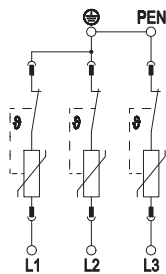
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_C 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_D 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole with FS 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+FS-150	150	3	IP20	1	43,900	5093448

PA Polyamide

/pc.

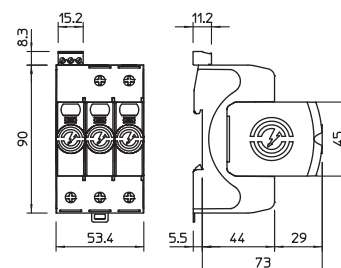
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

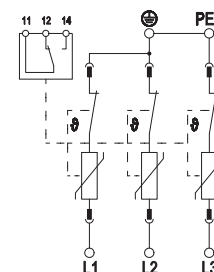
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-3+FS-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	I_n / L-N 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_d 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0.4 kV
Protection level [L-N] @ 5 kA	U_{res} 0.5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 150 V with NPE, type 1+2

Combination arrester V50, 1-pole + NPE 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE-150	150	1+N/PE	IP20	1	29,300	5093452

PA Polyamide

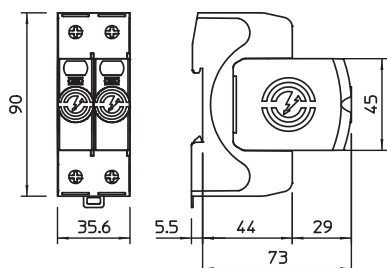
/pc.

Lightning current combination arrester, type 2

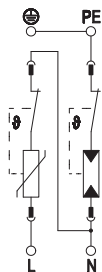
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1+NPE-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_C 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole + NPE with FS 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE+FS-150	150	1+N/PE	IP20	1	29,600	5093460

PA Polyamide /pc.

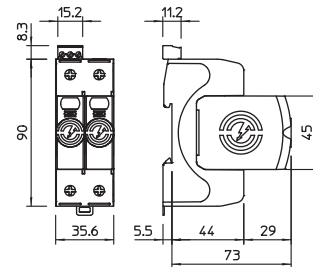
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

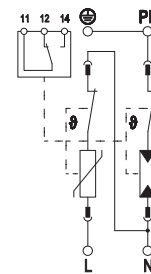
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 12.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 150 V with NPE, type 1+2

Combination arrester V50, 3-pole + NPE 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE-150	150	3+N/PE	IP20	1	55,800	5093454

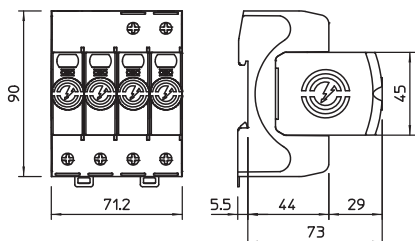
PA Polyamide /pc.

Lightning current combination arrester, type 2

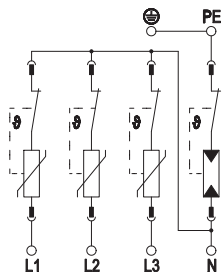
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3+NPE-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_C 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_D 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole + NPE with FS 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE+FS-150	150	3+N/PE	IP20	1	56,300	5093462

PA Polyamide /pc.

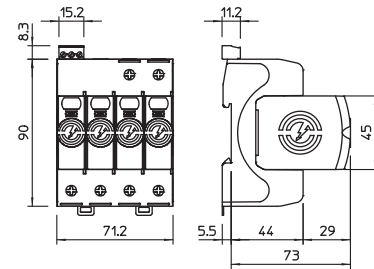
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

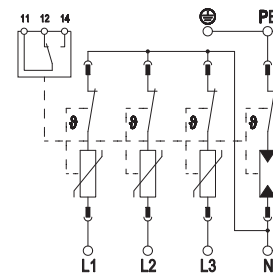
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+NPE+FS-150

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 130 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_d 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,4 kV
Protection level [L-N] @ 5 kA	U_{res} 0,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG





Combination arrester V50 in 280 V, type 1+2

Combination arrester V50, 1-pole 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1-280	280	1	IP20	1	16,400	5093500

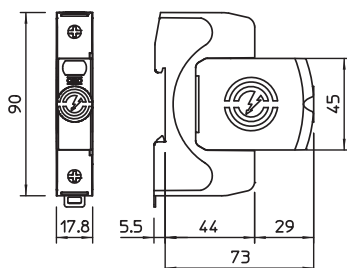
PA Polyamide /pc.

Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+FS-280	280	1	IP20	1	16,600	5093502

PA Polyamide

/pc.

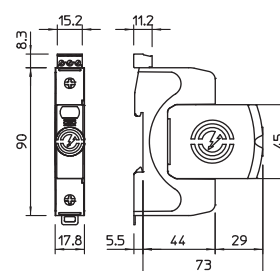
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-1+FS-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 280 V, type 1+2

Combination arrester V50, 3-pole 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3-280	280	3	IP20	1	46,500	5093511

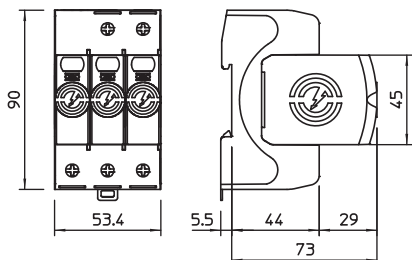
/pc.

Lightning current combination arrester, type 2

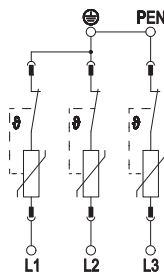
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole with FS 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+FS-280	280	3	IP20	1	46,900	5093516

/pc.

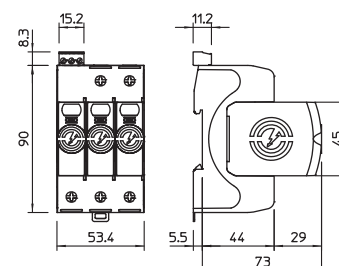
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

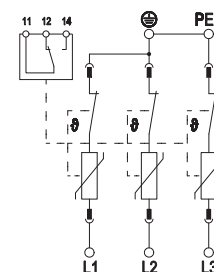
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+FS-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 280 V, type 1+2

Combination arrester V50, 4-pole 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-4-280	280	4	IP20	1	61,000	5093513

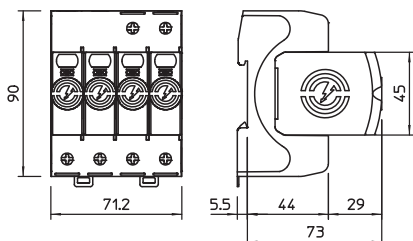
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Lightning current combination arrester, type 2

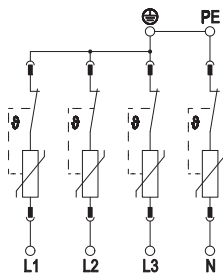
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-4-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 4-pole with FS 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-4+FS-280	280	4	IP20	1	61,500	5093518

/pc.

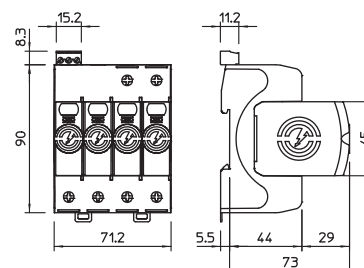
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

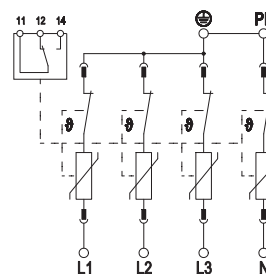
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-4+FS-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 280 V with NPE, type 1+2

Combination arrester V50, 1-pole + NPE 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE-280	280	1+N/PE	IP20	1	30,300	5093522

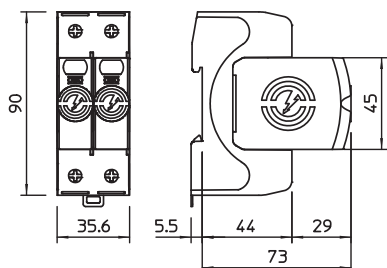
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Lightning current combination arrester, type 2

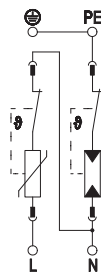
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole + NPE with FS 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE+FS-280	280	1+N/PE	IP20	1	30,600	5093531

/pc.

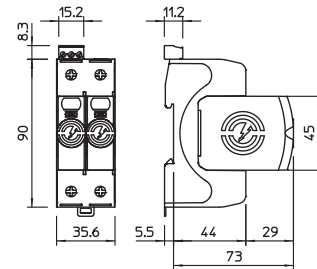
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

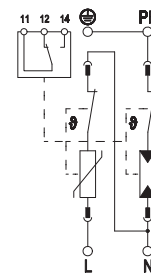
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 12.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 280 V with NPE, type 1+2

Combination arrester V50, 3-pole + NPE 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE-280	280	3+N/PE	IP20	1	58,800	5093526

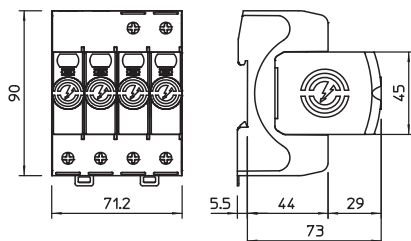
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Lightning current combination arrester, type 2

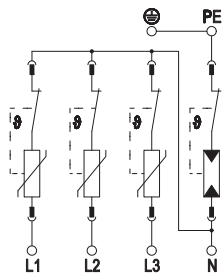
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole + NPE with FS 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE+FS-280	280	3+N/PE	IP20	1	59,300	5093533

/pc.

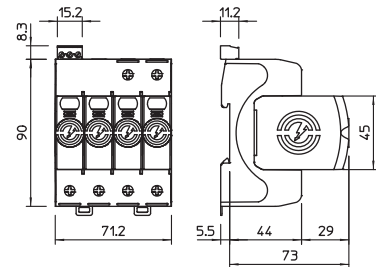


Lightning current combination arrester, type 2

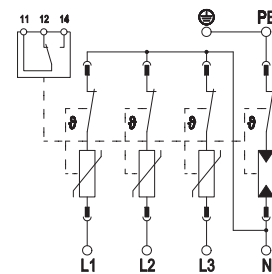
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3+NPE+FS-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 280 V with NPE, type 1+2

Combination arrester V50, 2-pole + NPE 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-2+NPE-280	280	2+N/PE	IP20	1	44,300	5093524

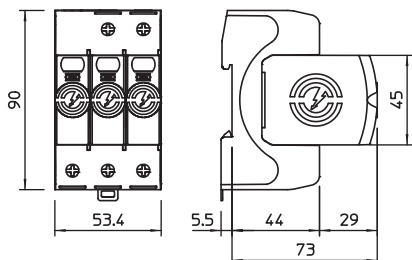
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Lightning current combination arrester, type 2

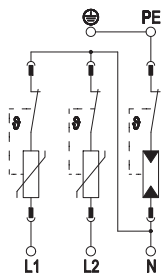
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-2+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 320 V, type 1+2

Combination arrester V50, 1-pole 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1-320	320	1	IP20	1	17,200	5093540

PA Polyamide

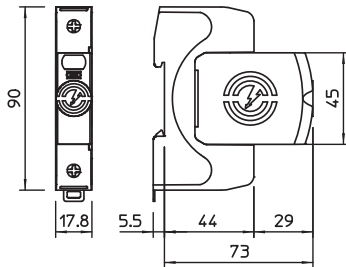
/pc.

Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_C 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+FS-320	320	1	IP20	1	17,200	5093546

PA Polyamide

/pc.

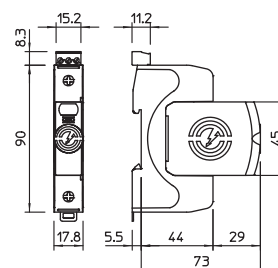
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-1+FS-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 320 V, type 1+2

Combination arrester V50, 3-pole 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3-320	320	3	IP20	1	48,900	5093542

PA Polyamide

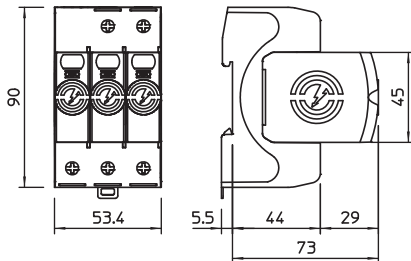
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Lightning current combination arrester, type 2

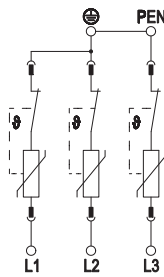
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_C 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_D 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+FS-320	320	3	IP20	1	49,300	5093548

PA Polyamide

/pc.

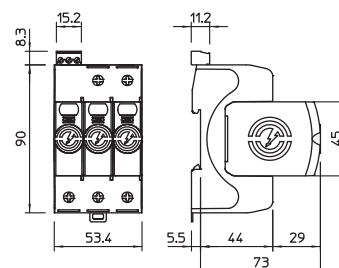
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

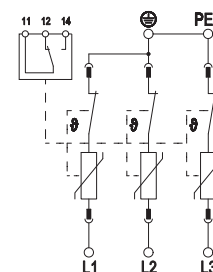
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-3+FS-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_d 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 320 V with NPE, type 1+2

Combination arrester V50, 1-pole + NPE 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE-320	320	1+N/PE	IP20	1	31,100	5093552

PA Polyamide

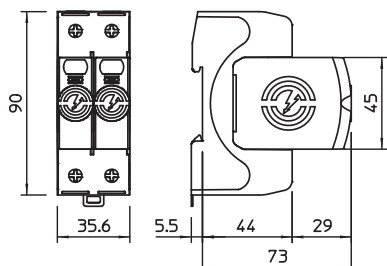
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Lightning current combination arrester, type 2

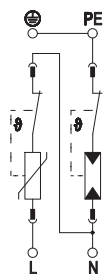
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1+NPE-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_C 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole + NPE with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE+FS-320	320	1+N/PE	IP20	1	31,100	5093560

PA Polyamide /pc.

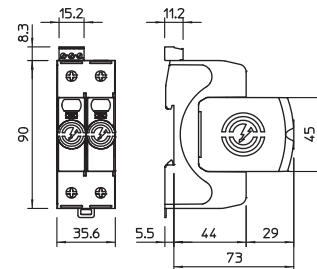
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

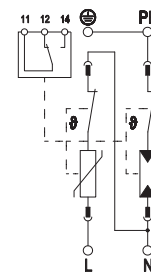
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 12.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 320 V with NPE, type 1+2

Combination arrester V50, 3-pole + NPE 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE-320	320	3+N/PE	IP20	1	61,200	5093554

PA Polyamide

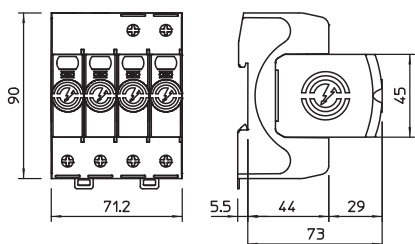
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Lightning current combination arrester, type 2

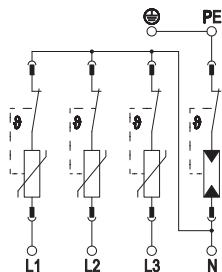
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3+NPE-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_C 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_D 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole + NPE with FS 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE+FS-320	320	3+N/PE	IP20	1	61,700	5093562

PA Polyamide /pc.

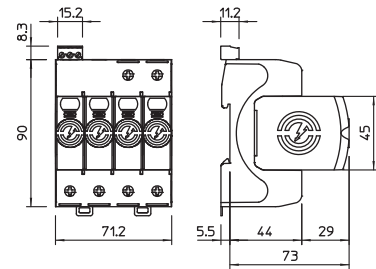
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

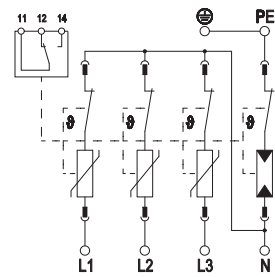
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+NPE+FS-320

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 300 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_d 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 0,85 kV
Protection level [L-N] @ 5 kA	U_{res} 0,95 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 385 V, type 1+2

Combination arrester V50, 1-pole 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1-385	385	1	IP20	1	18,300	5093572

PA Polyamide

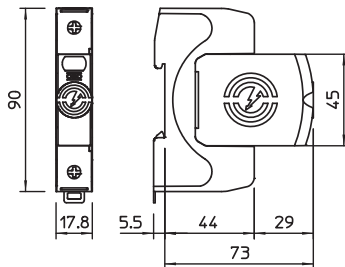
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Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_C 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+FS-385	385	1	IP20	1	18,500	5093578

PA Polyamide

/pc.

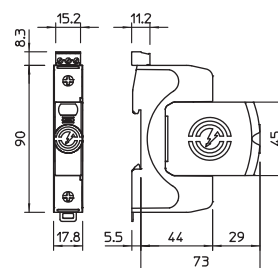
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-1+FS-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n — V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 385 V, type 1+2

Combination arrester V50, 3-pole 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3-385	385	3	IP20	1	52,200	5093574

PA Polyamide

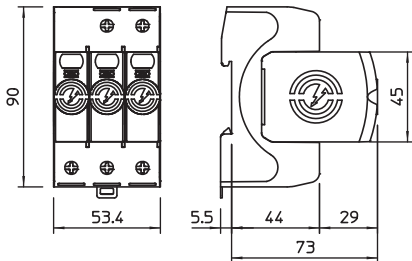
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Lightning current combination arrester, type 2

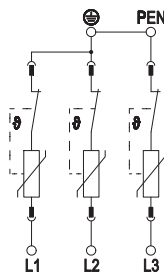
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_C 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_D 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+FS-385	385	3	IP20	1	52,600	5093580

PA Polyamide

/pc.

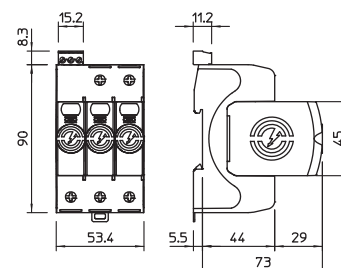
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

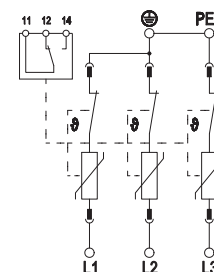
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options


V50-3+FS-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n — V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 37.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_d 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 385 V with NPE, type 1+2

Combination arrester V50, 1-pole + NPE 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE-385	385	1+N/PE	IP20	1	32,200	5093584

PA Polyamide

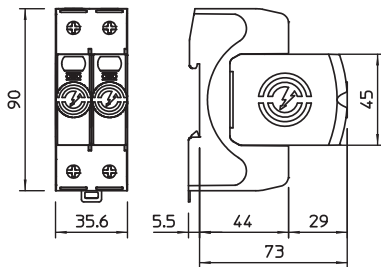
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Lightning current combination arrester, type 2

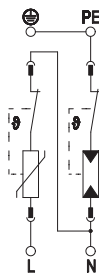
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-1+NPE-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_C 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} — kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_D 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 1-pole + NPE with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-1+NPE+FS-385	385	1+N/PE	IP20	1	32,500	5093590

PA Polyamide /pc.

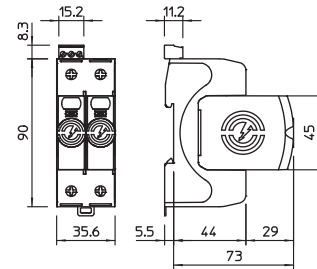
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

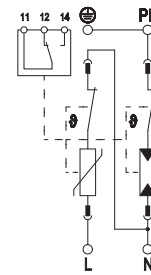
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-1+NPE+FS-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 12.5 kA
Arrester surge current (8/20 μ s) [total]	I_{total} — kA
Protection level [L-N]	U_d 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Combination arrester V50 in 385 V with NPE, type 1+2

Combination arrester V50, 3-pole + NPE 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE-385	385	3+N/PE	IP20	1	64,500	5093586

PA Polyamide

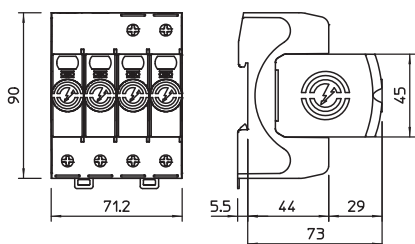
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Lightning current combination arrester, type 2

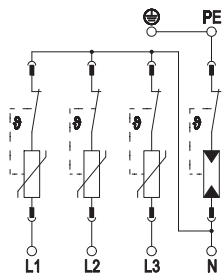
- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

Application: Lightning current equipotential bonding for buildings of class III and IV.

Dimensions



Connection options



V50-3+NPE-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_C 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_d 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole + NPE with FS 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-3+NPE+FS-385	385	3+N/PE	IP20	1	65,000	5093592

PA Polyamide /pc.

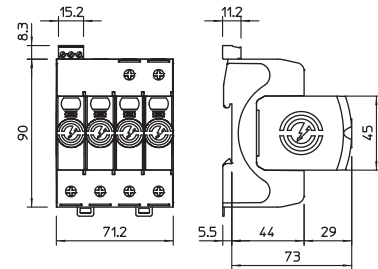
Lightning current combination arrester, type 2

- For the equipotential bonding of lightning current to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling (FS) variants have a potential-free changeover contact for remote signalling

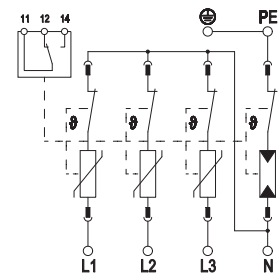
Application: Lightning current equipotential bonding for buildings of class III and IV.



Dimensions



Connection options



V50-3+NPE+FS-385

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 350 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_d 1.8 kV
Protection level [L-N] @ 1 kA	U_{res} 1,1 kV
Protection level [L-N] @ 5 kA	U_{res} 1,2 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG





Combination arrester V50 upper part, type 1+2

Upper part V50 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V50-0-150	150	—	IP20	1	7,660

/pc.

Upper part, lightning current combination arrester, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V50 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V50-0-280	280	—	IP20	1	8,500

/pc.

Upper part, lightning current combination arrester, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V50 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V50-0-320	320	—	IP20	1	9,160

/pc.

Upper part, lightning current combination arrester, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V50 385 V



Type	Highest continuous voltage		Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	AC V	Pole version				
V50-0-385	385	—	IP20	1	10,260	5093510



/pc.

Upper part, lightning current combination arrester, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current discharge capacity of 12.5 kA (10/350) per pole
- Modular, plug-in arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part NPE-C50



Type	Highest continuous voltage		Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	AC V	Pole version				
C50-0-255	255	N/PE	IP20	1	6,000	5095609



/pc.

Combination arrester, lightning current and surge arrester, type 1+2

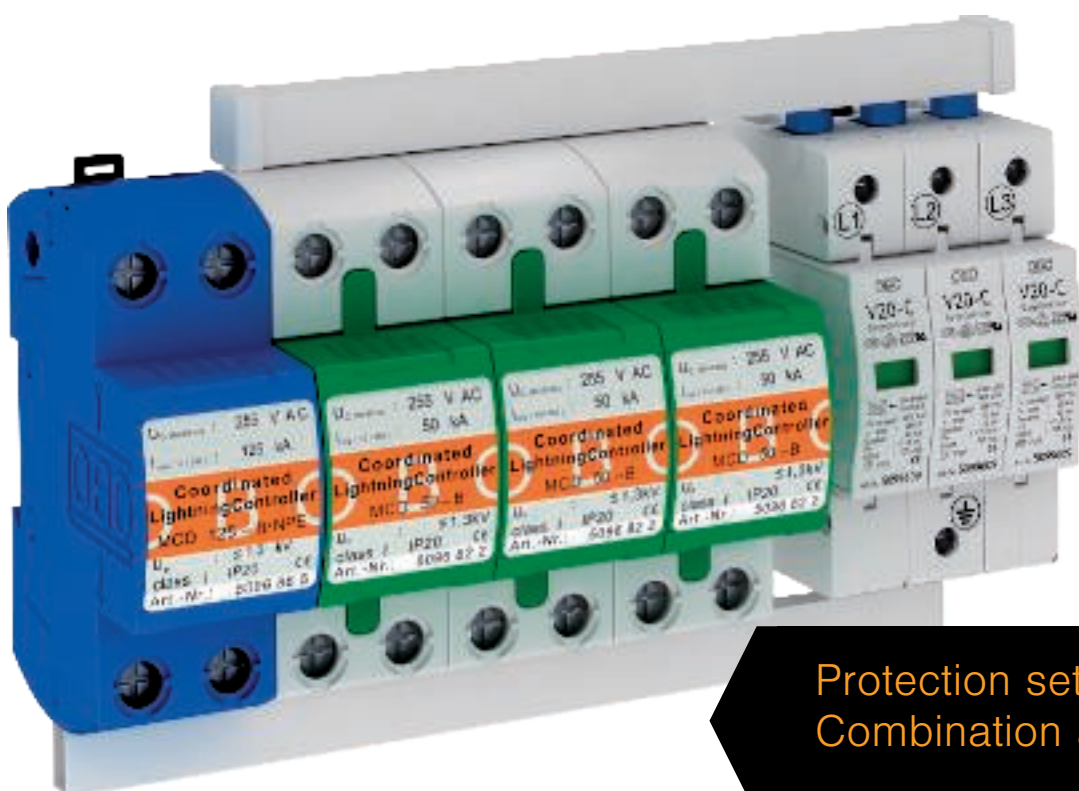
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total
- Arrester, plug-in, with dynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings

Application: Residential building with external lightning protection of Class III and IV.



Combination arrester, protection set, energy technology, type 1+2

- + Connectable arrester combination, type 1+2
- + High arresting capacity of 100 kA (10/350)
- + Visual status display on surge protection device
- + Available with optional remote signalling
- + Labelled connections
- + Encapsulated, non-extinguishing arrester



Protection set MCD
Combination arrestors

Function and areas of use

The lightning current and surge arrester combination and protection set meet the type 1+2 requirement class according to IEC 61643-11. The arrester combination protects

low-voltage consumer systems from lightning currents and surge voltages of all types and is available in single-pole to two-pole versions. The separate structure fulfils the requirements for a separate

surge protection device and provides optimum protection of the electronic components. The arrester combination is pre-mounted for DIN rail mounting.

Protection set MCD + V20 1-pole + NPE



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS 2-B+C/TT+TNS	255	1 + NPE	1	101,000	5089748

/pc.

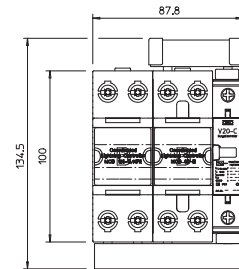
Protection set, lightning and surge arrestor combination, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Arrestor, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrestor for use in distributor housings

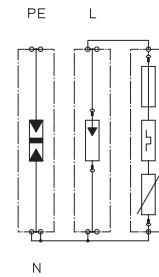
Application: Mobile telecommunications systems and industrial systems with special requirements.



Dimensions



Connection options



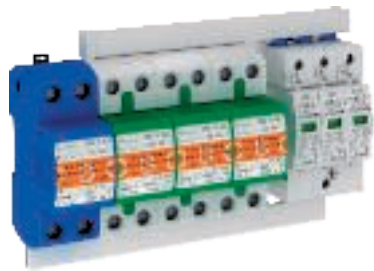
PS 2-B+C/TT+TNS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		5
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, protection set for TN and TT network systems

Protection set MCD + V20 3-pole + NPE



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS4-B+C TT+TNS	255	3 + NPE	1	206,000	5089761

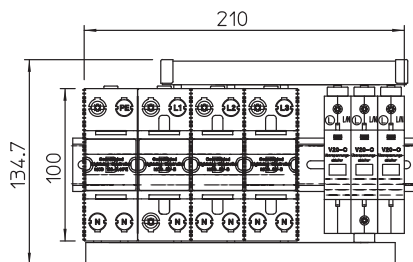
/pc.

Protection set, lightning and surge arrester combination, type 1+2

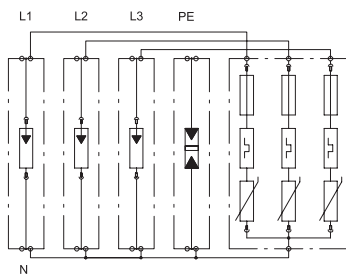
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

Application: Mobile telecommunications systems and industrial systems with special requirements.

Dimensions



Connection options



PS4-B+C TT+TNS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_D	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_n	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		12
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Protection set MCD + V20 3-pole + NPE with remote signalling



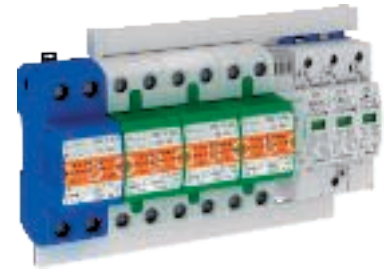
Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
PS4-B+C TNS+FS	255	3 + NPE	1	211,000	5089763

/pc.

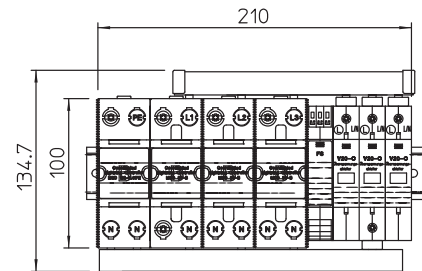
Series PS...: Protection Set, Type 1+2 (Class B+C) lightning and surge arrestor to VDE 0675 Part 6-11 (DIN EN 61643-11).

- Arresting capacity 100 kA 10/350 μs BET tested
- Pre-mounted and ready for connection, including connecting bridges, connection terminals marked
- With remote signalling, potential-free NO contact, for function monitoring
- For use in TN-C network system

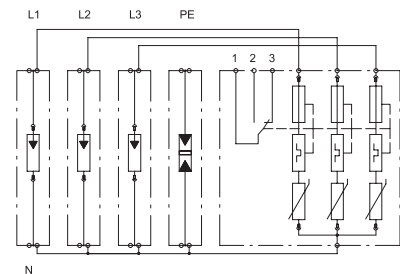
Note: Max. backup fuse (required only if not already fitted in network) 125 A gL/gG.



Dimensions



Connection options



PS4-B+C TNS+FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μs)	I_{max}	100 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		12
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, protection set for TN-C network systems

Protection set MCD + V20 3-pole



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS3-B+C TNC	255	3-pole	1	158,000	5089754

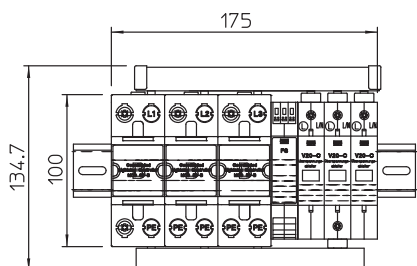
/pc.

Protection set, lightning and surge arrester combination, type 1+2

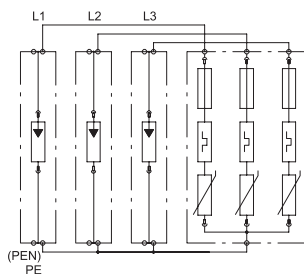
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

Application: Mobile telecommunications systems and industrial systems with special requirements.

Dimensions



Connection options



PS3-B+C TNC

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_p	< 1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_n	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Protection set MCD + V20 3-pole with remote signalling



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS3-B+C TNC+FS	255	3-pole	1	163,000	5089756

/pc.

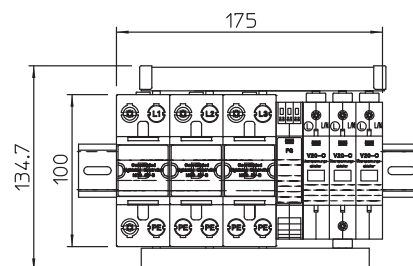
Series PS...: Protection Set,, Type 1+2 (Class B+C) lightning and surge arrester to VDE 0675 Part 6-11 (DIN EN 61643-11).

- Arresting capacity 100 kA 10/350 μs BET tested
- Pre-mounted and ready for connection, including connecting bridges, connection terminals marked
- With remote signalling, potential-free NO contact, for function monitoring
- For use in TN-C network system

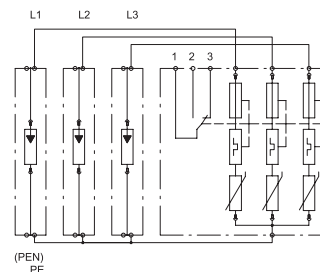
Note: Max. backup fuse (required only if not already fitted in network) 125 A gL/gG.



Dimensions



Connection options



PS3-B+C TNC+FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μs)	I_{max}	100 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, protection set for TN-C network systems

Protection set MCD + V20 3-pole



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
PS3-B+C-320	320	3-pole	1	160,000	5089755

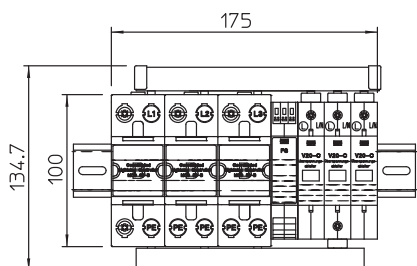
/pc.

Protection set, lightning and surge arrester combination, type 1+2

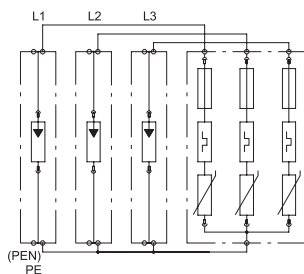
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

Application: Mobile telecommunications systems and industrial systems with special requirements.

Dimensions



Connection options



PS3-B+C-320

Nominal voltage	U_N	320 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I+II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_D	< 1,7 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_n	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Protection set MCD + V20 3-pole with remote signalling



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS3-B+C-320+FS	320	3-pole	1	170,000	5089757

/pc.

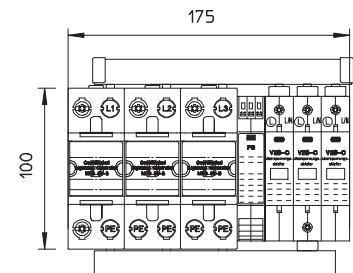
Protection set, lightning and surge arrester combination, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

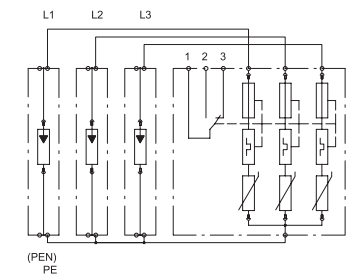
Application: Mobile telecommunications systems and industrial systems with special requirements.



Dimensions



Connection options



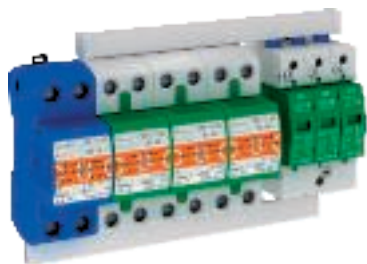
PS3-B+C-320+FS

Nominal voltage	U_N	320 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class II
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_p	<1,7 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, protection set VA for TN and TT network systems

Protection set MCD + V20, leakage current-free, 3-pole + NPE



Highest continuous voltage

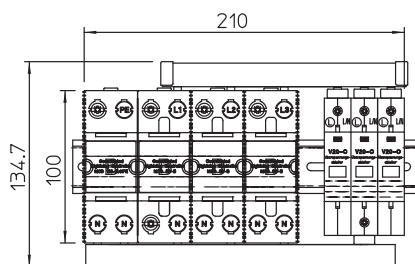
Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS4-VA TT+TNS	255	3 + NPE	1	210,000	5089770

/pc.

Protection set VA, lightning and surge arrester combination, type 1+2

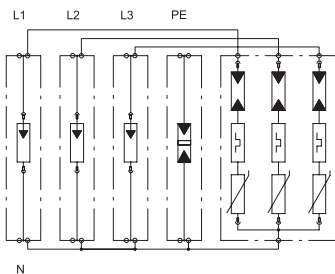
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Free of leak current and suitable for use in pre-meter area according to the VDEW directive
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

Dimensions



Application: pre-meter area and industrial systems with special requirements.

Connection options



PS4-VA TT+TNS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_D	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_n	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		12
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Protection set MCD + V20, leakage current-free, 3-pole + NPE with remote signalling



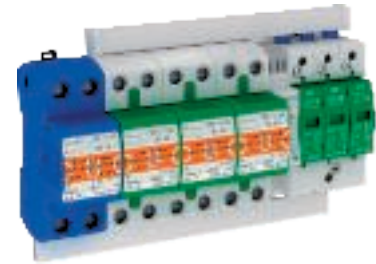
Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS4-VA TT+FS	255	3 + NPE	1	215,000	5089777

/pc.

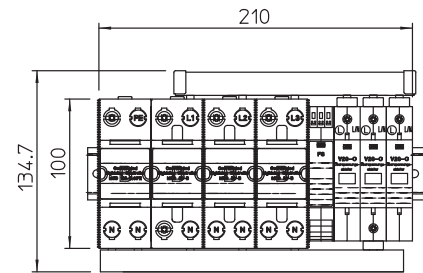
Protection set VA, lightning and surge arrester combination, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Free of leak current and suitable for use in pre-meter area according to the VDEW directive
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

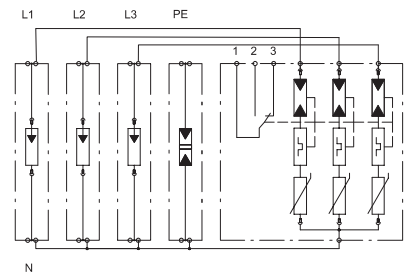
Application: pre-meter area and industrial systems with special requirements.



Dimensions



Connection options



PS4-VA TT+FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_D	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		12
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²



Combination arrester, protection set VA for TN and TT network systems

Protection set MCD + V20, leakage current-free, 3-pole



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS3-VA TNC	255	3-pole	1	162,000	5089768

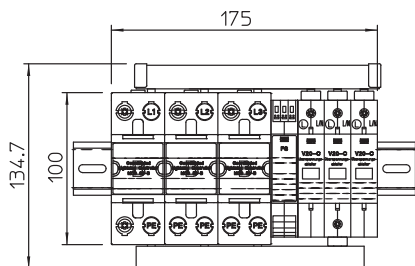
/pc.

Protection set VA, lightning and surge arrester combination, type 1+2

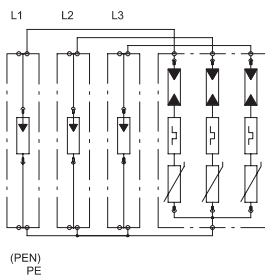
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Free of leak current and suitable for use in pre-meter area according to the VDEW directive
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

Application: pre-meter area and industrial systems with special requirements.

Dimensions



Connection options



PS3-VA TNC

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_p	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_n	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²

Protection set MCD + V20, leakage current-free, 3-pole with remote signalling



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
PS3-VA TNC+FS	255	3-pole	1	167,000	5089775

/pc.

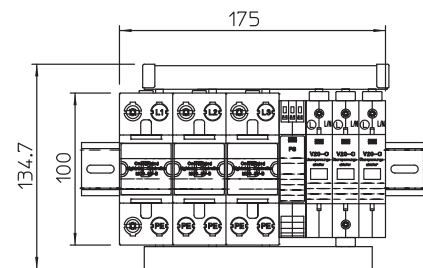
Protection set VA, lightning and surge arrester combination, type 1+2

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Lightning current arresting capacity to 50 kA (10/350) per pole and up to 125 kA (10/350) N-PE
- Free of leak current and suitable for use in pre-meter area according to the VDEW directive
- Arrester, connectable, including connecting bridges, labelled connection terminals
- Encapsulated, non-extinguishing arrester for use in distributor housings

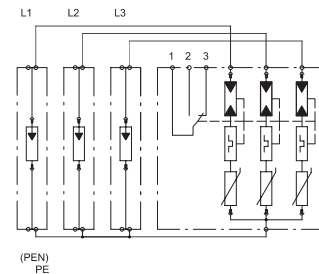
Application: pre-meter area and industrial systems with special requirements.



Dimensions



Connection options



PS3-VA TNC+FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 1+2
SPD to IEC 61643-11		Class I
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I_{imp}	100 kA
Total discharge current (10/350)	I_{total}	100 kA
Nominal discharge current (8/20)	I_n	100 kA
Arrester surge current (8/20) [total]	$I_{Total 8/20}$	100 kA
Maximum discharge current (8/20 μ s)	I_{max}	100 kA
Voltage protection level	U_D	<1,3 kV
Response time	t_A	<25 ns
Follow current quenching capacity (eff) [N-PE]	I_{fi}	25 kA
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +85 °C
Division unit TE (17.5 mm)		10
Protection rating		IP20
Connection cross-section rigid		10 - 50 mm ²
Connection cross-section, multi-wire		10 - 35 mm ²
Connection cross-section, flexible		10 - 25 mm ²





Combination arrester V50 in housing

Combination arrester V50, 1-pole + NPE 280 V



Type	Highest continuous voltage AC V	Pole version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-V50-1+NPE-280	280	1+N/PE	1	80,635	5093594

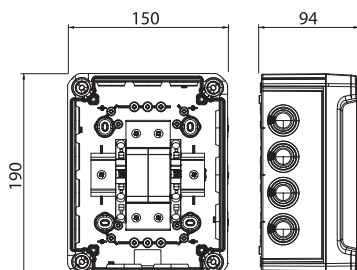
/pc.

Lightning current combination arrester, type 1+2 to DIN EN 61643-11

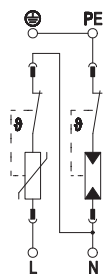
- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total

Application: Lightning protection equipotential bonding for buildings of Class III and IV.
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V50-1+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I-II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_C 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 25 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 50 kA
Protection level [L-N]	U_D 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP66
Approvals	UL, ÖVE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Combination arrester V50, 3-pole + NPE 280 V



Type	Highest continuous voltage AC V	Pole version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-V50-3+NPE-280	280	3+N/PE	1	108,900	5093596

/pc.



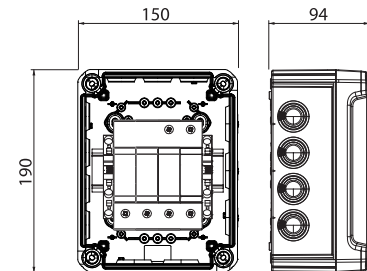
Lightning current combination arrester, type 1+2 to DIN EN 61643-11

- For lightning protection equipotential bonding to VDE 0185-305 (IEC 62305)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Lightning current arresting capacity 12.5 kA (10/350) per pole and up to 50 kA (10/350) in total

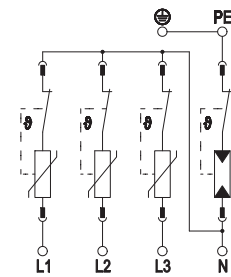
Application: Lightning protection equipotential bonding for buildings of Class III and IV.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V50-3+NPE-280

SPD to EN 61643-11	Type 1+2
SPD to IEC 61643-11	Class I+II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 30 kA
Maximum discharge current (8/20 μ s)	I_{max} 50 kA
Lightning surge current (10/350 μ s)	I_{imp} 12.5 kA
Total discharge current (10/350)	I_{total} 50 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 50 kA
Protection level [L-N]	U_d 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP66
Approvals	UL, ÖVE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG





Surge protection
Energy technology
Arrestor type 2

Diese Anlage
Überspannung
ausgerüstet.
Bei Isolation
Schutzmodul
abklemmen.
System conf
devices. Ple
OBO protec



V20, Typ 2

02 TBS Masterkatalog Länder / en / 30/11/2016 (LLExpert_04408) / 30/11/2016

Surge protection Energy technology, type 2 arrester

	Surge arrester V20, 75 V	186
	Surge arrester V20, 150 V	190
	Surge arrester V20, 280 V	198
	Surge arrester V20, 320 V	212
	Surge arrester V20, 385 V	220
	Surge arrester V20, 440 V	230
	Surge arrester V20, 550 V	231
	System solution, surge arrester V20 in housing	238
	Accessories, upper parts and bases V20	240

Surge protection energy technology, arrester, type 2 The plus of the V20 family

- + Connectable surge arrester
- + High arresting capacity
- + Visual status display
- + Available with optional remote signalling
- + Vibration-proof
- + Simple standard DIN rail mounting
- + Labelled connections
- + Voltage encoding



Surge arrester V20

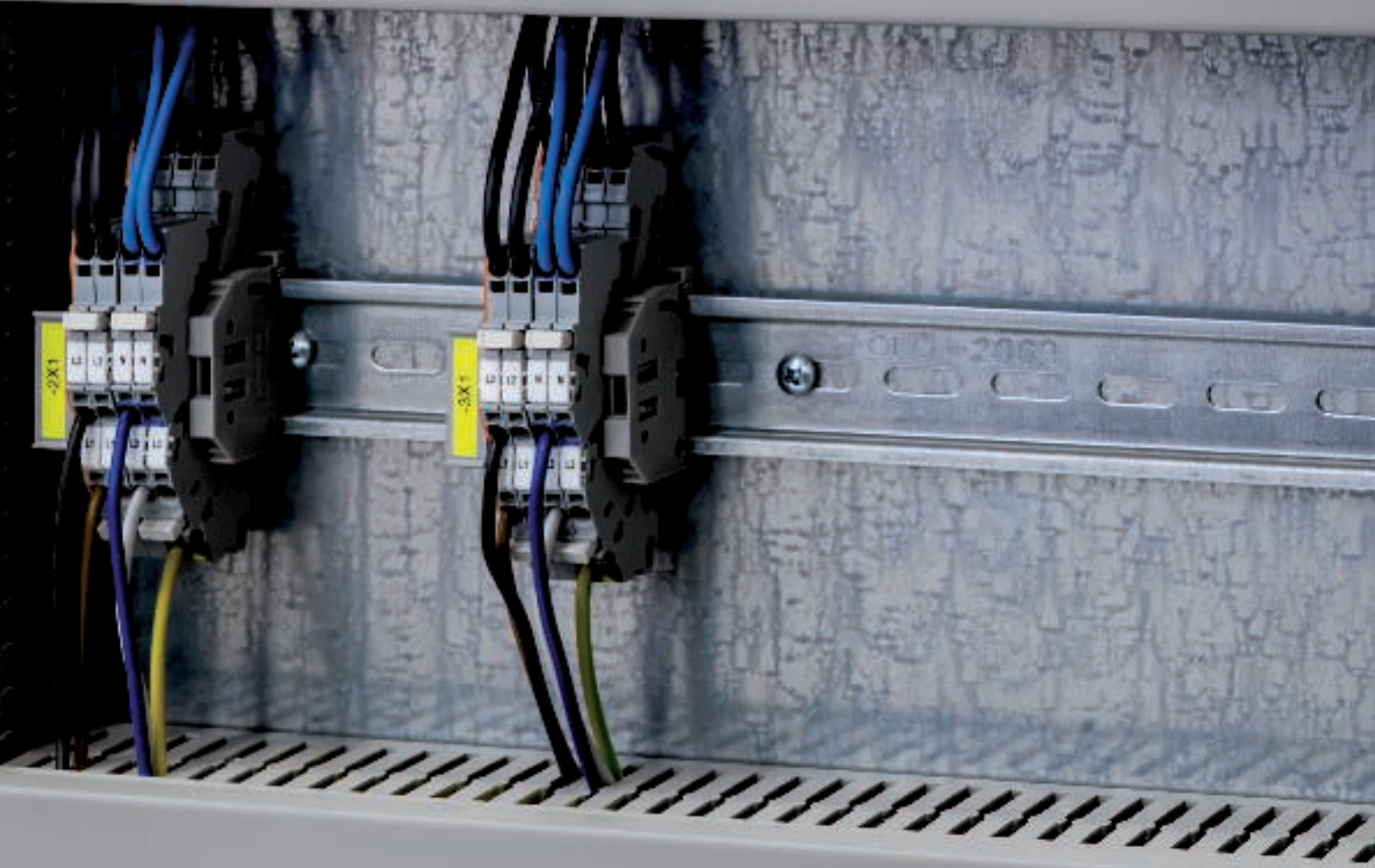
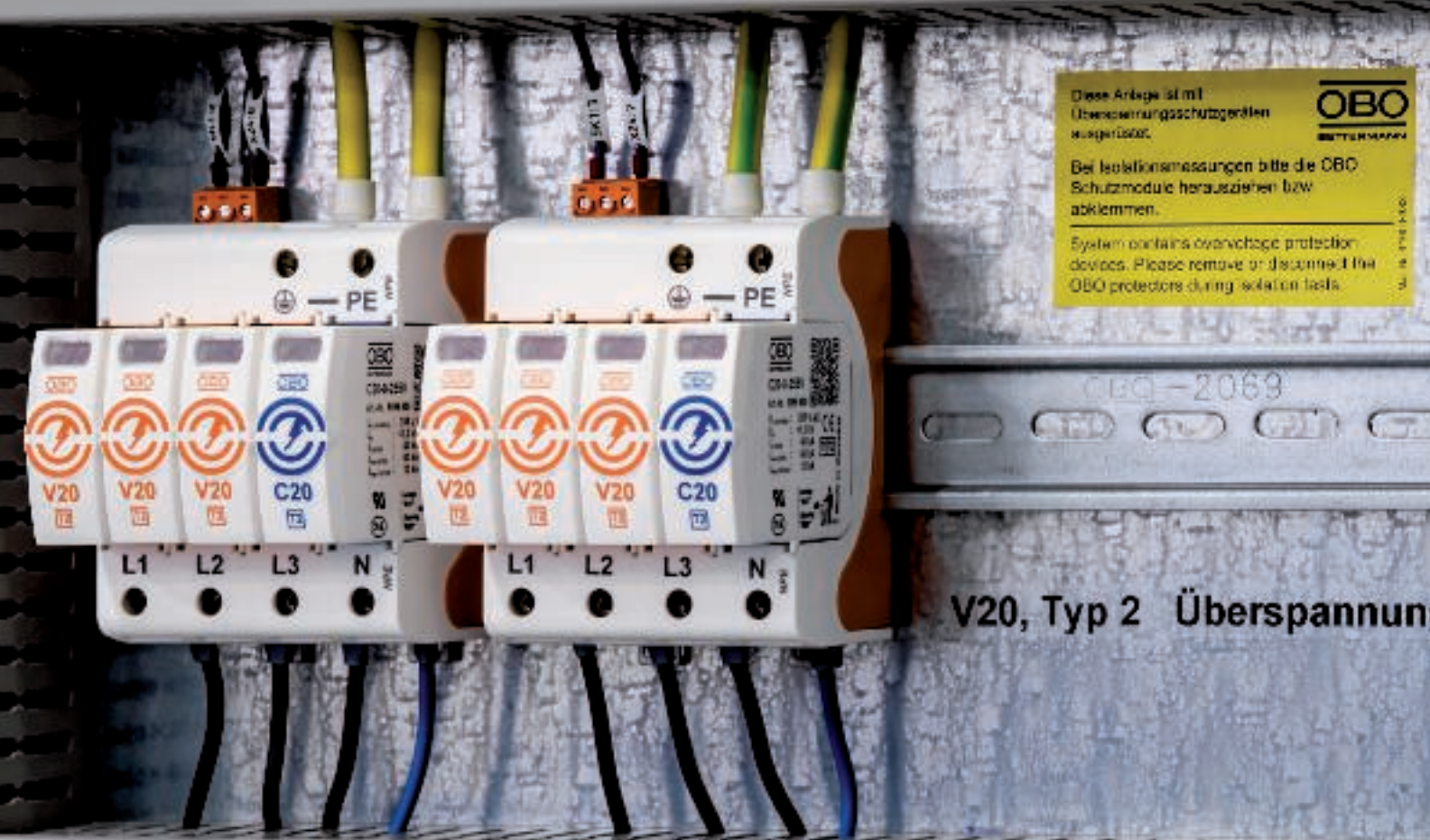
Function and areas of use

The surge arrestors V20 meet the type 2 requirement class according to IEC 61643-11. These devices protect low-voltage consumer systems from overvoltages of all types and are available in

single-pole to four-pole versions. The use of high-performance varistors permits a rapid response time and a low protection level, without any line follow current. If circumstances are uncertain and there is a risk of fire from an overload, the

internal cut-off unit disconnects the arrester from the mains if necessary. In addition, the QR code printed on the arrester allows direct access to the online installation instructions.





Type 2, surge arrester V20



1-pole

Volts	Item no.	Page
75	5095 14 1	186
150	5095 15 1	190
280	5095 16 1	198
320	5095 17 1	212
385	5095 19 1	220
440	5095 20 1	230
550	5095 21 1	231



2-pole

Volts	Item no.	Page
75	5095 14 2	188
150	5095 15 2	192
280	5095 16 2	200
385	5095 19 2	222
550	5095 21 2	232



3-pole

Volts	Item no.	Page
150	5095 15 3	193
280	5095 16 3	202
320	5095 17 3	214
385	5095 19 3	224
550	5095 21 3	234



4-pole

Volts	Item no.	Page
280	5095 16 4	204
385	5095 19 4	228
550	5095 21 4	236

Type 2, surge arrester V20 with remote signalling



1-pole + FS

Volts	Item no.	Page
280	5095 28 1	199
320	5095 29 1	213



2-pole + FS

Volts	Item no.	Page
280	5095 28 2	201
385	5095 30 2	223
550	5095 31 2	233



3-pole + FS

Volts	Item no.	Page
280	5095 28 3	203
320	5095 29 3	215
385	5095 30 3	225
550	5095 31 3	235



4-pole + FS

Volts	Item no.	Page
280	5095 28 4	205
385	5095 30 4	229
550	5095 31 4	237



Type 2, surge arrester V20 + NPE



1-pole + NPE

Volts	Item no.	Page
75	5095 22 1	187
150	5095 23 1	191
280	5095 25 1	206
320	5095 26 1	216
385	5095 27 1	221



2-pole + NPE

Volts	Item no.	Page
150	5095 23 2	194
280	5095 25 2	208



3-pole + NPE

Volts	Item no.	Page
150	5095 23 3	196
280	5095 25 3	210
320	5095 26 3	218
385	5095 27 3	226



Cover - V20

Volts	Item no.	Page
75	5095 36 0	240
150	5095 36 2	240
280	5095 36 4	240
320	5095 36 6	241
385	5095 36 8	242
440	5095 37 0	242
550	5095 37 2	242

Type 2, surge arrester V20 + NPE with remote signalling



1-pole + NPE + FS

Volts	Item no.	Page
280	5095 33 1	207
320	5095 34 1	217



2-pole + NPE + FS

Volts	Item no.	Page
150	5095 32 2	195
280	5095 33 2	209



3-pole + NPE + FS

Volts	Item no.	Page
150	5095 32 1	197
280	5095 33 3	211
320	5095 34 3	219
385	5095 35 3	227



Cover NPE - C20

Volts	Item no.	Page
255	5095 60 0	243

Type 2, surge arrester V20 in housing



1-pole + NPE

Volts	Item no.	Page
280	5095 38 1	238



3-pole + NPE

Volts	Item no.	Page
280	5095 38 3	239

Surge arrester V20, 1-pole 75 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-75	75	1	IP20	1	11,500	5095141

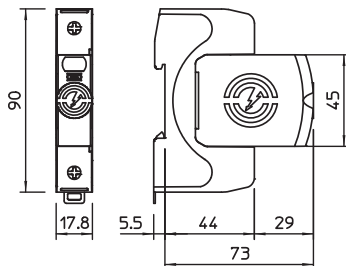
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-75

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 60 V
Maximum continuous voltage AC	U_c 75 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 0.5 kV
Protection level [L-N] @ 1 kA	U_{res} 0,3 kV
Protection level [L-N] @ 5 kA	U_{res} 0,35 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	25 kA
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole + NPE, 75 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE-75	75	1+N/PE	IP20	1	22,900	5095221

/pc.

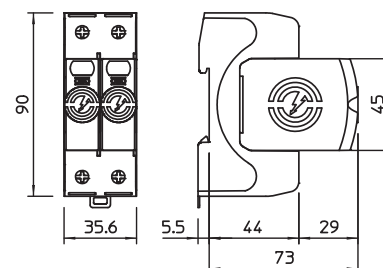
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE-75

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 60 V
Maximum continuous voltage AC	U_c 75 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0.5 kV
Protection level [L-N] @ 1 kA	U_{res} 0,3 kV
Protection level [L-N] @ 5 kA	U_{res} 0,35 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole, 75 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2-75	75	2	IP20	1	22,800	5095142

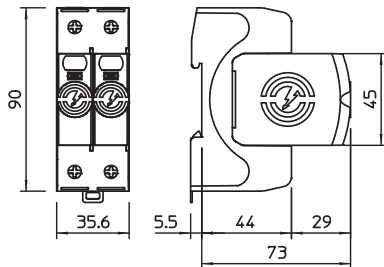
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Surge arrester, type 2

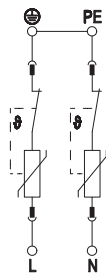
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2-75

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 60 V
Maximum continuous voltage AC	U_c 75 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 0.5 kV
Protection level [L-N] @ 1 kA	U_{res} 0,3 kV
Protection level [L-N] @ 5 kA	U_{res} 0,35 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG





Surge arrester V20, 1-pole, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-150	150	1	IP20	1	11,900	5095151

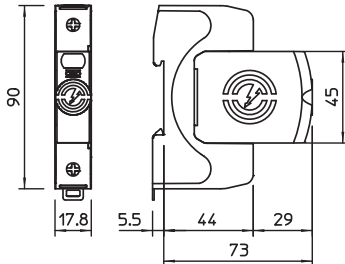
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 0,8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole+ NPE, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE-150	150	1+N/PE	IP20	1	23,300	5095231

/pc.

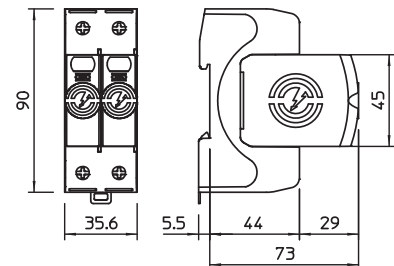
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

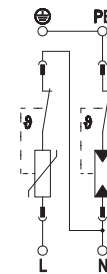
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2-150	150	2	IP20	1	23,600	5095152

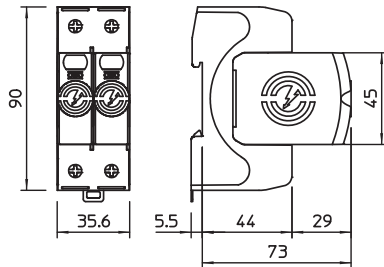
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Surge arrester, type 2

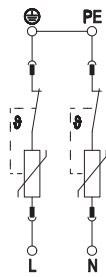
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 0,8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3-150	150	3	IP20	1	33,000	5095153

/pc.

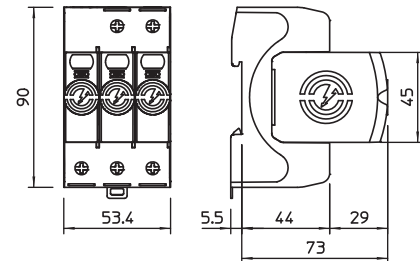


Surge arrester, type 2

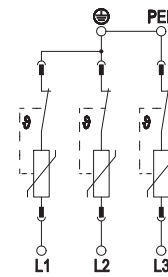
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole + NPE, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+NPE-150	150	2+N/PE	IP20	1	32,800	5095232

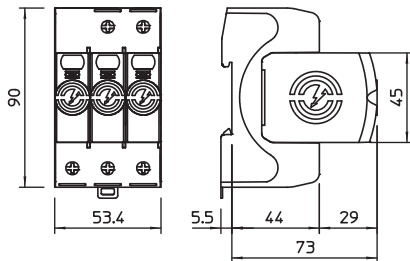
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Surge arrester, type 2

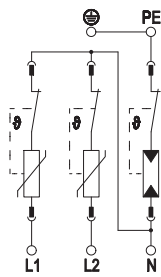
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2+NPE-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0,8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Surge arrester V20, 2-pole + NPE and FS, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+NPE+FS-150	150	2+N/PE	IP20	1	33,200	5095322

/pc.

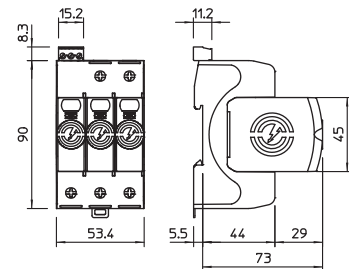
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

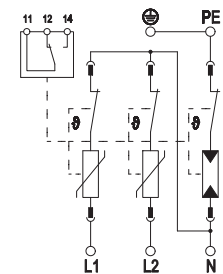
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options

**V20-2+NPE+FS-150**

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0.8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole + NPE, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE-150	150	3+N/PE	IP20	1	42,700	5095233

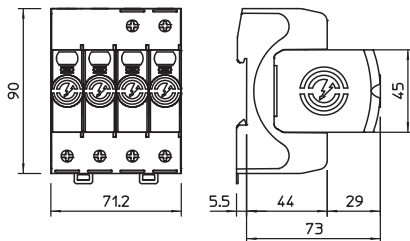
/pc.

Surge arrester, type 2

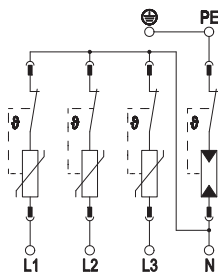
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3+NPE-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0,8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole+ NPE and FS, 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE+FS-150	150	3+N/PE	IP20	1	43,300	5095321

/pc.

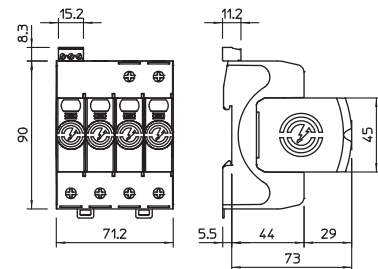
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

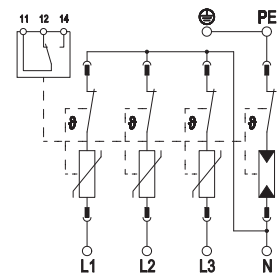
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+FS-150

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 120 V
Maximum continuous voltage AC	U_c 150 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 0,8 kV
Protection level [L-N] @ 1 kA	U_{res} 0,5 kV
Protection level [L-N] @ 5 kA	U_{res} 0,65 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1,5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1,5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-280	280	1	IP20	1	12,900	5095161

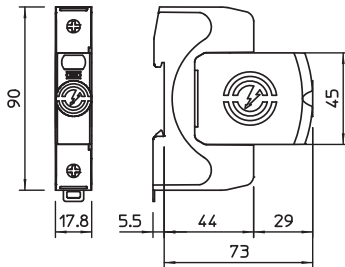
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole with remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+FS-280	280	1	IP20	1	13,100	5095281

/pc.

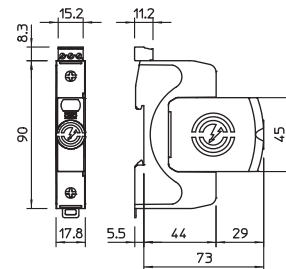
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2-280	280	2	IP20	1	25,600	5095162

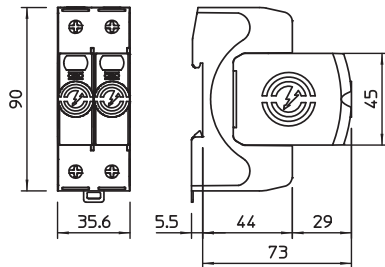
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Surge arrester, type 2

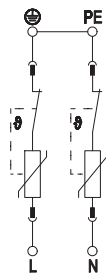
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole with remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+FS-280	280	2	IP20	1	25,900	5095282

/pc.

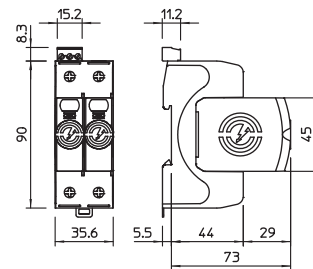
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

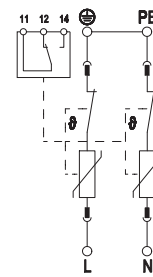
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-2+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3-280	280	3	IP20	1	36,000	5095163

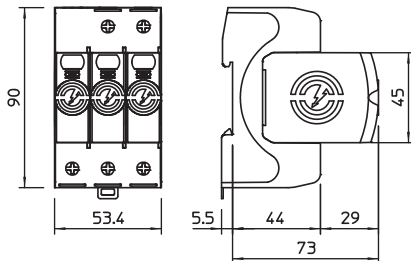
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Surge arrester, type 2

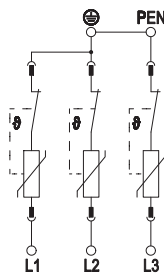
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Surge arrester V20, 3-pole with remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+FS-280	280	3	IP20	1	36,400	5095283

/pc.

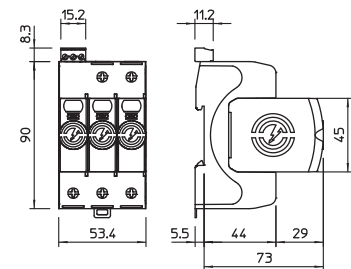
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

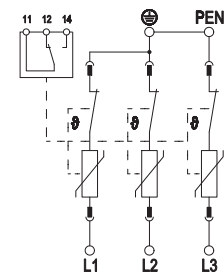
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 4-pole, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4-280	280	4	IP20	1	47,000	5095164

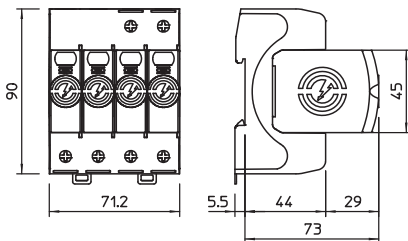
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Surge arrester, type 2

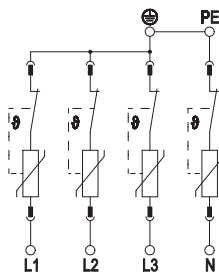
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-4-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 4-pole with remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4+FS-280	280	4	IP20	1	47,500	5095284

/pc.

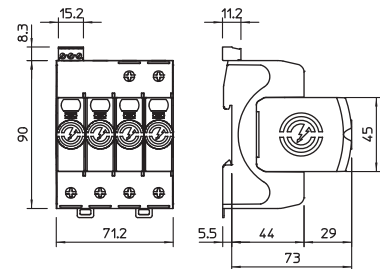
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

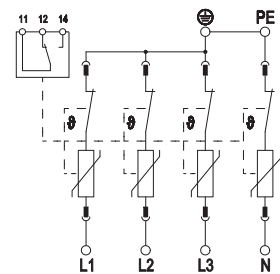
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-4+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole + NPE, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE-280	280	1+N/PE	IP20	1	24,300	5095251

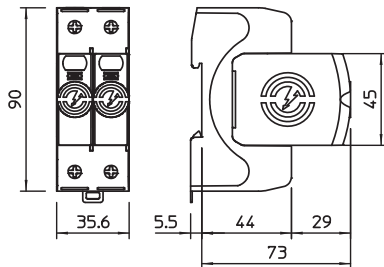
/pc.

Surge arrester, type 2

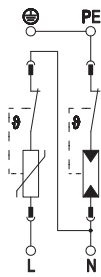
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1+NPE-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Surge arrester V20, 1-pole + NPE and remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE+FS-280	280	1+N/PE	IP20	1	24,600	5095331

/pc.

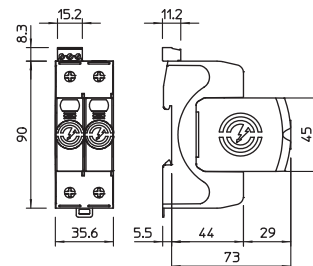
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

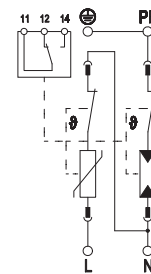
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole + NPE, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+NPE-280	280	2+N/PE	IP20	1	34,600	5095252

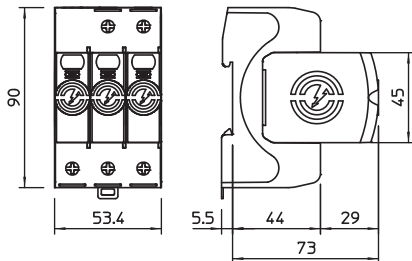
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Surge arrester, type 2

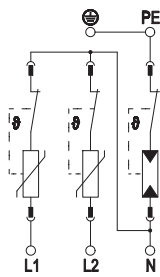
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2+NPE-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole + NPE and remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+NPE+FS-280	280	2+N/PE	IP20	1	34,800	5095332

/pc.

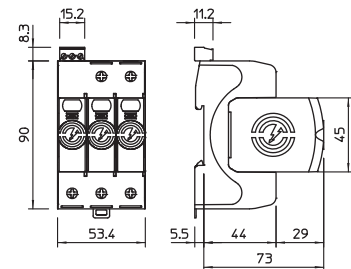
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

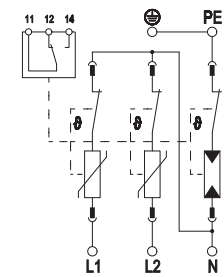
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-2+NPE+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole + NPE, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE-280	280	3+N/PE	IP20	1	45,800	5095253

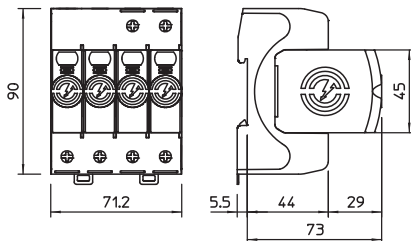
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Surge arrester, type 2

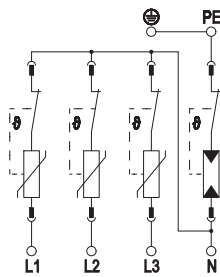
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3+NPE-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Surge arrester V20, 3-pole + NPE and remote signalling, 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE+FS-280	280	3+N/PE	IP20	1	46,300	5095333

/pc.

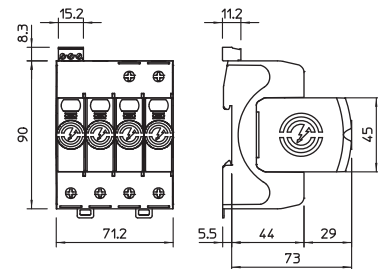
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

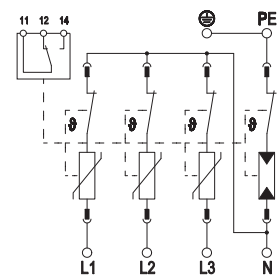
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+FS-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-320	320	1	IP20	1	13,000	5095171

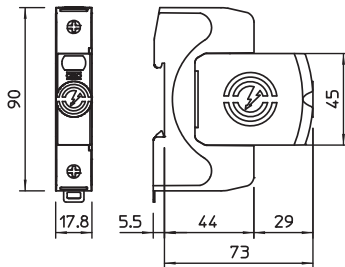
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole with remote signalling, 320 V



Type	Highest continuous voltage AC	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V					
V20-1+FS-320	320	1	IP20	1	13,200	5095291

/pc.

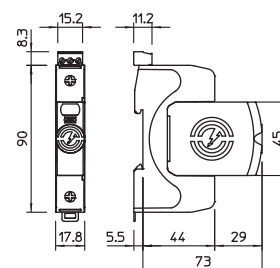
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+FS-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3-320	320	3	IP20	1	36,300	5095173

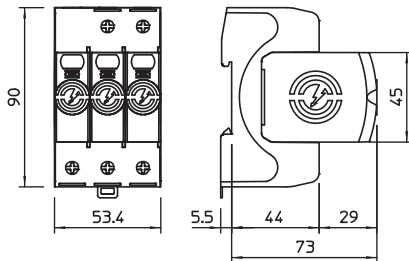
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Surge arrester, type 2

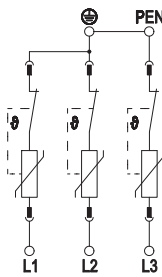
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole with remote signalling, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+FS-320	320	3	IP20	1	36,700	5095293

/pc.

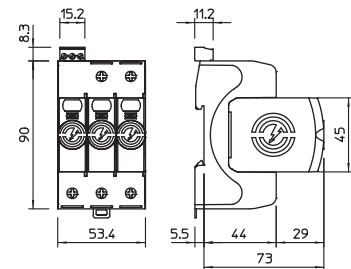
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

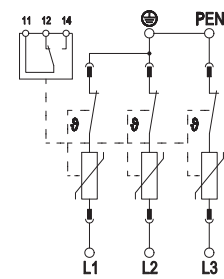
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+FS-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole + NPE, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE-320	320	1+N/PE	IP20	1	24,400	5095261

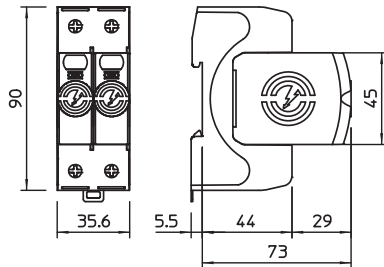
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1+NPE-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole + NPE and remote signalling, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE+FS-320	320	1+N/PE	IP20	1	24,700	5095341

/pc.

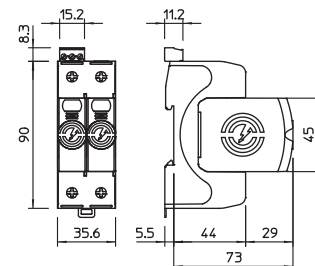
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

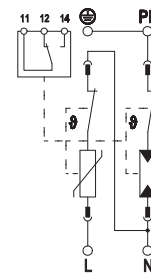
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE+FS-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole + NPE, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs	Item No.
V20-3+NPE-320	320	3+N/PE	IP20	1	46,100	5095263

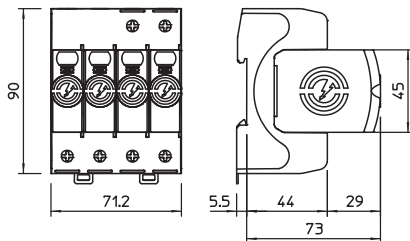
/pc.

Surge arrester, type 2

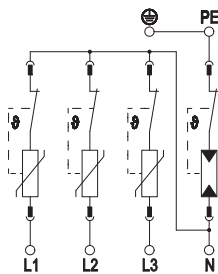
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3+NPE-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole + NPE and remote signalling, 320 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE+FS-320	320	3+N/PE	IP20	1	46,600	5095343

/pc.

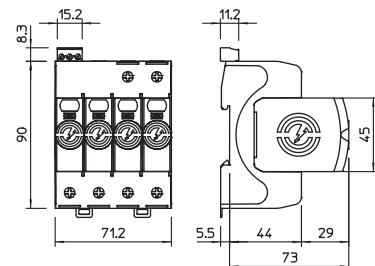
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

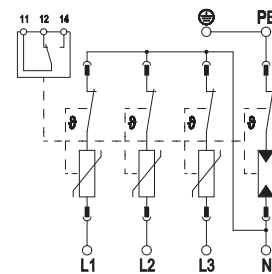
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+FS-320

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 320 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.6 kV
Protection level [L-N] @ 1 kA	U_{res} 1,0 kV
Protection level [L-N] @ 5 kA	U_{res} 1,3 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-385	385	1	IP20	1	13,300	5095191

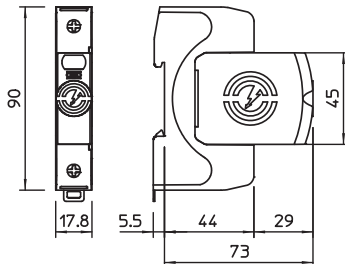
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole + NPE, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1+NPE-385	385	1+N/PE	IP20	1	24,700	5095271

/pc.

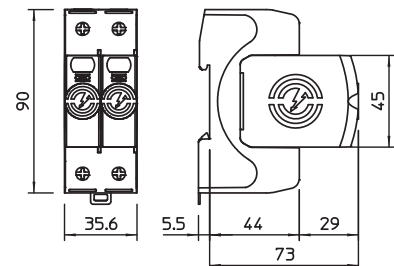
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

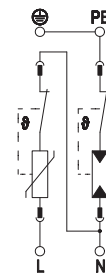
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1+NPE-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2-385	385	2	IP20	1	26,400	5095192

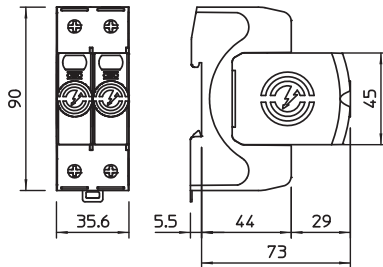
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Surge arrester, type 2

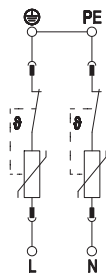
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole with remote signalling, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+FS-385	385	2	IP20	1	26,700	5095302

/pc.

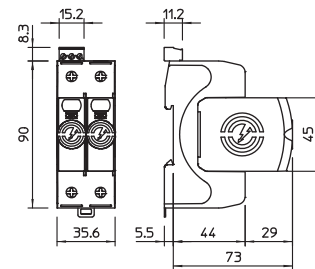
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

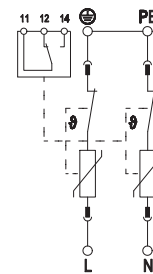
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-2+FS-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3-385	385	3	IP20	1	35,600	5095193

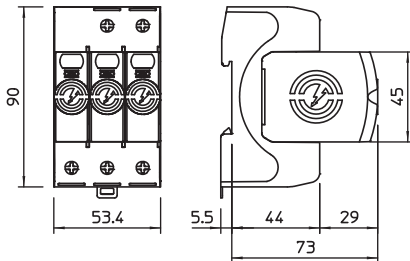
/pc.

Surge arrester, type 2

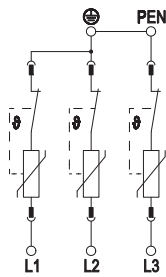
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	I_n / I_{L-N} 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole with remote signalling, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+FS-385	385	3	IP20	1	37,600	5095303

/pc.

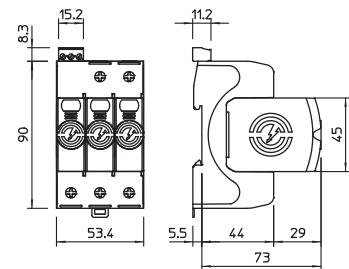
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

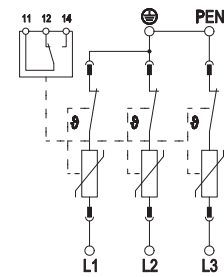
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+FS-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole + NPE, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs	Item No.
V20-3+NPE-385	385	3+N/PE	IP20	1	47,000	5095273

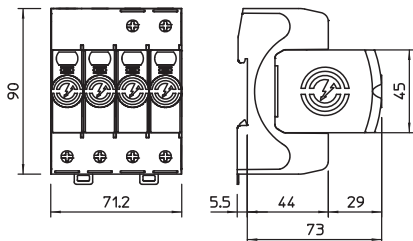
/pc.

Surge arrester, type 2

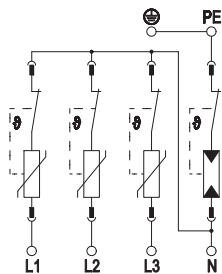
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3+NPE-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG

Surge arrester V20, 3-pole + NPE and remote signalling, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+NPE+FS-385	385	3+N/PE	IP20	1	47,500	5095353

/pc.

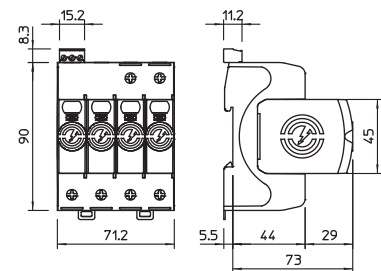
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

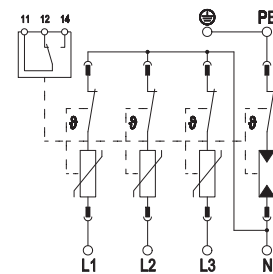
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+NPE+FS-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 4-pole, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4-385	385	4	IP20	1	48,600	5095194

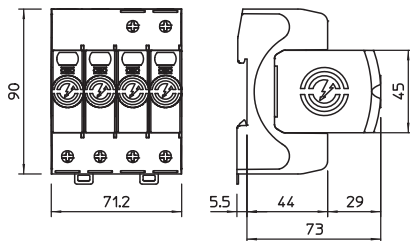
/pc.

Surge arrester, type 2

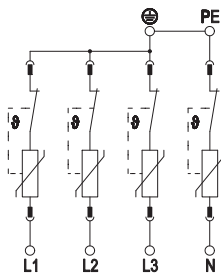
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-4-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole with remote signalling, 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4+FS-385	385	4	IP20	1	49,100	5095304

/pc.

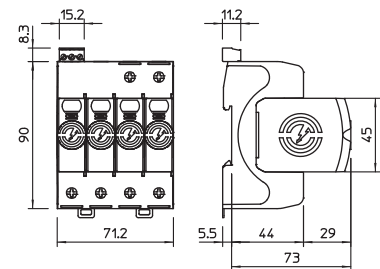
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

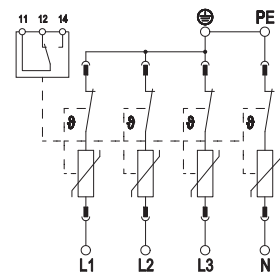
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-4+FS-385

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 385 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 1.7 kV
Protection level [L-N] @ 1 kA	U_{res} 1,2 kV
Protection level [L-N] @ 5 kA	U_{res} 1,5 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL, ÖVE, VDE
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole, 440 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-440	440	1	IP20	1	13,600	5095201

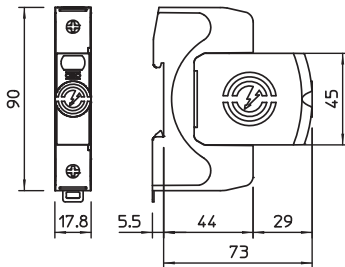
/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-1-440

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 400 V
Maximum continuous voltage AC	U_c 440 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 2 kV
Protection level [L-N] @ 1 kA	U_{res} 1,5 kV
Protection level [L-N] @ 5 kA	U_{res} 1,8 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 1-pole, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-1-550	550	1	IP20	1	14,300	5095211

/pc.

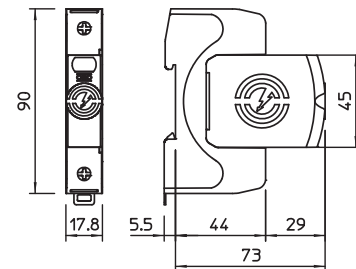
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-1-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 40 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2-550	550	2	IP20	1	27,000	5095212

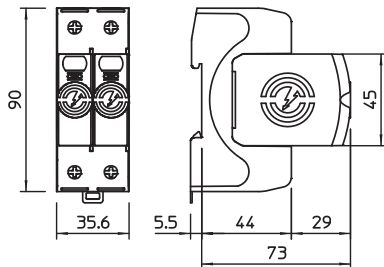
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Surge arrester, type 2

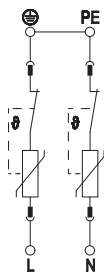
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-2-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 2-pole with remote signalling, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-2+FS-550	550	2	IP20	1	27,300	5095312

/pc.

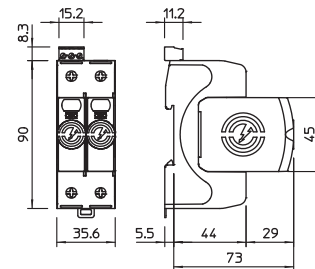
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

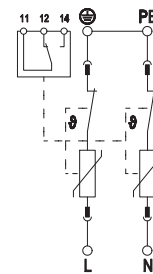
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-2+FS-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 80 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3-550	550	3	IP20	1	38,100	5095213

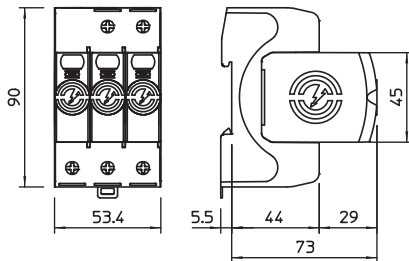
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Surge arrester, type 2

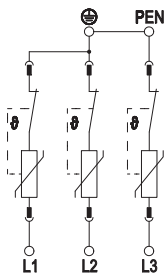
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-3-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_C 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 3-pole with remote signalling, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-3+FS-550	550	3	IP20	1	38,500	5095313

/pc.

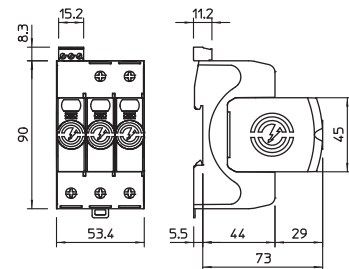
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

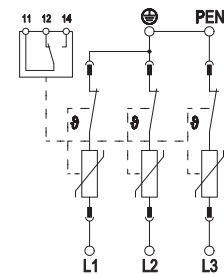
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-3+FS-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 120 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 4-pole, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4-550	550	4	IP20	1	49,800	5095214

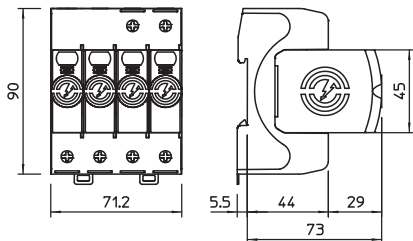
/pc.

Surge arrester, type 2

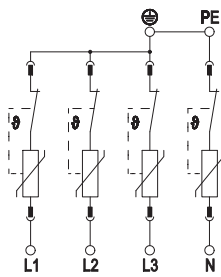
- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.

Dimensions



Connection options



V20-4-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1,7 kV
Protection level [L-N] @ 5 kA	U_{res} 2,1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20, 4-pole with remote signalling, 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-4+FS-550	550	4	IP20	1	50,300	5095314

/pc.

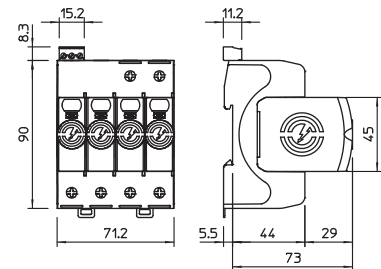
Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

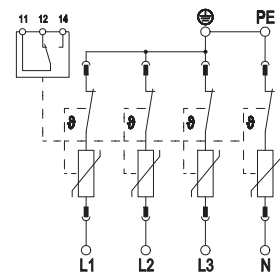
Application: Equipotential bonding in main and sub-distributions.



Dimensions



Connection options



V20-4+FS-550

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 480 V
Maximum continuous voltage AC	U_c 550 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 15 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 160 kA
Protection level [L-N]	U_p 2.4 kV
Protection level [L-N] @ 1 kA	U_{res} 1.7 kV
Protection level [L-N] @ 5 kA	U_{res} 2.1 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP20
Approvals	UL
FM contacts	Changeover
Switching power AC	230 V; 0,5 A
Switching power DC	230 V; 0,1 A / 75 V; 0,5 A
Connection cross-section, FM terminals	0,5 - 1,5 mm ²
Connection cross-section, FM terminals	21 - 16 AWG
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



System solution, surge arrester V20 in housing, 1-pole + NPE, 280 V



Type	Highest continuous voltage AC V	Pole version	Pack. pcs	Weight kg/100 pcs	Item No.
VG-V20-1+NPE-280	280	1+N/PE	1	74,000	5095381

/pc.

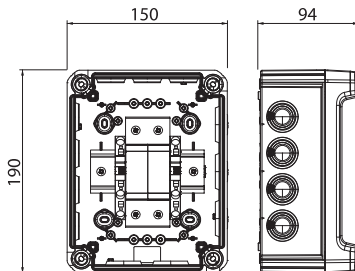
Surge arrester, type 2, according DIN EN 61643-11

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Arresting capacity to 40 kA (8/20) per pole through high-performance varistors

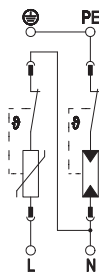
Application: Equipotential bonding in main and sub-distributors.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V20-1+NPE-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrestor surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP66
Approvals	ÖVE, UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



System solution, surge arrester V20 in housing, 3-pole + NPE, 280 V



Type	Highest continuous voltage AC V	Pole version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-V20-3+NPE-280	280	3+N/PE	1	96,000	5095383

/pc.



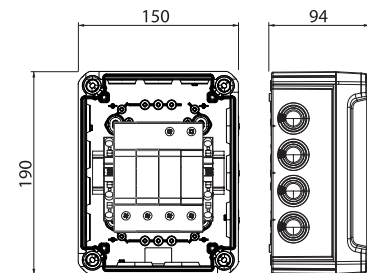
Surge arrester, type 2, according DIN EN 61643-11

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Complete unit, pre-mounted and ready for connection in polycarbonate housing (IP66)
- Arresting capacity to 40 kA (8/20) per pole through high-performance varistors

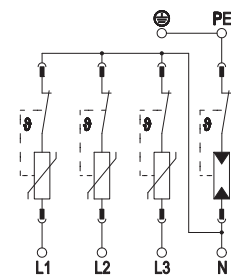
Application: Equipotential bonding in main and sub-distributors.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V20-3+NPE-280

SPD to EN 61643-11	Type 2
SPD to IEC 61643-11	Class II
SPD to UL 1449	Type 4
Nominal voltage AC (50 / 60 Hz)	U_n 230 V
Maximum continuous voltage AC	U_c 280 V
Nominal discharge current (8/20 μ s)	$I_n / L-N$ 20 kA
Maximum discharge current (8/20 μ s)	I_{max} 40 kA
Arrester surge current (8/20 μ s) [total]	I_{total} 60 kA
Protection level [L-N]	U_p 1.3 kV
Protection level [L-N] @ 1 kA	U_{res} 0,7 kV
Protection level [L-N] @ 5 kA	U_{res} 0,9 kV
Max. mains-side overcurrent protection	160 A gL/gG
Short-circuit resistance for max. mains-side overcurrent protection	50 kA eff
Operating temperature range	T_u -40 - +80 °C
Protection rating	IP66
Approvals	ÖVE, UL
Cable cross-section, flexible (fine-wire)	1.5 - 35 mm ²
Rigid cable cross-section (single wire/multiwire)	1.5 - 35 mm ²
Cable cross-section, flexible (fine-wire)	16 - 2 AWG
Rigid cable cross-section (single wire/multiwire)	16 - 2 AWG



Surge arrester V20 upper parts, type 2

Upper part V20 75 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-75	75	1	IP20	1	3,660

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V20 150 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-150	150	1	IP20	1	4,160

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V20 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-280	280	1	IP20	1	5,000

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)



Upper part V20 320 V



Type	Highest continuous voltage	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	AC V					
V20-0-320	320	1	IP20	1	5,100	5095366

/pc.



Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)



Surge arrester V20 upper parts, type 2

Upper part V20 385 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-385	385	1	IP20	1	

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V20 440 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-440	440	1	IP20	1	

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)

Upper part V20 550 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
	V20-0-550	550	1	IP20	1	

/pc.

Upper parts, surge arrester, type 2

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular, plug-in upper part with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)



Upper part C20 280 V



Type	Highest continuous voltage AC V	Pole version	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
C20-0-255	255	N/PE	IP20	1	3,680	5095600



/pc.

Surge arrester, type 2

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Discharge capacity to 40 kA (8/20) per pole through high-performance varistors
- Modular connectable arrester with dynamic cut-off unit and visual status display
- Locking mechanism with vibration protection and voltage keying
- Halogen-free plastic (UL 94 V-0)
- The remote signalling variants (FS) have a potential-free changeover contact for remote signalling

Application: Equipotential bonding in main and sub-distributions.



Connection terminal for through-wiring



Type	Colour	Version	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
AS 3x16	Light grey	3x16mm ²	5	2,474	5012010

/100 pc.

Connection terminal type: AS 3 x 16

Connection cross-section: 3 x 1.5 - 16 sq mm rigid/ multiple strands

3 x 1.5 - 10 sq mm fine-wire/with wire end sleeve

Stripping length: 16 mm

Rec. tightening torque: 1.2 Nm

Nominal current: 50 A

Width: 17.5 mm (1 TE)

For EMV-optimised V through-wiring to IEC 60364-5-53 (VDE 0100-534).



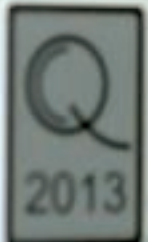




Surge protection
Energy technology
Arrestor 2+3

STRUBEL & JOHNS
Drehstromzähler
10000 Imp/kWh

Drehstromzähler
4P/3W/3VL/3LL/3P
10000 Imp/kWh
2013



Surge protection Energy technology, type 2+3 arrestor

	Surge arrester V10 Compact, 150, 255, 385 V	250
	Surge arrester V10, 280 V	256
	Surge arrester V10, 320 V	259
	Accessories, upper parts and bases V10	260
	Surge arrester LED	263

Type 2+3, surge arrester V10



1-pole + NPE

Volts	Item no.	Page
280	5093 41 8	258

3-pole + NPE

Volts	Item no.	Page
280	5094 92 0	256
320	5094 92 4	259

Type 2+3, surge arrester V10 with remote signalling



3-pole + NPE + FS

Volts	Item no.	Page
280	5094 93 1	257

Type 2+3, surge arrester V10 covers



Upper part

Volts	Item no.	Page
150	5093 40 0	260
280	5093 40 2	260
320	5093 40 4	260
385	5093 40 6	261



Type 2+3, surge arrester V10 Compact



3-pole + NPE

Volts	Item no.	Page
150	5093 37 8	250
255	5093 38 0	251
385	5093 38 4	252

Type 2+3, surge arrester V10 Compact with remote/acoustic signalling



3-pole + NPE + FS

Volts	Item no.	Page
255	5093 38 2	254



3-pole + NPE + AS

Volts	Item no.	Page
255	5093 39 1	253

Type 2+3, surge arrester ÜSM-LED



IP20

Volts	Item no.	Page
230	5092 48 0	263
440	5092 48 2	263



IP65

Volts	Item no.	Page
230	5092 47 8	264

Surge arrester Compact 150 V



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10 COMPACT 150	150	3 + NPE	1	15,800	5093378

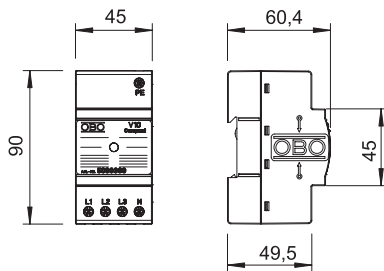
/pc.

Surge protection device, compact module type 2+3

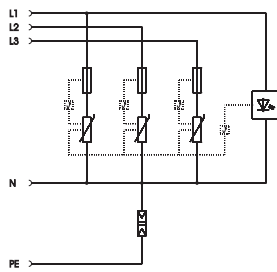
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- Optionally with acoustic signalling (-AS) or remote signalling (-FS)

Application: Industry, residential buildings as well as for device protection in alternating current systems.

Dimensions



Connection options



V10 COMPACT 150

Nominal voltage	U_N	130 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	< 0,7 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2.5
Protection rating		IP20
Connection cross-section rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²

Surge arrester Compact 255 V



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10 COMPACT 255	255	3 + NPE	1	15,800	5093380

/pc.

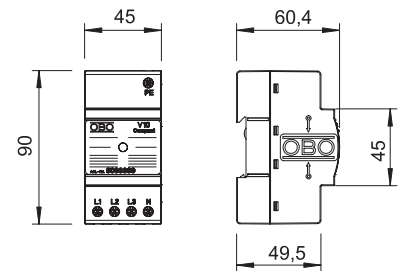
Surge protection device, compact module type 2+3

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- Optionally with acoustic signalling (-AS) or remote signalling (-FS)

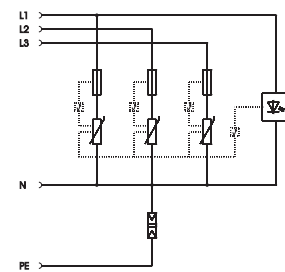
Application: Industry, residential buildings as well as for device protection in alternating current systems.



Dimensions



Connection options



V10 COMPACT 255

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,1 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2.5
Protection rating		IP20
Connection cross-section rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²



Surge arrester Compact 385 V



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10 COMPACT 385	385	3 + NPE	1	16,800	5093384

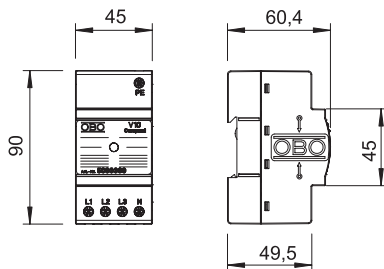
/pc.

Surge protection device, compact module type 2+3

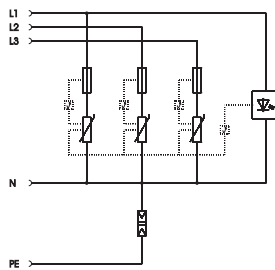
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- Optionally with acoustic signalling (-AS) or remote signalling (-FS)

Application: Industry, residential buildings as well as for device protection in alternating current systems.

Dimensions



Connection options



V10 COMPACT 385

Nominal voltage	U_N	385 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	< 1,5 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2.5
Protection rating		IP20
Connection cross-section rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²

Surge arrester Compact with acoustic signalling



Type	Highest continuous voltage V	Version	Designation	Pack. pcs	Weight kg/100 pcs.	Item No.
V10 COMPACT-AS	255	3 + NPE	with acoustic signalling	1	15,800	5093391

/pc.

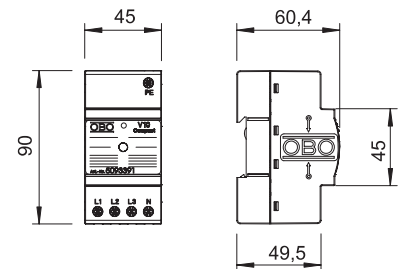
Surge protection device, compact module type 2+3

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off unit and visual function display
- With visual and acoustic signalling
- ...-AS version with additional acoustic defect signalling (switchable)

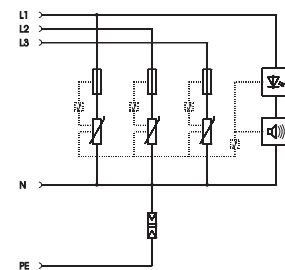
Application: Industry, residential buildings as well as for device protection in rotational current systems.



Dimensions



Connection options



V10 COMPACT-AS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,1 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2.5
Protection rating		IP20
Connection cross-section rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²



Surge arrester Compact with remote signalling



	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
Type	V	3 + NPE	1	17,300	5093382

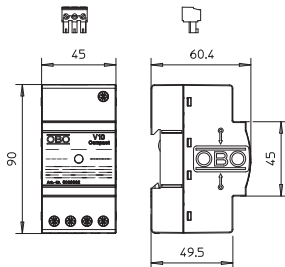
/pc.

Surge protection device, compact module type 2+3

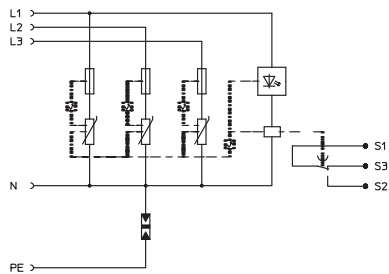
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 60 kA (8/20) in total
- Integrated 3+1 solution for TN and TT network systems on 45 mm module width
- High-performance varistor technology
- Including thermic and dynamic cut-off mechanism and visual function display
- ...-FS (remote signalling) version with potential-free changeover contact for remote signalling

Application: Industry, residential buildings as well as for device protection in alternating current systems.

Dimensions



Connection options



V10 COMPACT-FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	60 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	< 1,1 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		63 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2.5
Protection rating		IP20
Connection cross-section rigid		2.5 - 10 mm ²
Connection cross-section, multi-wire		2.5 - 10 mm ²
Connection cross-section, flexible		2.5 - 10 mm ²

Connecting bridge for V10 Compact 200 mm



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VB-V10 COMPACT-2	200 mm	1	5,300	5089650

/pc.

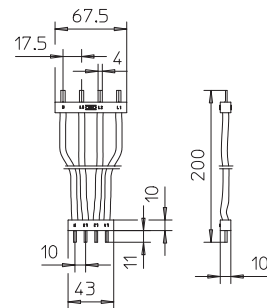
Connecting bridge for V10 Compact:

The VB-V10 Compact connecting bridge allows quick and easy bridging to other series-mounted devices such as residual-current circuit-breaker.

- Available in two different lengths.



Dimensions



Connection options

Connecting bridge for V10 Compact 400 mm



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VB-V10 COMPACT-4	400 mm	1	8,900	5089652

/pc.

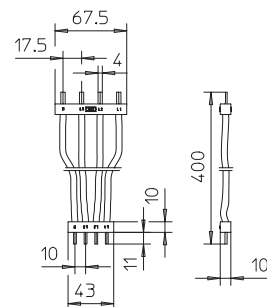
Connecting bridge for V10 Compact:

The VB-V10 Compact connecting bridge allows quick and easy bridging to other series-mounted devices such as residual-current circuit-breaker.

- Available in two different lengths.



Dimensions



Connection options

Surge arrester, 3-pole + NPE



	280	3 + NPE	1	37,800	5094920
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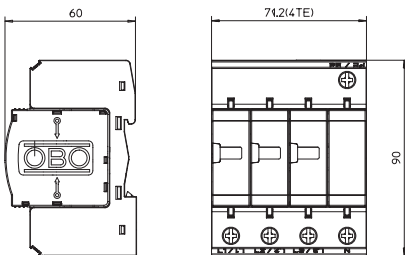
Highest continuous voltage

Pack. Weight pcs kg/100 pcs. Item No.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) to overvoltage protection to DIN VDE 0100 part 443.

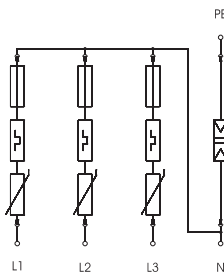
- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN and TT network systems
- Plug-in arrester with dynamic separating device
- With visual function display
- Version FS with remote signalling, potential-free changeover contact, for function monitoring
- High current conductivity and long service life
- Marked connections

Dimensions



Application example: residential buildings, single-family homes

Connection options



V10-C 3+NPE

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	40 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,1 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Surge arrester, 3-pole + NPE with remote signalling



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 3+NPE+FS	280	3 + NPE	1	37,900	5094931

/pc.

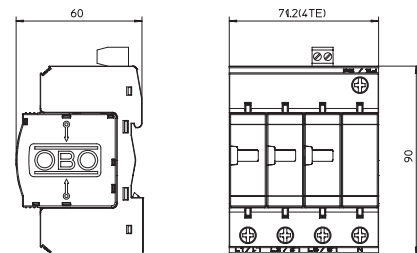
V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) to overvoltage protection to DIN VDE 0100 part 443.

- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN and TT network systems
- Plug-in arrester with dynamic separating device
- With visual function display
- Version FS with remote signalling, potential-free changeover contact, for function monitoring
- High current conductivity and long service life
- Marked connections

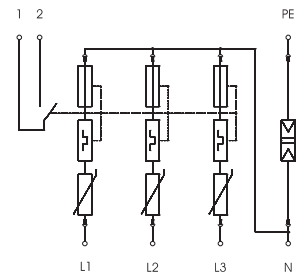
Application example: residential buildings, single-family homes



Dimensions



Connection options



V10-C 3+NPE+FS

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,1 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

Surge arrester, 1-pole + NPE



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 1+NPE-280	280	1 + NPE	1	22,200	5093418

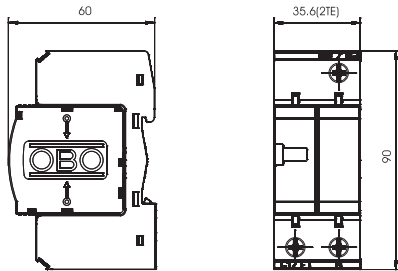
/pc.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) to overvoltage protection to DIN VDE 0100 part 443.

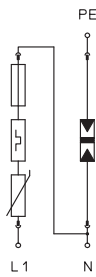
- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN and TT network systems
- Plug-in arrester with dynamic separating device
- With visual function display
- Version FS with remote signalling, potential-free changeover contact, for function monitoring
- High current conductivity and long service life
- Marked connections

Application example: residential buildings, single-family homes

Dimensions



Connection options



V10-C 1+NPE-280

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1-3
Nominal discharge current (8/20)	I_n	10 kA
Arrester surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,1 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		2
Protection rating		IP20
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 35 mm ²

Surge arrester, 3-pole + NPE



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 3+NPE-320	320	3 + NPE	1	39,000	5094924

/pc.

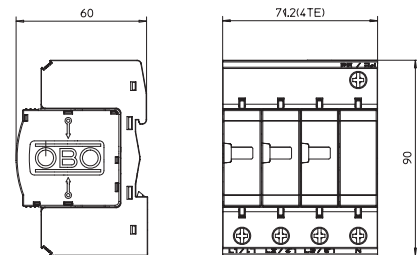
V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) to overvoltage protection to DIN VDE 0100 part 443.

- With new MultiBase base part and Multi-connection clamps
- Complete unit consisting of upper part and base, pre-mounted and ready for connection
- Suitable for any TN and TT network systems
- Plug-in arrester with dynamic separating device
- With visual function display
- Version FS with remote signalling, potential-free changeover contact, for function monitoring
- High current conductivity and long service life
- Marked connections

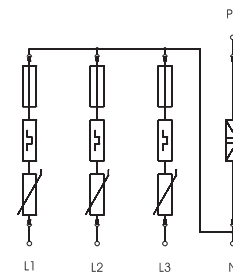
Application example: residential buildings, single-family homes



Dimensions



Connection options



V10-C 3+NPE-320

Nominal voltage	U_N	320 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	40 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_p	< 1,2 kV
Response time	t_A	<25 ns
Maximum back-up fuse		125 A
Temperature range	ϑ	-40 - +80 °C
Division unit TE (17.5 mm)		4
Protection rating		IP20
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



Upper part, surge arrester 150 V



Highest continuous voltage

Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 0-150	150	1-pole	1	2,900	5093400

/pc.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) for overvoltage protection to DIN VDE 0100 part 443.

- Plug-in upper part; upper part can be separated from lower part without tools
- Including thermal and dynamic separating device
- High current conductivity and long service life
- 3+NPE is suitable for any TN and TT network system

Application example: Industrial and residential buildings in every normal commercially available distributor housing.

Other variants with FS (with remote signalling), AS (with audible signalling), FS-SÜ and housing are described on the following pages.

Upper part, surge arrester 280 V



Highest continuous voltage

Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 0-280	280	1-pole	1	3,360	5093402

/pc.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) for overvoltage protection to DIN VDE 0100 part 443.

- Plug-in upper part; upper part can be separated from lower part without tools
- Including thermal and dynamic separating device
- High current conductivity and long service life
- 3+NPE is suitable for any TN and TT network system

Application example: Industrial and residential buildings in every normal commercially available distributor housing.

Other variants with FS (with remote signalling), AS (with audible signalling), FS-SÜ and housing are described on the following pages.

Upper part, surge arrester 320 V



Highest continuous voltage

Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V10-C 0-320	320	1-pole	1	3,510	5093404

/pc.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) for overvoltage protection to DIN VDE 0100 part 443.

- Plug-in upper part; upper part can be separated from lower part without tools
- Including thermal and dynamic separating device
- High current conductivity and long service life
- 3+NPE is suitable for any TN and TT network system

Application example: Industrial and residential buildings in every normal commercially available distributor housing.

Other variants with FS (with remote signalling), AS (with audible signalling), FS-SÜ and housing are described on the following pages.



Upper part, surge arrester 385 V



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
V10-C 0-385	385	1-pole	30	3,630	5093406



/pc.

V 10-C/...: lightning and surge protection device type 2+3 (Class C+D) to VDE 0675 part 6-11 (DIN EN 61643-11) for overvoltage protection to DIN VDE 0100 part 443.

- Plug-in upper part; upper part can be separated from lower part without tools
- Including thermal and dynamic separating device
- High current conductivity and long service life
- 3+NPE is suitable for any TN and TT network system

Application example: Industrial and residential buildings in every normal commercially available distributor housing.

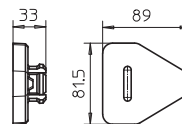
Other variants with FS (with remote signalling), AS (with audible signalling), FS-SÜ and housing are described on the following pages.

Shock Guard locking

Type	Colour Version		Pack. pcs	Weight kg/100 pcs.	Item No.
MB-SG	Blue	Locking system for upper parts	100	0,060	5096695

PA Polyamide

/pc.



Shock Guard: Locking for connector technology on MultiBase bases

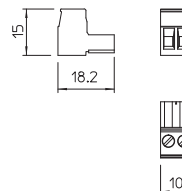
- Locking system for the plug-in modules/upper parts
- Vibration and shock-tested
- Use in housing hole of the connection terminals
- Upper parts can be removed without tools

Remote signalling replacement connector for MultiBase



Type	Version		Pack. pcs	Weight kg/100 pcs.	Item No.
MB-FS	2-pole		25	0,310	5096693

/pc.

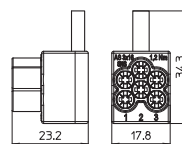


Replacement telephony connector, 2-pole version, for MultiBase base

Connection terminal for through-wiring

Type	Colour Version		Pack. pcs	Weight kg/100 pcs.	Item No.
AS 3x16	Light grey	3x16mm ²	5	2,474	5012010

/100 pc.



Connection terminal type: AS 3 x 16

Connection cross-section: 3 x 1.5 - 16 sq mm rigid/ multiple strands
 3 x 1.5 - 10 sq mm fine-wire/with wire end sleeve
 Stripping length: 16 mm
 Rec. tightening torque: 1.2 Nm
 Nominal current: 50 A
 Width: 17.5 mm (1 TE)

For EMV-optimised V through-wiring to IEC 60364-5-53 (VDE 0100-534).



Surge protection energy technology, arrester, type 2+3: The plus for LED street lighting

- + Surge arrestors with high arresting capacity
- + High arresting capacity of 10 kA (max. 20 kA)
- + Visual status display
- + Labelled connections
- + Optional switch-off of the LED luminaires after surge protection fails



Surge protection
for LED systems

Function and areas of use

The surge arrester ÜSM-LED 230 meets the type 2 requirement class according to IEC 61643-11. This device protects lighting systems against any kind of surge

voltages. The voltage-limiting, high-performance zinc oxide varistor provides several benefits. An extremely short response time, a low protection level and high current leakage capability with long ser-

vice life. It can be used in the mast connection box or in LED luminaires.

Surge protection for LED systems



Type	Highest continuous voltage V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSM-LED 230	255	1 + NPE	1	3,500	5092480
ÜSM-LED 440	440	1 + NPE	1	4,500	5092482

/pc.

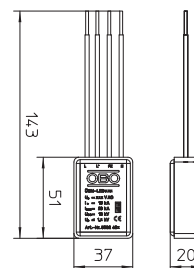
Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of LED lighting.

- With visual function display
- Small size for the installation in the pole or in the LED lamp head
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Surge limitation under 1,300 V or 1,000 V @ 5 kA
- Available with or without cut-off function of the lamp in case of malfunction

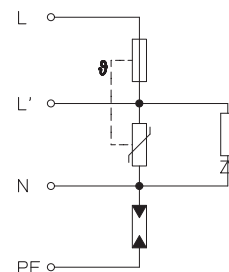
Application: Universally deployable in all lighting systems



Dimensions



Connection options



ÜSM-LED 230

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		16 A
Temperature range	ϑ	-15 - +60 °C
Division unit TE (17.5 mm)		Other
Protection rating		IP20
Connecting cable length		0.092 m

ÜSM-LED 440

Nominal voltage	U_N	440 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		1→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total\ 8/20}$	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	1,8 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		20 A
Temperature range	ϑ	-15 - +60 °C
Division unit TE (17.5 mm)		—
Protection rating		IP20
Connecting cable length		0.092 m



Surge protection for LED systems



LPZ 1→3 Type 2+3



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
ÜSM-LED 230-65	255	1 + NPE	25	7,500	5092478

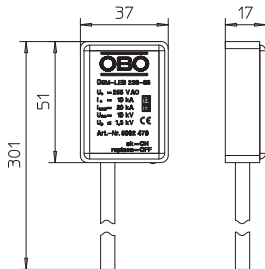
/pc.

Surge protection module type 2+3 to DIN EN 61643-11 for 230/400 V power grids. Appropriate for the protection of LED lighting and the LED driver.

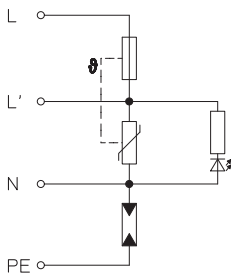
- With visual function display
- Small size for the installation in the mast connection box
- IP65 and with 25 cm connection cable
- 1+NPE protective circuit with a maximum discharge capacity of 20 kA
- Surge limitation under 1,300 V or 1,000 V @ 5 kA
- Available with or without cut-off function of the lamp in case of malfunction

Application: Universally deployable in all lighting systems

Dimensions



Connection options



ÜSM-LED 230-65

Nominal voltage	U_N	230 V
SPD to EN 61643-11		Type 2+3
SPD to IEC 61643-11		Class II+III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	10 kA
Arrestor surge current (8/20) [total]	$I_{Total 8/20}$	20 kA
Maximum discharge current (8/20 μ s)	I_{max}	20 kA
Voltage protection level	U_d	1,3 kV
Response time	t_A	< 25 ns
Maximum back-up fuse		16 A
Temperature range	ϑ	-15 - +60 °C
Division unit TE (17.5 mm)		Other
Protection rating		IP65
Connecting cable length		0.25 m





Surge protection
Energy technology
Arrestor 3

Blitzbarriere

VF
24
AC/DC



OK



Replace

U_N : 24 V
 I_L : 20 A
 $I_n (8/20)$: 700 A
 $I_{max} (8/20)$: 2 kA
 U_p : ≤ 130 V
IP20 CE

Art.-Nr. 5097 60 7

heben

13 03 15

OFF

13:41 18

MENU



Surge protection Energy technology, type 3 arrester

	Fine power protection, connectable	270
	Fine power protection, fixed installation	278
	Fine power protection, series installation	284

Type 3, fine power protection FC, connectable



SchuKo

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230	5092 80 0	270



SchuKo + TV

Volts	Item no.	Page
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SchuKo + SAT

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SchuKo + TAE

Volts	Item no.	Page
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SchuKo + ISDN

Volts	Item no.	Page
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SchuKo + RJ

Volts	Item no.	Page
230	5092 82 8	275



Socket bar

Volts	Item no.	Page
230	5092 70 1	276



Cold device connector

Volts	Item no.	Page
230	5092 60 4	277

Type 3, fine power protection ÜSM, fixed installation



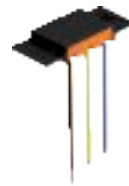
Direct connection

Volts	Item no.	Page
150	5092 45 1	278
230	5092 46 6	278



V connection

Volts	Item no.	Page
230	5092 46 0	279



For GB2 and GB3 mounting boxes

Volts	Item no.	Page
230	5092 47 2	280



SchuKo

Volts	Item no.	Page
230	5092 44 1	281

Type 3, fine power protection ÜSS, Modul 45



Visual signalling

Volts	Item no.	Page
230	6117 47 3	282



Acoustic signalling

Volts	Item no.	Page
230	6117 46 5	283

Type 3, fine power protection VF, series installation



2-pole

Volts	Item no.	Page
12	5097 45 3	284
24	5097 60 7	285
48	5097 61 5	286
60	5097 62 3	287
110	5097 63 1	288
230	5097 65 0	289

Type 3, fine power protection VF, series installation with remote signalling



2-pole + FS

Volts	Item no.	Page
24	5097 82 0	290
230	5097 85 8	291

Type 3, fine power protection VF, series installation with leakage current-free signalling



2-pole + FS leakage current-free

Volts	Item no.	Page
230	5097 93 9	292



Fine power protection, connectable

FineController for protective contact socket



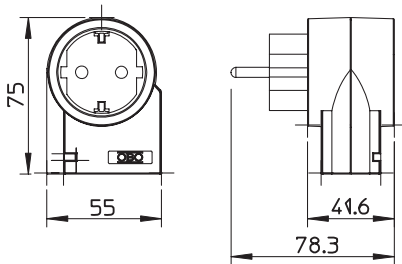
Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-D	EN	Pure white	1	12,000	5092800

/pc.

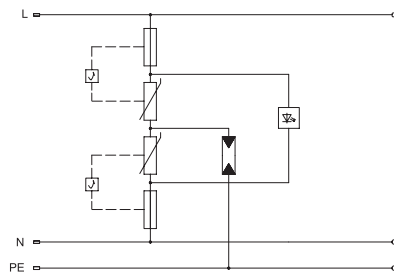
Type 3 surge protection device to EN 61643-11, intended for use in protective contact sockets.

- Adapter
- Disconnection device and function display
- Child lock through increased finger touch protection

Dimensions



Connection options



FC-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns

FineController for video, TV and hi-fi systems



Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-TV-D	EN	Pure white	1	18,000	5092808

/pc.

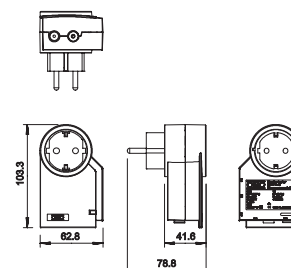
Type 3 combined surge protection to EN 61643-11, designed for use on Schuko sockets and video, TV and hi-fi systems with IEC adapter.

- Adapter
- Disconnection device and function display
- Child lock through increased finger contact protection
- Incl. 0.5 m connection cable in white (double screen)
- Maximum continuous voltage, TV connection 72 V DC / 1.5 A (25 °C)
- Limit frequency: 2.5 GHz (75 Ohm system)

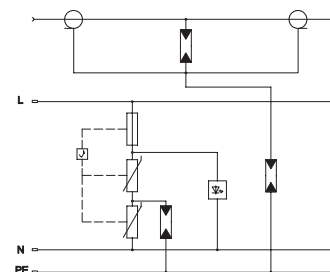
Note: The technical data in the table below refer to the power supply.



Dimensions



Connection options



FC-TV-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns



FineController for SAT systems and receivers



Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-SAT-D	EN	Pure white	1	18,000	5092816

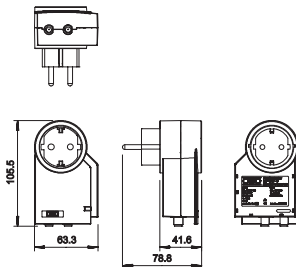
/pc.

Type 3 combined surge protection to EN 61643-11, designed for use on satellite systems and receivers.

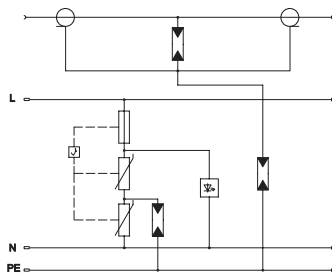
- Adapter
- Disconnection device and function display
- Child lock through increased finger contact protection
- Incl. 0.5 m connection cable in white (double screen)
- Maximum continuous voltage, TV connection 72 V DC / 1.5 A (25 °C)
- Limit frequency: 2.5 GHz (75 Ohm system)

Note: The technical data in the table below refer to the power supply.

Dimensions



Connection options



FC-SAT-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns

FineController for telephone systems and terminals



Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-TAE-D	EN	Pure white	1	18,000	5092824

/pc.

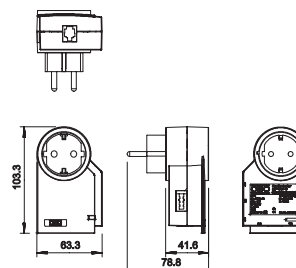
Type 3 combined surge protection to EN 61643-11, designed for use in telephone systems with TAE connection (telephones upstream of the NTBA/DSL splitter).

- Adapter
- Disconnection device and function display
- Child lock through increased finger contact protection
- Incl. 0.5 m connection cable TAE / RJ11
- Maximum continuous voltage, TAE connection 200 V DC / 1.5 A (25 °C)
- Limit frequency: Typ. 4 MHz / DSL-compatible

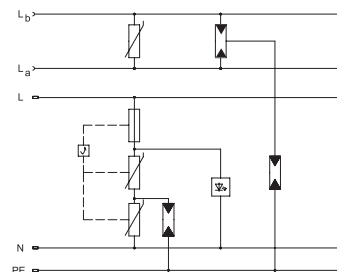
Note: The technical data in the table below refer to the power supply.



Dimensions



Connection options



FC-TAE-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns



FineController for ISDN telephone systems and terminals



Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-ISDN-D	EN	Pure white	1	18,000	5092812

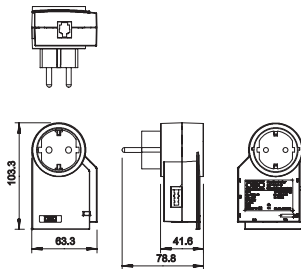
/pc.

Type 3 combined surge protection to EN 61643-11 designed for use in ISDN / DSS 1 telephone systems and terminals.

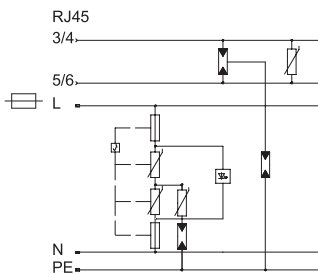
- Adapter
- Disconnection device and function display
- Child lock through increased finger contact protection
- Incl. 0.5 m connection cable RJ12
- Maximum continuous voltage, ISDN connection 6 V DC / 1.5 A (25 °C)
- Limit frequency: Type 300 kHz

Note: The technical data in the table below refer to the power supply.

Dimensions



Connection options



FC-ISDN-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns

FineController for telephone systems with RJ11



Type	Country version	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
FC-RJ-D	EN	Pure white	1	18,000	5092828

/pc.

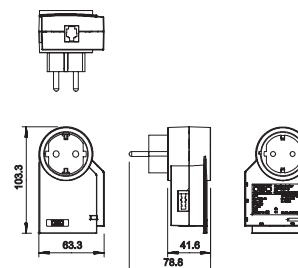
Type 3 combined surge protection to EN 61643-11 designed for use in telephone systems and terminals with RJ12 connection.

- Adapter
- Disconnection device and function display
- Child lock through increased finger contact protection
- Incl. 0.5 m connection cable RJ12
- Maximum continuous voltage, RJ connection 200 V DC / 1.5 A (25 °C)
- Limit frequency: Typ. 4 MHz / DSL-compatible

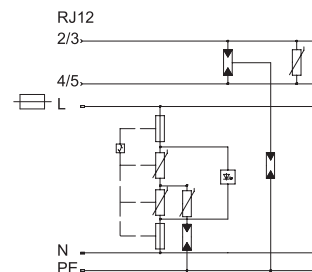
Note: The technical data in the table below refer to the power supply.



Dimensions



Connection options



FC-RJ-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	275 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,2 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns



Fine power protection / socket bar



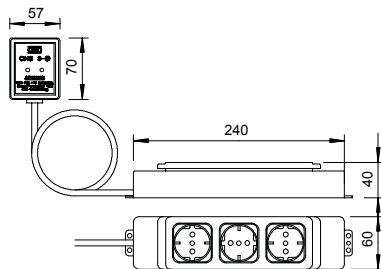
Type	Country version	Colour	Connection cable length m	Pack. pcs	Weight kg/100 pcs.	Item No.
CNS 3-D-D	EN	Black	2	1	65,000	5092701

/pc.

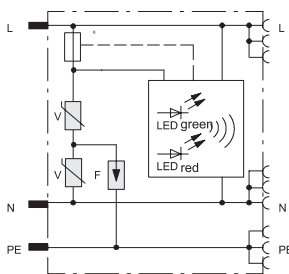
CNS 3-D: Type 3 surge protection device to DIN EN 61643-11, intended for use in protective contact sockets.

- With visual and audible signalling, function display
- 3-way socket
- Length of connection cable: 2 m
- Y circuit for high electrical safety

Dimensions



Connection options



CNS 3-D-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	2.5 kA
Protection level (L-N)		< 1,0 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	<25 ns

Fine power protection / adapter with cold device connector



Type	Country version	Colour	Connection cable length m	Pack. pcs	Weight kg/100 pcs.	Item No.
CNS-D-D	EN	Light grey	1.5	1	30,000	5092604

/pc.

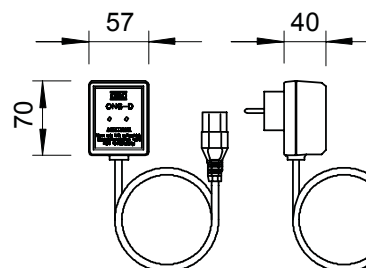
CNS-D: Type 3 surge protection device to EN 61643-11, designed for use in protective contact sockets

- With visual and audible signalling, function display
- With cold unit connector
- Length of connection cable: 1.5 m
- Y circuit for high electrical safety

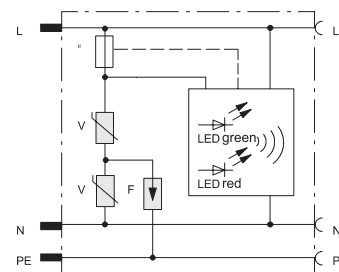
Application: For example, the protection of PCs, printers, copiers, fax machines, etc.



Dimensions



Connection options

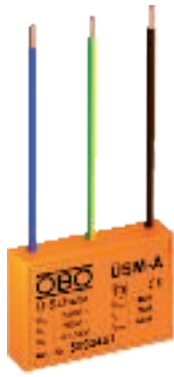


CNS-D-D

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	2.5 kA
Protection level (L-N)		< 1,0 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	< 25 ns



Fine power protection for all installation systems



Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSM-A	Audible	Acoustic function display	1	1,500	5092451
ÜSM-A-150	Audible	Acoustic function display	1	1,500	5092466

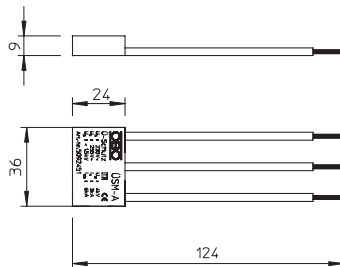
/pc.

Surge protection module type 3 to DIN EN 61643-11 for 230 V power grids.

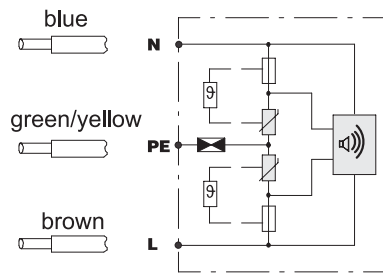
- With acoustic defect signal
- With low construction height
- Y circuit

Application: Universally applicable for all installation systems.

Dimensions



Connection options



ÜSM-A

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,3 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	< 25 ns
Temperature range	ϑ	-15 - +60 °C
Maximum discharge current (8/20 μ s)	I_{max}	6 kA
Rated current	I_L	16 A

ÜSM-A-150

Nominal voltage	U_N	150 V
Max. continuous operating voltage	U_C	170 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,3 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	< 25 ns
Temperature range	ϑ	-15 - +60 °C
Maximum discharge current (8/20 μ s)	I_{max}	6 kA
Rated current	I_L	16 A

Fine power protection for through wiring



Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSM-A-2	Audible	V connection	1	2,200	5092460

/pc.

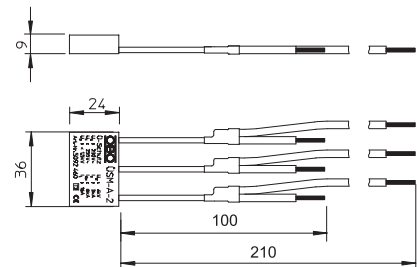
Surge protection device type 3 to DIN EN 61643-11 for 230 V networks.

- With acoustic defect signal
- With 2 strands for continuous wiring
- With low construction height
- Y circuit

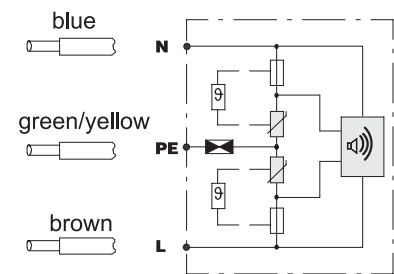
Application: Universally applicable for all installation systems.



Dimensions



Connection options



ÜSM-A-2

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I_n	3 kA
Protection level (L-N)		< 1,3 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	< 25 ns
Temperature range	ϑ	-15 - +60 °C
Maximum discharge current (8/20 μ s)	I_{max}	6 kA
Rated current	I_L	16 A

Fine power protection, fixed installation

Fine power protection with holder for GB2 and GB3 mounting boxes



Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSM-A-4	Audible	Incl. holder with partition function	1	2,000	5092472

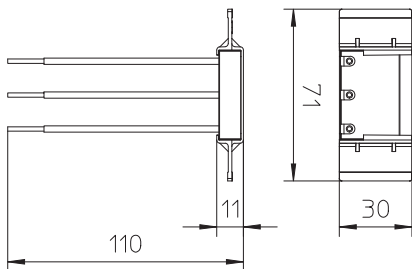
/pc.

Surge protection module type 3 to DIN EN 61643-11 for 230 V power grids.

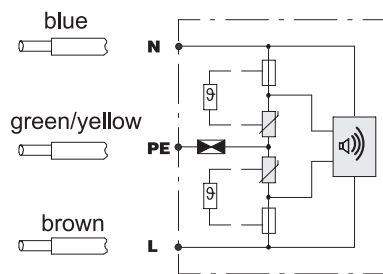
- With acoustic defect signal
- With low construction height and Y circuit
- Holder (separating retainer function) for installation in GB2 and GB3 mounting boxes

Application: Universally applicable for all installation systems.

Dimensions



Connection options



ÜSM-A-4

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I_n	3 kA
Maximum discharge current (8/20 μ s)	I_{max}	6 kA
Protection level (L-N)		< 1,3 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	< 25 ns
Temperature range	ϑ	-15 - +60 °C

Fine power protection, protective contact sockets



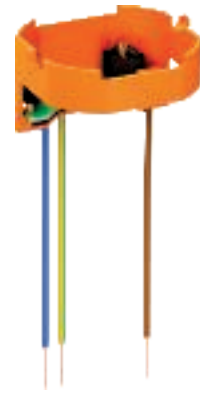
Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSM-ST-230-1P+PE	Audible	Acoustic function display	1	1,770	5092441

/pc.

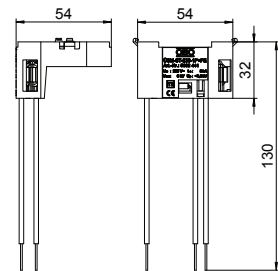
Surge protection / fine power protection, type 3, to EN 61643-11 for protective contact sockets.

- Thermal cut-off unit with acoustic defect signalling
- Y protection circuit for increased safety
- Mounting through snapping onto the support ring of the socket
- Labelling of the socket with supplied sign

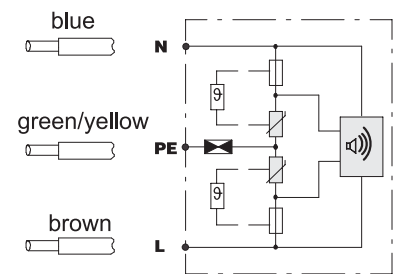
Application: For retrofitting on standard Schuko sockets.



Dimensions



Connection options



ÜSM-ST-230-1P+PE

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I_n	3 kA
Maximum discharge current (8/20 μ s)	I_{max}	5 kA
Protection level (L-N)		< 1,5 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	25 ns
Temperature range	ϑ	-5 - +40 °C

Fine power protection / dado duct installation Modul 45



Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSS 45-O-RW	Visual	Optical function display	1	2,411	6117473

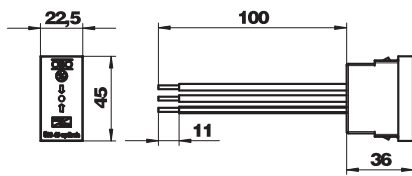
/pc.

Surge protection / network fine protection, type 3, according to EN 61643-11 for installation in Rapid 45 ducts, device installation ducts and underfloor systems.

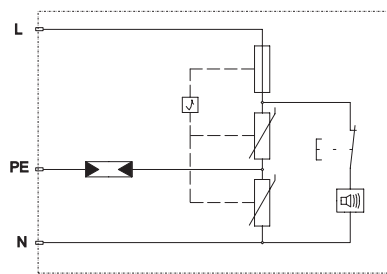
- Version-O with acoustic function display
- Quick and easy mounting
- Low construction width of 22.5 mm

Application: The surge protection device secures downstream and nearby sockets.

Dimensions



Connection options



ÜSS 45-O-RW

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	2.5 kA
Protection level (L-N)		< 1,5 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	25 ns
Temperature range	ϑ	-25 - +45 °C

Fine power protection / dado duct installation Modul 45



Type	Signalling on device	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
ÜSS 45-A-RW	Audible	Acoustic function display	1	2,800	6117465

/pc.

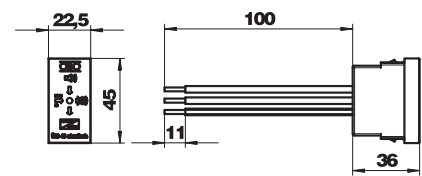
Surge protection / network fine protection, type 3, according to EN 61643-11 for installation in Rapid 45 ducts, device installation ducts and underfloor systems.

- Version-A with acoustic function display (switchable signal tone)
- Quick and easy mounting
- Low construction width of 22.5 mm

Application: The surge protection device secures downstream and nearby sockets.



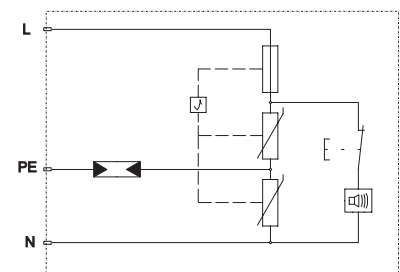
Dimensions



ÜSS 45-A-RW

Nominal voltage	U_N	230 V
Max. continuous operating voltage	U_C	255 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	2.5 kA
Protection level (L-N)		< 1,5 kV
Protection level (N-PE)		< 1,5 kV
Maximum back-up fuse		16 A
Response time	t_A	25 ns
Temperature range	ϑ	-25 - +45 °C

Connection options



Protection for 2-pole for power supply, 12 V



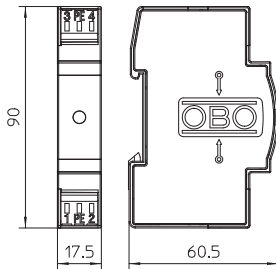
Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
	VF12-AC DC 13.5	1	9,000	5097453

/pc.

Surge protection device / fine protection type 3 to EN 61643-11

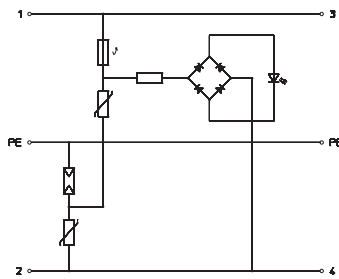
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Connection options



VF12-AC DC

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<110 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole for power supply, 24 V



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF24-AC/DC 34	1	8,000	5097607

/pc.

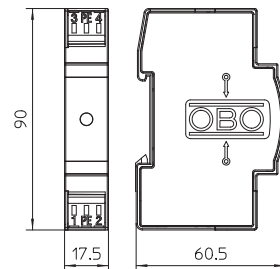


Surge protection device / fine protection type 3 to EN 61643-11

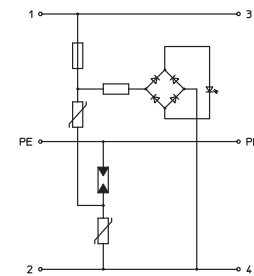
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.

Dimensions



Connection options



VF24-AC/DC

U max AC	U _c AC	34 V
U max DC	U _c DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<130 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole for power supply, 48 V



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF48-AC/DC 60	1	8,000	5097615

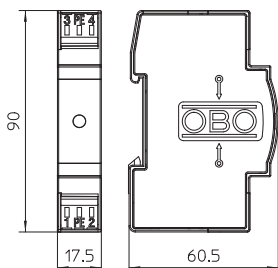
/pc.

Surge protection device / fine protection type 3 to EN 61643-11

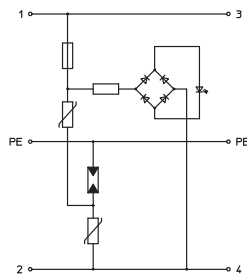
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Dimensions



Connection options



VF48-AC/DC

U max AC	U _c AC	60 V
U max DC	U _c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<220 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole for power supply, 60 V



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF60-AC/DC 80	1	8,000	5097623

/pc.

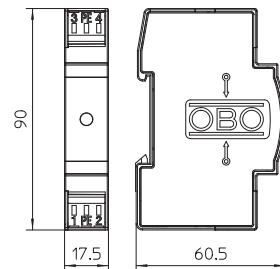
Surge protection device / fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

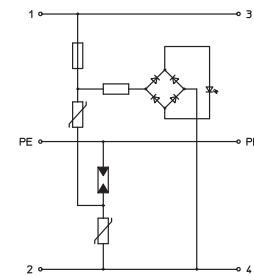
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.



Dimensions



Connection options



VF60-AC/DC

U max AC	U _c AC	80 V
U max DC	U _c DC	110 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<280 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole for power supply, 110 V



Highest continuous voltage V

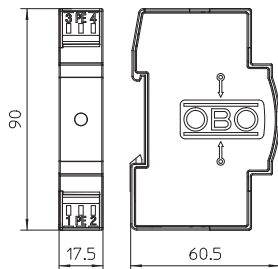
Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
VF110-AC DC	150	1	8,000	5097631

/pc.

Surge protection device / fine protection type 3 to EN 61643-11

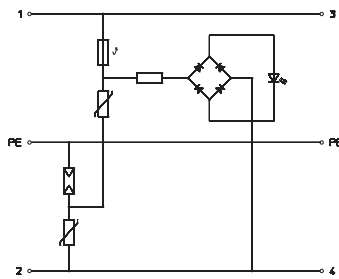
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Connection options



VF110-AC DC

U max AC	U _c AC	150 V
U max DC	U _c DC	200 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	2 kA
Rated current	I _L	20 A
Protection level wire-wire		<500 V
Protection level wire-earth		<1400 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole for power supply, 230 V



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF230-AC/DC 255	1	8,000	5097650

/pc.

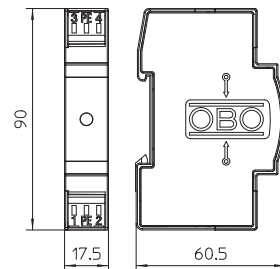
Surge protection device / fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

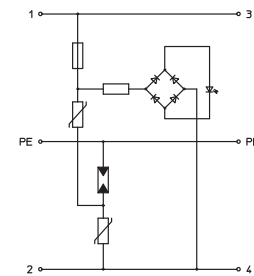
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.



Dimensions



Connection options



VF230-AC/DC

U max AC	U _c AC	255 V
U max DC	U _c DC	350 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	2.5 kA
Rated current	I _L	20 A
Protection level wire-wire		<1000 V
Protection level wire-earth		<1400 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole power supply with remote signalling, 24 V AC/DC



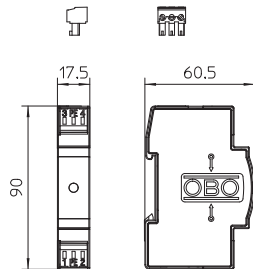
Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
	VF24-AC/DC-FS	34	1 6,620	5097820

/pc.

Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

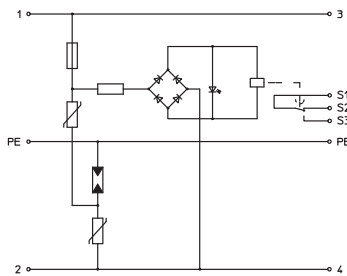
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Connection options



VF24-AC/DC-FS

U max AC	U _c AC	34 V
U max DC	U _c DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<160 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

Protection for 2-pole power supply with remote signalling, 230 V AC



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF230-AC-FS 255	1	6,910	5097858

/pc.

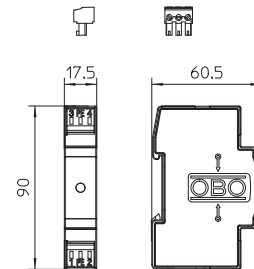


Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

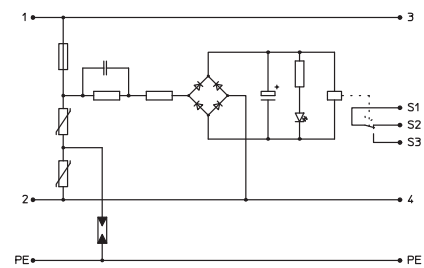
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Dimensions



Connection options



VF230-AC-FS

U max AC	U _c AC	255 V
U max DC	U _c DC	— V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	2,5 kA
Rated current	I _L	20 A
Protection level wire-wire		<1060 V
Protection level wire-earth		<1400 V
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pin for power supply with leak current-free remote signalling, 230 V AC/DC



Type	U max	U max	Pack.	Weight	Item No.
	AC	DC			
VF2-230-AC/DC-FS	255	350	1	6,000	5097939

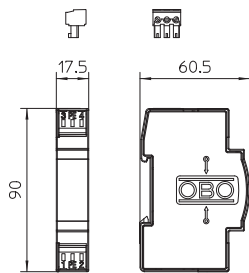
/pc.

Type 3 surge protection/fine network protection to EN 61643-11 with leak current-free remote signalling

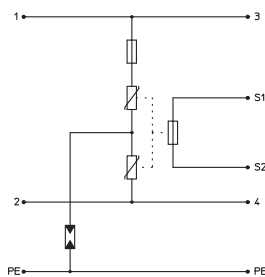
- With remote signalling: potential-free NC contact for function monitoring
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Dimensions



Connection options



VF2-230-AC/DC-FS

U max AC	U _c AC	255 V
U max DC	U _c DC	350 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	2,5 kA
Rated current	I _L	20 A
Protection level wire-wire		< 1000 V
Protection level wire-earth		< 1400 V
Response time	t _A	<25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²















**Surge protection
Photovoltaics,
Arrestor type 1+2, type 2**



Photovoltaic systems

	Lightning current and surge arrester, type 1+2, photovoltaic systems 600 V DC	298
	Lightning current and surge arrester, type 1+2, photovoltaic systems 900 V DC	300
	Surge arrester, type 2, photovoltaics 600 V DC	302
	Surge arrester, type 2, photovoltaics 1,000 V DC	304
	Photovoltaic system solution with 2/3 MPP trackers	306
	Photovoltaic system solution with 1 MPP tracker	311
	Photovoltaic system solution with fuses	317
	Photovoltaic system solution with circuit breaker	320
	Photovoltaic covers	324
	Photovoltaic bases	326

Type 1+2, combination arrestor, PV system



Y circuit

Volts	Item no.	Page
600	5093 62 3	298
900	5097 44 7	300

Type 1+2, combination arrestor with remote signalling, PV system



Y circuit + FS

Volts	Item no.	Page
600	5093 62 5	299
900	5097 44 8	301

Type 2, surge arrestor, PV system



Y circuit

Volts	Item no.	Page
600	5094 60 5	302
1,000	5094 60 8	304

Type 2, surge arrestor with remote signalling, PV system



Y circuit + FS

Volts	Item no.	Page
600	5094 57 6	303
1,000	5094 57 4	305

Type 1+2, PV system solution



WR with 1 MPP

Volts	Item no.	Page
900	5088 59 1	310
900	5088 63 2	322



WR with 2 MPPs

Volts	Item no.	Page
900	5088 56 6	312



WR with 2 MPPs

Volts	Item no.	Page
900	5088 57 6	306



WR with 3 MPPs

Volts	Item no.	Page
900	5088 57 9	307

Type 2, PV system solution



WR with 1 MPP

Volts	Item no.	Page
1,000	5088 59 3	311
1,000	5088 65 0	323



WR with 2 MPPs

Volts	Item no.	Page
1,000	5088 56 8	313



WR with 2 MPPs

Volts	Item no.	Page
1,000	5088 58 2	308



WR with 3 MPPs

Volts	Item no.	Page
1,000	5088 58 5	309

Type 2, PV system solution with fuse



Unequipped 1 MPP

Volts	Item no.	Page
900	5088 58 0	314



Unequipped 2 MPP

Volts	Item no.	Page
900	5088 58 1	315



Unequipped holder

Volts	Item no.	Page
900	5088 64 0	319
1,000	5088 65 4	318

PV system solution with circuit breaker



Type 1+2

Volts	Item no.	Page
900	5088 63 5	320



Type 2

Volts	Item no.	Page
900	5088 66 0	321

PV combination arrester V50, 600 V DC



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-B+C 3-PH600	600	3-pole for PV systems	1	41,000	5093623

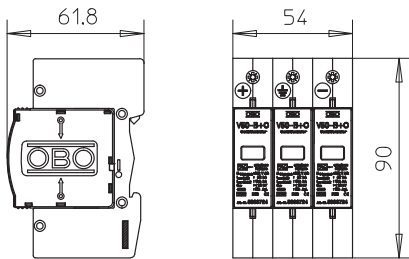
/pc.

V50 combination arrester, type 1+2, for photovoltaic systems

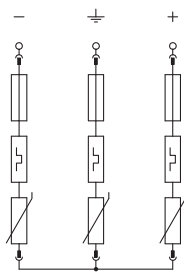
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 2.6 kV and Voc max = 600 V DC
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

Dimensions



Connection options



V50-B+C 3-PH600

U max DC	U _c DC	600 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	12.5 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _d	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV combination arrester V50, 600 V DC with remote signalling



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V50-B+C 3PHFS600	600	3-pole for PV systems with FS	1	49,600	5093625

/pc.

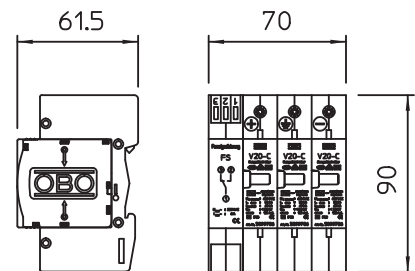


V50 combination arrester, type 1+2, for photovoltaic systems

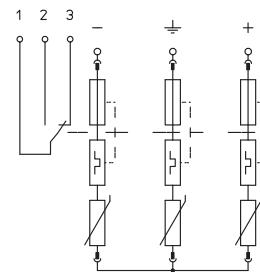
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 2.6 kV and Voc max = 600 V DC
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

Dimensions



Connection options



V50-B+C 3PHFS600

U max DC	U _c DC	600 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{impD}	12.5 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _p	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



PV combination arrester V25, 900 V DC



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V25-B+C 3-PH900	900	3-pole for PV systems	1	42,200	5097447

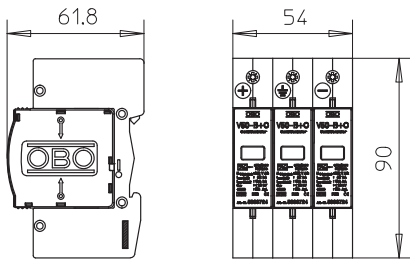
/pc.

V25 combination arrester, type 1+2, for photovoltaic systems

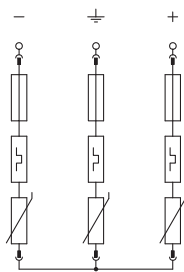
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 3.0 kV and Voc max = 900 V DC
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

Dimensions



Connection options



V25-B+C 3-PH900

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _d	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV combination arrester V25, 900 V DC with remote signalling



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V25-B+C 3PHFS900	900	3-pole for PV systems with FS	1	53,500	5097448

/pc.

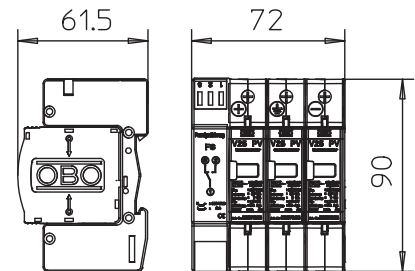


V25 combination arrester, type 1+2, for photovoltaic systems

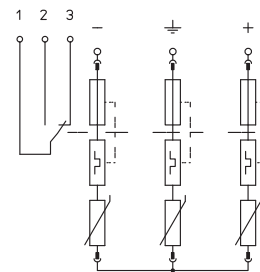
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity up to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 3.0 kV and Voc max = 900 V DC
- With visual function display for use in distributor housings

Application: PV systems with lightning protection system

Dimensions



Connection options



V25-B+C 3PHFS900

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{impD}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



PV surge protection V20, 600 V DC



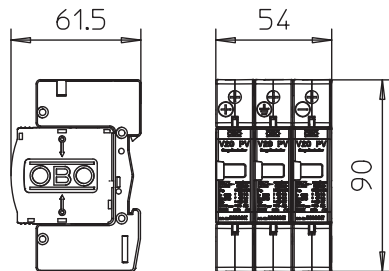
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C 3PH-600	600	3-pole for PV systems	1	33,500	5094605

/pc.

V20 surge arrester, type 2, for PV systems

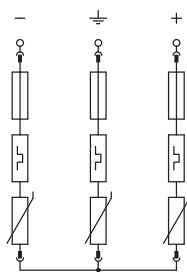
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 2.6 kV (Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings

Dimensions



Application: PV systems with or without separate lightning protection system

Connection options



V20-C 3PH-600

U max DC	U _c DC	600 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV surge protection V20, 600 V DC with remote signalling



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C 3PHFS-600	600	3-pole for PV systems with FS	1	41,500	5094576

/pc.

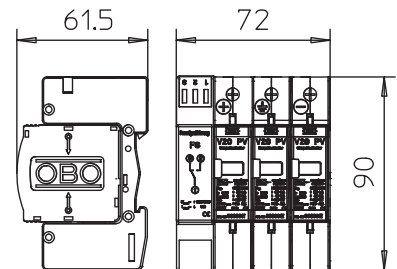
V20 surge arrester, type 2, for PV systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit for use according to VDE 0100-712 (EN 50539-12)
- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 2.6 kV (Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrester for use in distributor housings

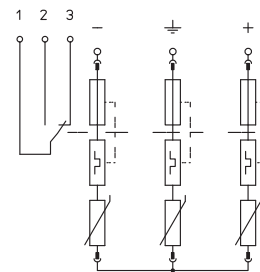
Application: PV systems with or without separate lightning protection system



Dimensions



Connection options



V20-C 3PHFS-600

U max DC	U _c DC	600 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 2,6 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



PV surge protection V20, 1,000 V DC



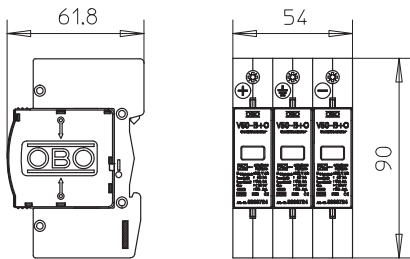
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C 3-PH-1000	1000	3-pole for PV systems	1	36,500	5094608

/pc.

V20 surge arrester, type 2, for photovoltaic systems

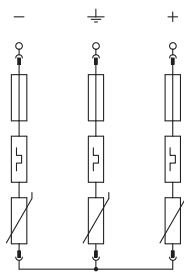
- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- V20-C 3-PH-1000 tested to EN 50539-11 (VDE / KEMA)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 4.0 kV and Voc max = 1,000 V DC
- With visual function display for use in distributor housings

Dimensions



Application: PV systems with or without separate lightning protection system

Connection options



V20-C 3-PH-1000

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		3
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²

PV surge protection V20, 1,000 V DC with remote signalling



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C 3PHFS-1000	1000	3-pole for PV systems with FS	1	44,500	5094574

/pc.

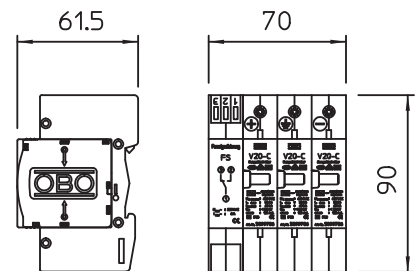
V20 surge arrester, type 2, for photovoltaic systems

- Complete unit, consisting of plug-in varistor arrester with cut-off unit
- Error-resistant Y circuit to VDE 0100-712 (EN 50539-12)
- Surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- V20-C 3-PH-1000 tested to EN 50539-11 (VDE / KEMA)
- Arresting capacity to 40 kA (8/20) per pole
- Low DC protection level: < 4.0 kV and Voc max = 1,000 V DC
- With visual function display for use in distributor housings

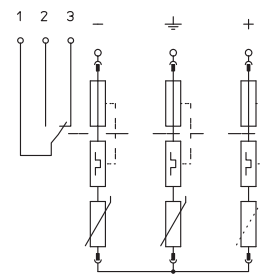
Application: PV systems with or without separate lightning protection system



Dimensions



Connection options



V20-C 3PHFS-1000

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		4
Connection cross-section rigid		2.5 - 35 mm ²
Connection cross-section, multi-wire		2.5 - 35 mm ²
Connection cross-section, flexible		2.5 - 25 mm ²



PV system solution, type 1+2, for inverter with 2 MPP trackers, 900 V DC



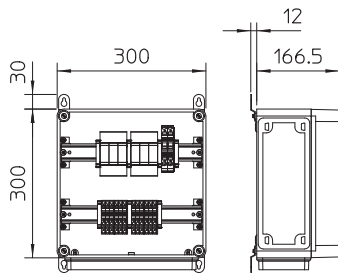
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BCPV 900K 330	900	For two MPP and with terminal connection	1	478,000	5088576

/pc.

System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with disconnecting device in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Uoc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device there are 6 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for the use outside, including cable gland kit

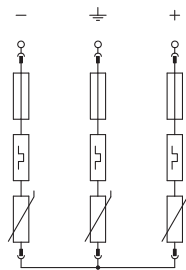
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-BCPV 900K 330

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65

PV system solution, type 1+2, for inverter with 3 MPP trackers, 900 V DC



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BCPV 900K 333	900	For three MPP and with terminal connection	1	546,000	5088579

/pc.

System solution for photovoltaic inverter with 3 separate MPP trackers

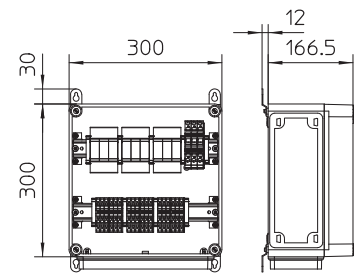
- Varistor arrestor, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device there are 6 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

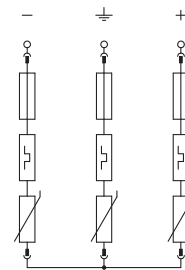
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-BCPV 900K 333

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65



PV system solution, type 2, for inverter with 2 MPP trackers, 1,000 V DC



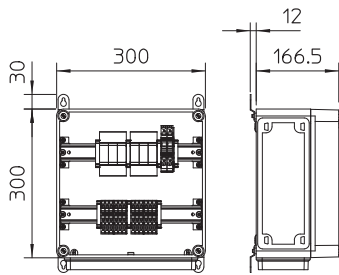
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-CPV 1000K 330	1000	For two MPP and with terminal connection	1	468,000	5088582

/pc.

System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with disconnecting device in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Uoc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device there are 6 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for the use outside, including cable gland kit

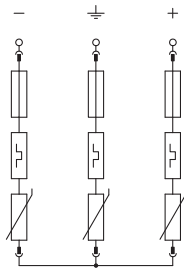
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-CPV 1000K 330

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65

PV system solution, type 2, for inverter with 3 MPP trackers, 1,000 V DC



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-CPV 1000K 333	1000	For three MPP and with terminal connection	1	528,000	5088585

/pc.

System solution for photovoltaic inverter with 3 separate MPP trackers

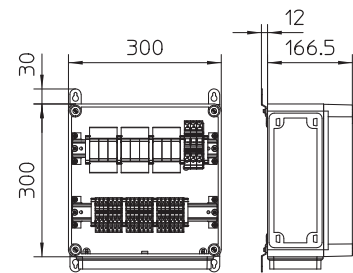
- Varistor arrestor, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device there are 6 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

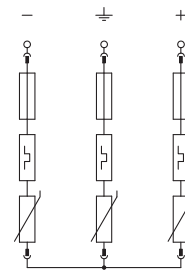
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-CPV 1000K 333

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65



PV system solution, type 1+2, for inverter with 1 MPP trackers, 900 V DC



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-V25-BC3-PH900	900	Type 1+2 in housing with terminals	1	93,000	5088591

/pc.

System solution for photovoltaic inverter with 1 separate MPP tracker

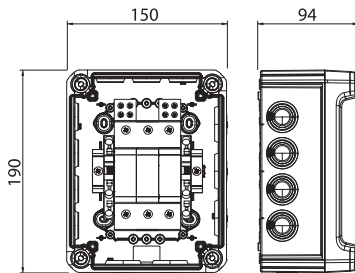
- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- For each protection devices, there are 3 terminal points up to 16 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Low DC protection level: < 3.0 kV (Uoc max = 900 V DC with V25-B+C/0-450PV)

- Pre-mounted in polycarbonate housing (IP66), UV-resistant for the use outside, including cable gland kit

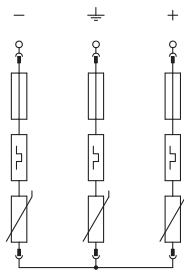
For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V25-BC3-PH900

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		1.5 - 16 mm ²
Connection cross-section, flexible		1.5 - 10 mm ²
Temperature range	θ	-40+80 °C
Protection rating		IP66

PV system solution, type 2, for inverter with 1 MPP trackers, 1,000 V DC



Type	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-V20-C3-PH1000	IP66	1	87,000	5088593

/pc.

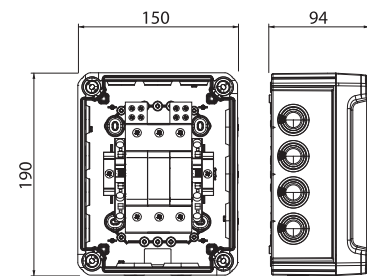


System solution for photovoltaic inverter with 1 separate MPP tracker

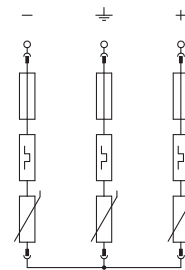
- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- For each protection devices, there are 3 terminal points up to 16 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Low DC protection level: < 4.0 kV (U_{oc} max = 1,000 V DC with V20-B/0-500PV)
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for the use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-V20-C3-PH1000

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		1.5 - 16 mm ²
Connection cross-section, flexible		1.5 - 10 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP66



PV system solution, type 1+2, for inverter with 2 MPP trackers, 900 V DC



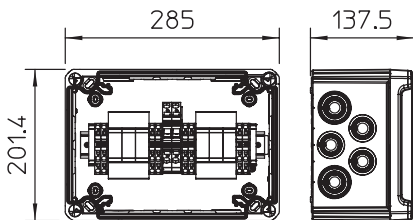
Type	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BCPV900K 22	— — IP66	1	220,000	5088566

/pc.

System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- Per protection device, there are 4 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside, including cable gland kit

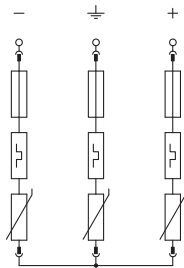
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-BCPV900K 22

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-30 - 90 °C
Protection rating		IP66

PV system solution, type 2, for inverter with 2 MPP trackers, 1,000 V DC



Type	Protection rating	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-CPV1000K 22	— — IP65	1	216,600	5088568

/pc.

System solution for photovoltaic inverter with 2 separate MPP trackers

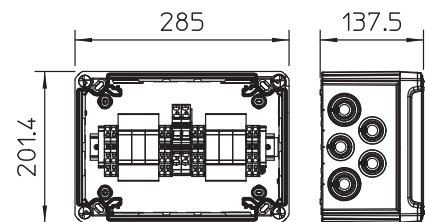
- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V20-C/0-500PV)
- Per protection device, there are 4 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

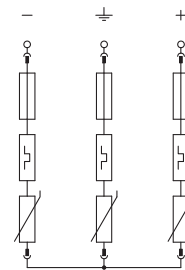
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-CPV1000K 22

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65



PV system solution, type 2, for inverter with 1 MPP tracker, 900 V DC



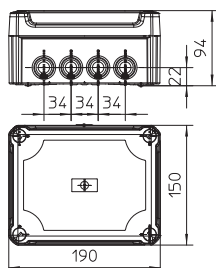
	U max DC	Weight	
Type	V	kg/100 pcs.	Item No.
VG-BCPV 900KS 1	900 —	85,000	5088580

/pc.

System solution for photovoltaic fuses (unequipped) for photovoltaic inverters with 1 MPP tracker

- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V50-C/0-450PV)
- (+) poles protected via 1 photovoltaic fuses 10x38 mm (unequipped), 900 V DC protected
- 1 (-) pole via terminal up 6 mm² switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside, including cable gland kit

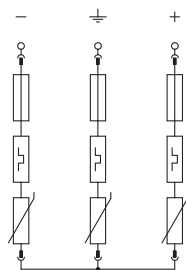
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-BCPV 900KS 1

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _d	< 3,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 10 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP66

PV system solution, type 2, for inverter with 2 MPP trackers, 900 V DC



Type	U max DC V	Weight kg/100 pcs.	Item No.
VG-BCPV 900KS 11	900	230,000	5088581

/pc.

System solution for photovoltaic fuses (unequipped) for photovoltaic inverters with 2 MPP tracker

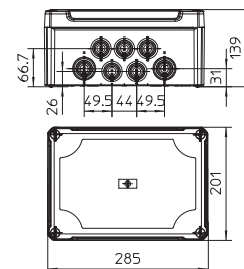
- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V50-C/0-450PV)
- (+) poles protected via 1 photovoltaic fuses 10x38 mm (unequipped), 900 V DC protected
- 1 (-) pole via terminal up 6 mm² switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP66), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

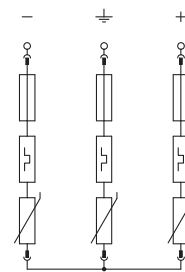
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-BCPV 900KS 11

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 10 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP66



PV system solution, type 2, for inverter with 2 MPP trackers, 1,000 V DC



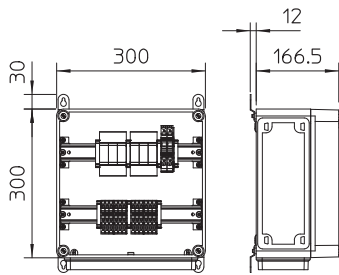
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-CPV 1000K 330	1000	For two MPP and with terminal connection	1	468,000	5088582

/pc.

System solution for photovoltaic inverter with 2 separate MPP trackers

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1000 V DC with V20-B+C/0-500PV)
- Per protection device there are 6 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

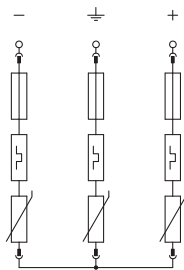
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-CPV 1000K 330

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65

Photovoltaic housing with 4 fuses 10 A



Type	U max DC V	Weight kg/100 pcs.	Item No.
VG-C DCPH1000-4S	1000 -	200,000	5088651

/pc.

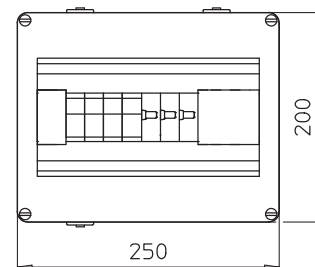
System solution for photovoltaic fuses for photovoltaic inverters with 1 MPP tracker

- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1000 V DC with V20-C/0-500PV)
- (+) poles protected via 4 photovoltaic fuses 10x38 mm 10 A, 1000 V DC protected
- 4 (-) poles via terminal up 6 mm² switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

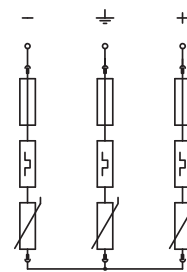
For DC protection of the inverter in photovoltaic systems.
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-C DCPH1000-4S

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 6 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP 65



Photovoltaic housing with 4 fuse holders, unequipped



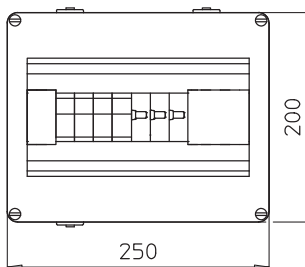
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-C PV1000KS4	1000	Type 2 in housing with fuse holder (unequipped)	1	190,000	5088654

/pc.

System solution for photovoltaic fuses (unequipped) for photovoltaic inverters with 1 MPP tracker

- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1000 V DC with V20-C/0-500PV)
- (+) poles protected via 4 photovoltaic fuses 10x38 mm (unequipped), 1000 V DC protected
- 4 (-) poles via terminal up 6 mm² switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

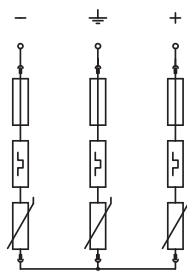
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-C PV1000KS4

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _d	< 4,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 6 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 65

Photovoltaic housing with 4 fuse holders, V25, 900 V



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BC PV900KS4	900	Type 1+2 in housing with fuse holder (unequipped)	1	205,000	5088640

/pc.

System solution for photovoltaic fuses (unequipped) for photovoltaic inverters with 1 MPP tracker

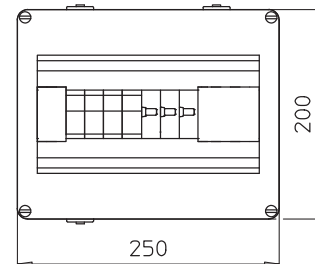
- Error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- (+) poles protected via 4 photovoltaic fuses 10x38 mm (unequipped), 900 V DC protected
- 4 (-) poles via terminal up 6 mm² switched in parallel in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

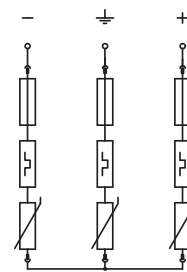
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-BC PV900KS4

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{impD}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	60 kA
Voltage protection level	U _d	< 3,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 6 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP 65



PV system solution, type 1+2, to 900 V DC with circuit breaker (32 A)



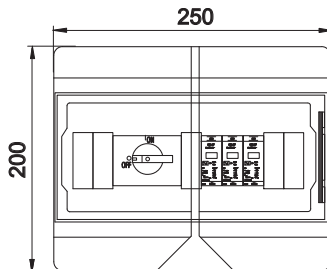
Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BC DC-TS900	900	Type 1+2 and Benedikt LS32-SMA-A4 DC isolator	1	182,500	5088635

/pc.

System solution for circuit breaker photovoltaic inverter with 1 MPP tracker

- Varistor arrester, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- Circuit breaker (1000 V; 32 A) for secure switch-off of the DC string cable
- Per protection device there is 1 terminal up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

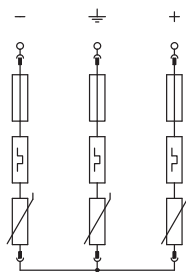
Dimensions



For DC protection of the inverter in photovoltaic systems.

If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Connection options



VG-BC DC-TS900

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _d	< 3,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65
Connection cross-section String		0.5 - 10
Connection cross-section PE		0.5 - 10

PV system solution, type 2, to 1,000 V DC with circuit breaker (32 A)



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-C DC-TS1000	1000	Type 2 and Benedikt LS32-SMA-A4 DC isolator	1	182,500	5088660

/pc.

System solution for circuit breaker photovoltaic inverter with 1 MPP tracker

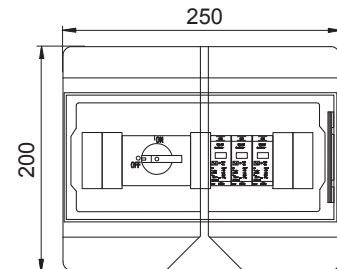
- Varistor arrestor, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 4.0 kV (Voc max = 1,000 V DC with V20-B+C/0-500PV)
- Circuit breaker (1,000 V; 32 A) for secure switch-off of the DC string cable
- Per protection device, there is 1 terminal up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.

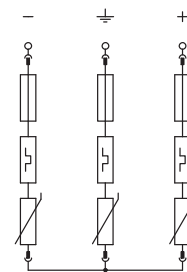
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!



Dimensions



Connection options



VG-C DC-TS1000

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{impD}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP65
Connection cross-section String		0.5 - 10
Connection cross-section PE		2.5 - 35



PV system solution with connection terminals, type 1+2, 900 V DC, incl. V-Tec entry set



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-BC DCPH900-4K	900	Type 1+2 in housing with terminals	1	171,000	5088632

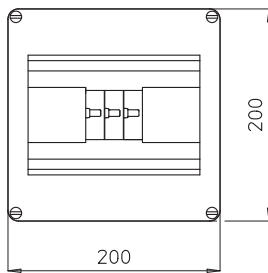
/pc.

System solution for photovoltaic inverter with 1 MPP tracker

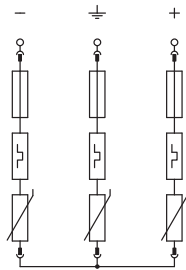
- Varistor arrestor, connectable with cut-off unit in error-resistant Y circuit to VDE 0100-712 (50539-12)
- Low DC protection level: < 2.6 kV (Voc max = 600 V DC with V50-B+C/0-300PV / V20-C/0-300PV)
- Low DC protection level: < 3.0 kV (Voc max = 900 V DC with V25-B+C/0-450PV)
- Low DC protection level: < 4.0 kV (Voc max = 1000 V DC with V20-C/0-500PV)
- For each protection device, there are 10 terminals up to 6 mm² pre-mounted in the housing, up to 30 A DC per terminal
- Pre-mounted in polycarbonate housing (IP65), UV-resistant for use outside, including cable gland kit

For DC protection of the inverter in photovoltaic systems.
If there is a danger of condensation forming through wind, ice, temperature or sunlight, further measures may be necessary!

Dimensions



Connection options



VG-BC DCPH900-4K

U max DC	U _c DC	900 V
SPD to EN 61643-11		Type 1+2
Lightning protection zone LPZ		0→2
Impulse discharge current (10/350)	I _{imp}	7 kA
Nominal discharge current (8/20)	I _n	30 kA
Maximum discharge current (8/20 μs)	I _{max}	50 kA
Voltage protection level	U _p	< 3,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 6 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP 65

PV system solution with connection terminals, type 2, 1,000 V DC, incl. V-Tec entry set



Type	U max DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
VG-C DCPH1000-4K	1000	Type 2 in housing, incl. V-Tec Set	1	162,000	5088650

/pc.

System solution for photovoltaic systems with connection terminals and entry set

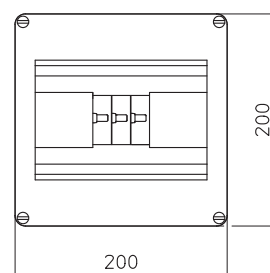
- Error-resistant Y circuit with 3 varistors for use according to VDE 0100-712
- Low DC protection level: < 4.0 kV (Voc max = 1000 V DC with V20-C/0-500PV)
- 5 parallel connection terminals to 6 mm² per polarity (+ and -)
- V-Tec entries set included
- Arrestor, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated zinc oxide varistor arrestor for use in distributor housings
- Polycarbonate housing, weatherproof for outdoor use.

Note: 5 PV strings can be switched in parallel on the terminals. The technical data (string voltage, etc.) and the conditions of the converter (number of MPP trackers) must be taken into account.

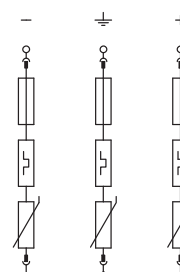
Note: If there is a danger of condensation formation, wind, ice formation, temperatures and direct sunlight, additional measures may be necessary!



Dimensions



Connection options



VG-C DCPH1000-4K

U max DC	U _c DC	1000 V
SPD to EN 61643-11		Type 2
Lightning protection zone LPZ		1→2
Impulse discharge current (10/350)	I _{imp}	— kA
Nominal discharge current (8/20)	I _n	20 kA
Maximum discharge current (8/20 μs)	I _{max}	40 kA
Voltage protection level	U _p	< 4,0 kV
Response time	t _A	< 25 ns
Connection cross-section rigid		0.5 - 6 mm ²
Connection cross-section, flexible		0.5 - 6 mm ²
Temperature range	θ	-40 - +80 °C
Protection rating		IP 65



PV upper part - lightning and surge arrestor, type 1+2



Type	U max DC V	Version	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
V50-B+C 0-300PV	300	1-pole, PV upper part with Y base to 600 V DC	1	8,200	5093726

/pc.

V50-B+C/...PV: CombiController upper part, type 1+2, combination arrestor for photovoltaic systems

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 12.5 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Arrestor, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrestor for use in distributor housings
- High current carrying capacity with long lifespan

Application: PV systems with or without separated insulated lightning protection system

PV upper part - lightning and surge arrestor, type 1+2



Type	U max DC V	Version	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
V25-B+C 0-450PV	450	1-pole, PV upper part with Y base to 900 V DC	1	9,500	5097065

/pc.

V25-B+C/...PV: CombiController upper part, type 1+2, combination arrestor for photovoltaic systems

- For surge protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 7 kA (10/350) and 50 kA (8/20) per pole
- Low DC protection level: < 1.5 kV per pole (Y circuit: 3.0 kV and Voc max = 900 V DC)
- Arrestor, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, zinc oxide varistor arrestor for use in distributor housings
- High current carrying capacity with long lifespan

Application: PV systems with or without separated insulated lightning protection system

PV upper part - surge arrestor, type 2



Type	U max DC V	Version	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
V20-C 0-300PV	300	1-pole, PV upper part with Y base to 600 V DC	1	5,500	5099611

/pc.

V20-C/...PV: SurgeController upper part, type 2, surge arrestor for photovoltaic systems

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pin
- Low DC protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Arrestor, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrestor for use in distributor housings
- High current carrying capacity with long lifespan

Application example: PV systems with or without separated insulated lightning protection system

PV upper part - surge arrester, type 2



Type	U max DC		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
V20-C 0-500PV	500	1-pole, PV upper part with Y base to 1,000 V DC	1	6,500	5099708



/pc.

V20-C/...PV: SurgeController upper part, type 2, surge arrester for photovoltaic systems

- For surge voltage protection equipotential bonding to VDE 0100-443 (IEC 60364-4-44)
- Arresting capacity to 40 kA (8/20) per pin
- Low DC protection level: < 1.3 kV per pole (Y circuit: 2.6 kV and Voc max = 600 V DC)
- Arrester, connectable with thermodynamic cut-off unit and visual function display
- Encapsulated, non-extinguishing zinc oxide varistor arrester for use in distributor housings
- High current carrying capacity with long lifespan

Application example: PV systems with or without separated insulated lightning protection system



PV base, 3-pole in Y circuit



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C U-3PH-Y	3-pole Y circuit for PV	1	17,000	5096647

/pc.

V 20-C/3-PH-Y: Bottom part for photovoltaic systems up to $U_{oc} = 1,000$ V (Y-circuit)

- Suitable for V 25-B+C upper parts type 1+2 combination arrester
- Suitable for V 20-C upper parts type 2 surge arrester
- Protection circuit against transverse and longitudinal voltages
- Y-protection circuit
- Low protection level < 4.0 kV (U_{oc} max = 1,000 V DC with V20-C/0-440)
- Low protection level < 3.0 kV (U_{oc} max = 900 V DC with V25-B+C/0-385)
- Low protection level < 2.6 kV (U_{oc} max = 600 V DC with V50-C/0-280)

Indicated connectors

Application: In photovoltaic systems between PH modules and inverters.

PV base, 3-pole in Y circuit with remote signalling



Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
V20-C U-3PH-Y-FS	3-pole Y circuit for photovoltaic systems with FS	1	25,000	5096646

/pc.

V 20-C/U-3-PH-Y-FS: Base for photovoltaic systems up to $V_{oc}=1,000$ V (Y circuit)

- Suitable for V 50-B+C and V25-B+C upper parts, type 1+2 combination arrester
- Suitable for V 20-C upper parts, type 2, surge arrester
- Protection circuit against transverse and longitudinal voltages
- Y circuit
- Low protection level < 4.0 kV (V_{oc} max = 1,000 V DC with V20-C/0-440)
- Low protection level < 3.0 kV (V_{oc} max = 900 V DC with V25-B+C/0-385)

Low protection level < 2.6 kV (V_{oc} max = 600 V DC with V50-C/0-280)

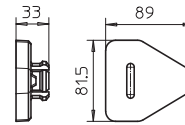
- -FS with remote signalling, potential-free changeover contact, for function monitoring
- Labelled connections

Application: In photovoltaic systems between PH modules and inverters.

Shock Guard locking for strong vibrations

Type	Colour	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
MB-SG	Blue	Locking system for upper parts	100	0,060	5096695
PA	Polyamide		/pc.		

Shock Guard: Locking for connector technology on MultiBase bases



- Locking system for the plug-in modules/upper parts
- Vibration and shock-tested
- Use in housing hole of the connection terminals
- Upper parts can be removed without tools

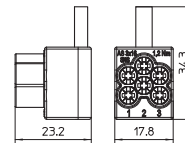
Connection terminal for V wiring



Type	Colour	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
AS 3x16	Light grey	3x16mm ²	5	2,474	5012010
			/100 pc.		

Connection terminal type: AS 3 x 16

Connection cross-section: 3 x 1.5 - 16 sq mm rigid/ multiple strands
 3 x 1.5 - 10 sq mm fine-wire/with wire end sleeve
 Stripping length: 16 mm
 Rec. tightening torque: 1.2 Nm
 Nominal current: 50 A
 Width: 17.5 mm (1 TE)



For EMV-optimised V through-wiring to IEC 60364-5-53 (VDE 0100-534).














**Surge protection
Data and information technology**



02 TBS (bestenwertig) Defender - 30112016 (LLESport_04409) / 30112016

Surge protection, data and information technology

	Surge protection for telecommunication systems	333
	Surge protection for LSA-Plus systems	345
	Coaxial protection devices for high-frequency applications	351
	Surge protection for network technology	366
	Surge protection for data technology	373
	Surge protection for serial interfaces	377
	MCR protection 2-pole power supply	381
	MCR protection FRD/FLD/TKS-B lightning protection barriers	393
	MCR protection MDP, in series terminal format	413

Telecommunications, fixed mounting



VDSL

MHz	Item no.	Page
0-225	5081 69 8	333



ISDN + Analogue

MHz	Item no.	Page
0-100	5081 69 0	334



TAE

MHz	Item no.	Page
0-100	5081 69 2	335



Hat rail

MHz	Item no.	Page
0-75	5081 69 4	336

Telecommunications, cable adapter



Combination arrestors

Type	Item no.	Page
RJ11	5081 97 5	339
RJ45	5081 98 2	341



Fine protection

Type	Item no.	Page
RJ11	5081 97 7	340
RJ45	5081 98 4	342



LSA basic protection

Volts	Item no.	Page
180	5084 02 0	345



LSA basic + fine protection

Volts	Item no.	Page
24	5084 02 8	347
180	5084 02 4	346

High-frequency technology, coaxial arrestors



S-UHF

Type	Item no.	Page
M/F	5093 02 3	351
W/W	5093 01 5	352



BNC

Type	Item no.	Page
M/F	5093 25 2	353
W/W	5093 23 6	354
M/M	5093 26 0	355



N

Type	Item no.	Page
M/F	5093 99 8	358
M/F	5093 99 6	356
W/W	5093 98 8	357



TNC

Type	Item no.	Page
M/F	5093 27 0	359



7/16

Type	Item no.	Page
M/F	5093 17 1	362



F

Type	Item no.	Page
M/F	5093 27 5	361
W/W	5093 27 2	362



SMA

Type	Item no.	Page
W/W	5093 27 7	363



F/SAT

Type	Item no.	Page
W/W	5083 40 0	364

Data and network technology



Eth. RJ45

Type	Item no.	Page
CAT6A/EA	5081 80 0	366
CAT5e	5081 99 0	367



BNC/CCTV

Type	Item no.	Page
Combination	5082 43 0	368
Fine	5082 43 2	369
Fine	5082 43 4	370



RJ45/4-pole

Type	Item no.	Page
Combination	5081 00 3	374
Fine	5081 00 5	375
Basic	5081 00 1	373



Sub-D

Type	Item no.	Page
SD09-V24	5080 05 3	377
SD15-V24	5080 15 0	378
SD09-V11	5080 06 1	379

Measurement and control technology



FRD

Volts	Item no.	Page
5	5098 49 2	396
12	5098 50 6	397
24	5098 51 4	398
48	5098 52 2	399
110	5098 55 7	400



FRD-2

Volts	Item no.	Page
24	5098 72 7	407



FLD

Volts	Item no.	Page
5	5098 60 0	402
12	5098 60 3	403
24	5098 61 1	404
48	5098 63 0	405
60	5098 63 8	406
110	5098 64 6	407



FLD-2

Volts	Item no.	Page
5	5098 86 7	408
12	5098 80 8	409
24	5098 81 6	410
110	5098 85 9	411



MDP 2-pole

Volts	Item no.	Page
5	5098 40 4	413
24	5098 42 2	416
48	5098 44 2	419



MDP 3-pole

Volts	Item no.	Page
5	5098 40 7	414
24	5098 42 7	417
48	5098 44 6	420



MDP 4-pole

Volts	Item no.	Page
5	5098 41 1	415
24	5098 43 1	418
48	5098 45 0	421



MDP, 10 A, 2-pole

Volts	Item no.	Page
12	5098 41 5	423
24	5098 42 5	425



MDP, 10 A, 4-pole

Volts	Item no.	Page
5	5098 41 3	422
12	5098 41 9	424
24	5098 43 3	426



MDP EX 4-pole

Volts	Item no.	Page
5	5098 41 2	431
24	5098 43 2	432
48	5098 45 2	433



FDB 2-pole 24 V

Type	Item no.	Page
Metric	5098 38 0	435
NPT	5098 39 0	437



FDB 3-pole 24 V

Type	Item no.	Page
Metric	5098 38 2	436
NPT	5098 39 2	438

Surge protection devices for telecommunications applications: The plus of the combination protection devices

- + Simple installation
- + Low protection level
- + High arresting capability
- + High bandwidth
- + Wide range of uses



Combined protection device for VDSL, ISDN and DSL systems

Function and areas of use

The data cable protection devices for telecommunications applications are available as combination protection and fine protection.

Depending on the application, from DSL through to analogue

communication, the devices are used for direct intermediate switching into the data cable, meaning that they can easily be retrofitted in existing installations.

The devices differ in their connection technology and transmission

cable and are thus optimised for their appropriate applications, in order to cause the lowest attenuation level possible.

Combination protection device for VDSL systems



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TD-2D-V	125	180	2	Terminal	1	9,500	5081698

Plastic

/pc.

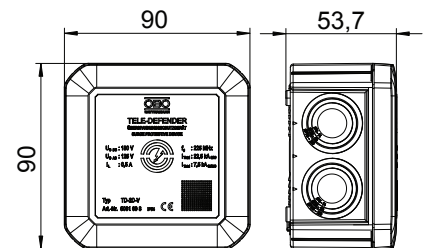
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
- "Push-in" clamps for quick installation
- Bandwidth-optimised for secure transmission up to 225 MHz
- Surface mounting

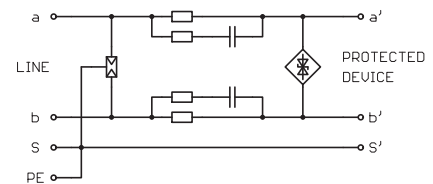
Application: Ideal for all DSL systems, IP connections, ISDN or analogue telecommunications



Dimensions



Connection options



TD-2D-V

Maximum continuous voltage AC	U_C	125 V
Maximum continuous voltage DC	U_C	180 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.5 A
Capacity (wire-wire)		<10 pF
Capacity (wire-earth)		<20 pF
Series resistance per wire		2,2 Ω \pm 5 %
Impulse current resistance wire-wire		C2: 15 kV / 7,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 15 kV / 7,5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		22,5 kA
Total arrester surge current (10/350)		D1: 7,5 kA
Protection level wire-wire		<350 V
Protection level wire-earth		<600 V
Protection level shield-earth (S-PE)		- V
Frequency range		0 - 225 MHz
Insertion loss	S_{21}	\leq 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Surface-mounted
Connection system		Terminal
Protection rating		IP54
Shielding connection available		Yes
Connection cross-section, flexible		0.14 - 1 mm ²
Connection cross-section, multi-wire		0.14 - 1 mm ²
Connection cross-section rigid		0.08 - 1.5 mm ²
Testing standard		IEC 61643-21

Combination protection device for ISDN and DSL systems



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TD-4/I	120	170	4	Terminal	1	11,000	5081690

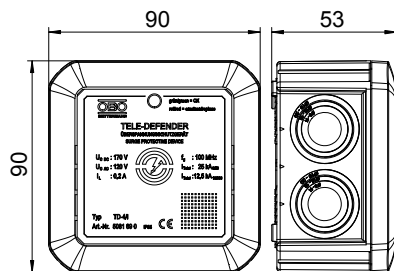
Plastic

/pc.

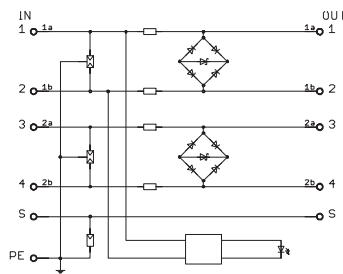
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
 - "Push-in" terminals for quick installation
 - Bandwidth-optimised for secure transmission
 - Surface mounting
 - Visual function display
- Application: DSL systems, IP connections, ISDN or analogue telecommunications

Dimensions



Connection options



TD-4/I

Maximum continuous voltage AC	U_C	120 V
Maximum continuous voltage DC	U_C	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		4
Rated current	I_L	0.2 A
Capacity (wire-wire)		<50 pF
Capacity (wire-earth)		<10 pF
Series resistance per wire		9 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		25 kA
Total arrester surge current (10/350)		D1: 12,5 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<650 V
Protection level shield-earth (S-PE)		850 V
Frequency range		0 - 100 MHz
Insertion loss	S_{21}	\leq 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Surface-mounted
Connection system		Terminal
Protection rating		IP54
Shielding connection available		Yes
Connection cross-section, flexible		0.14 - 0.75 mm ²
Connection cross-section, multi-wire		0.14 - 0.75 mm ²
Connection cross-section rigid		0.14 - 0.75 mm ²
Testing standard		IEC 61643-21

Combination protection device for ISDN and DSL systems



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TD-4/I-TAE-F	120	170	4	Terminal	1	12,300	5081692

Plastic

/pc.

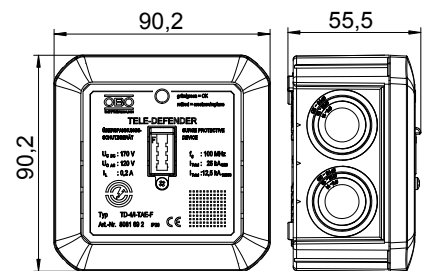
Data cable protection device for telecommunications equipment

- Low protection level at a high current load
- "Push-in" terminals for quick installation
- Bandwidth-optimised for secure transmission
- Preinstalled TAE socket for Plug & Play
- Surface mounting
- Visual function display

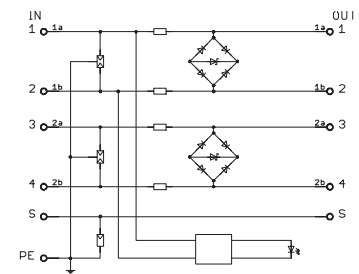
Application: DSL systems, IP connections, ISDN or analogue telecommunications



Dimensions



Connection options



TD-4/I-TAE-F

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.2 A
Capacity (wire-wire)		<50 pF
Capacity (wire-earth)		<10 pF
Series resistance per wire		9 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		25 kA
Total arrester surge current (10/350)		D1: 12,5 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<650 V
Protection level shield-earth (S-PE)		850 V
Frequency range		0 - 100 MHz
Insertion loss	S_{21}	\leq 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Surface-mounted
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Connection cross-section, flexible		0.14 - 0.75 mm ²
Connection cross-section, multi-wire		0.14 - 0.75 mm ²
Connection cross-section rigid		0.14 - 0.75 mm ²
Testing standard		IEC 61643-21

Combination protection device for ISDN and DSL systems



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TD-2/D-HS	120	170	2	Terminal	1	4,800	5081694

Plastic

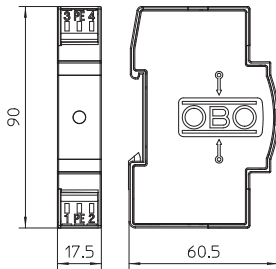
/pc.

Data cable protection devices for telecommunication systems

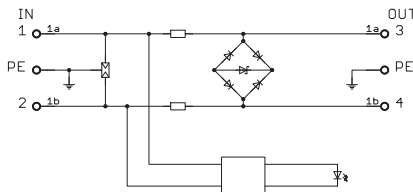
- Low protection level at high current load
- Screwless terminals or connectable
- Bandwidth-optimised for secure transmission
- Quick mounting onto DIN rail for a telephone line
- Visual function display

Application: DSL systems, ISDN or analogue telecommunication

Dimensions



Connection options



TD-2/D-HS

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	I_L	0.2 A
Capacity (wire-wire)		<50 pF
Capacity (wire-earth)		<50 pF
Series resistance per wire		9 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 5 kA kA
Protection level wire-wire		<300 V
Protection level wire-earth		<650 V
Protection level shield-earth (S-PE)		- V
Frequency range		0 - 75 MHz
Insertion loss	S_{21}	\leq 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		No
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Testing standard		IEC 61643-21



Surge protection devices for telecommunications applications: The plus of the fine protection devices RJ11-Tele and RJ45 Tele

- + Simple installation
- + Low protection level
- + High arresting capability
- + High bandwidth
- + Wide range of uses



Combination and fine protection device for analogue cables

Function and applications

The data cable protection devices for telecommunications applications are available as combination protection and fine protection.

Depending on the application, from DSL through to analogue

communication, the devices are used for direct intermediate switching into the data cable, meaning that they can easily be retrofitted in existing installations.

The devices differ in their connection technology and transmission

cable and are thus optimised for their appropriate applications, in order to cause the lowest attenuation level possible.

Combination protection device for ISDN RJ11



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ11-TELE 4-C	Combi protection, 4 wires	RJ11	1	14,000	5081975

/pc.

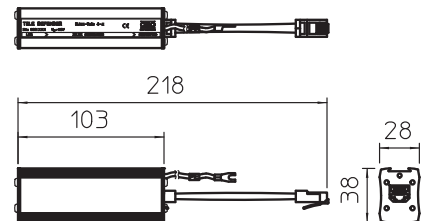
Data line protection device for analogue telecommunications systems

- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- Hat rail mounting with DLS-BS accessories (5082 38 2)

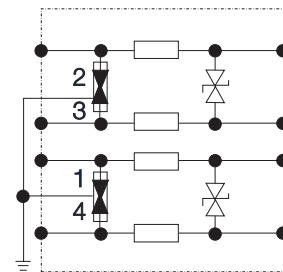
Application: For analogue telecommunication systems



Dimensions



Connection options



RJ11-TELE 4-C

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Series resistance per wire		$8,2 \Omega \pm 10 \%$
Total arrester surge current (8/20)		4 kA
Total arrester surge current (10/350)		1,5 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_p	<245 V
Frequency range		0 - 12 MHz
Insertion loss	S_{21}	≤ 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ11
Protection rating		IP40
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Fine protection device for ISDN RJ11



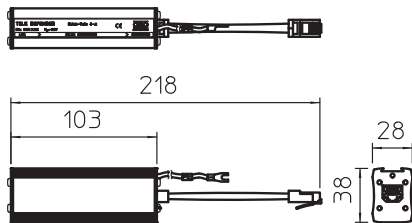
Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ11-TELE 4-F	Fine protection, 4 wires	RJ11	1	14,000	5081977

/pc.

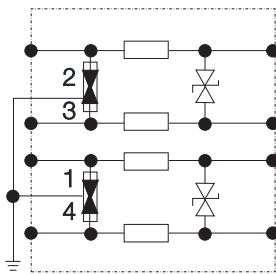
Data line protection device for analogue telecommunications systems

- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- Hat rail mounting with DLS-BS accessories (5082 38 2)

Dimensions



Connection options



RJ11-TELE 4-F

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1-3
Number of poles		4
Series resistance per wire		$2,2 \pm 10 \%$
Total arrester surge current (8/20)		4 kA
Total arrester surge current (10/350)		- kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Protection level, wire-earth at $1 \text{ kV}/\mu\text{s}$ (C3)	U_p	<245 V
Frequency range		0 - 18 MHz
Insertion loss	S_{21}	$\leq 3 \text{ dB}$
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ11
Protection rating		IP40
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Combination protection device for ISDN RJ45



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45-TELE 4-C	Combi protection, 4 wires	RJ45	1	14,000	5081982

/pc.

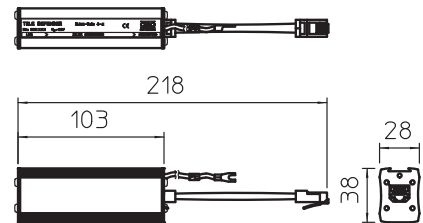
Data line protection device for analogue telecommunications systems

- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- Hat rail mounting with DLS-BS accessories (5082 38 2)

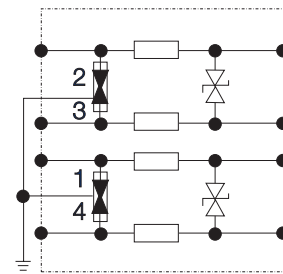
Application: For analogue telecommunication systems



Dimensions



Connection options



RJ45-TELE 4-C

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Series resistance per wire		$8,2 \Omega \pm 10 \%$
Total arrester surge current (8/20)		4 kA
Total arrester surge current (10/350)		1,5 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Protection level, wire-earth at $1 \text{ kV}/\mu\text{s}$ (C3)	U_p	<245 V
Frequency range		0 - 12 MHz
Insertion loss	S_{21}	$\leq 3 \text{ dB}$
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45
Protection rating		IP40
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Fine protection device for ISDN RJ45



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45-TELE 4-F	Fine protection, 4 wires	RJ45	1	14,000	5081984

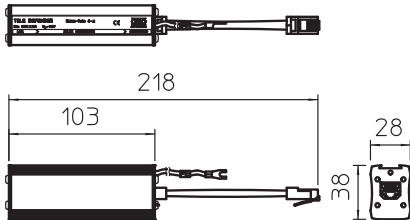
/pc.

Data line protection device for analogue telecommunications systems

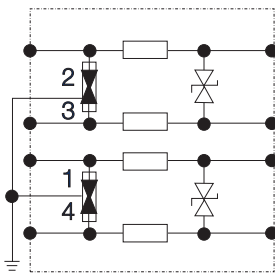
- In aluminium housing
- With 2-stage protection circuit
- Simple mounting
- Incl. 150 mm connection cable with RJ11 and/or RJ45 connectors
- Optimised bandwidth for TC systems
- Hat rail mounting with DLS-BS accessories (5082 38 2)

Application: For analogue telecommunication systems

Dimensions



Connection options



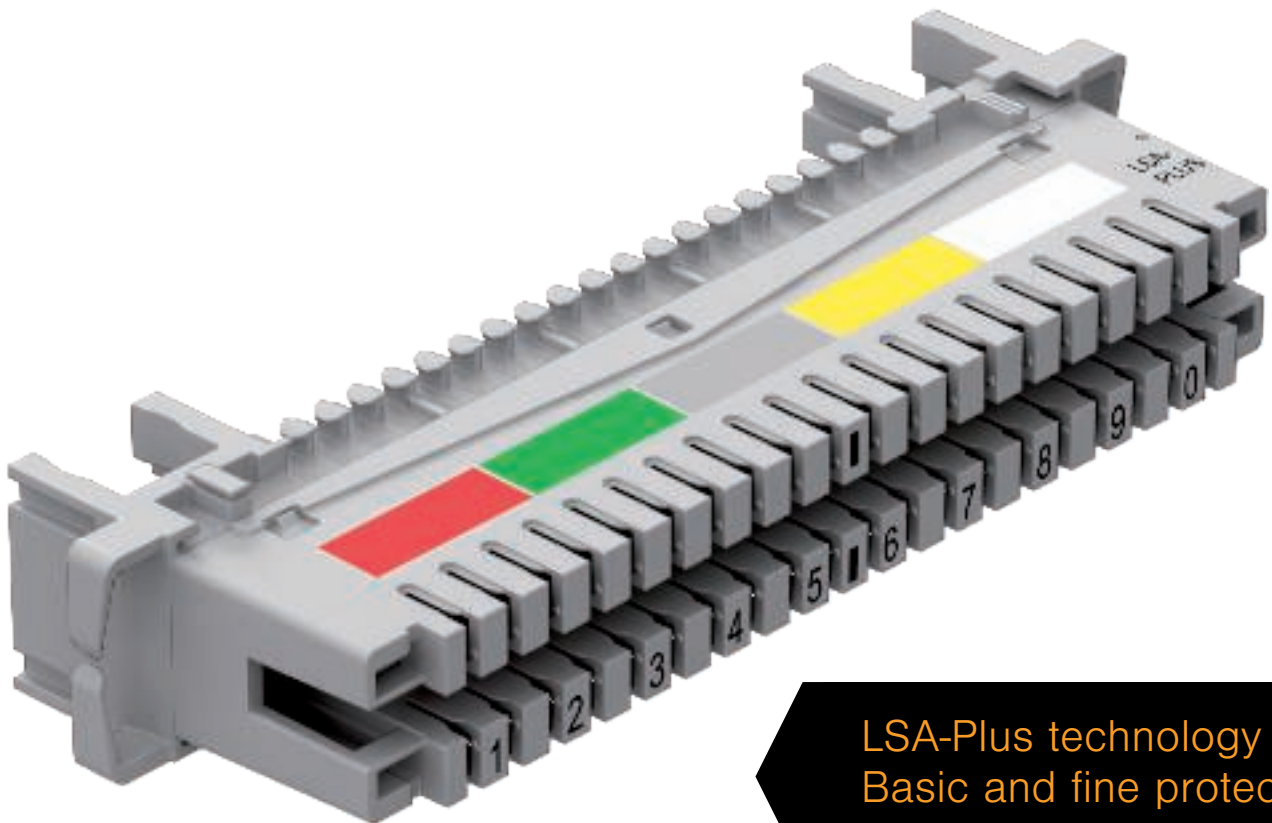
RJ45-TELE 4-F

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1-3
Number of poles		4
Series resistance per wire		$2,2 \pm 10 \%$
Total arrester surge current (8/20)		4 kA
Total arrester surge current (10/350)		- kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Protection level, wire-earth at $1 \text{ kV}/\mu\text{s}$ (C3)	U_p	<245 V
Frequency range		0 - 18 MHz
Insertion loss	S_{21}	$\leq 3 \text{ dB}$
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45
Protection rating		IP40
Earthing via:		Connection cable
Testing standard		IEC 61643-21



Surge protection devices for industrial telecommunications applications

- + Simple installation
- + Protection up to 10 two-core wires
- + Low protection level
- + High arresting capacity
- + High broadband in basic protection
- + Wide range of uses



LSA-Plus technology
Basic and fine protection

In particular with multi-wire cable systems, such as telecommunications distribution systems, the LSA surge voltage components offer rapid, adequate protection. The

LSA system offers both basic protection modules and fine protection modules to protect up to ten two-core wires per connection strip. These are split up into separ-

ating and connection strips and must be selected according to the application.

LSA-Plus technology / LSA basic protection



Type	Installation type	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-B-MAG	LSA-Plus, connectable	20	1	8,600	5084020

/pc.

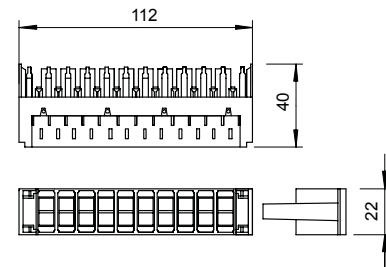
LSA-B-MAG: LSA basic protection magazine for use in multi-core data cable systems, MCR systems and telephone switchboards.

- Basic protection
- Equipped with 20 gas charge tubes
- Max. voltage: 180 V

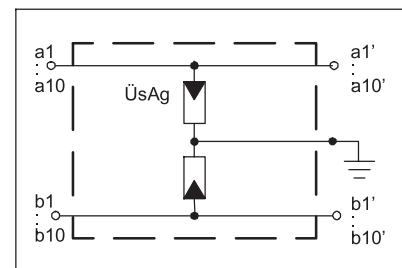
Application: Directly on LSA-Plus separating strips or connection strips (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2)).



Dimensions



Connection options



LSA-B-MAG

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	180 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		20
Rated current	I_L	1 A
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		1 kA
Protection level @ C1		<750 V
Temperature range	ϑ	-40 - +80 °C
Installation type		LSA-Plus, connectable
Connection system		Other
Protection rating		IP20
Testing standard		IEC 61643-21

LSA-Plus technology/LSA basic and fine protection



Type	Installation type	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-BF-180	LSA-Plus, connectable	2	1	0,500	5084024

/pc.

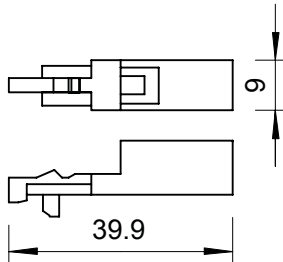


LSA-BF 24: LSA basic and fine protection, for application in MCR systems

- Basic and fine protection
- Rough protection using fail-safe technology.
- With PTC protection components against overcurrent.
- Max. voltage: 24 V

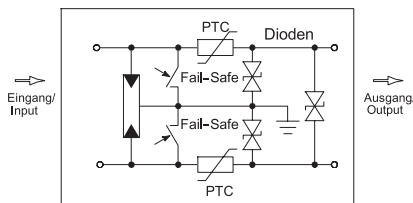
Application: Directly on LSA-Plus barrier strip or connection rails with earthing rail (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2), and OBO LSA-E (5084 03 2))

Dimensions



Connection options

1 DA (TC) => 1 line



LSA-BF-180

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	180 V
Category	Type 1+2+3 / D1+C2+C1	
Lightning protection zone LPZ	0→3	
Number of poles	2	
Rated current	I_L	0.12 A
Impulse current resistance wire-wire	C2: 5 kV / 2,5 kA (8/20 μ s)	
Impulse current resistance wire-earth	C2: 5 kV / 2,5 kA (8/20 μ s)	
Total arrester surge current (8/20)	5 kA	
Total arrester surge current (10/350)	0,5 kA	
Protection level wire-wire	<300 V	
Protection level wire-earth	<300 V	
Temperature range	ϑ	-40 - +80 °C
Installation type	LSA-Plus, connectable	
Connection system	Other	
Protection rating	IP20	
Testing standard	IEC 61643-21	

LSA-Plus technology/LSA basic and fine protection



Type	Installation type	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-BF-24	LSA-Plus, connectable	2	1	0,500	5084028

/pc.

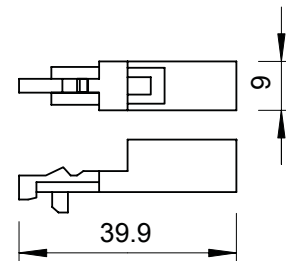
LSA-BF 24: LSA basic and fine protection, for application in MCR systems

- Basic and fine protection
- Rough protection using fail-safe technology.
- With PTC protection components against overcurrent.
- Max. voltage: 24 V

Application: Directly on LSA-Plus barrier strip or connection rails with earthing rail (e.g. OBO LSA-A-LEI (5084 00 8) or OBO LSA-T-LEI (5084 01 2), and OBO LSA-E (5084 03 2))

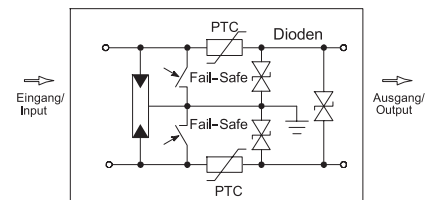


Dimensions



Connection options

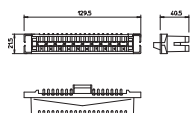
1 DA (TC) => 1 line



LSA-BF-24

Maximum continuous voltage AC	U_c	15 V
Maximum continuous voltage DC	U_c	24 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	I_L	0.12 A
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		0,5 kA
Protection level wire-wire		<70 V
Protection level wire-earth		<70 V
Temperature range	ϑ	-40 - +80 °C
Installation type		LSA-Plus, connectable
Connection system		Other
Protection rating		IP20
Testing standard		IEC 61643-21

LSA-Plus technology / LSA connection strip



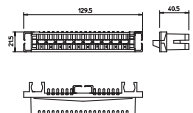
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-A-LEI	Grey	1	5,100	5084008

/pc.

LSA-A-LEI: LSA attaching strip 2/10 for attaching ten double-cores.

- For use with protection element LSA-B-MAG
- Fastening to mounting trough LSA-M
- Colour: grey
- Clampable cross-sections 0.14-0.5 (AWG 26 to 20)

LSA-Plus technology / LSA separating strip



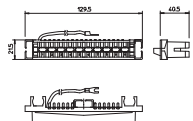
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-T-LEI	White	1	5,400	5084012

/pc.

LSA-T-LEI: LSA separating strip 2/10 for attaching up to ten double-cores.

- For use with protection element LSA-BF-180, LSA-BF-24, LSA-B-MAG
- Fastening to mounting trough LSA-M
- Colour: white
- Clampable cross-sections 0.14-0.5 (AWG 26 to 20)

LSA-Plus technology / LSA earthing strip



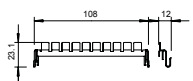
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-E-LEI	Red	1	6,500	5084016

/pc.

LSA-E-LEI: LSA earthing strip, 40-pin for attaching earth lines or screens to the earth connection.

- Complete with connection line, green-yellow, 1.5 mm²
- Colour: red

LSA-Plus technology / LSA earthing rail for LSA-BF

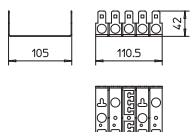


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-E	1	1,000	5084032

/pc.

LSA-E: Earth rail as earth connection between overvoltage protectors LFS-BF... (1 DA) and distributor connector LSA-...-LEI.

LSA-Plus technology / LSA installation trough



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-M	1	7,800	5084032

/pc.

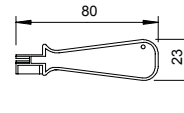
LSA-M: Installation trough for 5 connection or separating strips. Grid 22.5 mm. Depth: 22 mm; 30 mm; 50 mm

LSA-Plus technology / LSA simple tool



Type

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-TOOL	1	0,600	5084040



/pc.

LSA-TOOL: Simple tool for soldering, bolting and stripping-free connection of cores, without cutter.

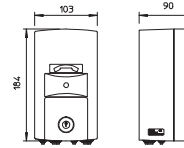
LSA-Plus technology / protective housing



Colour

Type

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
LSA-G	Light grey	1	57,500	5084048



/pc.

Protective housing for a LSA 10 DA bar

- Protective housing for 10 wire pairs
- Housing can be locked
- Incl. key
- 4x cable fixing
- Light grey



Surge protection for high frequency applications: the plus of the DS family

- + Coaxial protection devices
- + Optimum protection for sensitive systems
- + Low insertion attenuation and low return loss at different wave resistances
- + High bandwidth



Coaxial protection devices for S-UHF, BNC, N, TNC, F and SMA connection

The coaxial protection devices of type DS offer optimum protection of sensitive systems, based on coaxial plug connections. The low insertion attenuation and low return attenuation at different wave

resistances offer ideal protection for any application. In accordance with their structure, the protection devices are switched into the application in series, and are connected to the local equipotential bond-

ing. The direct shield earthing avoids reducing of the shield performance.

Coaxial protection devices for S-UHF connection: male/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
S-UHF M/W	UHF	0 - 1.3 GHz	1	7,000	5093023

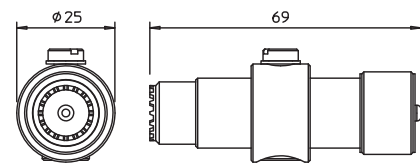
/pc.

Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = male/f = female connector
- Various plug combinations
- With UHF connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation



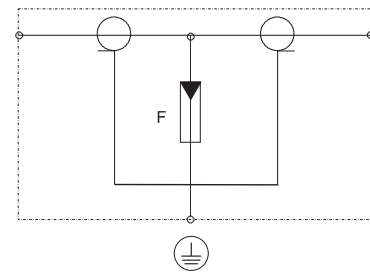
Dimensions



S-UHF M/W

Maximum continuous voltage AC	U_C	130 V
Maximum continuous voltage DC	U_C	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 1.3 GHz
Insertion loss	S_{21}	≤0,2 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		UHF
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Connection options



Coaxial protection devices for S-UHF connection: female/female



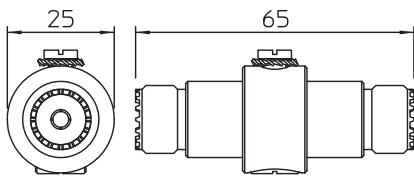
Type	Conne- tion system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
S-UHF W/W	UHF	0 - 1.3 GHz	1	7,000	5093015

/pc.

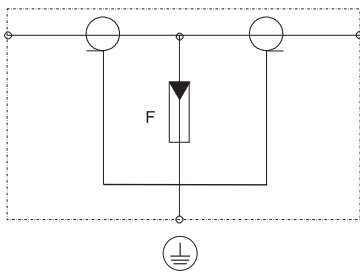
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = male/f = female connector
- Various plug combinations
- With UHF connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Dimensions



Connection options



S-UHF W/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 1.3 GHz
Insertion loss	S_{21}	≤0,2 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		UHF
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for BNC connection: male/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-BNC M/W	BNC	0 - 2.2 GHz	1	6,500	5093252

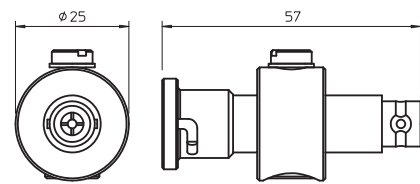
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Coaxial data cable protection devices

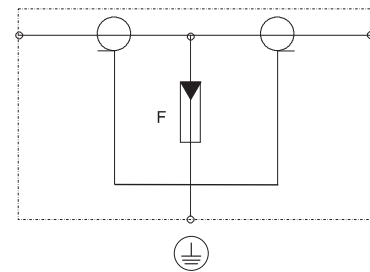
- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation



Dimensions



Connection options



DS-BNC M/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2.2 GHz
Insertion loss	S_{21}	≤0,95 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for BNC connection: female/female



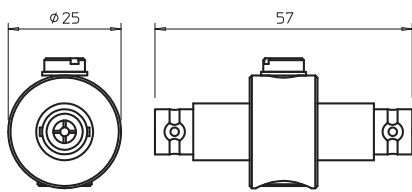
Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-BNC W/W	BNC	0 - 2.2 GHz	1	6,000	5093236

/pc.

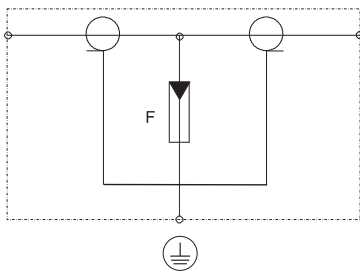
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Dimensions



Connection options



DS-BNC W/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2.2 GHz
Insertion loss	S_{21}	≤0,95 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for BNC connection: male/male



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-BNC M/M	BNC	0 - 2.2 GHz	1	7,000	5093260

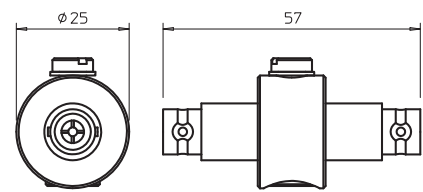
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Coaxial data cable protection devices

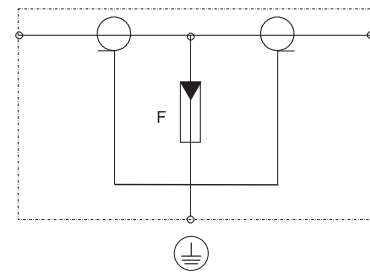
- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With BNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation



Dimensions



Connection options



DS-BNC M/M

Maximum continuous voltage AC	U_C	130 V
Maximum continuous voltage DC	U_C	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 2.2 GHz
Insertion loss	S_{21}	≤0,95 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for N connection: male/female



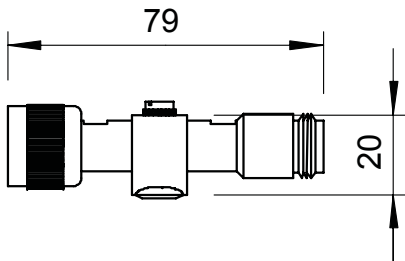
Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-N M/W	N	0 - 3 GHz	1	12,200	5093996

/pc.

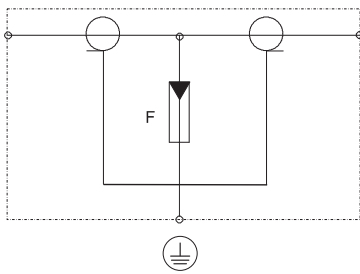
Coaxial data cable protection devices

- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With N connector
- Including OBO M25 Quick clip for simple installation

Dimensions



Connection options



DS-N M/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3 GHz
Insertion loss	S_{21}	$\leq 0,62$ dB
Return loss	S_{11}	≥ 14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for N connection: female/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-N W/W	N	0 - 3 GHz	1	11,500	5093988

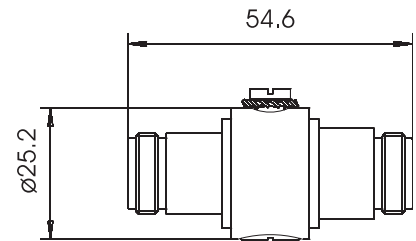
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Coaxial data cable protection devices

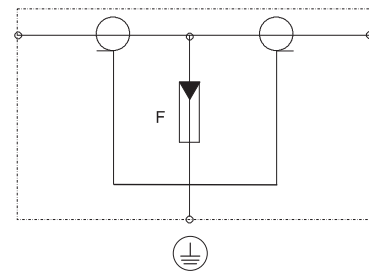
- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With N connector
- Including OBO M25 Quick clip for simple installation



Dimensions



Connection options



DS-N W/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3 GHz
Insertion loss	S_{21}	$\leq 0,62$ dB
Return loss	S_{11}	≥ 14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for N connection up to 6 GHz: Male/female



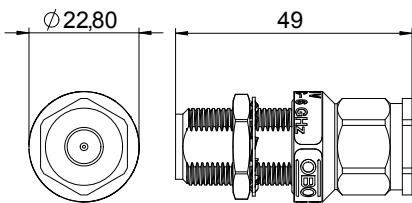
Type	Conne- tion system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-N-6 M/W	N	0 - 6 GHz	1	7,830	5093998

/pc.

Coaxial data cable protection devices for transmission and reception technology

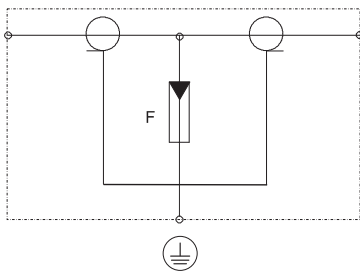
- With N-Connector, male/female
- High impulse current load capacity: 2.5 kA (10/350)
- Simple mounting (adapter), m = connector, w = socket
- Low protection level at high current loads
- Optimum transmission behaviour:
 - Low reflection behaviour
 - Bandwidth-optimised for secure transmission up to 6 GHz
- Available in 50 Ω technology

Dimensions



Application: For example: SAT-TV C band, WiMAX, WLAN applications, DVB-T2

Connection options



DS-N-6 M/W

Maximum continuous voltage AC	U_c	50 V
Maximum continuous voltage DC	U_c	70 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Protection level		<750 V
Frequency range		0 - 6 GHz
Insertion loss	S_{21}	≤0,1 dB
Return loss	S_{11}	≥22 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		N
Protection rating		IP65/67
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21



Coaxial protection device for TNC connection: male/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-TNC M/W	TNC	0 - 4 GHz	1	9,000	5093270

/pc.

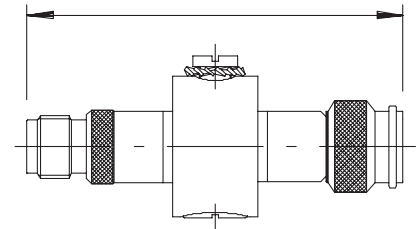
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With TNC connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

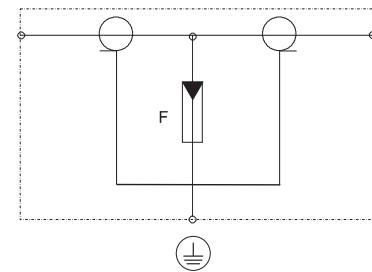


Dimensions

66.8



Connection options



DS-TNC M/W

Maximum continuous voltage AC	U_C	130 V
Maximum continuous voltage DC	U_C	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 4 GHz
Insertion loss	S_{21}	≤0,5 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		TNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for 7/16 connection: male/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-7 16 M/W	7/16	0 - 3 GHz	1	35,500	5093171

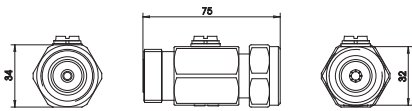
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Coaxial data protection device

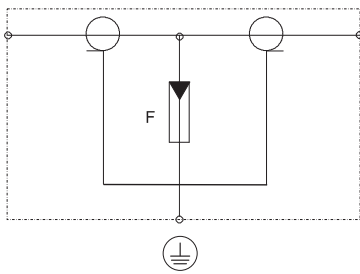
- Basic protection
- Simple mounting (adapter)
- Optimum transmission
- High pulse load capacity
- With 7/16 connector

Application: to protect mobile telephony applications.

Dimensions



Connection options



DS-7 16 M/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3 GHz
Insertion loss	S_{21}	$\leq 0,95$ dB
Return loss	S_{11}	≥ 14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		7/16
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for F connection: male/female



Type	Conne- tion system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-F M/W	F	0 - 3.4 GHz	1	9,000	5093275

/pc.

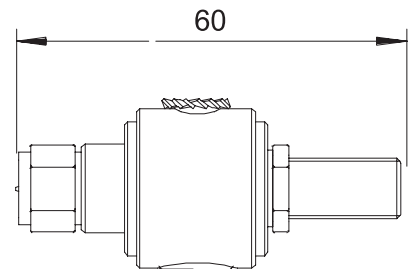
Coaxial data cable protection devices

- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With F connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

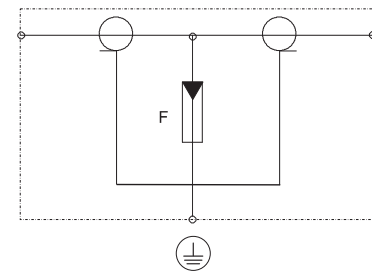
Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T(2)



Dimensions



Connection options



DS-F M/W

Maximum continuous voltage AC	U_C	130 V
Maximum continuous voltage DC	U_C	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	5 A
Wave resistance	Z_L	75 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	1 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		2 kA
Protection level		<800 V
Frequency range		0 - 3.4 GHz
Insertion loss	S_{21}	≤0,9 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		F
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for F connection: female/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-F W/W	F	0 - 3.4 GHz	1	9,000	5093272

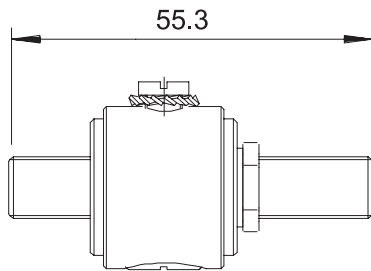
/pc.

Coaxial data cable protection devices

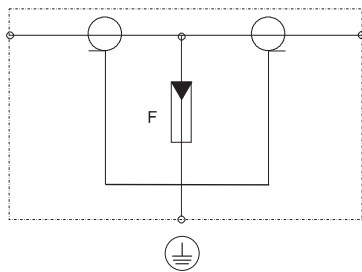
- Basic protection
- High pulsed current carrying capacity 2 x 2.5 kA (10/350 μs)
- Simple installation (adapter plug), m = plug/f = female connector
- Various plug combinations
- With F connector
- Optimised transmission behaviour
- Including OBO M25 Quick clip for simple installation

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T(2)

Dimensions



Connection options



DS-F W/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0-2
Number of poles		1
Rated current	I_L	5 A
Wave resistance	Z_L	75 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	1 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		2 kA
Protection level		<800 V
Frequency range		0 - 3.4 GHz
Insertion loss	S_{21}	≤0,9 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		F
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for SMA connection: female/female



Type	Connection system	Frequency range	Pack. pcs	Weight kg/100 pcs.	Item No.
DS-SMA W/W	SMA	0 - 3.7 GHz	1	7,500	5093277

/pc.

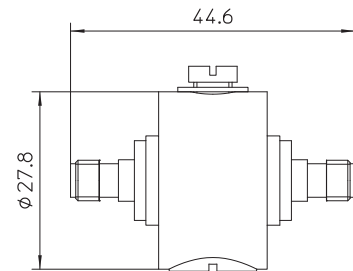
Coaxial data cable protection devices

- High pulsed current carrying capacity 2 x 2.5 kA (10/350)
- Simple mounting (adapter plug), m = plug/f = female connector
- Optimised transmission behaviour
- 5-year guarantee
- With SMA connector
- Including OBO M25 Quick clip for simple installation
- 50 Ω technology

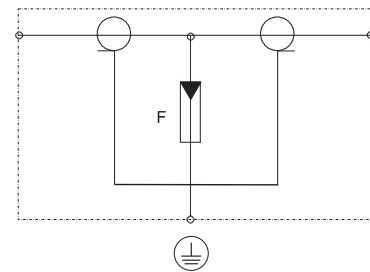
Application: Radio and data technology with SMA connector



Dimensions



Connection options



DS-SMA W/W

Maximum continuous voltage AC	U_c	130 V
Maximum continuous voltage DC	U_c	185 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		1
Rated current	I_L	10 A
Wave resistance	Z_L	50 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20μs)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20μs)
Impulse discharge current (10/350)	I_{imp}	2.5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		5 kA
Protection level		<800 V
Frequency range		0 - 3.7 GHz
Insertion loss	S_{21}	≤0,2 dB
Return loss	S_{11}	≥14 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		SMA
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Coaxial protection device for SAT and cable multiswitch



Type	Connection system	Frequency range	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TV 4+1	F	0.5 - 2.8 GHz	F	1	37,000	5083400

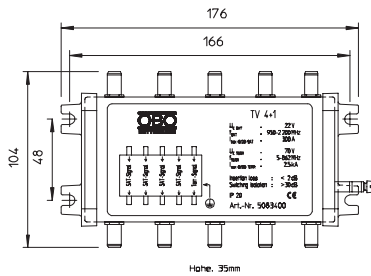
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Coaxial data line protection for TV reception systems

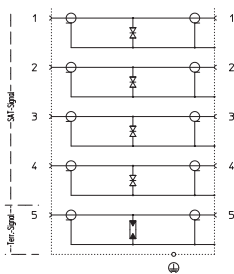
- Protects up to four SAT lines
- Protects one terrestrial line, e.g. DVB-T.
- Simple mounting using screws and holder
- With F-connector
- Optimum transmission behaviour with 75 Ohm technology.

Application: Protection of TV and SAT systems, multi-switches, receivers and DVB-T receivers

Dimensions



Connection options



TV 4+1

Maximum continuous voltage U_c SAT inputs	22 V
Maximum continuous voltage U_c terrestrial input	70 V
Category	Type 2+3 / C2+C1
Lightning protection zone LPZ	1→3
Number of poles	5
Rated current	I_L 2 A
Wave resistance	Z_L 75 Ω
Nominal discharge current SAT inputs	I_n 300 A
Lightning impulse current terrestrial input	I_{imp} 1 kA
Protection level SAT inputs at I_n	U_p <45 V
Protection level terrestrial input at I_n	<500 V
Frequency range	0.5 - 2.8 GHz
Insertion loss	S_{21} \leq 3 dB
Return loss	S_{11} >30 dB
Temperature range	ϑ -40 - +80 °C
Installation type	Surface-mounted
Connection system	F
Protection rating	IP10
Shielding connection available	Yes
Shield connection	Direct
Earthing via:	Connection cable
Testing standard	IEC 61643-21

Surge protection devices for network technology

- + Connectable protection device
- + High-performance surge protection
- + Usable in the "Channel Link" up to 10 GBit
- + Supports Power over Ethernet to 1 A
- + Testing protocol available



Surge protection
for data
and network technology

The "Net Defender" permits the use of Power over Ethernet with nominal currents of up to 1 A and optimised surge protection in the channel up to 10 GBit/s. This corresponds to a Channel Perform-

ance according to ISO/IEC 11801 Amd. 2 of Class EA or CAT 6A to TIA/ANSI. Of course, reverse compatibility is also guaranteed. To ensure easy installation, the "Net Defender" can be snapped directly

onto the DIN rail and uses it to create the necessary equipotential bonding. Alternatively, terminal protection using a separately connectable earthing line is possible.

Surge protection for high-speed networks up to 10 GBit (Class EA/CAT6A)



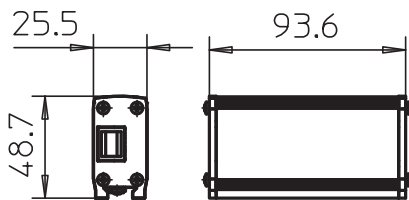
Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
ND-CAT6A/EA	Fine protection, 8 wires + shield	RJ45 8(8)	1	16,600	5081800

/pc.

Data cable protection device for high-speed networks

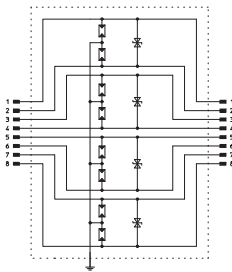
- High-quality RJ45 sockets
- Low protection level at high current load
- Earthing via DIN rail or connection cable
- Support of Power over Ethernet + to 1 A
- Tested transmission quality in networks up to 10 GBit (Class EA) or CAT6A
- Rapid installation through plug-in version
- Incl. DIN rail fastening set and earthing cable

Dimensions



Application example: 10 GBit Ethernet, 10/100 MBit Ethernet, PoE applications, IP camera systems, ISDN S0 interfaces

Connection options



ND-CAT6A/EA

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Channel performance ISO/IEC		Class EA
Channel performance Ansi/EA		CAT 6A
Number of poles		8
Rated current	I_L	1 A
Impulse current resistance wire-wire		C1: 0,3 kV / 0,15 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 2 kV / 1 kA (8/20 μ s)
Total arrester surge current (8/20)		7 kA
Protection level wire-wire		<120 V
Protection level wire-earth		<700 V
Frequency range		>500 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45 8(8)
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Fine protection for Ethernet networks (Class D/CAT 5)



Type	Version	Con- nec- tion system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45 S-ATM 8-F	Fine protection, 8 wires + shield	RJ45 8(8)	1	14,000	5081990

/pc.

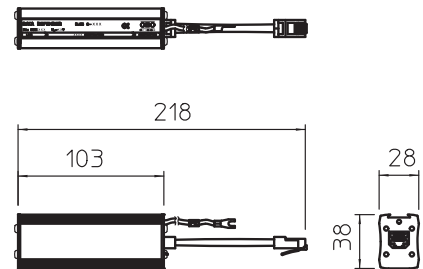
Universal data cable protection device for network technology and telecommunication systems

- In aluminium housing
- Protection for 8 cores
- With two-stage protective circuit
- Simple mounting
- With RJ45 Western connector
- Incl. 150 mm connection cable with RJ45 connectors
- Cat 5e network technology, 10BaseT, 100BaseT, 1000BaseT
- DIN rail mounting with accessories DLS-BS (5082 38 2)

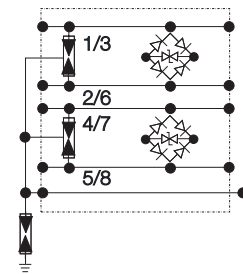
Application: For analogue, ISDN, DSL systems, Ethernet Twisted Pair.



Dimensions



Connection options

**RJ45 S-ATM 8-F**

Maximum continuous voltage AC	U_c	4.2 V
Maximum continuous voltage DC	U_c	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Channel performance ISO/IEC		Class D
Channel performance Ansi/EA		CAT 5e
Number of poles		8
Rated current	I_L	1 A
Impulse current resistance wire-wire		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 3 kV / 1,5 kA (8/20 μ s)
Total arrester surge current (8/20)		7,5 kA
Protection level wire-wire		<40 V
Protection level wire-earth		<900 V
Frequency range		>155 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45 8(8)
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Combination arrestor for 10Base2-/10Base5 networks



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
KOAX B-E2 MF-C	Combi protection	BNC	1	10,300	5082430

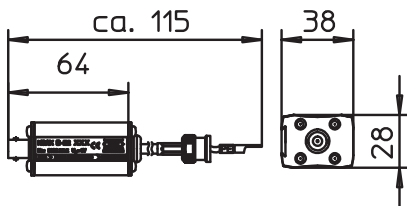
/pc.

Data line protection device for coaxial Ethernet network systems

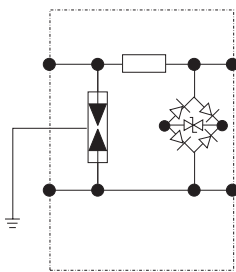
- In aluminium housing
- BNC connector m/f
- Simple mounting with adapter plug
- Two-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Protecting video signals; cameras and/or CCTV units, Cheapernet, 10BASE2, 10BASE5

Dimensions



Connection options



KOAX B-E2 MF-C

Maximum continuous voltage AC	U_c	4.2 V
Maximum continuous voltage DC	U_c	6.2 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		1
Rated current	I_L	0.3 A
Series resistance per wire		4,7 Ω \pm 10%
Wave resistance	Z_L	75 Ω
Impulse current resistance wire-wire		C2: 10 kV / 5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{impD}	1 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		2 kA
Protection level wire-wire		<75 V
Protection level wire-earth		<600 V
Frequency range		0 - 68 MHz
Insertion loss	S_{21}	\leq 1,7 dB
Return loss	S_{11}	\geq 14 dB
Temperature range	ϑ	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Fine protection for 10Base2-/10Base5 networks



Type	Version	Conne- tion system	Pack. pcs	Weight kg/100 pcs.	Item No.
KOAX B-E2 MF-F	Fine protection	BNC	1	9,800	5082432

/pc.

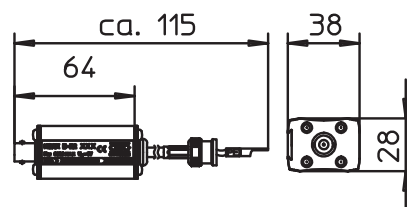
Data line protection device for coaxial Ethernet network systems

- In aluminium housing
- BNC connector m/f
- Simple mounting with adapter plug
- Two-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Protecting video signals; cameras and/or CCTV units, Cheapernet, 10BASE2, 10BASE5



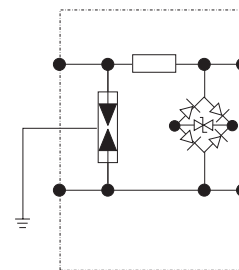
Dimensions



KOAX B-E2 MF-F

Maximum continuous voltage AC	U_c	4.2 V
Maximum continuous voltage DC	U_c	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		1
Rated current	I_L	1 A
Series resistance per wire		—
Wave resistance	Z_L	75 Ω
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	— kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<40 V
Protection level wire-earth		<600 V
Frequency range		0 - 70 MHz
Insertion loss	S_{21}	≤ 1 dB
Return loss	S_{11}	≥ 14 dB
Temperature range	ϑ	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Connection options



Data cable protection device for coaxial TV / camera systems



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
KOAX B-E2 FF-F	Fine protection	BNC	1	14,400	5082434

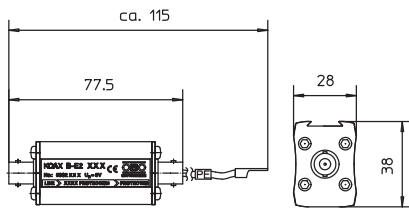
/pc.

Data cable protection device for coaxial TV / camera systems

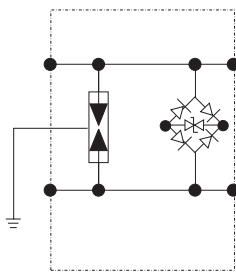
- In aluminium housing
- BNC connector socket/socket
- Simple mounting with adapter plug
- Two-stage protection circuit
- Hat rail mounting with DLS-BS accessories (5082 38 2)

Application: Protection of CCTV, video signals; cameras and/or TV systems

Dimensions



Connection options



KOAX B-E2 FF-F

Maximum continuous voltage AC	U_C	4.2 V
Maximum continuous voltage DC	U_C	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1-3
Number of poles		1
Rated current	I_L	1 A
Series resistance per wire		—
Wave resistance	Z_L	75 Ω
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{impD}	— kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<40 V
Protection level wire-earth		<600 V
Frequency range		0 - 160 MHz
Insertion loss	S_{21}	$\leq 1,7$ dB
Return loss	S_{11}	≥ 14 dB
Temperature range	ϑ	-20 - +80 °C
Installation type		Connector/cable adapter
Connection system		BNC
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Earthing via:		—
Testing standard		IEC 61643-21

Fastening set for DIN profile rail

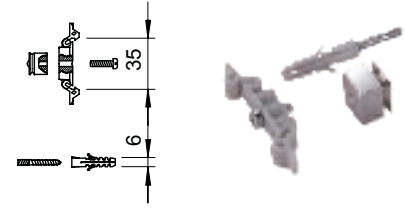


Type	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
DLS-BS	For mounting: <ul style="list-style-type: none"> • Coax B-E2/... • Coax N-E5/... • RJ 11-Tele/4... • RJ 45 S-... 	1	5,000	5082382

/pc.

DLS-BS: The attachment set is designed for DIN profile rail and wall mounting and can be used for the data cable protection devices listed below:

- Coax B-E2/...
- RJ 11-Tele/4...
- RJ 45 S-...



Surge protection devices for data technology: The plus of the arrestors for IT systems

- + Plug-in protective devices
- + Labelled connections
- + Basic Protection = red = lightning protection
- + Fine Protection = green = surge protection
- + Combi Protection = blue = combined protection



Basic protection
Combination arrestors
Fine protection

Data cable protection device for data technology, e.g. Ethernet network systems, Twisted Pair and control circuits. The two-level protection circuit permits transmission

frequencies of up to 155 MHz. The protection devices are mounted in an aluminium housing with Sub RJ45 connector and can be mounted simply as an adapter con-

ector. The supplied, 150 mm-long connection cable allows rapid refitting.

Basic protection for 4-wire information technology systems with RJ45



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45 S-E100 4-B	Basic protection, 4 wires + shield	RJ45	1	14,000	5081001

/pc.

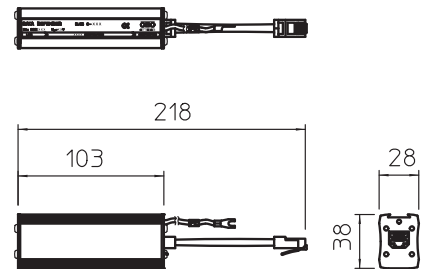


Data line protection device for IT systems

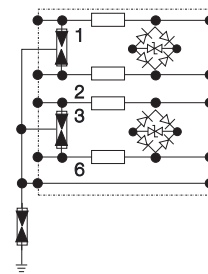
- In aluminium housing
- RJ45 connector
- Incl. 150 mm connection cable with RJ45 connectors
- Simple mounting using adapter
- 2-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Twisted Pair, control circuits, RJ45 communication cables

Dimensions



Connection options

**RJ45 S-E100 4-B**

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		4
Rated current	I_L	1 A
Series resistance per wire		—
Impulse current resistance wire-wire		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	0,5 kA
Total arrester surge current (8/20)		7,5 kA
Total arrester surge current (10/350)		2,5 kA
Protection level wire-wire		<700 V
Protection level wire-earth		<850 V
Frequency range		0 - 463 MHz
Insertion loss	S_{21}	≤ 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Indirect
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Combination arrester for 4-wire information technology systems with RJ45



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45 S-E100 4-C	Combined protection, 4 wires + shield	RJ45	1	14,000	5081003

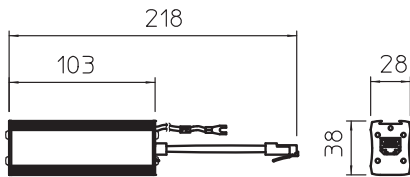
/pc.

Data line protection device for IT systems

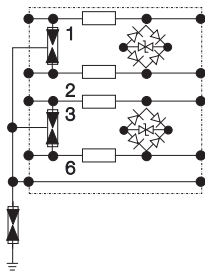
- In aluminium housing
- RJ45 connector
- Incl. 150 mm connection cable with RJ45 connectors
- Simple mounting using adapter
- 2-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

Application: Twisted Pair, control circuits, RJ45 communication cables

Dimensions



Connection options



RJ45 S-E100 4-C

Maximum continuous voltage AC	U_c	4.2 V
Maximum continuous voltage DC	U_c	6.2 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-2
Number of poles		4
Rated current	I_L	0.3 A
Series resistance per wire		4,7 $\Omega \pm 10\%$
Impulse current resistance wire-wire		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 3 kV / 1,5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	1.5 kA
Total arrester surge current (8/20)		7,5 kA
Total arrester surge current (10/350)		2,5 kA
Protection level wire-wire		<70 V
Protection level wire-earth		<850 V
Frequency range		0 - 109 MHz
Insertion loss	S_{21}	≤ 3 dB
Temperature range	θ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Indirect
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Fine protection for 4-wire information technology systems with RJ45



Type	Version	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
RJ45 S-E100 4-F	Fine protection, 4 wires + shield	RJ45	1	14,000	5081005

/pc.

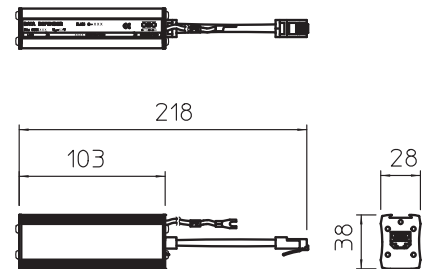
Data line protection device for IT systems

- In aluminium housing
- RJ45 connector
- Incl. 150 mm connection cable with RJ45 connectors
- Simple mounting using adapter
- 2-stage protection circuit
- DIN rail mounting with DLS-BS accessories (5082 38 2)

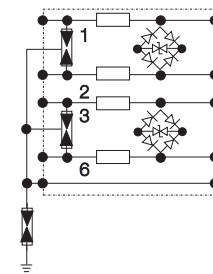
Application: Twisted Pair, control circuits, RJ45 communication cables



Dimensions



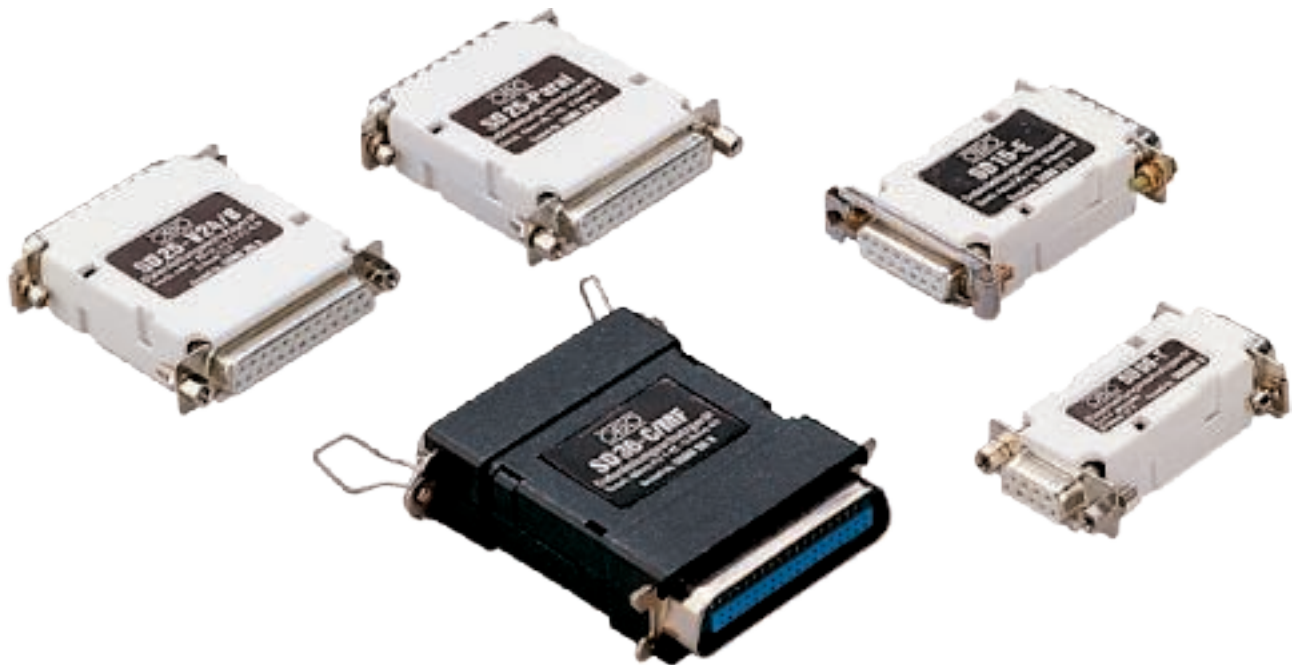
Connection options

**RJ45 S-E100 4-F**

Maximum continuous voltage AC	U_C	4.2 V
Maximum continuous voltage DC	U_C	6.2 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		2→3
Number of poles		4
Rated current	I_L	1 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse discharge current (10/350)	I_{imp}	— kA
Total arrester surge current (8/20)		2,5 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<40 V
Protection level wire-earth		<750 V
Frequency range		0 - 100 MHz
Insertion loss	S_{21}	≤ 3 dB
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		RJ45
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Indirect
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Product family, surge protection for serial interfaces

- + Connectable protection device
- + High-performance surge protection
- + Various interfaces available
- + Low protection level



Fine protection for serial interfaces

Serial interfaces are regularly found in industrial applications. Whether RS-232 or RS-422, depending on the connection system, OBO Bettermann can offer easy to install surge protection. Depending on the interface, these compon-

ents are switched into the appropriate system in series, thus offering protection against the coupling of surge voltages between data cables.

Fine protection for 9-pole RS232 interface



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
SD09-V24 9	18	SUB-D-9; V24 RS232	1	6,000	5080053

/pc.

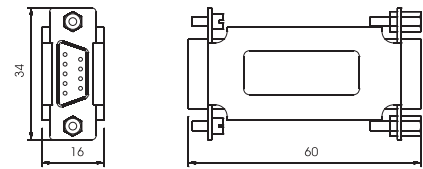


Data cable protection devices, serial interfaces

- Various connection technologies available
- Low protection level

Application: PLC, alarm systems, controllers

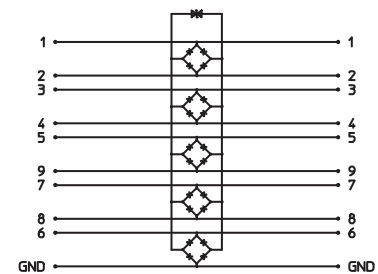
Dimensions



SD09-V24 9

Max. continuous operating voltage	U_c	18 V
Category		Type 3 / C1
Lightning protection zone LPZ		2→3
Number of poles		9
Impulse current resistance wire-wire		0,34 kA (8/20 μ s)
Impulse current resistance wire-earth		0,34 kA (8/20 μ s)
Protection level wire-wire		<50 V
Protection level wire-earth		<50 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_p	<25 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 9 pole
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Connection options



Fine protection for 15-pole RS232 interface



Highest continuous voltage

Type	V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
SD15-V24 15	18	SUB-D-15; V24 RS232	1	7,000	5080150

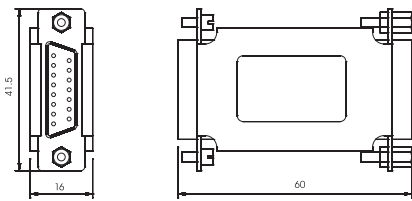
/pc.

Data cable protection devices, serial interfaces

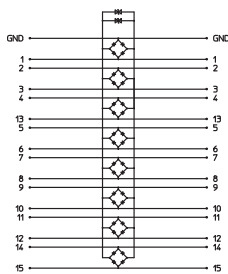
- Various connection technologies available
- Low protection level

Application: PLC, alarm systems, controllers

Dimensions



Connection options



SD15-V24 15

Max. continuous operating voltage	U_c	18 V
Category		Type 3 / C1
Lightning protection zone LPZ		2→3
Number of poles		15
Impulse current resistance wire-wire		0,34 kA (8/20 μ s)
Impulse current resistance wire-earth		0,34 kA (8/20 μ s)
Protection level wire-wire		<50 V
Protection level wire-earth		<50 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_p	<25 V
Temperature range	θ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 15 pole
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Fine protection for 9-pole RS485 interface



Type	Highest continuous voltage		Pack. pcs	Weight kg/100 pcs.	Item No.
	V	Version			
SD09-V11 9	7.5	SUB-D-9; V11 RS485	1	6,000	5080061

/pc.

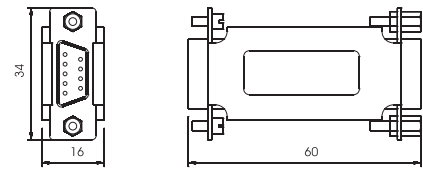


Data cable protection devices, serial interfaces

- Various connection technologies available
- Low protection level

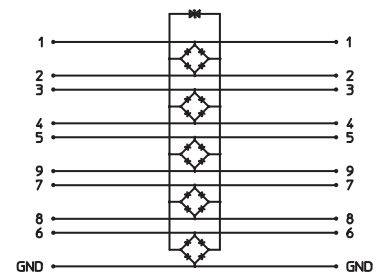
Application: PLC, alarm systems, controllers

Dimensions

**SD09-V11 9**

Max. continuous operating voltage	U_c	7.5 V
Category		Type 3 / C1
Lightning protection zone LPZ		2→3
Number of poles		9
Impulse current resistance wire-wire		0,75 kA (8/20 μ s)
Impulse current resistance wire-earth		0.75 kA (8/20 μ s)
Protection level wire-wire		<100 V
Protection level wire-earth		<100 V
Protection level, wire-earth at 1 kV/ μ s (C3)	U_p	<10 V
Temperature range	ϑ	-40 - +80 °C
Installation type		Connector/cable adapter
Connection system		D-Sub 9 pole
Protection rating		IP40
Shielding connection available		Yes
Shield connection		Direct
Testing standard		IEC 61643-21

Connection options



Fine protection for energy systems, series installation: the plus of the VF family

- + High arresting capacity
- + Low protection level
- + Usable in AC/DC applications
- + Simple mounting using screwless terminals
- + UL-listed



Protection for 2-pole power supplies

The lightning barriers of type VF are fine protection devices, used for single-phase energy technology systems. Besides the low protection level, these devices also have a visual display, which will indicate

defective surge protection. If required, remote signalling is also available using a changeover contact and an NC contact.

MCR protection for 2-pole power supply, 12 V



Highest continuous voltage
V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF12-AC DC 13.5	1	9,000	5097453

/pc.

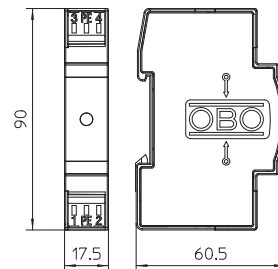
Surge protection device / fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

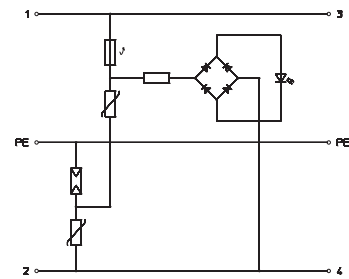
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.



Dimensions



Connection options



VF12-AC DC

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<110 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 24 V



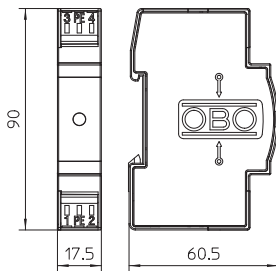
Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
	VF24-AC/DC	34	1	8,000

/pc.

Surge protection device / fine protection type 3 to EN 61643-11

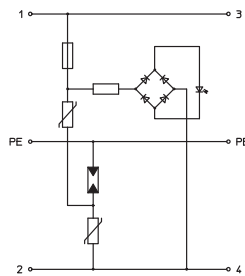
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Connection options



VF24-AC/DC

U max AC	U _c AC	34 V
U max DC	U _c DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<130 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 48 V



Highest continuous voltage
V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF48-AC/DC 60	1	8,000	5097615

/pc.

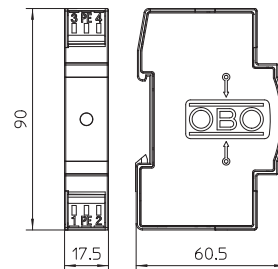
Surge protection device / fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

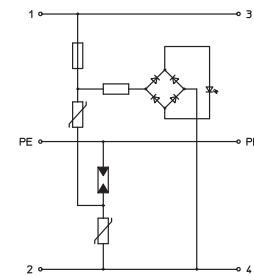
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.



Dimensions



Connection options



VF48-AC/DC

U max AC	U _c AC	60 V
U max DC	U _c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<220 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²



MCR protection for 2-pole for power supply, 60 V



Highest continuous voltage V

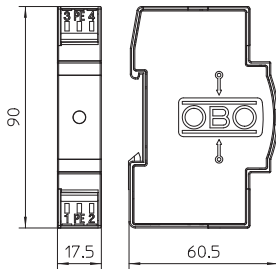
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF60-AC/DC 80	1	8,000	5097623

/pc.

Surge protection device / fine protection type 3 to EN 61643-11

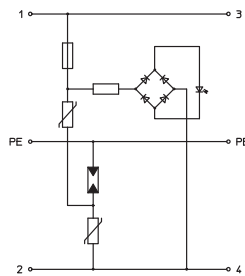
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Connection options



VF60-AC/DC

U max AC	U _c AC	80 V
U max DC	U _c DC	110 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<280 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 110 V



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF110-AC DC 150	1	8,000	5097631

/pc.

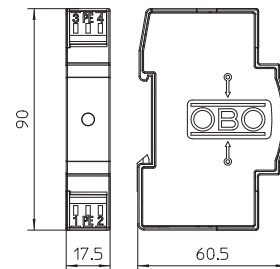
Surge protection device / fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

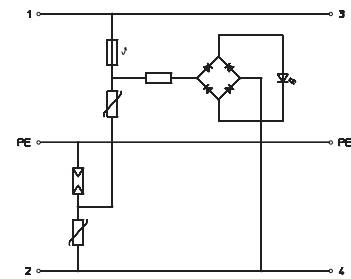
Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributing housing.



Dimensions



Connection options



VF110-AC DC

U max AC	U _c AC	150 V
U max DC	U _c DC	200 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	2 kA
Rated current	I _L	20 A
Protection level wire-wire		<500 V
Protection level wire-earth		<1400 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply, 230 V



Highest continuous voltage V

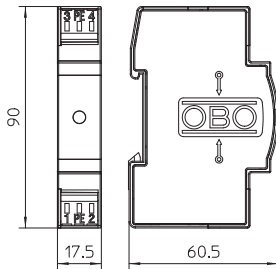
Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
VF230-AC/DC	255	1	8,000	5097650

/pc.

Surge protection device / fine protection type 3 to EN 61643-11

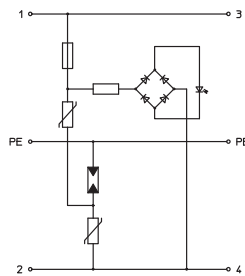
- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Dimensions



Application: Universal use on 35 mm DIN profile rail in every normal commercially available distributor housing.

Connection options



VF230-AC/DC

U max AC	U_c AC	255 V
U max DC	U_c DC	350 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I_n	2.5 kA
Rated current	I_L	20 A
Protection level wire-wire		<1000 V
Protection level wire-earth		<1400 V
Response time	t_A	<25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole for power supply with remote signalling, 12 V AC/DC



Type	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
VF12-AC/DC-FS	13.5	1	6,400	5097454

/pc.

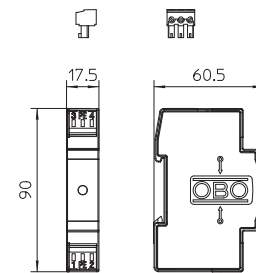
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

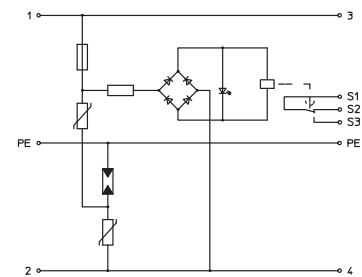
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



Connection options



VF12-AC/DC-FS

U max AC	U _c AC	13.5 V
U max DC	U _c DC	18 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<110 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole power supply with remote signalling, 24 V AC/DC



Highest continuous voltage V

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
VF24-AC/DC-FS 34	1	6,620	5097820

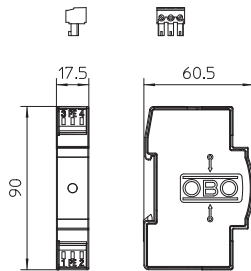
/pc.

Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

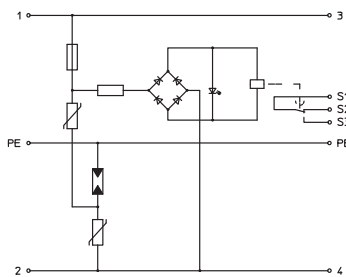
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Dimensions



Connection options



VF24-AC/DC-FS

U max AC	U _c AC	34 V
U max DC	U _c DC	46 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	0,7 kA
Rated current	I _L	20 A
Protection level wire-wire		<160 V
Protection level wire-earth		<1200 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole power supply with remote signalling, 48 V AC/DC



Type	Highest continuous voltage	Pack. pcs	Weight kg/100 pcs.	Item No.
	V	1	6,630	5097822
VF48-AC/DC-FS	60			

/pc.

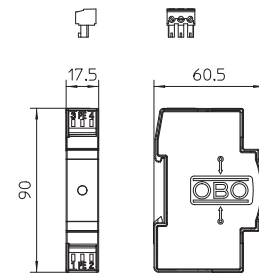
Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for DC and AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

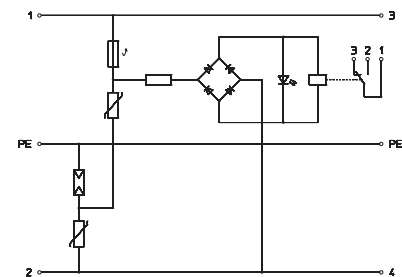
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



Connection options



VF48-AC/DC-FS

U max AC	U_c AC	60 V
U max DC	U_c DC	80 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I_n	0,7 kA
Rated current	I_L	20 A
Protection level wire-wire		<220 V
Protection level wire-earth		<1200 V
Response time	t_A	<25 ns
Temperature range	ϑ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole power supply with remote signalling, 230 V AC



	Highest continuous voltage V	Pack. pcs	Weight kg/100 pcs.	Item No.
Type	255	1	6,910	5097858

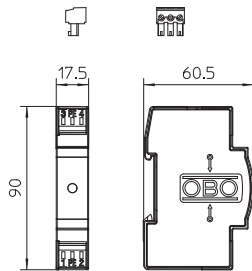
/pc.

Surge protection / fine power protection, type 3, to EN 61643-11 with remote signalling

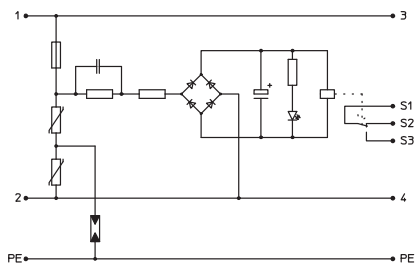
- With remote signalling, potential-free changeover contact, for function monitoring
- Suitable for AC systems
- With visual function display
- With easy mounting, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.

Dimensions



Connection options



VF230-AC-FS

U max AC	U _c AC	255 V
U max DC	U _c DC	– V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2-3
Nominal discharge current (8/20)	I _n	2,5 kA
Rated current	I _L	20 A
Protection level wire-wire		<1060 V
Protection level wire-earth		<1400 V
Response time	t _A	< 25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for 2-pole power supply with leak current-free remote signalling, 230 V AC/DC



Type	U max		Pack. pcs	Weight kg/100 pcs.	Item No.
	AC V	DC V			
VF2-230-AC/DC-FS	255	350	1	6,000	5097939

/pc.

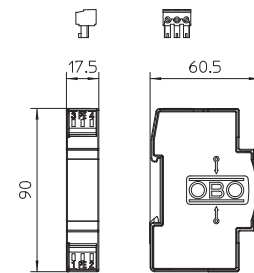
Type 3 surge protection/fine network protection to EN 61643-11 with leak current-free remote signalling

- With remote signalling: potential-free NC contact for function monitoring
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- Y circuit

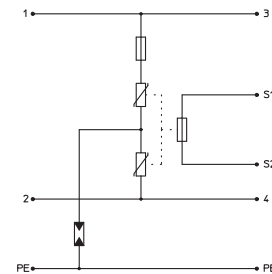
Application: Universal use on 35 mm DIN profile rails in any standard distributor housing.



Dimensions



Connection options



VF2-230-AC/DC-FS

U max AC	U _c AC	255 V
U max DC	U _c DC	350 V
SPD to EN 61643-11		Type 3
SPD to IEC 61643-11		Class III
Lightning protection zone LPZ		2→3
Nominal discharge current (8/20)	I _n	2,5 kA
Rated current	I _L	20 A
Protection level wire-wire		< 1000 V
Protection level wire-earth		< 1400 V
Response time	t _A	<25 ns
Temperature range	θ	-40 - +80 °C
Protection rating		IP 20
Division unit TE (17.5 mm)		1
Connection cross-section rigid		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section, flexible		0.14 - 2.5 mm ²

MCR protection for two-core systems: the plus of the FRD/FLD family

- + High arresting capability
- + Low protection level
- + Universally usable
- + Simple mounting using screwless terminals
- + High bandwidth
- + UL-listed



Basic and combination protection for two-core systems

The use of lightning barriers in two-core wire systems is commonplace. These surge protection devices are used from telecommunication cables through bus systems up to measurement and control technology. Surge protection

technology allows flexible protection for all kinds of applications. All the devices have both a low protection level and a high arresting capacity.

Basic protection for two-core systems with HF applications 120 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
TKS-B	120	170	2	Terminal	1	4,400	5097976

/pc.

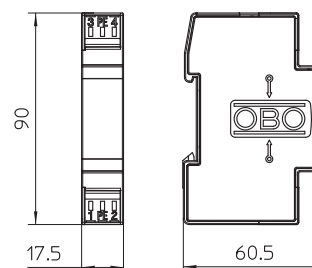
Basic protection for measuring, control and regulation technology and telecommunication systems.

- Basic protection for lightning protection equipotential bonding
- High impulse arresting capacity 6 kA (10/350)
- With easy-to-mount, screwless connection terminals
- In a space-saving 17.5 mm grid

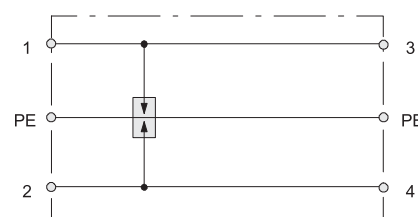
Application: Universal use on 35 mm DIN rails in standard distributor housings.



Dimensions



Connection options



TKS-B

Maximum continuous voltage AC	U_c	120 V
Maximum continuous voltage DC	U_c	170 V
Category		Type 1+2 / D1+C2
Lightning protection zone LPZ		0→2
Number of poles		2
Rated current	I_L	20 A
Series resistance per wire		—
Impulse current resistance wire-wire		C2: 18 kV / 9 kA
Impulse current resistance wire-earth		C2: 18 kV / 9 kA
Total arrester surge current (8/20)		18 kA
Total arrester surge current (10/350)		D1: 6 kA
Protection level wire-wire		<950 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Connection cable
Testing standard		IEC 61643-21

Combination protection for two-core systems with HF applications 5 V



Type	Highest continuous AC voltage V	Highest continuous DC voltage V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 5 HF	4	6	2	Terminal	1	4,400	5098571

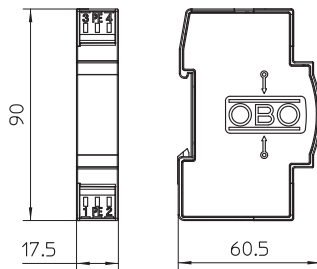
/pc.

Surge protection for use in measuring, control and regulation systems.

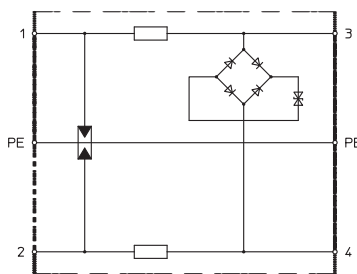
- Basic, medium and fine protection
- Two-stage protection circuit with high lightning current carrying capacity
- High transmission frequency up to 100 MHz
- Suitable for all bus systems (e.g. Profibus)
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid

Application: Multipurpose use on any 35 mm DIN profile rail in every commercially available distribution housing.

Dimensions



Connection options



FRD 5 HF

Maximum continuous voltage AC	U_c	4 V
Maximum continuous voltage DC	U_c	6 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.45 A
Series resistance per wire		2,2 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Total arrester surge current (8/20)		18 kA
Total arrester surge current (10/350)		D1: 6 kA
Protection level wire-wire		<90 V
Protection level wire-earth		<650 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Combination protection for two-core systems with HF applications 24

V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 24 HF	19	28	2	Terminal	1	4,400	5098575

/pc.

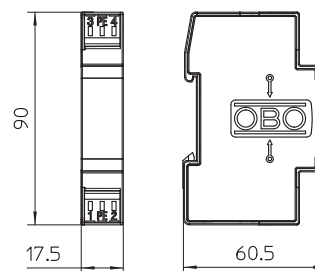
Surge protection for use in measuring, control and regulation systems.

- Basic, medium and fine protection
- Two-stage protection circuit with high lightning current carrying capacity
- High transmission frequency up to 100 MHz
- Suitable for all bus systems (e.g. Profibus)
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid

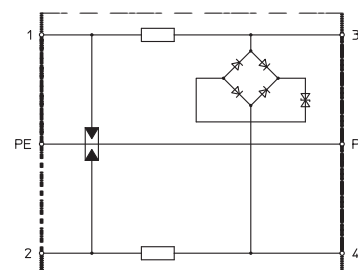
Application: Multipurpose use on any 35 mm DIN profile rail in every commercially available distribution housing.



Dimensions



Connection options



FRD 24 HF

Maximum continuous voltage AC	U_c	19 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	I_L	0.45 A
Series resistance per wire		2,2 $\Omega \pm 10\%$
Impulse current resistance wire-wire		C2: 18 kV / 9 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 18 kV / 9 kA (8/20 μ s)
Total arrester surge current (8/20)		18 kA
Total arrester surge current (10/350)		D1: 6 kA
Protection level wire-wire		<120 V
Protection level wire-earth		<650 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 5 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 5	5	8	2	Terminal	1	5,100	5098492

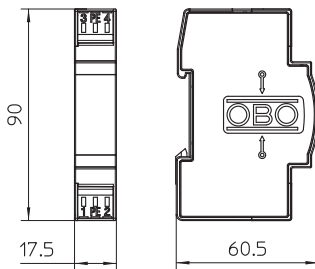
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Surge protection for use in measurement and control technology

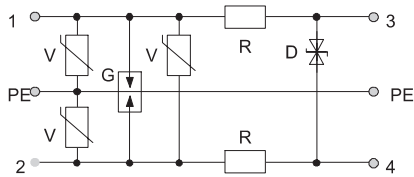
- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FRD 5

Maximum continuous voltage AC	U_c	5 V
Maximum continuous voltage DC	U_c	8 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 Ω \pm 10 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<15 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 12 V



Type	Highest continuous voltage AC	Highest continuous voltage DC	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
	V	V					
FRD 12	9	13	2	Terminal	1	5,100	5098506

/pc.

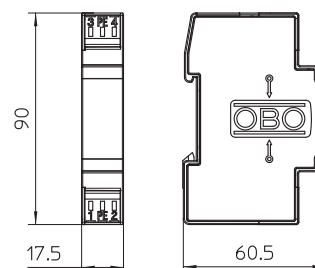
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

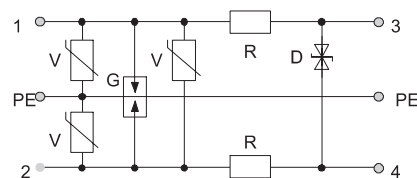
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FRD 12

Maximum continuous voltage AC	U_c	9 V
Maximum continuous voltage DC	U_c	13 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 Ω \pm 10 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<30 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 24	19	28	2	Terminal	1	5,100	5098514

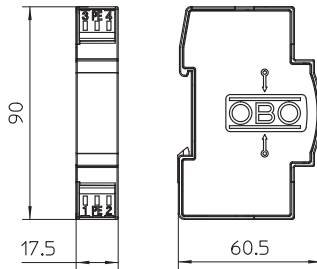
/pc.

Surge protection for use in measurement and control technology

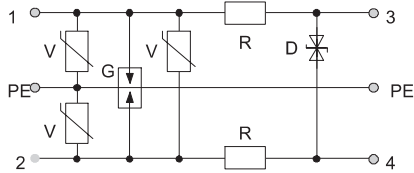
- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FRD 24

Maximum continuous voltage AC	U_c	19 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<60 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 48 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 48	37	53	2	Terminal	1	5,100	5098522

/pc.

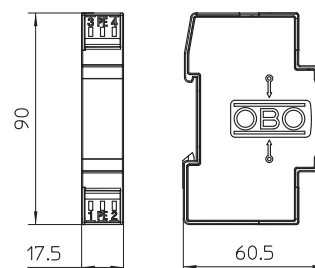
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

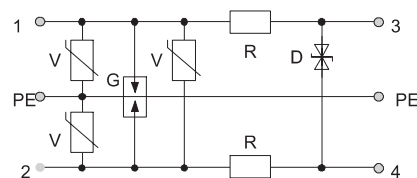
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FRD 48

Maximum continuous voltage AC	U_c	37 V
Maximum continuous voltage DC	U_c	53 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 $\Omega \pm 10\%$
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<140 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21



Medium and fine protection for two-core systems 110 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 110	86	122	2	Terminal	1	5,100	5098557

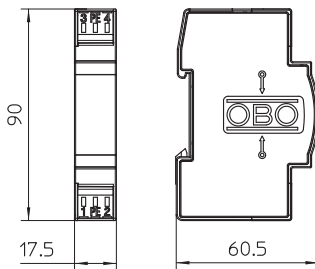
/pc.

Surge protection for use in measurement and control technology

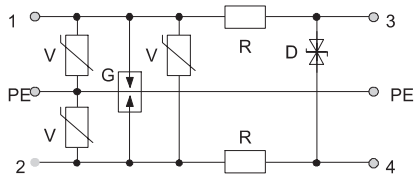
- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FRD 110

Maximum continuous voltage AC	U_c	86 V
Maximum continuous voltage DC	U_c	122 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 Ω \pm 10 %
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FRD 2-24	19	28	2	Terminal	1	5,100	5098727

/pc.

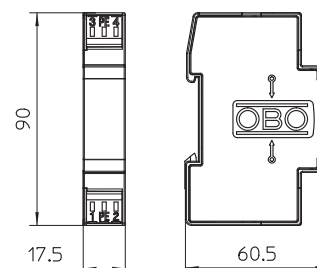
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for double core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With ohmic decoupling in the longitudinal branch

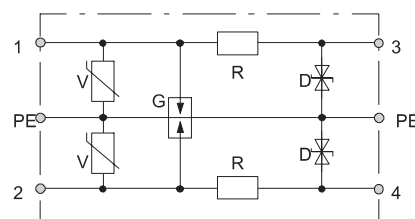
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FRD 2-24

Maximum continuous voltage AC	U_c	19 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Rated current	I_L	0.2 A
Series resistance per wire		15 $\Omega \pm 10\%$
Impulse current resistance wire-wire		C2: 5 kV / 2.5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2.5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<120 V
Protection level wire-earth		<60 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 5 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 5	5	8	2	Terminal	1	5,200	5098600

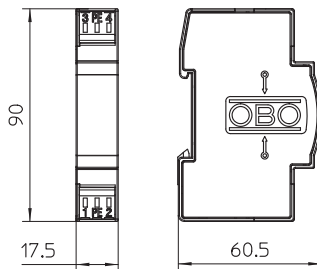
/pc.

Surge protection for use in measurement and control technology

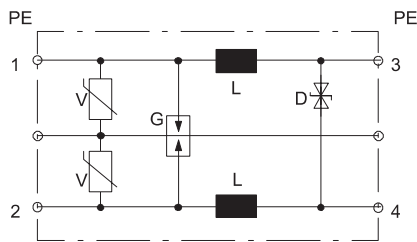
- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FLD 5

Maximum continuous voltage AC	U_c	5 V
Maximum continuous voltage DC	U_c	8 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<15 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 12 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 12	9	13	2	Terminal	1	5,200	5098603

/pc.

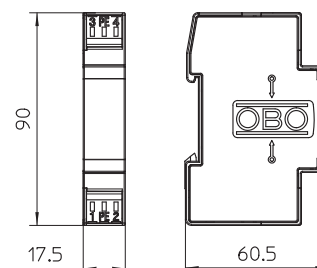
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

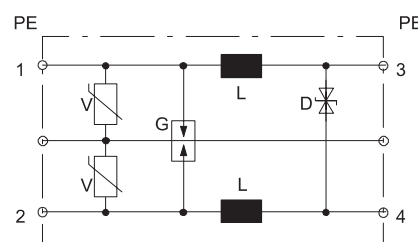
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FLD 12

Maximum continuous voltage AC	U_c	9 V
Maximum continuous voltage DC	U_c	13 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<30 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21



Medium and fine protection for two-core systems 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 24	19	28	2	Terminal	1	5,200	5098611

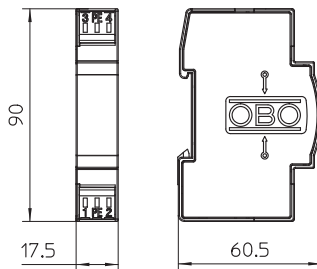
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Surge protection for use in measurement and control technology

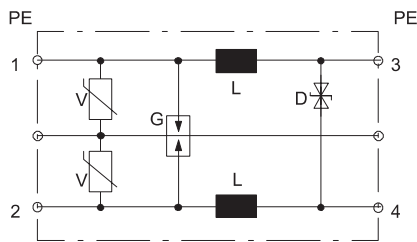
- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FLD 24

Maximum continuous voltage AC	U_c	19 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<60 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 48 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 48	37	53	2	Terminal	1	5,200	5098630

/pc.

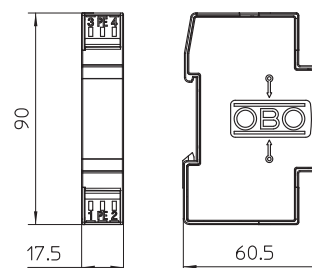
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

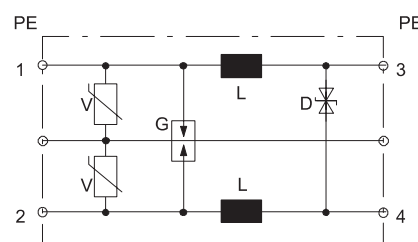
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FLD 48

Maximum continuous voltage AC	U_c	37 V
Maximum continuous voltage DC	U_c	53 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<140 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 60 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 60	65	93	2	Terminal	1	5,200	5098638

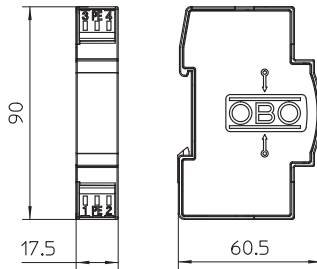
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Surge protection for use in measurement and control technology

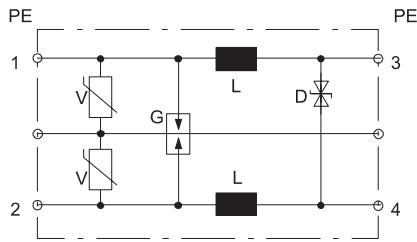
- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FLD 60

Maximum continuous voltage AC	U_c	65 V
Maximum continuous voltage DC	U_c	93 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<160 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 110 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 110	86	122	2	Terminal	1	5,200	5098646

/pc.

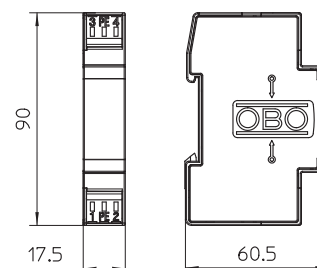
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

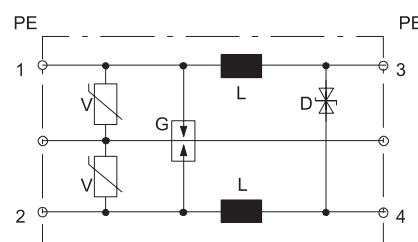
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FLD 110

Maximum continuous voltage AC	U_c	86 V
Maximum continuous voltage DC	U_c	122 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 20 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 10 kV / 5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 3 kA
Protection level wire-wire		<300 V
Protection level wire-earth		<600 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21



Medium and fine protection for two-core systems 5 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 2-5	5	8	2	Terminal	1	5,100	5098867

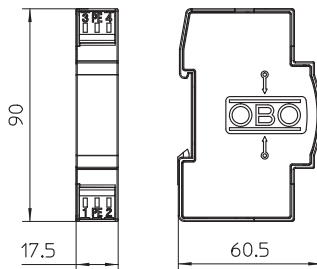
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Surge protection for use in measurement and control technology

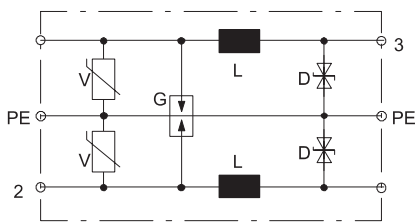
- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FLD 2-5

Maximum continuous voltage AC	U_c	5 V
Maximum continuous voltage DC	U_c	8 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 10 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C1: 1 kV / 0,5 kA (8/20 μ s)
Total arrester surge current (8/20)		1 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<30 V
Protection level wire-earth		<15 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 12 V



Type	Highest continuous voltage AC	Highest continuous voltage DC	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
	V	V					
FLD 2-12	9	13	2	Terminal	1	5,100	5098808

/pc.

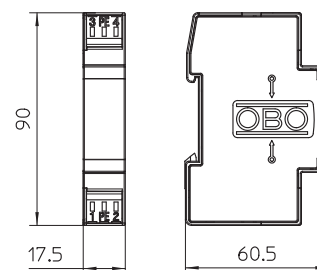
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

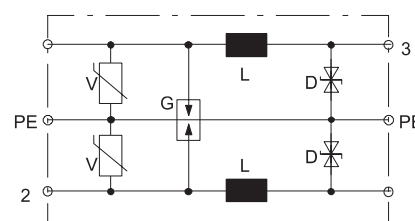
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FLD 2-12

Maximum continuous voltage AC	U_c	9 V
Maximum continuous voltage DC	U_c	13 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 10 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C1: 1 kV / 0,5 kA (8/20 μ s)
Total arrester surge current (8/20)		1 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<60 V
Protection level wire-earth		<30 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21



Medium and fine protection for two-core systems 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
FLD 2-24	28	19	2	Terminal	1	5,100	5098816

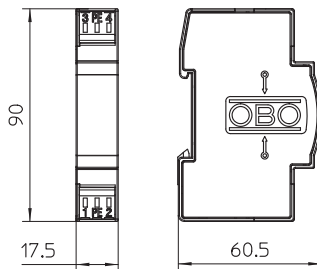
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Surge protection for use in measurement and control technology

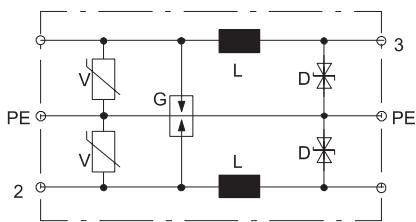
- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.

Dimensions



Connection options



FLD 2-24

Maximum continuous voltage AC	U_c	28 V
Maximum continuous voltage DC	U_c	19 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 10 %
Impulse current resistance wire-wire		C1: 1 kV / 0,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C1: 1 kV / 0,5 kA (8/20 μ s)
Total arrester surge current (8/20)		1 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<120 V
Protection level wire-earth		<60 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21

Medium and fine protection for two-core systems 110 V



Type	Highest continuous voltage		Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
	AC V	DC V					
FLD 2-110	86	122	2	Terminal	1	5,100	5098859

/pc.

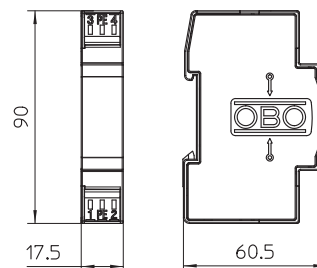
Surge protection for use in measurement and control technology

- Medium and fine protection
- Standard design for single core systems
- Two-stage protection circuit
- With installation-friendly, screwless connection terminals
- In space-saving 17.5 mm grid
- With inductive decoupling in the longitudinal branch

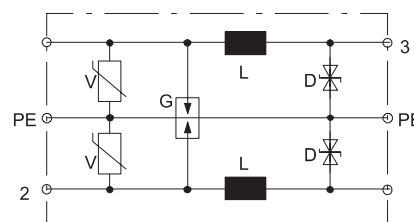
Application: Universal use on any 35 mm DIN profile rail in every commercially available distributor housing.



Dimensions



Connection options



FLD 2-110

Maximum continuous voltage AC	U_c	86 V
Maximum continuous voltage DC	U_c	122 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Rated current	I_L	1 A
Series inductivity per wire		120 μ H \pm 10 %
Impulse current resistance wire-wire		C2: 5 kV / 2,5 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		— kA
Protection level wire-wire		<500 V
Protection level wire-earth		<300 V
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Division unit TE (17.5 mm)		1
Protection rating		IP20
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 2.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		Terminal
Testing standard		IEC 61643-21



MCR protection for multi-wire systems (testable): the plus of the MDP family

- + Protection device for multi-wire systems (4-pole)
- + Direct shield earthing
- + Easy-mounting, screwless connection terminals
- + Space-saving width of just 8.1 mm
- + Versions with nominal currents up to 10 A
- + High frequency bandwidth up to 100 MHz
- + UL-listed



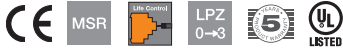
Series protection device
2–3 and 4-pole
from 5 to 48 V

Besides the high current capacity, the lightning barriers of type MDP offer a narrow installation width of just 8 mm. A separate screen connection permits shield attachment on both sides of the equipotential bonding, thus optimising the shield

effect against capacitive and inductive couplings. Depending on the version, a nominal current of up to 10 A can be applied to the devices, meaning that they are thus ideally suited to use in special applications, such as slip ring

transmitters or heating systems in wind power systems. When installed, all the MDPs can be checked using LifeControl.

Series protection device, 2-pole, 5 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-5-T	7	10	2	Terminal	1	6,000	5098404

/pc.

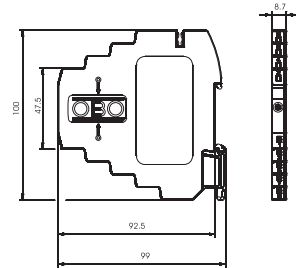
MDP... D-5-T: Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

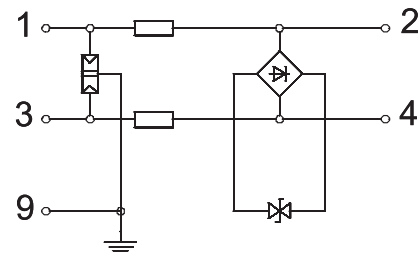
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



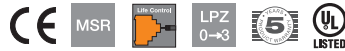
Connection options



MDP-2 D-5-T

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		D1: 1 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 3-pole, 5 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-5-T	7	10	3	Terminal	1	6,000	5098407

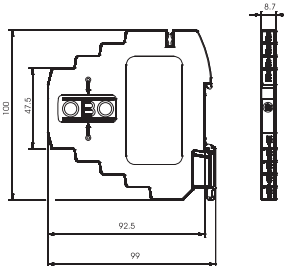
/pc.

MDP... D-5-T: Lightning barrier with test function; 5 V version

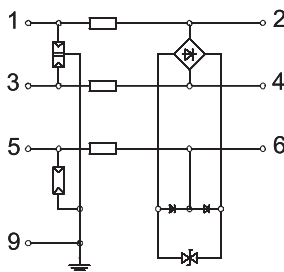
- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



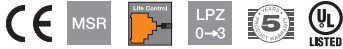
Connection options



MDP-3 D-5-T

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	I_L	0.58 A
Series resistance per wire		2,35 Ω \pm 5 %
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		7,5 kA
Total arrester surge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 5 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-5-T	7	10	4	Terminal	1	6,000	5098411

/pc.

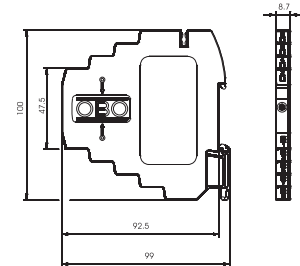
MDP... D-5-T: Lightning barrier with test function; 5 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High frequency range of 0–100 MHz
- UL-listed (4DG1)

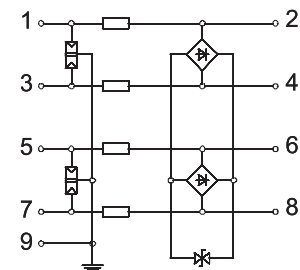
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



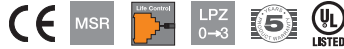
Connection options



MDP-4 D-5-T

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA kA
Total arrester surge current (10/350)		D1: 2kA kA
Protection level wire-wire		<35 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 2-pole, 24 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-24-T	20	28	2	Terminal	1	6,000	5098422

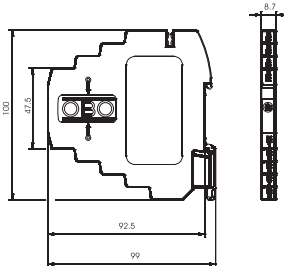
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MDP... D-24-T: Lightning barrier with test function; 24 V version

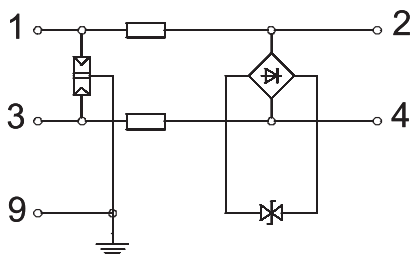
- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



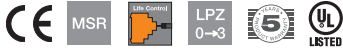
Connection options



MDP-2 D-24-T

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	0.58 A
Series resistance per wire		2,35 Ω \pm 5 %
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		D1: 1 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 3-pole, 24 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-24-T	20	28	3	Terminal	1	6,000	5098427

/pc.

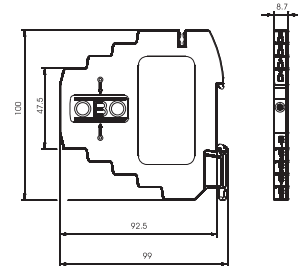
MDP... D-24-T: Lightning barrier with test function; 24 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

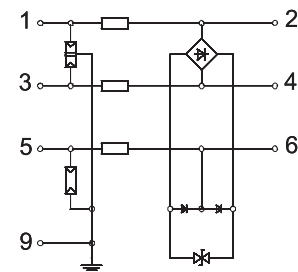
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



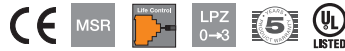
Connection options



MDP-3 D-24-T

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		7,5 kA
Total arrester surge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 24 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-T	20	28	4	Terminal	1	5,800	5098431

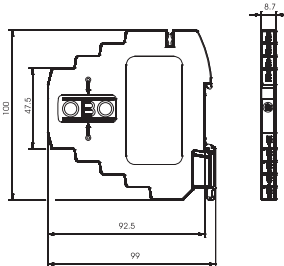
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MDP... D-24-T: Lightning barrier with test function; 24 V version

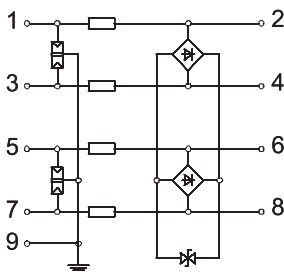
- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



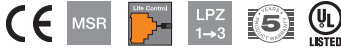
Connection options



MDP-4 D-24-T

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 2-pole, 48 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-48-T	41	58	2	Terminal	1	6,000	5098442

/pc.

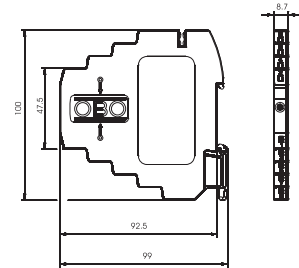
MDP... D-48-T: Lightning barrier with test function; 48 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

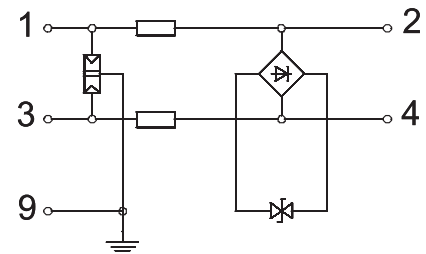
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions

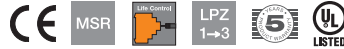


Connection options

**MDP-2 D-48-T**

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		2
Rated current	I_L	0.58 A
Series resistance per wire		$2,35 \Omega \pm 5 \%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		D1: 1 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 3-pole, 48 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-3 D-48-T	41	58	3	Terminal	1	6,000	5098446

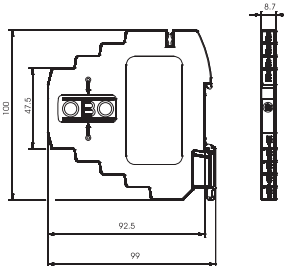
/pc.

MDP... D-48-T: Lightning barrier with test function; 48 V version

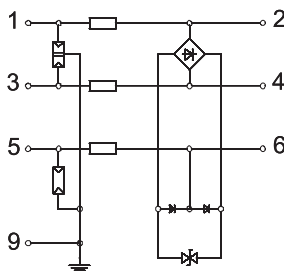
- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



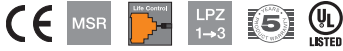
Connection options



MDP-3 D-48-T

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		3
Rated current	I_L	0.58 A
Series resistance per wire		2,35 Ω \pm 5 %
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		7,5 kA
Total arrester surge current (10/350)		D1: 1,5 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 48 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-48-T	41	58	4	Terminal	1	5,800	5098450

/pc.

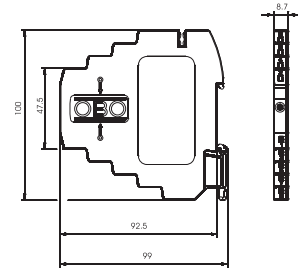
MDP... D-48-T: Lightning barrier with test function; 48 V version

- Nominal load current 0.58 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

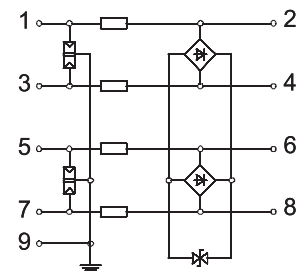
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



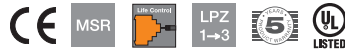
Connection options



MDP-4 D-48-T

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		<95 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail 35 mm
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 5 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-5-T-10	7	10	4	Terminal	1	7,200	5098413

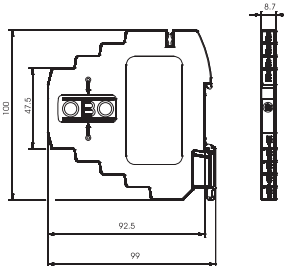
/pc.

MDP-4 D-5-T-10: Lightning barrier with test function; 5 V version

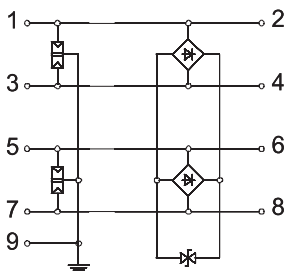
- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



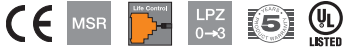
Connection options



MDP-4 D-5-T-10

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	10 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		<45 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 2-pole, 12 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-12-T-10	10.5	15	2	Terminal	1	6,000	5098415

/pc.

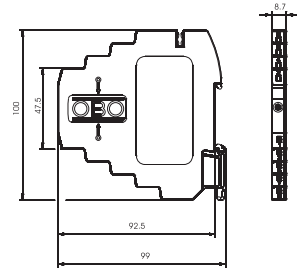
MDP... D-12-T-10: Lightning barrier with test function; 12 V version

- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

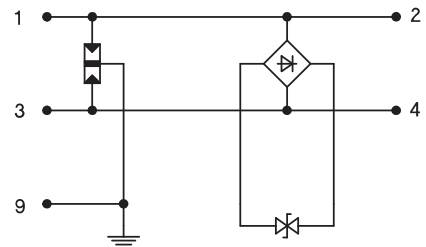
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



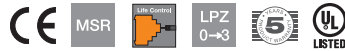
Connection options



MDP-2 D-12-T-10

Maximum continuous voltage AC	U_c	10.5 V
Maximum continuous voltage DC	U_c	15 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	10 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20µs)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		D1: 1 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 12 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-12-T-10	10.5	15	4	Terminal	1	6,000	5098419

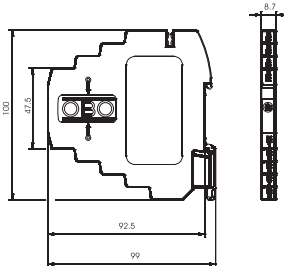
/pc.

MDP... D-12-T-10: Lightning barrier with test function; 12 V version

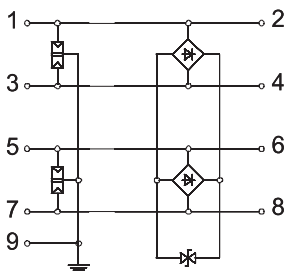
- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



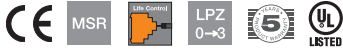
Connection options



MDP-4 D-12-T-10

Maximum continuous voltage AC	U_c	10.5 V
Maximum continuous voltage DC	U_c	15 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	10 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		<55 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	θ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 2-pole, 24 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-2 D-24-T-10	20	28	2	Terminal	1	6,000	5098425

/pc.

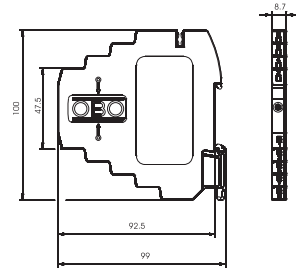
MDP... D-24-T-10: Lightning barrier with test function; 24 V version

- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

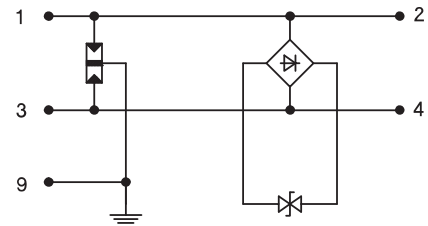
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



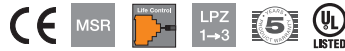
Connection options



MDP-2 D-24-T-10

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		2
Rated current	I_L	10 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Total arrester surge current (8/20)		5 kA
Total arrester surge current (10/350)		D1: 1 kA
Protection level wire-wire		<70 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Series protection device, 4-pole, 24 V version



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Connection system	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-T-10	20	28	4	Terminal	1	7,200	5098433

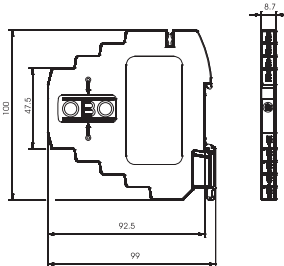
/pc.

MDP... D-24-T-10: Lightning barrier with test function; 24 V version

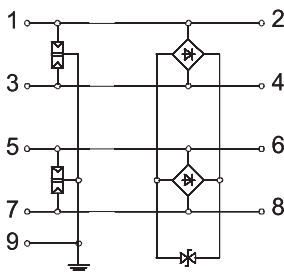
- Nominal load current 10 A
- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- Protection circuit testable with Life Control
- High bandwidth to 100 MHz
- UL-listed (4DG1)

Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.

Dimensions



Connection options



MDP-4 D-24-T-10

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	10 A
Series resistance per wire		—
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		<70 V
Protection level wire-earth		<800 V
Frequency range		0 - 100 MHz
Temperature range	θ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
Testing standard		IEC 61643-21

Accessories for series terminal



Type

VB-MDP 10-MD

Cu Copper

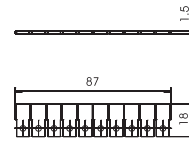
Connecting bridge for 8 mm lightning barriers

- Length of bridge can be adjusted
- Material: Copper
- Allows quick equipotential bonding

Application: Parallel switching of the MDP lightning barriers

Pack. pcs	Weight kg/100 pcs.	Item No.
1	2,300	5098470

/pc.



Replacement connector for VF remote signalling



Version

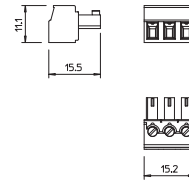
Type

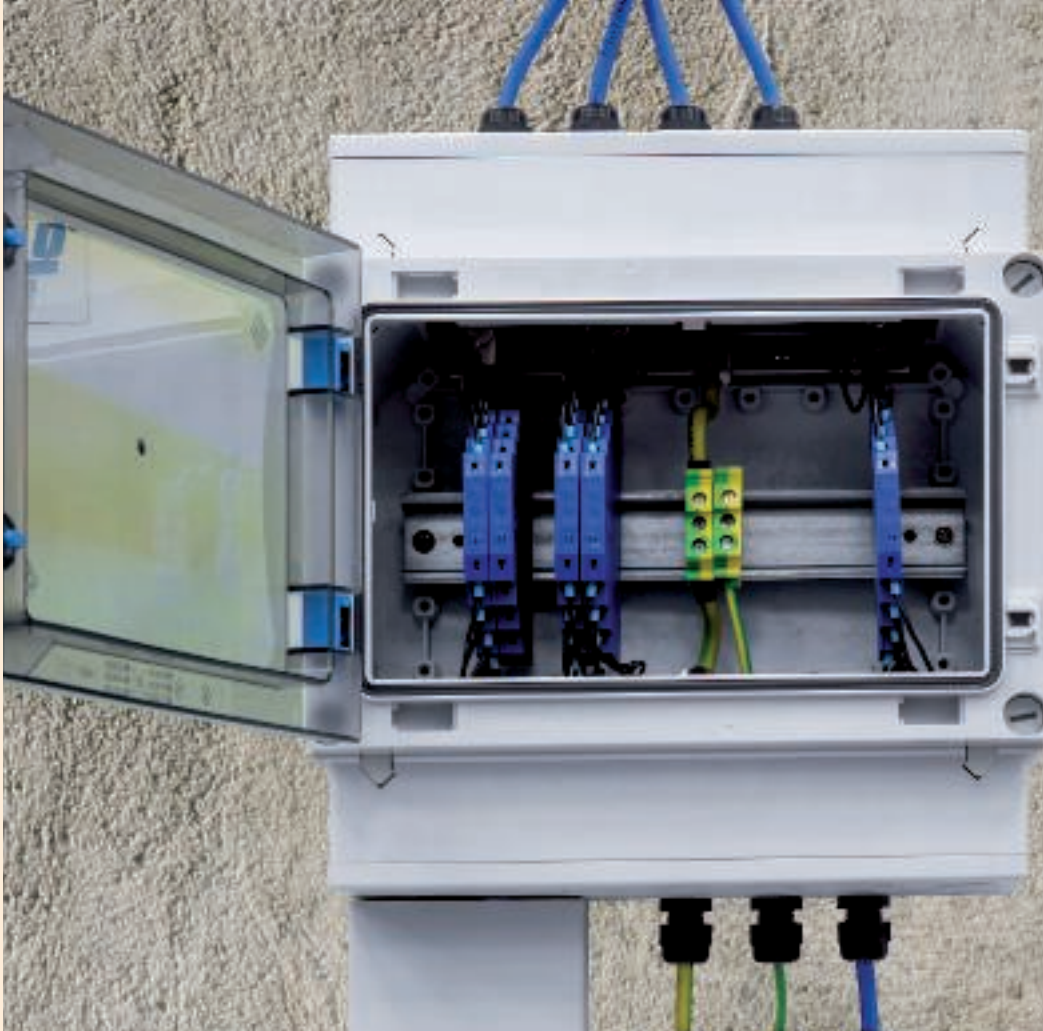
VF-FS 3-pole

Replacement telephony connector, 3-pin version, for VF variant

Pack. pcs	Weight kg/100 pcs.	Item No.
25	0,320	5098475

/pc.






**Surge arrester
MCR protection for Ex areas**



02_TBS Masterkatalog Lander / 30/11/2016 (LLExpert_044.08) / 30/11/2016

Surge protection, Ex protection

	Series protection device, 4-pole, 5 V	431
	Series protection device, 4-pole, 24 V	432
	Series protection device, 4-pole, 48 V	433
	MCR protection, 2-pole 24 V	435
	MCR protection, 3-pole 24 V	436

MCR protection for Ex areas: the plus of the MDP Ex family

- + Protection device for multi-wire systems (4-pole)
- + Direct shield earthing
- + Easy-mounting, screwless connection option
- + Space-saving width of just 8.7 mm
- + Ex-tested for intrinsically safe measuring circuits
- + High frequency bandwidth up to 100 MHz



Series protection device,
Ex protection
2–4-pole, 5–48 V

Surge protection in potentially explosive areas is an important topic. Here, it is important to protect costly measuring technology against the influence of surge voltages through atmospheric dis-

charge. OBO lightning barriers are tested for intrinsic safety (ia) and are independently certified. With a high arresting capacity of 10 kA, they offer optimum protection for four-pole measurement and con-

trol applications. Different voltage variants offer a wide range of applications.

Series protection device, 4-pole, 5 V version, Ex-tested



Type	Highest continuous voltage AC	Highest continuous voltage DC	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
	V	V				
MDP-4 D-5-EX	7	10	4	1	5,800	5098412

/pc.

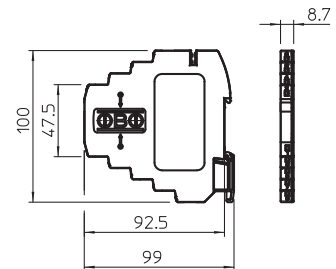
MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0-100 MHz
- Ex-tested: Ex II 2(1) G Ex ia IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

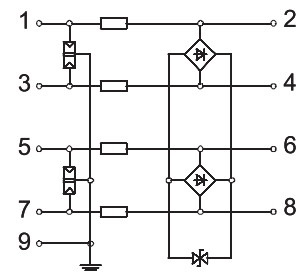
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options

**MDP-4 D-5-EX**

Maximum continuous voltage AC	U_c	7 V
Maximum continuous voltage DC	U_c	10 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 Ω \pm 5 %
Impulse current resistance wire-wire		C1: 0,5 KV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 KV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		< 35 V
Protection level wire-earth		<800 V
Frequency range		0-100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21



Series protection device, 4-pole, 24 V version, Ex-tested



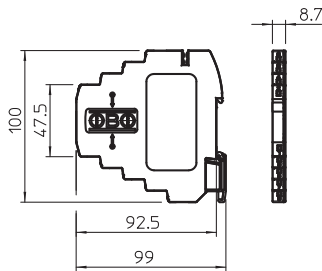
Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
MDP-4 D-24-EX	20	28	4	1	5,800	5098432

/pc.

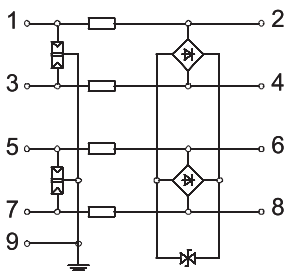
MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0-100 MHz
- Ex-tested: Ex II 2(1) G Ex ia IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

Dimensions



Connection options



MDP-4 D-24-EX

Maximum continuous voltage AC	U_c	20 V
Maximum continuous voltage DC	U_c	28 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0→3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 Ω \pm 5 %
Impulse current resistance wire-wire		C1: 0,5 KV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 KV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		< 55 V
Protection level wire-earth		<800 V
Frequency range		0-100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21



Series protection device, 4-pole, 48 V version, Ex-tested



Type	Highest continuous voltage AC	Highest continuous voltage DC	Number of poles	Pack. pcs	Weight kg/100 pcs.	Item No.
	V	V				
MDP-4 D-48-EX	41	58	4	1	5,800	5098452

/pc.

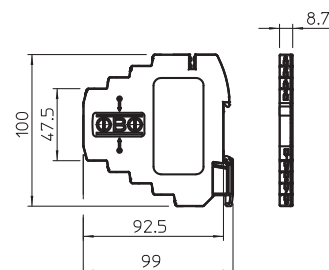
MDP-4 D...-EX : Lightning barrier for intrinsically safe measuring circuits

- Protection device for multi-wire systems
- Direct shield earthing and screwless connection terminals
- Space-saving width of just 8.7 mm
- High frequency range of 0-100 MHz
- Ex-tested: Ex II 2(1) G Ex ia IIC T4 (BVS 11 ATEX E 131 X)
- UL-listed (4UM2)

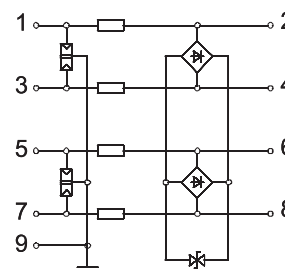
Application: Universal use on 35 mm DIN profile rail in any standard distribution housing.



Dimensions



Connection options

**MDP-4 D-48-EX**

Maximum continuous voltage AC	U_c	41 V
Maximum continuous voltage DC	U_c	58 V
Category		Type 1+2+3 / D1+C2+C1
Lightning protection zone LPZ		0-3
Number of poles		4
Rated current	I_L	0.58 A
Series resistance per wire		2,35 $\Omega \pm 5\%$
Impulse current resistance wire-wire		C1: 0,5 KV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 KV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Total arrester surge current (10/350)		D1: 2 kA
Protection level wire-wire		< 95 V
Protection level wire-earth		<800 V
Frequency range		0-100 MHz
Temperature range	ϑ	-40 - +80 °C
Installation type		DIN rail
Connection system		Terminal
Protection rating		IP20
Shielding connection available		Yes
Shield connection		Direct
Connection cross-section, flexible		0.14 - 2.5 mm ²
Connection cross-section, multi-wire		0.14 - 1.5 mm ²
Connection cross-section rigid		0.14 - 2.5 mm ²
Earthing via:		DIN rail
EX approval		II 2(1)G Ex ia [ia Ga] IIC T4 Gb
Testing standard		IEC 61643-21



MCR protection for explosive areas: the plus of the Petrol Field Protector family

- + For potentially explosive areas
- + Two or three-pole protection of various sensors
- + Metric or NPT thread
- + Robust VA housing
- + High arresting capacity



Surge protection
with NPT or
metric thread

Function and areas of use

With the Petrol Field Protector for data cable protection devices, OBO Bettermann can offer a surge protection device for sensors in potentially explosive areas. The Petrol Field Protector permits two or three-pole protection for all

kinds of sensors. The protection device can be fastened directly on the sensor and wired in using the appropriate metric or NPT thread. The robust VA housing means that aggressive atmospheres are no problem. The intrinsic safety of the Petrol Field Protector was inde-

pendently tested and certified. The Petrol Field Protector is your partner for safety-relevant applications in which effective surge protection must be guaranteed.



MCR protection for explosive areas, 2-pole, 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-2 24-M	22	32	2-pole; metric	1	18,500	5098380

/pc.

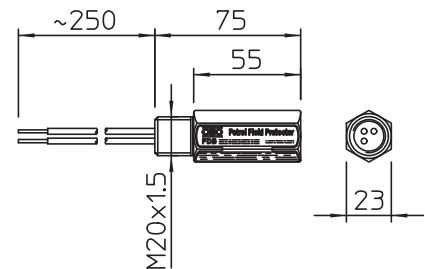


Petrol field protector FDB for intrinsically safe measuring circuits and bus systems

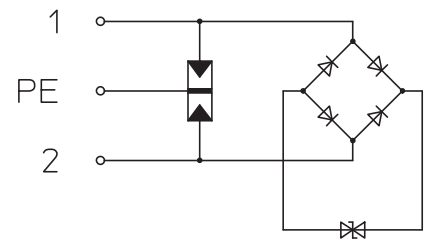
- Different connection technologies available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- Ex-tested: Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)

Application: Flow sensors, temperature sensors

Dimensions



Connection options



FDB-2 24-M

Maximum continuous voltage AC	U_c	22 V
Maximum continuous voltage DC	U_c	32 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2,5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Protection level wire-wire		<80 V
Protection level wire-earth		<800 V
Temperature range	ϑ	-20 - +70 °C
Installation type		Screw-on
Protection rating		IP65/67
Mounting of input / output		M20 x 1.5 external thread
Mounting of field / device side:		Connection cable 1.5 mm ² Length ~ 250 mm
Earthing via:		Connection cable
Housing material		V2A
EX approval		Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)
Testing standard		IEC 61643-21



MCR protection for explosive areas, 3-pole, 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-3 24-M	22	32	3-pole; metric	1	19,000	5098382

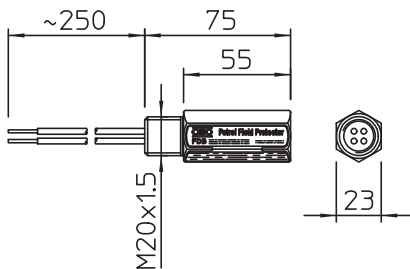
/pc.

Petrol field protector FDB for intrinsically safe measuring circuits and bus systems

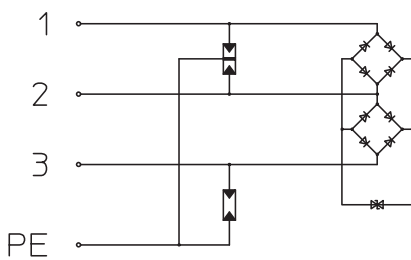
- Different connection technologies available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- Ex-tested: Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)

Application: Flow sensors, temperature sensors

Dimensions



Connection options



FDB-3 24-M

Maximum continuous voltage AC	U_c	22 V
Maximum continuous voltage DC	U_c	32 V
Category	Type 2+3 / C2+C1	
Lightning protection zone LPZ	1→3	
Number of poles	3	
Impulse current resistance wire-wire	C1: 0,5 kV / 0,25 kA (8/20 μ s)	
Impulse current resistance wire-earth	C2: 5 kV / 2,5 kA (8/20 μ s)	
Total arrester surge current (8/20)	10 kA	
Protection level wire-wire	<80 V	
Protection level wire-earth	<800 V	
Temperature range	ϑ	-20 - +70 °C
Installation type	Screw-on	
Protection rating	IP65/67	
Mounting of input / output	M20 x 1.5 external thread	
Mounting of field / device side:	Connection cable 1.5 mm ² Length ~ 250 mm	
Earthing via:	Connection cable	
Housing material	V2A	
EX approval	Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)	
Testing standard	IEC 61643-21	



MCR protection for explosive areas, 2-pole, 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-2 24-N	22	32	2-pole; NPT	1	19,000	5098390

/pc.

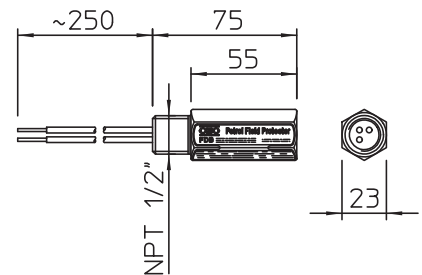


Petrol field protector FDB for intrinsically safe measuring circuits and bus systems

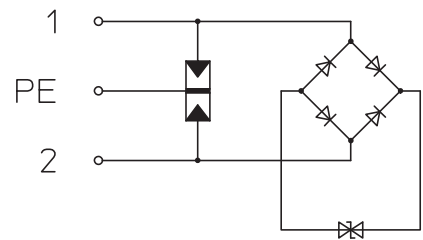
- Different connection technologies available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- Ex-tested: Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)

Application: Flow sensors, temperature sensors

Dimensions



Connection options



FDB-2 24-N

Maximum continuous voltage AC	U_c	22 V
Maximum continuous voltage DC	U_c	32 V
Category		Type 2+3 / C2+C1
Lightning protection zone LPZ		1→3
Number of poles		2
Impulse current resistance wire-wire		C1: 0,5 kV / 0,25 kA (8/20 μ s)
Impulse current resistance wire-earth		C2: 5 kV / 2.5 kA (8/20 μ s)
Total arrester surge current (8/20)		10 kA
Protection level wire-wire		<80 V
Protection level wire-earth		<800 V
Temperature range	ϑ	-20 - +70 °C
Installation type		Screw-on
Protection rating		IP65/67
Mounting of input / output		1/2" NPT
Mounting of field / device side:		Connection cable 1.5 mm ² Length ~ 250 mm
Earthing via:		Connection cable
Housing material		V2A
EX approval		Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)
Testing standard		IEC 61643-21



MCR protection for explosive areas, 3-pole, 24 V



Type	Highest continuous voltage AC V	Highest continuous voltage DC V	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
FDB-3 24-N	22	32	3-pole; NPT	1	19,500	5098392

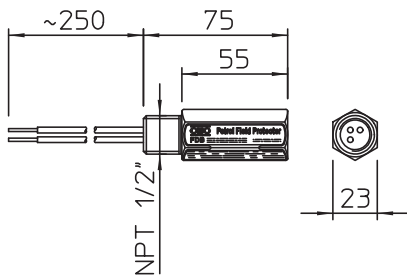
/pc.

Petrol field protector FDB for intrinsically safe measuring circuits and bus systems

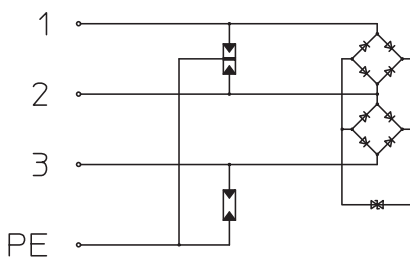
- Different connection technologies available (metric/NPT)
- Low protection level at high current load
- Easy mounting on field devices
- Negligible internal capacitance and inductance
- Stainless steel housing with pressure-resistant encapsulation
- Ex-tested: Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)

Application: Flow sensors, temperature sensors

Dimensions



Connection options



FDB-3 24-N

Maximum continuous voltage AC	U_c	22 V
Maximum continuous voltage DC	U_c	32 V
Category	Type 2+3 / C2+C1	
Lightning protection zone LPZ	1→3	
Number of poles	3	
Impulse current resistance wire-wire	C1: 0,5 kV / 0,25 kA (8/20 μ s)	
Impulse current resistance wire-earth	C2: 5 kV / 2,5 kA (8/20 μ s)	
Total arrester surge current (8/20)	10 kA	
Protection level wire-wire	<80 V	
Protection level wire-earth	<800 V	
Temperature range	ϑ	-20 - +70 °C
Installation type	Screw-on	
Protection rating	IP65/67	
Mounting of input / output	1/2" NPT	
Mounting of field / device side:	Connection cable 1.5 mm ² Length ~ 250 mm	
Earthing via:	Connection cable	
Housing material	V2A	
EX approval	Ex II 2(1) G Ex ia IIC T6 (BVS 10 ATEX E 48)	
Testing standard	IEC 61643-21	







Protection and spark gaps
Ex approval

Surge protection, protection and spark gaps

	Isolating spark gap	442
	Connection straps	442
	Closed spark gap with lightning current carrying capability	443
	Protective spark gap	443
	Spark gap/ surge voltage protection	443

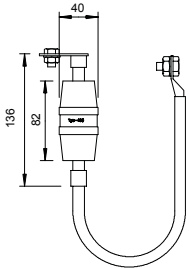


Explosion-proof, Parex closed spark gap



Type	Connection cable length m	Contact voltage kV	Impulse current (10/350) kA	Nominal discharge current (8/20) kA	Protection level kV	Temperature range °C	Pack. pcs	Weight kg/100 pcs.	Item No.
480 180	0.18	1	100	100	< 3,0	-20 - +50	1	48,000	5240034
480 250	0.25	1	100	100	< 3,0	-20 - +50	1	50,000	5240077
480 350	0.35	1	100	100	< 3,0	-20 - +50	1	53,000	5240069

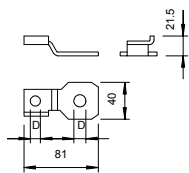
/pc.



- Ex certificate to ATEX
- Labelling to EN 60079-0/-1: II 2G Ex d IIC T6 Gb
- Ex certificate to IECEx and DNV
- Labelling to EN 60079-0/-1: Ex d IIC T6 Gb
- Lightning current carrying capacity class H (100 kA) to VDE 0185-561-3 (IEC 62561-3)
- Incl. connector cable 25 mm² Cu, highly flexible, with cable lug, screw (M 10), nut and lock washer

Application: In potentially explosive areas, indirect by-passing of insulating flanges and insulating glands e.g. in cathodic, corrosion-protected (KKS) systems

Connection bracket for Parex spark gap



Type	Bore hole Ø mm	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
484 M12	13	For M12 bolt	2	8,100	5240220
484 M16	17	For M16 bolt	2	7,700	5240239
484 M20	21	For M20 bolt	2	7,300	5240247
484 M24	25	For M24 bolt	2	6,800	5240255

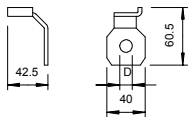
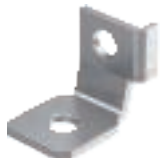
SI Steel

F Hot-dip galvanised

/pc.

Attaching flange for installing OBO Parex spark gap 480 on insulating flanges.

Connection bracket for Parex spark gap



Type	Bore hole Ø mm	Version	Pack. pcs	Weight kg/100 pcs.	Item No.
485 M12	13	For M12 bolt	2	8,100	5240328
485 M10	11	For M10 bolt	2	8,300	5240301
485 M16	17	For M16 bolt	2	7,700	5240336

SI Steel

F Hot-dip galvanised

/pc.

Attaching flange for installing OBO Parex spark gap 480 on insulating flanges.

Closed spark gap with lightning current carrying capability



Type	Impulse current (10/350) kA	Nominal discharge current (8/20) kA	Protection level kV	Contact voltage kV	Temperature range °C	Pack. pcs	Weight kg/100 pcs.	Item No.
481	50	100	< 5	2.5	-20 - +50	1	26,500	5240085

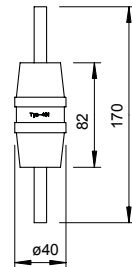
/pc.



Closed, lightning current carrying spark gap for separation of electrically conductive plant components.

- Connection bolts; Ø 10 mm; stainless steel.
- Pulsed current 50 kA (10/350)
- BET

Tested application: Installation of electrical isolations for external lightning protection and earthing systems, e.g. two earthing systems on account of mutual influence or corrosion (corrosion current prevention).

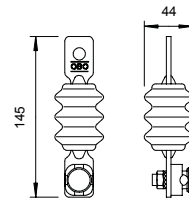


Protective spark gap



Type	Protection level kV	Contact voltage kV	Pack. pcs	Weight kg/100 pcs.	Item No.
482	< 10	10	1	56,000	5240050

/pc.



Closed spark gap for bridging a proximity point between roof standard of low-voltage system and components of outer lightning protection system

- Protection rating IP 54
- With pre-mounted type 5001 connector for attaching round conductors Rd 8 - 10

Spark gap / surge voltage protection for coupling earthing systems



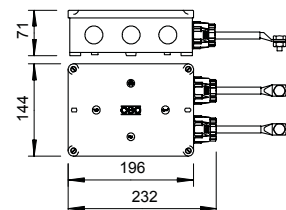
Type	Dimension mm	Highest continuous voltage V	Impulse current (10/350) kA	Nominal discharge current (8/20) kA	Protection level kV	Pack. pcs	Weight kg/100 pcs.	Item No.
FS-V20	196 x 144 x 71	280	100	100	< 1,5	1	170,000	5099803

/pc.



The FS-V 20 device is a discharge gap with parallel-connected surge voltage protector. It is used to couple different earthing systems. It is connected directly to the equipotential busbar concerned.

Application: Coupling earthing systems in data technology sector (functional and operational earthing)











Measuring and testing systems

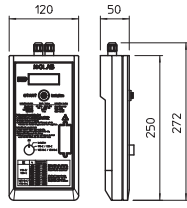
HINWEIS!
Isolierter Blitzschutz mit dem
OBO isCon®-System.
Änderungen sind nur von einer
Blitzschutzfachkraft
durchzuführen!



Measuring and testing systems

	ISOLAB measuring system arrester tester	446
	Testing unit for lightning barriers	446
	Magnetic card PCS	446
	Magnetic card holder PCS-H	447
	Card reader PCS-CS..	447
	Lightning current meter LSC	448

ISOLAB measuring system arrestor tester



Type	Country version	Nom. voltage V	Measuring range	Pack. Weight		Item No.
				pcs	kg/100 pcs.	
ISOLAB	D/GB	6	0 V - - 999 V	1	165,000	5096812

/pc.

To test the insulation resistance to DIN VDE 0100 Part 610 and the characteristic curve behaviour of the following surge voltage and lightning current arrestors:

- V10-C and V20-C:

Uc	Tolerance range
75 V	-> 110 V - 130 V
150 V	-> 215 V - 265 V
280 V	-> 385 V - 475 V
320 V	-> 460 V - 560 V
335 V	-> 460 V - 560 V
385 V	-> 560 V - 680 V
440 V	-> 645 V - 785 V
550 V	-> 820 V - 1,000 V
- V25-B+C and V50-B+C:

Uc	Tolerance range
150 V	-> 215 V - 265 V
280 V	-> 385 V - 475 V
320 V	-> 460 V - 560 V
385 V	-> 560 V - 680 V

- Varistor arrestors of other manufacturers can be tested for 1 or 3 mA characteristic curve behaviour
- Battery operation
- Measuring cables contained in the scope of delivery.

Testing unit for lightning barriers



Type	Pack. Weight		Item No.
	pcs	kg/100 pcs.	
LFC	1	164,500	5096786

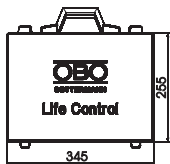
/pc.

OBO Life Control allows function control of the MDP lightning barriers.

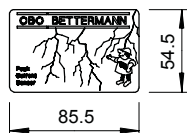
The lightning barriers can be checked while installed. Life Control will not have any influences on the measuring signal.

Life Control possesses an integrated OLED with visual and acoustic defect signalling. A separate LED inside the testing pin is also integrated.

Life Control is delivered in a case, complete with a CD and instructions.



Magnetic card PCS



Type	Pack. Weight		Item No.
	PU	kg/100 PUs	
PCS	1	8,000	5091438

/VPE

Magnetic card for recording pulsed/lightning currents.

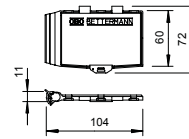
- Contents = 10 pieces

Magnetic card holder PCS-H



Type	Pack. PU	Weight kg/100 PUs	Item No.
PCS-H	1	31,000	5091527

/VPE



Magnetic card holder for mounting PCS cards.

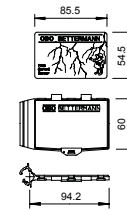
- Sealable holder
- For installing on round conductor Rd 8-10
- Simple holder installation by means of clamp
- 1 PU = 10 pieces

Magnetic card and holder MK-B



Type	Pack. PU	Weight kg/100 PUs	Item No.
MK-B	1	31,000	5091322

/VPE



PCS magnetic card to record pulse/lightning currents including holder

- Holder can be leaded
- For mounting on round conductor Rd 8-10
- Simple holder mounting through clamping
- 1 PU = 10 units

Card reader PCS-CS...:



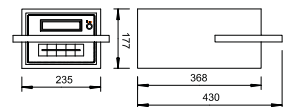
Type	Country version	Nom. voltage V	Measuring range	Measuring tolerances	Pack. pcs	Weight kg/100 pcs.	Item No.
PCS-CS-D	EN	230	3 -- 120 kA	< 2 kA (< 2%)	1	750,000	5091683
PCS-CS-GB	GB	230	3 -- 120 kA	< 2 kA (< 2%)	1	750,000	5091691

/pc.

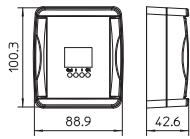


Magnetic card reader for reading and analysing PCS cards.

- Inc. rechargeable battery for 4 h continuous, no-mains operation
- Large, clear display



Lightning strike counter



Type Measuring range
LSC I+II | 1 kA - 100 kA

Pack. Weight
 pcs kg/100 pcs. **Item No.**

Plastic	1	36,000	5091722
---------	---	--------	----------------

/pc.

The LSC I+II lightning current meter measures and permanently saves pulse currents, together with the date and time. This ensures constant monitoring in order to notice if any lightning has struck the lightning protection system. Should this be the case, then the lightning protection system must be maintained according to VDE 0185-305 (IEC 62305).

- Saving and display of time and date
- Usable both inside and outside due to its protection class of IP65
- Cable clip for round conductor or flat conductor
- Direct mounting on the arrester or the PE cable of the surge protection device
- Long lifespan of the internal lithium batteries
- LCD display
- Internal battery







**Equipotential bonding systems
Indoors and outdoors
Industrial area and Ex area**

Equipotential bonding systems

	Equipotential busbars for indoor use	455
	Equipotential busbars for outdoor areas	461
	Equipotential busbars for industrial areas	463
	Equipotential busbars for Ex area	467
	Earthing clamps	471
	Earthing clips	472

Equipotential busbars for indoor use



VDE-tested

Type	Item no.	Page
1801 VDE	5015 65 0	455



Standard

Type	Item no.	Page
1809	5015 07 3	457



With metal base plate

Type	Item no.	Page
1809 M	5015 08 1	457



Bioplastic

Type	Item no.	Page
1809 NR	5015 07 5	458

Equipotential busbars for outdoor areas



UV-resistant

Type	Item no.	Page
1809 A	5015 11 1	461

Equipotential busbars for industry



Stainless steel

Pole	Item no.	Page
5	5015 85 4	463
10	5015 86 6	463



Copper

Pole	Item no.	Page
5	5015 83 0	463
6	5015 83 2	463
8	5015 83 6	463
10	5015 84 2	463
12	5015 84 4	463
14	5015 84 7	463
20	5015 84 9	463



Galvanised steel

Pole	Item no.	Page
2	5016 02 9	464
4	5016 03 7	464
6	5016 04 5	464



Stainless steel

Pole	Item no.	Page
2	5016 09 6	464
4	5016 11 8	464
6	5016 12 6	464

Equipotential busbars for potentially explosive areas



Zone 2/22 (stainless steel)

Pole	Item no.	Page
5	5015 85 4	463
10	5015 86 6	463



Zone 2/22 (copper)

Pole	Item no.	Page
5	5015 83 0	463
6	5015 83 2	463
8	5015 83 6	463
10	5015 84 2	463
12	5015 84 4	463
14	5015 84 7	463
20	5015 84 9	463



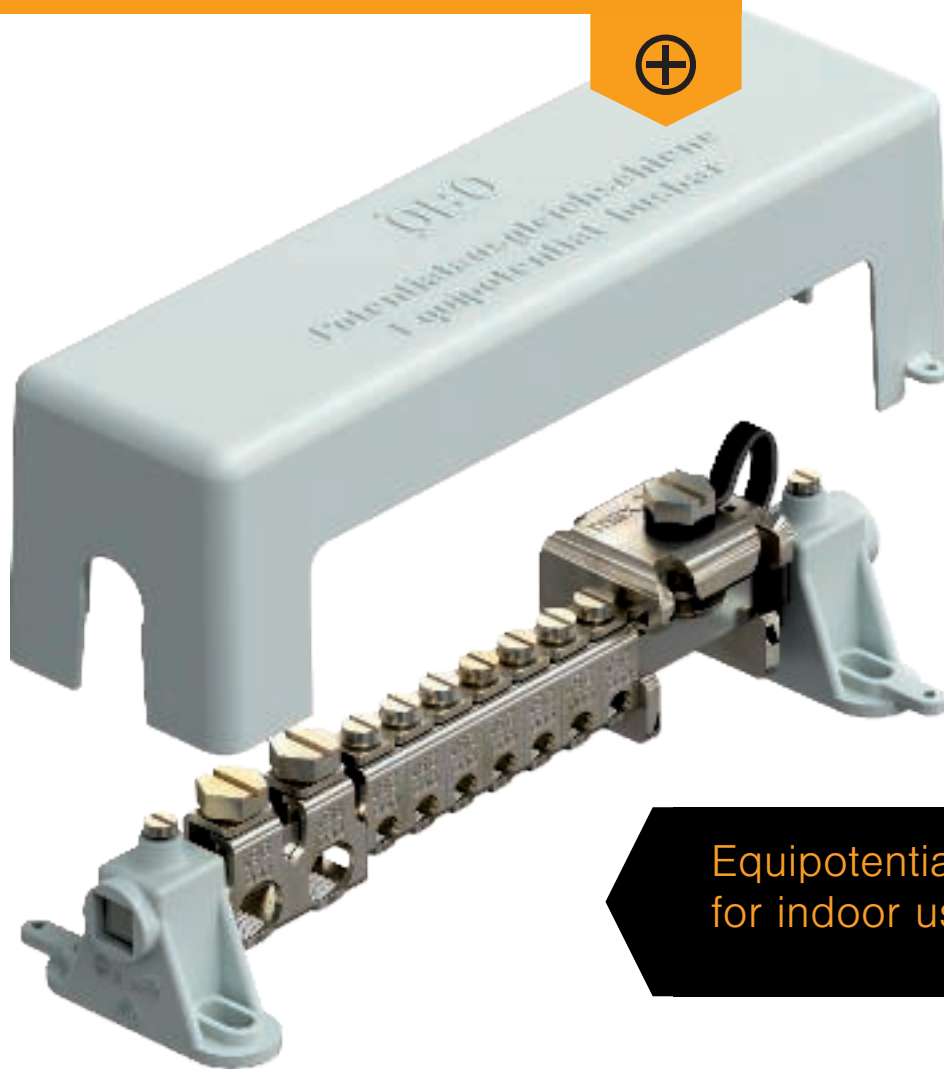
Zone 1/21 + 2/22

Pole	Item no.	Page
5	5015 26 5	467
10	5015 27 0	467



Equipotential busbars for indoor use

- + Simple installation
- + Modular series terminal system
- + Wide range of uses



Equipotential bonding
for indoor use

The equipotential busbars for interior areas are available as a modular, VDE-tested series terminal system 1801 or as a ready-for-installation equipotential busbar 1809 with plastic or metal footplate. The OBO Green 1809 is a

solution made from renewable resources. The simple versions of the 1809 and 1804 are available as both surface-mounted and concealed versions. The equipotential busbars are used for installation the protection and functional equi-

potential bonding according to DIN VDE 0100-410/540 and the lightning equipotential bonding according to VDE 0185-305 (IEC 62305).

Equipotential busbar for indoors, VDE-tested



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.

CuZn Brass /pc.

Equipotential busbar for equipotential bonding according to DIN VDE 0100-410 / -540 and lightning protection equipotential bonding according to DIN VDE 0185-305

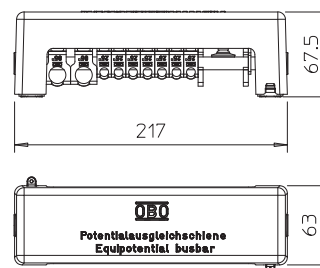
- According to VDE 0618, part 1
- With clamping rail 10 x 10 mm, nickel-plated brass
- With close-contact series terminals made of electrogalvanised steel
- Cover hood and rail stand made of grey polystyrene
- Lightning current carrying capacity 100 kA (10/350)
- Tension clamp with screw lock against self-loosening (e.g. required in industry and in explosion-protected areas)

Connection options:

- 7 single or multi-wire cables 2.5-25 mm² or fine-wire cables to 16 mm² (max. Ø 7 mm)
- 2 single or multi-wire cables 25-95 mm² or fine-wire cables to 70 mm² (max. Ø 13.5 mm)
- 1 flat conductor 30 x 3.5 mm



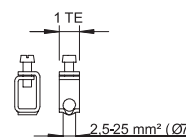
Dimensions

Round conductor terminal to 25 mm² for 1801 VDE

Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel /pc.
G Electrogalvanised

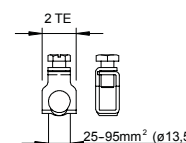
- For single or multi-wire cables 2.5–25 mm²
- For fine-wire cables to 16 mm² (max. Ø 7 mm)
- 1 division unit
- Lightning current carrying capacity 100 kA (10/350)
- Electrogalvanised steel
- Tension clamp with screw lock against self-loosening (e.g. required in industry and in explosion-protected areas)

Round conductor terminal from 25 mm² for 1801 VDE

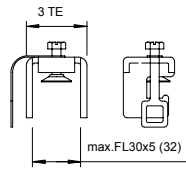
Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.

St Steel /pc.
G Electrogalvanised

- For single or multi-wire cables 25–95 mm²
- For fine-wire cables to 70 mm² (max. Ø 13.5 mm)
- 2 division units
- Lightning current carrying capacity 100 kA (10/350)
- Electrogalvanised steel
- Tension clamp with screw lock against self-loosening (e.g. required in industry and in explosion-protected areas)



Flat conductor terminal to FL 30 for 1801 VDE



Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.
1801 RK30	FL30 x 5	10	18,410	5015731

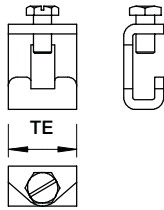
SI Steel

G Electrogalvanised

- For flat conductors to FL 30 and thickness to 5 mm
- Captive design with plastic safety strap
- 3 division units
- Lightning current carrying capacity 100 kA (10/350)
- Electrogalvanised steel

/pc.

Flat conductor terminal from FL 30 for 1801 VDE



Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.
1801 RK40	FL40 x 5	10	7,300	5015774

SI Steel

G Electrogalvanised

- For flat conductors from FL 30
- 2 terminals always required for each flat conductor connection
- Lightning current carrying capacity 100 kA (10/350)
- Electrogalvanised steel

/pc.

Contact strip for 1801 VDE



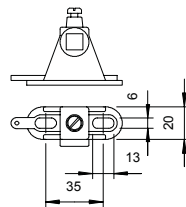
Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1801 KL1	212	1	18,000	5015723
1801 KL2	430	1	36,000	5015804
1801 KL3	645	1	54,000	5015812

CuZn Brass

- 10 x 10 mm made of nickel-plated brass
- 1801 KL1: 14 subunits
- 1801 KL2: 28 subunits
- 1801 KL3: 42 subunits

/pc.

Busbar stands for 1801 VDE



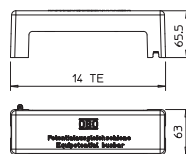
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
1801 SCH	Grey	10	1,490	5015715

PS Polystyrene

- 2 rail stands required per 14 units
- With 6 x 13 mm slot

/pc.

Cover hood for 1801 VDE



Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
1801 AH	Grey	1	6,450	5015707

PS Polystyrene

- 1 covering hood required per 14 division units
- Fastening to rail stands 1801/Sch
- Sealable

/pc.



Equipotential busbar with plastic base plate



Colour

Type

1809 Grey

CuZn Brass

Pack. pcs	Weight kg/100 pcs.	Item No.
1	23,000	5015073

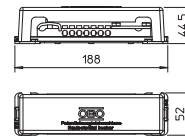
/pc.

Equipotential busbar for equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305

- Base plate and covering hood from polystyrene, grey
- Contact strip made of nickel-plated brass
- Screws and crossbar made of electrogalvanised steel
- Capable of carrying lightning current 100 kA (10/350)

Connection options:

- 7 x single or multi-core conductors to 25 mm² or fine-core conductors to 16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat strip to FL30 or round conductor Rd 8-10



Equipotential busbar with metal base plate



Colour

Type

1809 M Grey

CuZn Brass

Pack. pcs	Weight kg/100 pcs.	Item No.
1	28,100	5015081

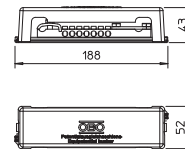
/pc.

Equipotential busbar with metal foot for equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305

- Cover hood from polystyrene, grey
- Base plate made of strip-galvanised steel
- Contact strip made of nickel-plated brass
- Screws and crossbar made of electrogalvanised steel
- Capable of carrying lightning current 100 kA (10/350)

Connection options:

- 7 x single or multi-core conductors to 25 mm² or fine-core conductors to 16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat strip to FL30 or round conductor Rd 8-10



Cover hood for 1809

Type

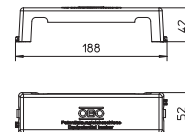
1809 30 AH Grey

PS Polystyrene

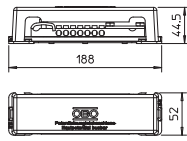
Pack. pcs	Weight kg/100 pcs.	Item No.
50	0,120	5015200

/pc.

- Replacement cover hood for equipotential busbar, type 1809



Equipotential busbar OBO Green



Type

1809 NR

CuZn Brass

Pack. pcs	Weight kg/100 pcs.	Item No.
1	24,300	5015075

/pc.

Natural product protects against natural influences.

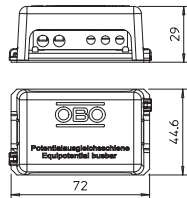
The OBO Green equipotential busbar is a solution manufactured from cellulose acetate CA for the installation of the equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305. The basic material is widely used in the paper industry.

- Base plate and covering hood made of CA, white
- Contact strip made of nickel-plated brass
- Screws and crossbar made of electrogalvanised steel
- Capable of carrying lightning current 100 kA (10/350)

Connection options:

- 7 x single or multi-core conductors to 25 mm² or fine-core conductors to 16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat strip to FL 30 or round conductor Rd 8-10

Equipotential busbar for small systems



Type

1809 BG Grey

CuZn Brass

Colour

Pack. pcs	Weight kg/100 pcs.	Item No.
1	9,000	5015502

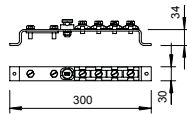
/pc.

- Cover hood made of polystyrene, grey
- Base plate made of strip galvanised steel
- Contact strip and screws made of nickel-plated brass

Connection options:

- 3 x multi-core cables to 6 mm²
- 2 x multi-core cables to 16 mm²

Equipotential busbar, simple version



Type

1808

CuZn Brass

Pack. pcs	Weight kg/100 pcs.	Item No.
1	67,000	5015014

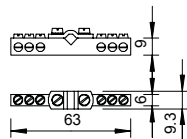
/pc.

- Clamp and crossbar, electrogalvanised steel
- Clamping element and contact strip, brass, screws, hot dipped galvanised steel

Connection options:

- 8 x cables to 25 mm²
- 1 x round conductor Rd 8-10
- 1 x flat conductor to FL 40

Equipotential busbar for bathrooms



Type

1804

CuZn Brass

Pack. pcs	Weight kg/100 pcs.	Item No.
5	3,000	5015553

/pc.

- Nickel-plated brass contact strip
- Screws and clamp made of electrogalvanised steel

Connection options:

- 6 cables 1.5-10 mm²
- 1 cable 6-16 mm²



Equipotential busbar for surface mounting with 1804

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
1804 AP	10	12,000	5015557

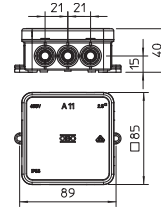
PE Polyethylene

/pc.

A 10/BP: Equipotential busbar for bathroom in housing

Connection options:

- 6x conductors 1.5-10 mm²
- 1x conductor 6-16 mm²
- Uncut
- With mounted potential equalisation rail 1804 in wet-room branch box A10



Equipotential busbar for flush-mounting with 1809

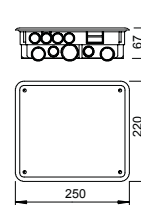
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
1809 UP	1	74,500	5015065

CuZn Brass

/pc.

Connection options:

- 7 conductors to 25 mm²
- 1 round conductor Rd 8-10
- 1 flat conductor to FL30 or round conductor Rd 8-10
- With mounted potential equalisation rail 1809 (without covering hood)
- Pre-marked boxes for inserting required conductors and cover



Equipotential busbar for flush-mounting with 1804

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
1804 UP	5	20,700	5015545

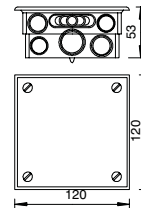
CuZn Brass

/pc.

A 10/BP: Equipotential busbars for bathroom in housing

Connection options:

- 6x conductors 1.5-10 mm²
- 1x conductor 6-16 mm²
- Uncut
- With mounted potential equalisation rail 1804 in wet-room branch box A10



The plus for equipotential bonding in outdoor areas

Equipotential busbars for outdoor areas

- + UV-stabilised
- + Corrosion-resistant
- + Simple installation



Equipotential bonding
for outdoor use

The equipotential busbar for outdoor areas, 1809 A, is used for installation the protection and functional equipotential bonding according to DIN VDE 0100-410/540 and the lightning protection equipotential bonding accord-

ing to VDE 0185-305 (IEC 62305). Thanks to corrosion-resistant and UV-stabilised materials, the equipotential busbar is suitable for both outdoor areas and systems in aggressive environments.

Equipotential busbar for outside installation



Type	Colour	Pack.		Weight	Item No.
		pcs	kg/100 pcs.		
1809 A	Black	1	23,000		5015111

V2A Stainless steel, grade 304 /pc.

Equipotential busbar for equipotential bonding according to DIN VDE 0100-410/-540 and lightning protection equipotential bonding according to DIN VDE 0185-305

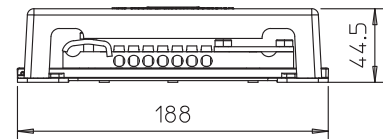
- Base plate and cover hood from polystyrene
- Colour: black, UV-resistant
- Screws and crossbar made of VA
- Capable of carrying lightning current 100 kA (10/350)

Connection options:

- 7 x single or multi-core conductors to 25 mm² or fine-core conductors to 16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat strip to FL30 or round conductor Rd 8-10



Dimensions



Equipotential busbar, solid version

Type	Pack.		Weight	Item No.
	pcs	kg/100 pcs.		
1810	1	173,000		5015057

St. Steel

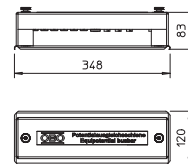
F Hot-dip galvanised

/pc.

- Base plate and screw-on cover hood, made of strip-galvanised steel
- Contact strip, made of electrogalvanised steel
- Screws and crossbar, made of hot-dip galvanised or electrogalvanised steel

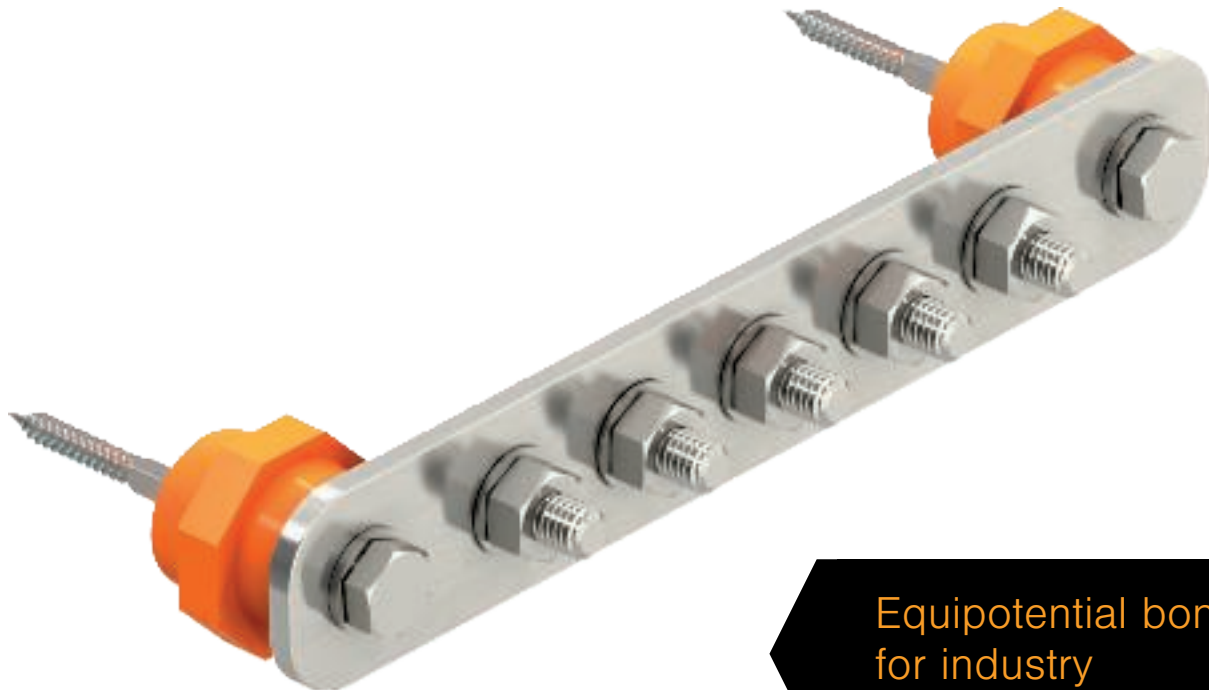
Connection options:

- 6 x cables 6-16 mm²
- 1 x round conductor Rd 8-10
- 1 x flat conductor to FL40
- 2 x cable lug M8



Equipotential busbars for industrial areas

- + Corrosion-resistant
- + UV-stabilised
- + Quick and easy mounting



Equipotential bonding
for industry

The equipotential busbars for industry, BigBar (1802) and 1805, are used for the installation of protection and functional equipotential bonding according to DIN VDE 0100-410/540 and the lightning protection equipotential bonding

according to VDE 0185-305 (IEC 62305). Due to the combination of corrosion resistance materials and their simple installation, the equipotential busbars are especially suitable for use in the industrial sector. The stainless steel

(V4A, 1.4571, 316 Ti) variants of the 1805 can be used in a wide range of applications thanks to the fastening holes with their 11 mm diameter.

Equipotential busbar BigBar for industrial application



Type	Number of connections	Width mm	Length mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 5 VA	5	40	246	5	1	90,000	5015854
1802 10 VA	10	40	408.5	5	1	190,000	5015866

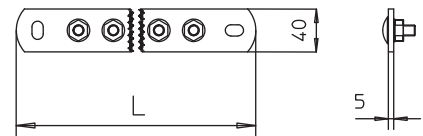
V2A Stainless steel, grade 304

/pc.

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)



Dimensions



Equipotential busbar BigBar for industrial application



Type	Number of connections	Width mm	Length mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 5 CU	5	40	246	5	1	80,000	5015830
1802 6 CU	6	40	278.5	5	1	98,400	5015832
1802 8 CU	8	40	343.5	5	1	116,550	5015836
1802 10 CU	10	40	408.5	5	1	180,000	5015842
1802 12 CU	12	40	473.5	5	1	152,850	5015844
1802 14 CU	14	40	538.5	5	1	171,000	5015847
1802 20 CU	20	40	733.5	5	1	225,450	5015849

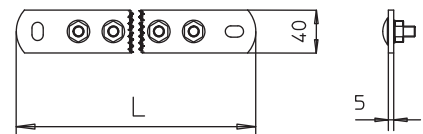
Cu Copper

/pc.

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)



Dimensions



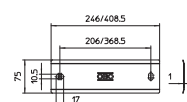
Cover for BigBar equipotential busbar

Type	Number of connections	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 AH 5	5	1	25,800	5015880
1802 AH 10	10	1	36,300	5015884

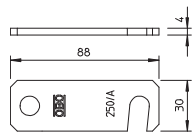
V2A Stainless steel, grade 304

/pc.

- Complete with all installation components

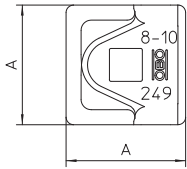
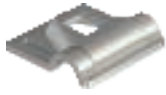


Crossbar for equipotential busbar



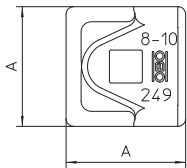
Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 KL	FL20-FL40	1	7,000	5015890
V2A Stainless steel, grade 304 /pc.				
<ul style="list-style-type: none"> To clamp the flat conductors 30 x 3.5 and 40 x 5 Suitable for equipotential busbar BigBar, type 1802 				

Crossbar for equipotential busbar



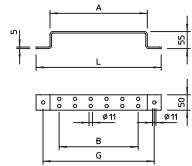
Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA-OT	Rd 8-10	40	100	3,130	5311554
V2A Stainless steel, grade 304 /100 pc.					
<ul style="list-style-type: none"> For round conductor Rd 8-10 Suitable for M10 bolts 					

Crossbar for equipotential busbar



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU-OT	Rd 8-10	40	100	3,580	5311530
Cu Copper /100 pc.					
<ul style="list-style-type: none"> For round conductor fastening RD 8-10 Suitable for M10 bolts 					

Potential and earth connection block

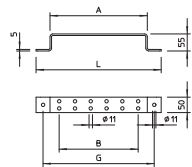


Type	Dimension L mm	Dimension A mm	Dimension B mm	Dimension G mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1805 2 FT	200	110	51	155	10	54,800	5016029
1805 4 FT	302	212	153	257	20	77,000	5016037
1805 6 FT	404	314	255	359	10	97,100	5016045
St Steel /pc.							
FT Hot-dip galvanised							

1805/...: For connecting different earthing systems

- With 2 mounting holes Ø 11 mm
- 1805/2: With 4 attaching holes
- 1805/4: With 8 attaching holes
- 1805/6: With 12 attaching holes

Potential and earth connection block



Type	Dimension L mm	Dimension A mm	Dimension B mm	Dimension G mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1805 2 VA	200	110	51	155	10	54,800	5016096
1805 4 VA	302	212	153	257	20	77,000	5016118
1805 6 VA	404	314	255	359	10	97,100	5016126
V4A Stainless steel, grade 316 Ti /pc.							

1805/...: For connecting different earthing systems

- With 2 mounting holes Ø 11 mm
- 1805/2: With 4 attaching holes
- 1805/4: With 8 attaching holes
- 1805/6: With 12 attaching holes

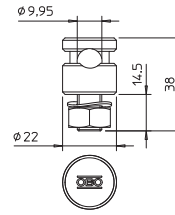


Connector, Rd 8–10 mm with pressure trough



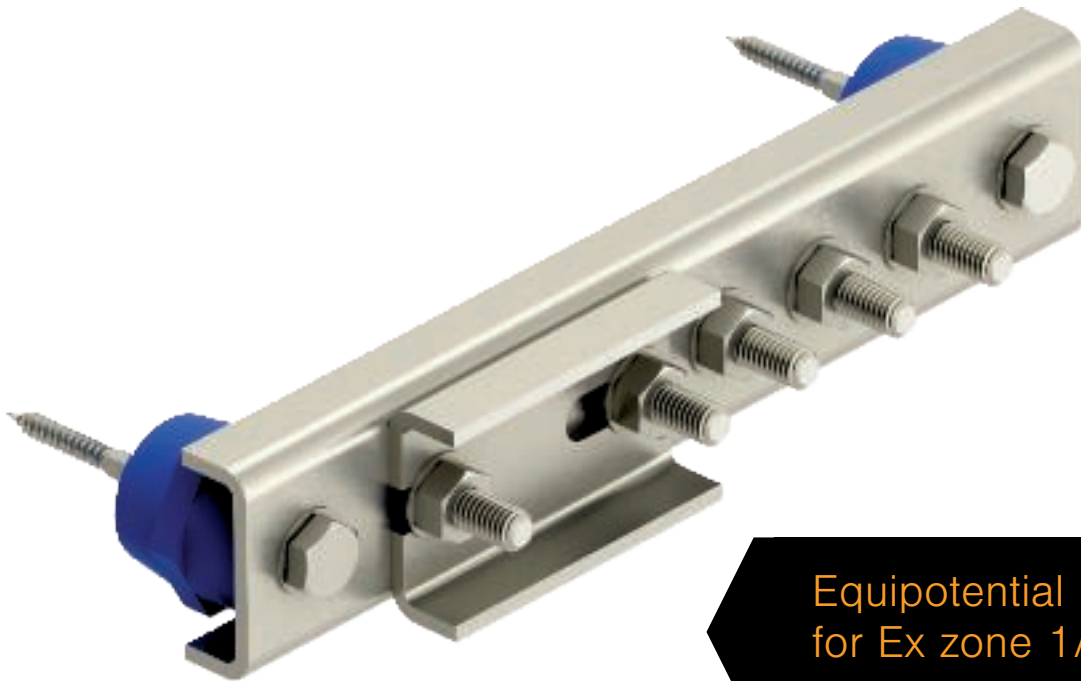
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 N-VA	Rd 8-10	10	6,800	5304176
V2A Stainless steel, grade 304				/100 pc.

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Equipotential bonding for Ex areas

- + Manufacturer declaration for use in potentially explosive areas
- + Protected against self-loosening
- + UV-stabilised and halogen-free insulation feet
- + For single, multi and fine-wire connection cables and flat conductors
- + Suitable for FT, VA, CU and AL material
- + Corrosion-resistant



Equipotential bonding
for Ex zone 1/21, 2/22

The lightning protection components for equipotential bonding in Ex areas can be used as part of the erection according to VDE 0165 Part 1 (IEC 60079-14) and VDE 0185-305-3 (IEC 62305-3). They are secured against self-loosening in accordance with VDE 0185-305-3 Supplementary Sheet 2 (DIN EN 62305-3 Supplementary Sheet 2).

The equipotential busbars are used for lightning protection equipotential bonding according to

VDE 0185-305-3 (IEC 62305-3) and protective/function equipotential bonding according to DIN VDE 0100 Part 410/540. The Vario quick connectors and the connectors with pressure trough are connected with lightning current carrying capacity according to VDE 0185-305-3 (IEC 62305-3) and VDE 0185-561-1 (IEC 62561-1).

The components are suitable for use in potentially explosive areas of Zone 2 (gases, vapours, mist)

as well as Zone 22 (dusts). They do not possess their own potential source of ignition and thus cannot be evaluated according to the European Directive 94/9/EC. This means that an approval according to the European Directive 94/9/EC is not legally possible and also not required in the context of explosion protection.



Equipotential bonding rail for EX zone 1/21, 2/22



Type	Number of connections	Width mm	Length mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
EX PAS 5	5	54	279	4	1	152,000	5015265
EX PAS 10	10	54	441	4	1	214,000	5015270

V2A Stainless steel, grade 304

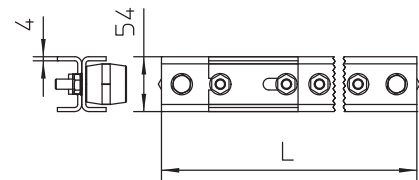
/pc.

For ignition spark-free protection/functional equipotential bonding to DIN VDE 0100-410/-540 as well as ignition spark-free lightning protection equipotential bonding to DIN VDE 0185-305 (IEC 62305) in systems to VDE 0165-1 (IEC/ EN 60079-14)

- Use in potentially explosive areas, Ex zone 1 and 2/21 and 22
- Tested according to explosion group IIC
- Lightning current carrying capacity class H (100 kA) to VDE 0185-561-1 (IEC/EN 62561-1)
- UV-stabilised and halogen-free insulation feet
- With spring washer for locking screws against self-loosening to VDE 0185-305-3 Supplementary sheet 2
- Suitable for indoor and outdoor applications



Dimensions



Equipotential busbar BigBar for industrial application



Type	Number of connections	Width mm	Length mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 5 VA	5	40	246	5	1	90,000	5015854
1802 10 VA	10	40	408.5	5	1	190,000	5015866

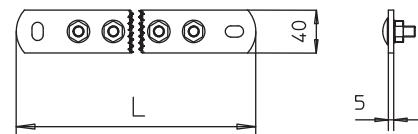
V2A Stainless steel, grade 304

/pc.

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)



Dimensions



Equipotential busbar BigBar for industrial application



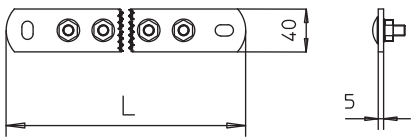
Type	Number of connections	Width mm	Length mm	Height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 5 CU	5	40	246	5	1	80,000	5015830
1802 6 CU	6	40	278.5	5	1	98,400	5015832
1802 8 CU	8	40	343.5	5	1	116,550	5015836
1802 10 CU	10	40	408.5	5	1	180,000	5015842
1802 12 CU	12	40	473.5	5	1	152,850	5015844
1802 14 CU	14	40	538.5	5	1	171,000	5015847
1802 20 CU	20	40	733.5	5	1	225,450	5015849

Cu Copper

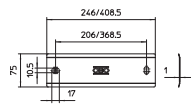
/pc.

- Main potential equalisation to VDE 0100 Part 410 and Part 540, and also lightning protection potential equalisation to VDE 0185-305 (IEC 62305)
- Insulation feet
- Quick, simple assembly of connection conductors to the contact rail using lock bolts M10
- The high-grade stainless steel versions (V2A) are suitable for outdoor use
- Complete with anchors and bolts for wall mounting
- With lock washer (DIN 137) for bolt locking against loosening (e.g. required in industry and explosion-protected areas)

Dimensions



Cover for BigBar equipotential busbar



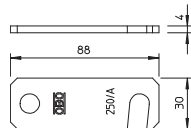
Type	Number of connections	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 AH 5	5	1	25,800	5015880
1802 AH 10	10	1	36,300	5015884

V2A Stainless steel, grade 304

/pc.

- Complete with all installation components

Crossbar for equipotential busbar



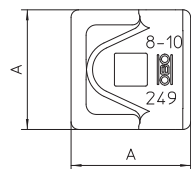
Type	Connection option	Pack. pcs	Weight kg/100 pcs.	Item No.
1802 KL	FL20-FL40	1	7,000	5015890

V2A Stainless steel, grade 304

/pc.

- To clamp the flat conductors 30 x 3.5 and 40 x 5
- Suitable for equipotential busbar BigBar, type 1802

Crossbar for equipotential busbar



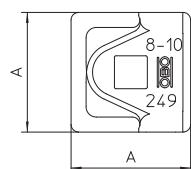
Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA-OT	Rd 8-10	40	100	3,130	5311554

V2A Stainless steel, grade 304

/100 pc.

- For round conductor Rd 8-10
- Suitable for M10 bolts

Crossbar for equipotential busbar



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU-OT	Rd 8-10	40	100	3,580	5311530

Cu Copper

/100 pc.

- For round conductor fastening RD 8-10
- Suitable for M10 bolts

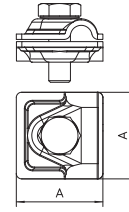


Vario quick connector



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA	Rd 8-10	40	10	10,700	5311551
V2A Stainless steel, grade 304					/100 pc.

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

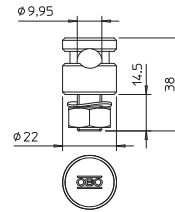


Connector, Rd 8–10 mm with pressure trough



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 N-VA	Rd 8-10	10	6,800	5304176
V2A Stainless steel, grade 304				/100 pc.

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

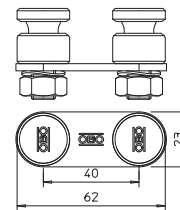


Connector, Rd 8–10 mm, double, with pressure trough



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5002 N-VA	Rd 8-10	10	16,200	5304270
V2A Stainless steel, grade 304				/100 pc.

- With 2 Fix-Kontakt clamping bolts, nuts and serrated washers
- With pre-mounted pressure trough made of VA
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

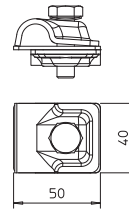


Vario quick connector Rd 8-10x16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10X16 VA	8-10X16	10	16,300	5311590
V2A Stainless steel, grade 304				/100 pc.

- For T, intersection and parallel connections with adapter plates
- Quick mounting using an M10 x 30 bolt, made from rustproof stainless steel
- With sprung washer to DIN 137
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)



The plus of earthing clips

- + Varied connection options
- + Adjustable mounting strip
- + Suitable for many pipe diameters



Earthing clips

Each system has different environmental and normative requirements relating to equipotential bonding. To implement equipotential bonding correctly, it is therefore necessary to select the right components to use. Equipotential bonding rails and earthing clips are key components of this kind of

installation. In the context of lightning protection equipotential bonding, these must fulfil the requirements and undergo tests as defined in VDE 0185-561-1 (IEC 62561-1).

When connecting metallic pipes to the equipotential bonding, strip

earthing clips such as OBO type 927 are generally used. These offer a wide range of advantages over pipe clamps during assembly. With their rustproof stainless steel tightening strap, they are suitable for a wide range of pipe diameters and materials.



Earthing pipe clamp VA

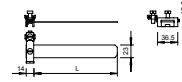


Type	for pipe Ø inch	Dimension L mm	for pipe Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
927 1	3/8-11/2	200	17.2 - 48	10	7,780	5057515
927 2	3/8-4	395	17.2 - 114	10	8,550	5057523
927 4	3/8-6	555	17.2 - 185	10	8,900	5057558

V2A Stainless steel, grade 304

/100 pc.

- For pipes of Ø 3/8 - 6"
- Connection options: Max. 2 cables 2.5-25 mm²
- Round conductor Rd 8
- Clip element, bolts and tightening strap made of rustproof stainless steel (VA)



Earthing pipe clamp, nickel-plated



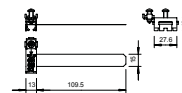
Type	for pipe Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
927 0	109.5	8 - 22	10	5,000	5057507

CuZn Brass

/100 pc.

N Nickel-plated

- For pipe Ø 8-22 mm
- Connection options: max. 2 conductors 2.5-10 mm²
- Clip elements and screws from nickel-plated brass
- Tightening strip from high-grade stainless steel (V2A)



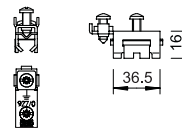
Clamp lock for earthing pipe clamp

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
927 SCH-K-VA	20	4,700	5057930

V2A Stainless steel, grade 304

/100 pc.

- Connection option: max. 2 conductors 2.5-25 mm²
- Possible to connect round conductor Rd 8



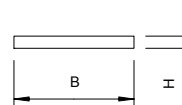
Installation strip for earthing pipe clamp

Type	Dimension B mm	Dimension H mm	Pack. m	Weight kg/100 m	Item No.
927 BAND-VA	23	0.3	40	6,000	5057922

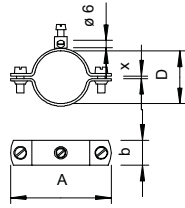
V2A Stainless steel, grade 304

price/100 m

- 40 m roll
- Ready for transport and installation in unroll pack



Earthing clamp, type 925



Type	Dimension A mm	Clamping range D mm	Dimension X mm	for pipe Ø inch	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
925 1/4	48	11.5 - 13.5	2	1/4	300	25	4,100	5040035
925 3/8	52	15.2 - 17.2	2	3/8	300	25	4,360	5040051
925 1/2	56	19.3 - 21.3	2	1/2	300	25	4,788	5040078
925 3/4	62	24.9 - 26.9	2	3/4	250	25	5,316	5040094
925 1	70	31.7 - 33.7	2	1	250	25	5,956	5040116
925 1 1/4	81	40.4 - 42.4	2	1 1/4	300	25	7,744	5040132
925 1 1/2	88	46.3 - 48.3	2	1 1/2	240	20	9,615	5040159

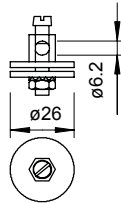
St Steel

/100 pc.

G Electrogalvanised

- For pipes 1/4"-1 1/2" or Ø 11.5-48.3 mm
- Connection options: conductors to 16 mm² with connecting terminal, riveted with brass and 1 cylinder screw M5 x 12
- To 1 1/2" with 2 cylinder screws M6 x 16 (G)

Earthing terminal for fastening on earthing strap



Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
928	240	10	5,700	5040507

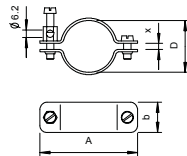
CuZn Brass

/100 pc.

N Nickel-plated

- For use in bathtubs or shower lutes etc.
- Connection option: conductors to 16 mm²
- Clamping element with threaded connection M6, 1 hexagonal nut M6, 1 serrated dimension washer and 1 cylinder screw M5 x 8
- Clamping element, nut and screws from copper-plated brass
- Serrated washer from stainless steel; 2 washers from galvanised steel

Earthing clamp, type 942



Type	Dimension A mm	Clamping range D mm	Dimension X mm	for pipe Ø inch	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
942 11	44	8 - 11	3.5	1/8	420	10	4,480	5038014
942 15	50	13 - 15	3	1/4	320	10	4,800	5038030
942 18	52	16 - 18	2	3/8	200	10	5,170	5038057
942 22	55	19 - 22	3	1/2	180	10	5,550	5038073
942 28	63	24 - 28	3	3/4	180	10	6,170	5038081
942 35	71	30 - 35	5	1	120	10	8,570	5038111
942 43	81	39 - 43	5	1 1/4	100	10	9,740	5038138
942 49	86	44 - 49	5	1 1/2	100	10	10,540	5038154

Cu Copper

/100 pc.

N Nickel-plated

- For pipes 1/8"-1 1/2" or Ø 8-49 mm
- Connection options: conductors to 16 mm²
- With attaching clamp and cylinder screw M6 x 16 from nickel-plated brass
- Top and bottom clip sections from nickel-plated copper



Earthing clamp, type 950

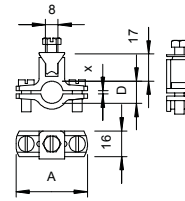
Type	Dimension A mm	Clamping range D mm	Dimension X mm	for pipe Ø inch	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
950 Z 1/4	45	12 - 14	2	1/4	300	10	5,830	5050030
950 Z 3/8	50	15.5 - 17.5	2	3/8	180	10	6,020	5050057
950 Z 1/2	54	20 - 22.5	2.5	1/2	120	10	7,000	5050073
950 Z 3/4	61	25 - 28	3	3/4	120	10	7,620	5050081
950 Z 1	66	31.5 - 34.5	3	1	150	10	8,410	5050111
950 Z 1 1/4	78	40.5 - 43.5	3	1 1/4	160	10	10,030	5050138
950 Z 1 1/2	84	46.5 - 49.5	3	1 1/2	150	10	10,410	5050154
950 Z 1 3/4	88	51 - 54	3	1 3/4	100	10	11,820	5050170
950 Z 2	96	58.5 - 61.5	3	2	80	10	12,150	5050197

Zn Die-cast zinc

/100 pc.

G Electrogalvanised

- For pipes Ø 1/4"-2"
- Connection options: conductors to 35 mm² or round conductors to Ø 6 mm
- With captive pressure strip, 2 cylinder screws M6 x 16 and 1 hex-head screw M6 x 16 from galvanised steel, top and bottom part of clip from die-cast zinc



Earthing clamp, type 952

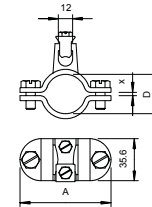
Type	Dimension A mm	Clamping range D mm	Dimension X mm	for pipe Ø inch	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
952 Z 1/2	65	18.5 - 21.5	3	1/2	50	5	24,880	5052076
952 Z 3/4	71	24 - 27	3	3/4	50	5	26,780	5052092
952 Z 1	77	30.5 - 33.5	3	1	50	5	28,560	5052114
952 Z 1 1/4	87	39.5 - 42.5	3	1 1/4	50	5	32,200	5052130
952 Z 1 1/2	94	45.5 - 48.5	3	1 1/2	20	5	34,720	5052157
952 Z 2	105	57 - 60	3	2	30	5	38,520	5052181

St Steel

/100 pc.

FT Hot-dip galvanised

- For pipes 1/2-2" or Ø 11.5-60 mm
- Connection options: conductors 16-70 mm² and/or round conductors to Rd 10 with captive pressure strip from stainless steel
- With 2 hexagonal bolts M6 x 16 and 2 hexagonal bolts M6 x 20 from hot-dip galvanised steel
- Top section of clip with cast contact point from die-cast zinc, bottom section of clip from hot-dip galvanised steel



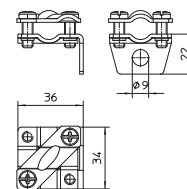
Earthing terminal type 951

Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
951	120	10	5,400	5051509

V2A Stainless steel, grade 304

/100 pc.

- Longitudinal and transverse conductor routing
- With 1 attaching hole Ø 9 mm
- With 2 cylinder bolts M6 x 16



Connection terminal, equipotential bonding, Rd 8-10 mm

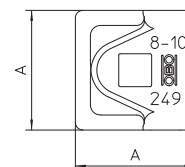
Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ST-OT	Rd 8-10	40	100	3,240	5311503

St Steel

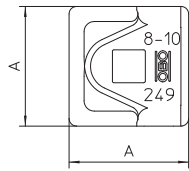
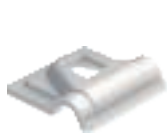
/100 pc.

FT Hot-dip galvanised

- For round conductor fastening RD 8-10
- Suitable for M10 bolts



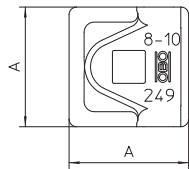
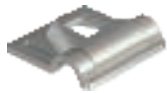
Connection terminal, equipotential bonding, Rd 8–10 mm



Type	Dimension A mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ALU-OT	44	Rd 8-10	100	2,100	5311585
Alu Aluminium					/100 pc.

- For round conductor fastening RD 8-10
- Suitable for M10 bolts

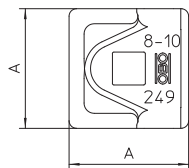
Connection terminal, equipotential bonding, Rd 8–10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA-OT	Rd 8-10	40	100	3,130	5311554
V2A Stainless steel, grade 304					/100 pc.

- For round conductor Rd 8-10
- Suitable for M10 bolts

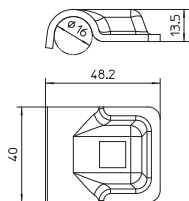
Connection terminal, equipotential bonding, Rd 8–10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU-OT	Rd 8-10	40	100	3,580	5311530
Cu Copper					/100 pc.

- For round conductor fastening RD 8-10
- Suitable for M10 bolts

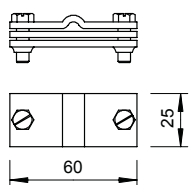
Connection terminal, equipotential bonding, Rd 16 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 VA-OT	16	100	5,700	5311573
V2A Stainless steel, grade 304				

- For round conductor fastening RD 16
- Suitable for M10 bolts

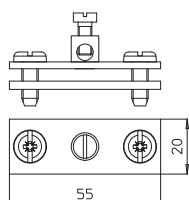
Earth connection terminal for round conductor and flat conductor



Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
937 50	100	10	11,750	5043018
St Steel				
FT Hot-dip galvanised				

- For round and flat conductors
- Fit: cable 50 mm² x max. FL 40
- Rd 8 x max. FL 40
- With 2 hexagonal bolts M6 x 20 (F)

Earthing terminal for conductors and flat conductors



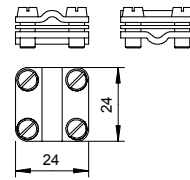
Type	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
939	150	25	5,932	5043107
St Steel				
G Electrogalvanised				

- For cables to 16 mm² and flat conductors
- Fit: cable to 16 mm² x max. FL 30
- With riveted brass connection terminal and one cylinder bolt, M5 x 12, with two cylinder bolts, M6 x 16



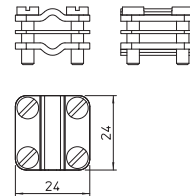
Clip branch terminal

Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
470 4-16	—	50	2,856	5064015
CuZn Brass /100 pc. N Nickel-plated				
• Seat: 4-8 mm x 4-8 mm • With 4 cylinder bolts M4 x 16				



Clip branch terminal, parallel

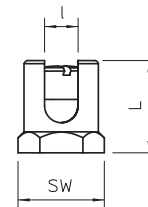
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
471 4-16 P	—	50	2,900	5064017
CuZn Brass /100 pc. N Nickel-plated				
• Seat: 4-8 mm x 4-8 mm • With 4 cylinder bolts M4 x 16				



Earthing screw with fastening thread



Type	Dimension L mm	Dimension I mm	Cross-section mm ²	SW mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
EKL 25 M6	22	8	25	18	M6	50	3,100	6404006
EKL 35 M6	26	10	35	21	M6	50	4,800	6404014
CuZn Brass /100 pc.								

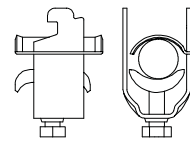


Earthing screw for fastening the equipotential bonding wire to the cable support system.

Clamp clips for screen connection



Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2056N SAS 8 VA	4 - 8	50	2,900	1167006
2056N SAS 12 VA	8 - 12	50	3,700	1167014
2056N SAS 16 VA	12 - 16	50	4,200	1167022
2056N SAS 22 VA	16 - 22	50	4,850	1167030
2056N SAS 28 VA	22 - 28	50	6,600	1167049
V2A Stainless steel, grade 304 /100 pc.				



For electrical connection of the braided shield of stripped cables.

Delivery complete with counter-trough; pressure trough and VA counter-trough.

A cable screen for protection against electromagnetic influences, can also contribute towards equipotential bonding as both ends are connected to the reference potential.



Type	Version	Dimension W x H mm	Material thickness mm	Length mm	Bundle m	Weight kg/100 m	Item No.
2066 2M FT	Unperforated	25 x 12	1.5	2000	20	65,000	1117025
2066 2M FS	Unperforated	25 x 12	1.5	2000	20	58,300	1117033
St Steel price/100 m FS Strip-galvanised FT Hot-dip galvanised							

Profile rail

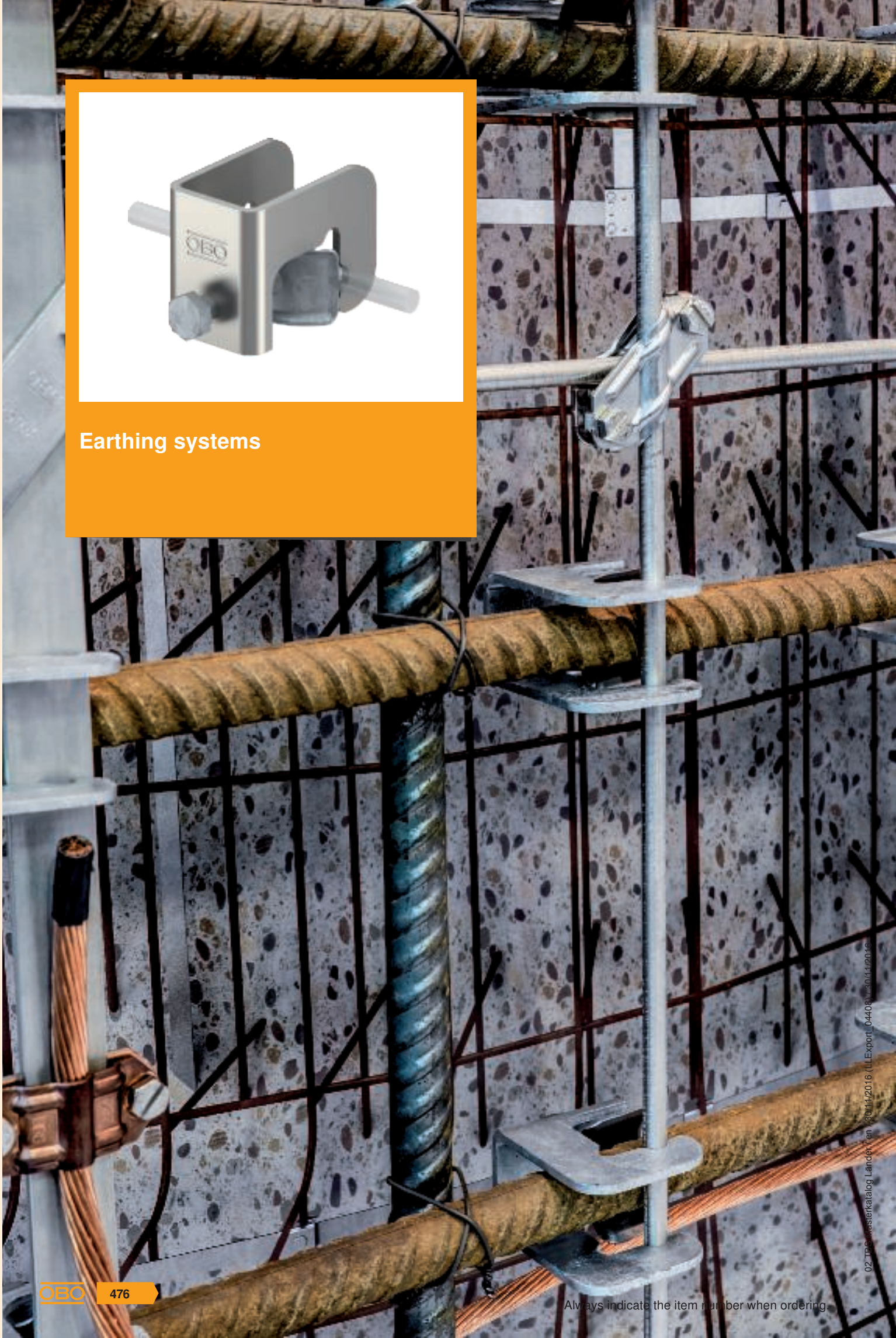


Profile rail, unperforated, slot width 11 mm.









Earthing systems





Earthing systems

	Conductor material	480
	Earth rods and plates	485
	Connection material	492
	Holders and accessories	505

Earth rod



Standard

Surface	Item no.	Page
FT	5000 74 2	485
FT	5000 75 0	485
FT	5000 76 9	485



BP

Surface	Item no.	Page
FT	5000 94 7	485
FT	5000 95 5	485
Stainless steel	5000 85 8	486
Stainless steel	5000 86 6	486
Copper-plated	5000 50 0	486



OMEX

Surface	Item no.	Page
FT	5000 01 7	486
FT	5000 20 3	486
FT	5000 02 5	486



Pipe earther

Surface	Item no.	Page
FT	5000 30 0	485
Stainless steel	5000 33 5	485

Connection clips for earth rods



RD 8-10/FL 30-40

Surface	Item no.	Page
FT	5001 64 1	492
FT	5001 74 9	492
FT	5001 66 8	492
Stainless steel	5001 63 3	493
Stainless steel	5001 67 2	493
Stainless steel	5001 61 7	493
Stainless steel	5001 62 5	493



Universal

Surface	Item no.	Page
FT	5001 41 2	492
FT	5001 40 4	492
Stainless steel	5001 36 6	492



RD 8-10

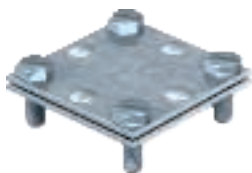
Surface	Item no.	Page
FT	5001 21 8	492
FT	5001 22 6	492



RD 7-12.5

Surface	Item no.	Page
Copper-plated	5001 56 0	493

Cross-connectors



FL/FL

Surface	Item no.	Page
FT	5314 53 4	493
FT	5314 51 8	493
FT	5314 65 8	494
FT	5314 66 6	494
FT	5314 61 5	494
FT	5314 62 3	494
Stainless steel	5314 65 9	494
Stainless steel	5314 72 0	494
Stainless steel	5314 61 6	494



RD 8-10/RD 8-10

Surface	Item no.	Page
FT	5312 60 4	495
FT	5312 31 0	495
Stainless steel	5312 31 8	495
Copper-plated	5312 41 8	496



RD 8-10/RD 16

Surface	Item no.	Page
FT	5312 80 9	496
FT	5312 34 5	496
Stainless steel	5312 34 6	496
Copper-plated	5312 44 2	497



RD 8-10/FL 30

Surface	Item no.	Page
FT	5312 65 5	497
Stainless steel	5312 65 6	497

Diagonal and parallel clamps



RD 8-10/FL 30

Surface	Item no.	Page
FT	5312 90 6	497
V4A	5312 92 5	498
V2A	5312 92 2	498



RD 6-22/max. FL 50

Surface	Item no.	Page
FT	5313 01 5	498
FT	5313 03 1	498
FT	5313 06 6	498
V2A	5313 02 3	498



RD 8-10

Surface	Item no.	Page
V4A	5313 01 3	499
V2A	5001 61 2	499



RD 10-20

Surface	Item no.	Page
V2A	5315 52 2	499
FT	5315 51 4	499
ST	5315 55 7	499

Connection terminals, sealing sleeves and fixed earthing terminals



Ø 8-14 mm

Surface	Item no.	Page
ST	5014 47 6	500
FT	5014 46 8	500



Ø 16-37 mm

Surface	Item no.	Page
ST	5014 47 7	500
FT	5014 46 9	500



RD 10/FL 30x3.5

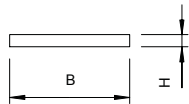
Surface	Item no.	Page
ST	2360 04 1	500
FT	2360 04 3	500



25 kg

Surface	Item no.	Page
ST	5009 20 0	505

Galvanised steel flat conductor



Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
5052 DIN 20X2.5	20 x 2,5	50	122	50	41,000	5019340
5052 DIN 25X3	25 x 3	75	84	50	59,700	5019342
5052 DIN 30X3	30 x 3	90	71	50	70,650	5019344
5052 DIN 30X3.5	30 x 3,5	105	30	25	84,000	5019345
5052 DIN 30X3.5	30 x 3,5	105	60	50	84,000	5019347
5052 DIN 30X4	30 x 4	120	52	50	97,000	5019350
5052 DIN 40X4	40 x 4	160	40	51	128,000	5019355
5052 DIN 40X5	40 x 5	200	30	50	162,000	5019360

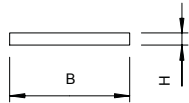
St Steel

price/100 m

FT Hot-dip galvanised

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- Zinc coating: 500 g/m² (approx. 70 µm)
- For lightning protection, earthing systems and ring equipotential bonding

Stainless steel flat conductor



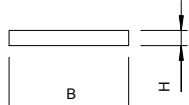
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
5052 V2A 30X3.5	30 x 3,5	105	50	42	82,500	5018501
5052 V4A 30X3.5	30 x 3,5	105	50	42	82,425	5018706
5052 V4A 30X3.5	30 x 3,5	105	25	21	82,425	5018730

V2A Stainless steel, grade 304 **V4A** Stainless steel, 316Ti / 316L

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- According to the foundation earther standard DIN 18014, V4A is required in the earth
- For use in areas at risk of corrosion
- For lightning protection, earthing systems and ring equipotential bonding

Flat conductor, copper



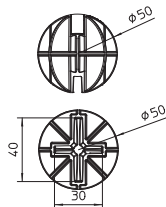
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
FL 20-CU	20 x 2,5	50	45	20	44,500	5021804

Cu Copper

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- For lightning protection, earthing systems and ring equipotential bonding

Protective cap for connection lugs, reflective



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
ProtectionBall	RD 8-10/ FL 25/ 30/ 40	25	2,050	5018014

PE Polyethylene

/100 pcs.

- For snapping onto round conductors or flat conductors
- Noticeable, reflective label
- For accident protection during the construction phase

Round conductor, galvanised steel



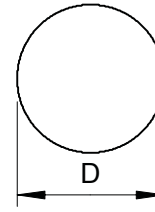
Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-FT	8	50	125	50	40,000	5021081
RD 8-FT 50	8	50	50	20	40,000	5021050
RD 10	10	78	80	50	63,000	5021103

St Steel

price/100 m

FT Hot-dip galvanised

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 10 can also be used in the earth
- Zinc coating: 350 g/m² (approx. 50 µm)



Round conductor, galvanised steel with PVC jacketing



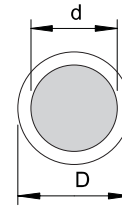
Type	Colour	Dimension d mm	Dimension D mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 10-PVC	Black	10	13	78	75	50	67,200	5021162

St Steel

price/100 m

FT Hot-dip galvanised

- Conforms to the requirements according to VDE V 0185-305, (IEC 62305)
- Zinc coating: 350 g/m² (approx. 50 µm)
- With PVC sheathing



Round conductor, aluminium

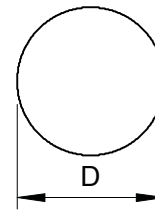


Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-ALU	8	50	150	20	13,500	5021286
RD 8-ALU-T	8	50	150	20	13,500	5021294
RD 8-ALU-T 75	8	50	75	10	13,500	5021296
RD 10-ALU	10	78	95	20	21,000	5021308

Alu Aluminium

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 8 ALU: Semi-hard (E-ALMgSi0.5 corresponds to DIN 48801)
- RD 8 ALU-T: Can be subjected to torsion (E-ALMgSi0.5 corresponds to DIN 48801)
- RD 10 ALU: Pure aluminium (E-Al corresponds to DIN 48801)
- AL and ALMgSi may not be routed directly on, in or under plaster, mortar or concrete, nor routed in the earth



Round conductor, aluminium, with PVC sheathing

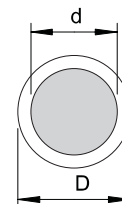


Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-PVC	8/11	50	100	20	20,000	5021332

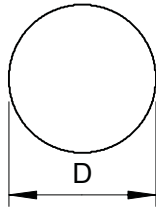
Alu Aluminium

price/100 m

- Meets the requirements of VDE 0185-305 (IEC 62305)
- With PVC jacketing (halogen-free)
- Suitable for routing on, in or under plasterwork, mortar or concrete



Round conductor, stainless steel

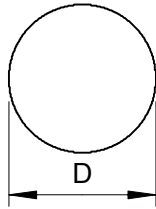


Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-V2A	8	50	125	50	40,000	5021235
RD 10-V2A	10	78	50	32	63,000	5021227
RD 10-V2A	10	78	80	50	63,000	5021239
RD 8-V4A	8	50	125	50	40,000	5021644
RD 10-V4A 20	10	78	20	12	63,000	5021640
RD 10-V4A	10	78	50	32	63,000	5021642
RD 10-V4A	10	78	80	50	63,000	5021647

V2A Stainless steel, grade 304 V4A Stainless steel, 316Ti / 316L price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 10-V4A for applications in the earth
- According to the foundation earther standard DIN 18014, V4A is required in the earth

Round conductor, copper

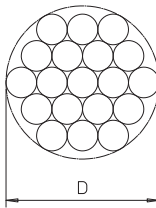


Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-CU	8	50	100	45	45,000	5021480
RD 10-CU	10	78	50	35	70,000	5021502

Cu Copper price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Stranded & tinned copper conductor



Type	Dimension D mm	Individual wires	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
S 11-CU	10.5	19 x Ø 2,1	70	50	30	58,600	5021654
S 9-CU	9	19 x Ø 1,8	50	100	45	45,000	5021652
S-11-CU SN	10.5	19 x Ø 2,1	70	50	30	58,600	5021656

Cu Copper price/100 m

Sn Tin-plated

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)





The plus of earth rods and plates

- + Corrosion-resistant – zinc coating double the amount required
- + Constant resistance values
- + No cross-section increase at the coupling point
- + Optimised for vibration hammers



Earth rods and plates with modular structure

The earthing system is the basis for the entire electrical system. Together with the equipotential bonding system, a conductive and low-resistance connection to the local earth is created. Voltage differences between the connected parts are shorted and a reference potential is generated. The safety conditions and switch-off systems can only reach their protection aims when the system is implemented correctly.

Besides correct planning, the installation must be checked and documented. The continued protective action of the earthing system must be ensured through regular maintenance and testing. Besides the state of the art and the named standards, the directives of the local power generating company must be complied with.

A correctly installed earthing system, together with lightning and

surge protection devices, can minimise damage and failures.

The earthing system creates the electrical connection to the surrounding earth. The earthing resistance of the system should be as small as possible (less than 10 Ω) and must be coordinated with further protective measures and switch-off conditions.

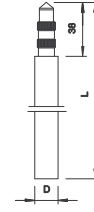
Earth rod for standard applications

Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 20 ST FT	1000	20	5	250,000	5000742
219 20 ST FT	1500	20	5	360,000	5000750

St Steel

FT Hot-dip galvanised

- High corrosion resistance
- Zinc support 70 µm
- With peg and bore for linking together
- Round pegs with two knurls
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)
- Short-circuit current I_k (50 Hz), time 1 s, max. temp 300 °C: 7.9 kA (219/20 ST)



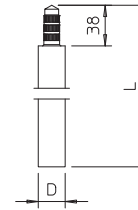
Earth rod for standard applications

Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 25 ST FT	1500	25	5	573,000	5000769

St Steel

FT Hot-dip galvanised

- High corrosion resistance
- Zinc support approx. 130 µm
- With peg and bore for linking together
- Round pegs with three knurls
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)
- Short-circuit current I_k (50 Hz), time 1 s, temp. max. 300 °C: 12.3 kA



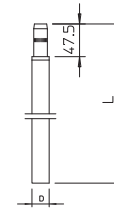
LightEarth earth rod

Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LE ERDER FT	1500	25	5	235,000	5000300

St Steel

FT Hot-dip galvanised

- Expandable earth rod system for erecting earthing connections (type A)
- Also suitable for difficult soil conditions
- The LightEarth earthing system is connected using the pre-mounted sleeve
- Satisfies requirements according to DIN VDE 0185-305 (IEC 62305)
- For use with antenna earthing systems, lightning earthing systems, etc.

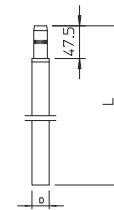


LightEarth earth rod

Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LE ERDER V4A	1500	25	5	235,000	5000335

V4A Stainless steel, grade 316 L

- Expandable earth rod system for erecting earthing connections (type A)
- Also suitable for difficult soil conditions
- The LightEarth earthing system is connected using the pre-mounted sleeve
- Satisfies requirements according to DIN VDE 0185-305 (IEC 62305)
- For use with antenna earthing systems, lightning earthing systems, etc.



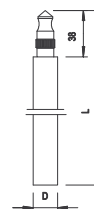
BP earth rod

Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 20 BP FT	1500	20	5	360,000	5000947
219 25 BP FT	1500	25	5	573,000	5000955

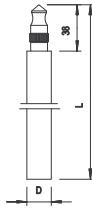
St Steel

FT Hot-dip galvanised

- "BP" system (Bundespost)
- Very good contacting properties with soft metal inlay in the bore hole
- With peg and bore for linking together
- FT version with zinc coating approx. 130 µm
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)



BP earth rod



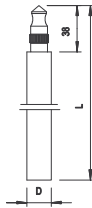
Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 20 BP V4A	1000	20	5	250,000	5000858
219 20 BP V4A	1500	20	5	365,000	5000866

V4A Stainless steel, grade 316

/pc.

- "BP" system (Bundespost)
- Very good contacting properties with soft metal inlay in the bore hole
- With peg and bore for linking together
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)
- Short circuit current I_k (50 Hz), time 1 s, max. temp. 300 °C: 4.5 kA (219 20 BP V4A)

BP copperbond earth rod



Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 20 BP CU	1500	20	5	365,400	5000500

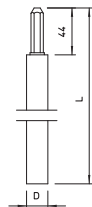
St Steel

/pc.

Cu Copper-plated

- "BP" system (Bundespost)
- Made of steel with a copper jacket of min. 0.25 mm
- Very good contacting properties with soft metal inlay in the bore hole
- With peg and bore for linking together
- Tensile strength min. 600 N/mm²
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)

OMEX earth rod



Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 20 OME X FT	1500	20	5	365,400	5000017
219 20 OME X FT	2000	20	5	491,400	5000203

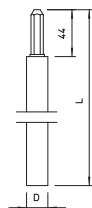
St Steel

/pc.

FT Hot-dip galvanised

- OME X system
- With peg and bore for linking together
- With hardened hexagonal pins
- Min. zinc coating 60 µm
- Very good contacting properties with soft metal inlay in the bore hole
- Conforms to the requirements according to VDE 0185-305 (IEC 62305) and DIN EN 62561-2

OMEX earth rod



Type	Length mm	Outer-Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
219 25 OME X FT	1500	25	5	577,200	5000025

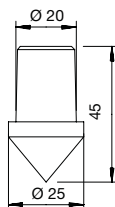
St Steel

/pc.

FT Hot-dip galvanised

- OME X system
- With peg and bore for linking together
- With hardened hexagonal pins
- Min. zinc coating 60 µm
- Very good contacting properties with soft metal inlay in the bore hole
- Conforms to the requirements according to VDE 0185-305 (IEC 62305) and DIN EN 62561-2

Driving spike for LightEarth earth rod



Type	For earth rods Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
LE SPITZE	25	5	10,000	3041409

St Steel

/pc.

FT Hot-dip galvanised

- Suitable for LightEarth system



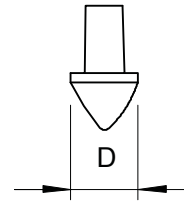
Driving spike for ST and BP earth rod

Type	For earth rods Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1819 20BP	20	5	3,800	3041212
1819 25BP	25	5	6,700	3041956

TG Cast iron

FT Hot-dip galvanised

- Suitable for ST and BP system



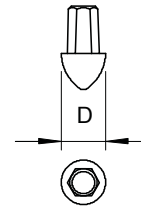
Driving spike for OMEX earth rod

Type	For earth rods Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1819 20	20	5	3,300	3041204
1819 25	25	5	4,900	3041255

TG Cast iron

FT Hot-dip galvanised

- Suitable for OMEX system
- DIN 48852, Form SP



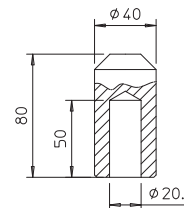
Driving head for LightEarth earth rod

Type	Material symbol	For earth rods Ø mm	Pack. pcs	Item No.
LE KOPF	St	25	1	3042308

St Steel

FT Hot-dip galvanised

- Suitable for LightEarth system
- For driving earth rods using hand-held hammer
- Hardened

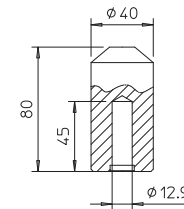


Driving head for earth rods ST, BP and OMEX

Type	Material symbol	For earth rods Ø mm	Pack. pcs	Item No.
1820 20	St	20	1	3042200
1820 25	St	25	1	3042251

St Steel

- Suitable for ST, BP and OMEX systems
- Hardened
- DIN 48852, Form SP

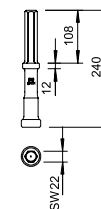


Hammer insert, type 2500, for earth rods ST, BP and OMEX

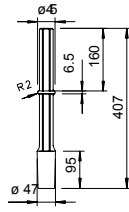
Type	For earth rods Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2500 20	20	1	120,000	3043207
2500 25	25	1	140,000	3043258

St Steel

- Manufactured by Cobra BBM 47 SPA-Super, Tex11 and COBRA 248
- Fits earth rod system ST, BP and OMEX
- Hardened



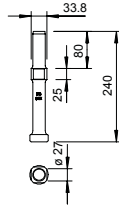
Hammer insert, type 2510, for earth rods ST, BP and OMEX



For earth rods		Pack.	Weight	Item No.
Type	Ø mm	pcs	kg/100 pcs.	
2510 20	20	1	310,000	3043312
St Steel /pc.				

- Manufactured by Atlas Copco, type FB 60 S-Super
- Fits earth rod system ST, BP and OMEX
- Hardened

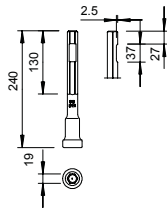
Hammer insert, type 2520, for earth rods ST, BP and OMEX



For earth rods		Pack.	Weight	Item No.
Type	Ø mm	pcs	kg/100 pcs.	
2520 20	20	1	197,000	3043703
2520 25	25	1	197,000	3043754
St Steel /pc.				

- Manufactured by Wacker BHF 25, BHF 30S, EHU 25/220
- Fits earth rod system ST, BP and OMEX
- Hardened

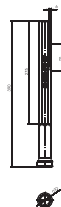
Hammer insert, type 2530, for earth rods ST, BP and OMEX



For earth rods		Pack.	Weight	Item No.
Type	Ø mm	pcs	kg/100 pcs.	
2530 20	20	1	125,000	3043401
2530 25	25	1	125,000	3043452
St Steel /pc.				

- Manufactured by Bosch USH 10, HSH 10
- Fits earth rod system ST, BP and OMEX
- Hardened

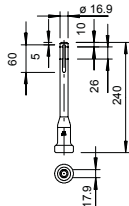
Hammer insert, type 2531, for earth rods ST, BP and OMEX



For earth rods		Pack.	Weight	Item No.
Type	Ø mm	pcs	kg/100 pcs.	
2531 20	20	1	200,000	3043908
St Steel /pc.				

- Make: Bosch GSH 27, USH 27 (WAF 28 mm)
- Suitable for ST, BP and OMEX earth rod systems
- Hardened

Hammer insert, type 2535, for earth rods ST, BP and OMEX



For earth rods		Pack.	Weight	Item No.
Type	Ø mm	pcs	kg/100 pcs.	
2535 20	20	1	100,000	3043916
2535 25	25	1	100,000	3044912
St Steel /pc.				

- Manufactured by Hilti TE 52/42, TE 72/60, TE 92
- Fits earth rod system ST, BP and OMEX
- Hardened

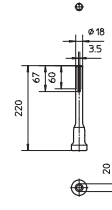
Hammer insert, type 2536, for earth rods ST, BP and OMEX

Type	For earth rods		Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm				
2536 20	20		1	63,000	3044904
2536 25	25		1	61,000	3044831

St. Steel

/pc.

- Fits earth rod system ST, BP and OMEX
- For vibration hammers with SDS- Max/TEY- mounting
- Hardened



Hammer insert for LightEarth earth rod

Type	Seat systems	Pack. pcs	Weight kg/100 pcs.	Item No.
LE HAMMER-W	Wacker	1	132,000	3043606
LE HAMMER-H	Hilti	1	76,000	3043610
LE HAMMER-B	Bosch	1	87,000	3043614
LE HAMMER-SDS-M	SDS-max	1	76,000	3043602
LE HAMMER-AC	Atlas Copco	1	76,000	3043618
LE HAMMER-B-II	Other	1	200,000	3043628

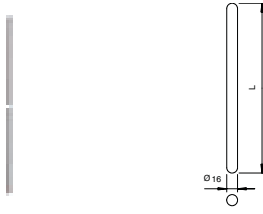
St. Steel

/pc.

- Suitable for LightEarth system
- 3043606 for Wacker (BHF 25, BHF 30S)
- 3043610 for Hilti (TE 52/42, TE72/60, TE92)
- 3043614 for Bosch (USH 10, HSH 10)
- 3043602 for SDS-Max
- 3043618 for Atlas Copco (Hexagon seat)
- 3043628 for Bosch GSH27/UH27 (11304) / HS28 (12314)
Hitachi H65SD
Makita HM 1500B / HM1800
- Hardened



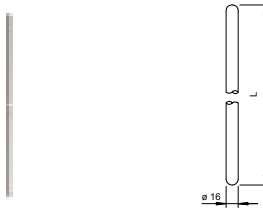
Interception/earth entry rod, rounded-off on both sides



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
101 A-1500	1500	16	—	10	240,000	5400155

- St Steel / FT Hot-dip galvanised
- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

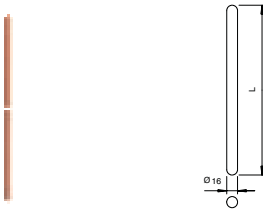
Interception/earth entry rod, rounded-off on both sides



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
200 V4A-1500	1500	16	—	10	242,000	5420504
200 V4A-2000	2000	16	—	10	320,000	5420539

- V4A Stainless steel, grade 316 Ti
- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

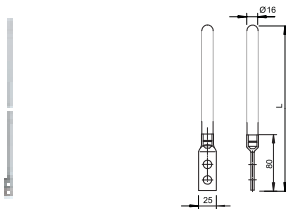
Interception/earth entry rod, rounded-off on both sides



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
101 A-CU	1500	16	—	10	272,100	5400627

- Cu Copper
- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

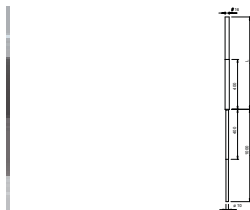
Interception/earth entry rod with connection tabs



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
101 F1500	1500	16	—	10	240,000	5424151
101 F2000	2000	16	—	10	320,000	5424208

- St Steel / FT Hot-dip galvanised
- With 2 attaching holes Ø 12 mm
- One end rounded

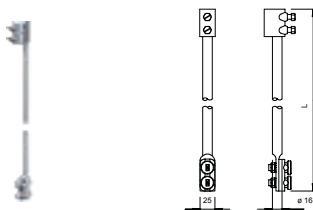
Earth entry rod, tapered and partially insulated



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
204 KS-2000	2000	16/10	—	1	230,000	5430011
204 KS-2500	2500	16/10	—	1	310,000	5430062

- St Steel / F Hot-dip galvanised
- 16 mm earth entry with 10 mm connection
- With mounted heat-shrinkable sleeve (corrosion protection)

Earth entry rod with separating piece and connector



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.

- St Steel
- With separating piece type 223 DIN and connector type 5002 DIN

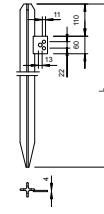
Profile earth rod connection with connecting lug

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
213 1000 DIN	1000	5	240,500	5003008
213 1500 DIN	1500	5	364,500	5003016
213 2000 DIN	2000	5	488,400	5003024
213 2500 DIN	2500	3	612,400	5003032
213 3000 DIN	3000	3	736,400	5003040

St Steel

FT Hot-dip galvanised

- Cross-profile 50 x 50 x 3 mm
- With connecting strap
- 1 through hole Ø 13 mm
- 2 through holes Ø 11 mm
- Round conductor fastening e.g. with type 5001 DIN-FT possible
- For the construction of earthing systems e.g. antenna or earthing of building site distribution boards



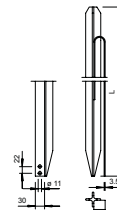
Profile earth rod connection with strip steel lug

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
213 1500 M	1500	3	527,600	5003261
213 2000 M	2000	3	651,600	5003288
213 2500 M	2500	3	783,800	5003296
213 3000 M	3000	3	899,500	5003318

St Steel

FT Hot-dip galvanised

- With 2 m strip steel section FL 30 x 3.5
- With 2 through holes Ø 11 mm
- For the construction of earthing systems e.g. antenna or earthing of building site distribution boards



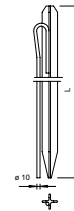
Profile earth rod connection with round conductor lug

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
213 1500 F	1500	3	486,900	5003776
213 2000 F	2000	3	610,900	5003784

St Steel

FT Hot-dip galvanised

- With 2 m round conductor lugs Rd 10
- For the construction of earthing systems e.g. antenna or earthing of building site distribution boards



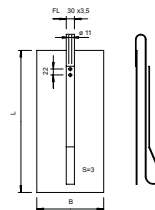
Earth plate

Type	Dimension B x L x S mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1816 F-500X1000	500 x 1000 x 3	1	1.329,300	5009227
1816 F-1000X1000	1000 x 1000 x 3	1	2.700,000	5009235

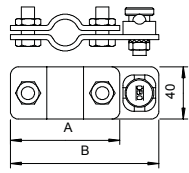
St Steel

FT Hot-dip galvanised

- With 3 m strip steel section FL30 x 3.5
- With 2 attaching holes Ø 11 mm



Connection clamp for earth rod to round conductors Rd 8–10



Type	For earth rods			Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm	Dimension A mm	Dimension B mm			
2710 20	20	84	114	5	39,900	5001218
2710 25	25	89	119	5	42,300	5001226

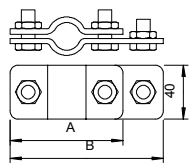
St Steel

FT Hot-dip galvanised

- ST, BP, OMEX and LightEarth system
- On round conductor Rd 8-10
- Incl. connector, type 5001 DIN

/pc.

Connection clamp for earth rod on flat conductor



Type	For earth rods			Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm	Dimension A mm	Dimension B mm			
2730 25 FT	25	89	119	5	38,800	5001412
2730 20 FT	20	84	114	5	35,900	5001404

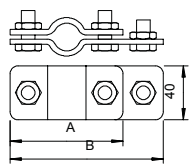
St Steel

FT Hot-dip galvanised

- ST, BP, OMEX and LightEarth systems
- On flat conductors
- Including hex-head screw for attaching flat conductors

/pc.

Connection clamp for earth rod on flat conductor



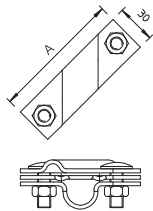
Type	For earth rods			Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm	Dimension A mm	Dimension B mm			
2730 20 VA	20	84	114	5	35,900	5001366

V2A Stainless steel, grade 304

- ST, BP, OMEX and LightEarth systems
- On flat conductors
- Including hex-head screw for attaching flat conductors

/pc.

Connection clamp for earth rod, universal



Type	For earth rods			Pack. pcs	Weight kg/100 pcs.	Item No.
	Dimension A mm	earth rods Ø mm	Fit mm			
2760 20 FT	101	20	Rd 8-10/FL40	5	32,400	5001641
2760 B-20 FT	101	20	Rd 8-10/FL40	20	32,400	5001749
2760 25 FT	110	25	Rd 8-10/FL40	5	38,400	5001668

St Steel

FT Hot-dip galvanised

- Suitable for attaching round conductors Rd 8-10 or flat conductors to FL 40
- With separator plate
- Installed with 2 hexagonal bolts M10 x 30 and 2 hexagonal nuts M10

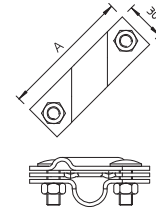
/pc.

Connection clamp for earth rod, universal



Type	For earth rods		Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
	Dimension A mm	Ø mm				
2760 20 VA	101	20	Rd 8-10/FL40	5	32,400	5001617
2760 B-20 VA	101	20	Rd 8-10/FL40	20	32,400	5001625
2760 20 V4A	101	20	Rd 8-10/FL40	5	32,400	5001633
2760 25 V4A	110	25	Rd 8-10/FL40	5	32,400	5001672

V2A Stainless steel, grade 304 V4A Stainless steel, grade 316 L /pc.



- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Suitable for connecting round conductors Rd 8-10 or flat conductors to FL 40
- With adapter plate
- Mounted with 2 hexagonal bolts M10 x 30 and 2 hexagonal bolts M10

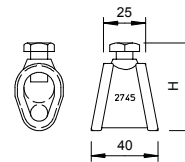
Connection clamp for earth rod or cables

Type	For earth rods		Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm	mm				
2745 20 MS	20	7-12.5/S95 mm ²		5	16,000	5001560

CuZn Brass

Cu Copper-plated

/pc.



- For earth rod connectors Ø 20 or conductors 95 mm²
- For round conductor attachments Rd 7-12.5 with hexagonal bolts M10 x 25, copper (Cu)

Cross-connector for flat conductor

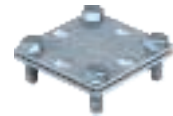
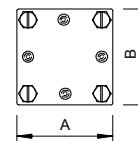
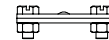


Type	Fit mm	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
		A mm	B mm			
255 A-FL30 FT	max. FL30	52	52	20	11,500	5314534

St Steel

FT Hot-dip galvanised

/100 pc.



- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max FL 30 x FL 30
- Without adapter plate
- Mounted with 4 hexagonal bolts M6 x 20 (F)

Cross-connector for flat conductor, with intermediate plate

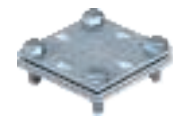
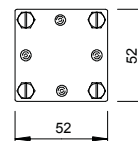


Type	Fit mm	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
		A mm	B mm			
255 30	max. FL30	52	52	20	16,650	5314518

St Steel

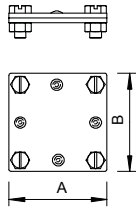
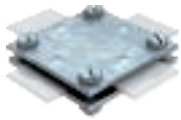
FT Hot-dip galvanised

/100 pc.



- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max FL 30 x FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M6 x 20 (F)

DIN cross-connector for flat conductor



Type	Fit mm	Dimen- sion A mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
256 A-DIN 30 FT	max. FL30	60	60	10	27,800	5314658
256 A-DIN 40 FT	max. FL40	80	80	10	38,800	5314666

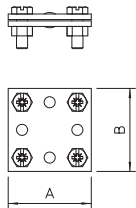
St Steel

FT Hot-dip galvanised

/100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max. FL 30 x FL 30 or max. FL 40 x FL 40
- Without adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

DIN cross-connector for flat conductor



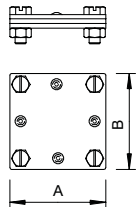
Type	Fit mm	Dimen- sion A mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
256 A-DIN 30 VA	max. FL30	60	60	10	27,800	5314720
256 A-DIN 30 V4A	max. FL30	60	60	10	26,400	5314659

V2A Stainless steel, grade 304 **V4A** Stainless steel, grade 316 Ti

/100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max. FL 30 x FL 30
- Without adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

DIN cross-connector for flat conductor, with intermediate plate



Type	Fit mm	Dimen- sion A mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
256 DIN 30 FT	max. FL30	60	60	10	35,860	5314615
256 DIN 40 FT	max. FL40	80	80	10	54,650	5314623

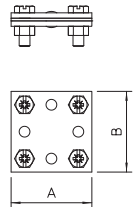
St Steel

FT Hot-dip galvanised

/100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max. FL 30 x FL 30 or max. FL 40 x FL 40
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

DIN cross-connector for flat conductor, with intermediate plate



Type	Fit mm	Dimen- sion A mm	Dimen- sion B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
256 DIN 30 V4A	max. FL30	60	60	10	29,100	5314616

V4A Stainless steel, grade 316 Ti

/100 pc.

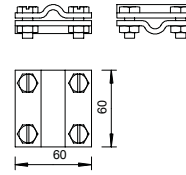
- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Max. FL 30 x FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for round conductors Rd 8–10



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
253 8X8	Rd 8-10	25	30,700	5312604

St Steel
FT Hot-dip galvanised



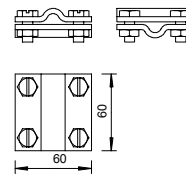
- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector for round conductors Rd 8–10



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
253 8-10 V4A	Rd 8-10	25	23,650	5312582

V4A Stainless steel, 316Ti / 316L
 /100 pc.



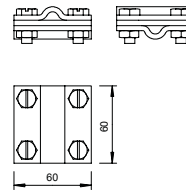
- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for round conductors, Rd 8–10



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 FT	Rd 8-10	25	33,530	5312310

St Steel
FT Hot-dip galvanised



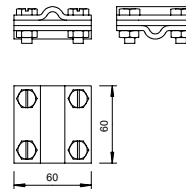
- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for round conductors, Rd 8–10



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 V4A	Rd 8-10	10	33,530	5312318

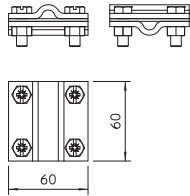
V4A Stainless steel, grade 316 Ti
 /100 pc.



- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

02 TBS Masterkatalog Länder / en / 30/11/2016 (LLExpport_04408) / 30/11/2016

Cross-connector with intermediate plate for round conductors, Rd 8–10



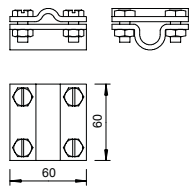
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 CU	Rd 8-10	10	38,940	5312418

Cu Copper

/100 pcs.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for round conductors Rd 8–10 x Rd 16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
253 10X16	Rd 8-10 x 16	25	29,800	5312809

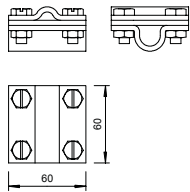
St Steel

/100 pcs.

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for round conductors, Rd 8–10 x Rd 16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10X16 FT	Rd 8-10 x 16	25	38,800	5312345

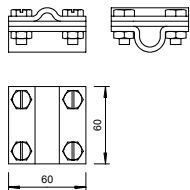
St Steel

/100 pcs.

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector with intermediate plate for round conductors, Rd 8–10 x Rd 16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10x16 V4A	Rd 8-10 x 16	10	39,000	5312346

V4A Stainless steel, grade 316 Ti

/100 pcs.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



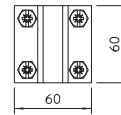
Cross-connector with intermediate plate for round conductors, Rd 8–10 x Rd 16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10X16 CU	Rd 8-10 x 16	10	43,985	5312442

Cu Copper /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



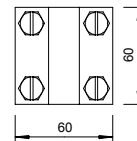
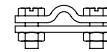
Cross-connector for flat conductors and round conductors



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10XFL30 FT	8-10 x FL30	25	28,500	5312655

St Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



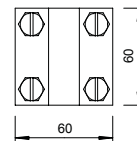
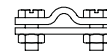
Cross-connector for flat conductors and round conductors



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10xFL30V4A	8-10 x FL30	10	28,500	5312656

V4A Stainless steel, grade 316 Ti /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



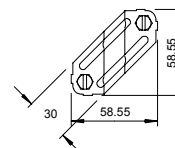
Cross-connector for flat conductors and round conductors



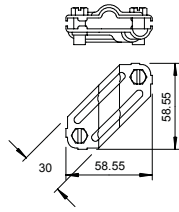
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250	Rd 8-10/FL30	25	10,260	5312906

St Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20 (F)



Cross-connector for flat conductors and round conductors

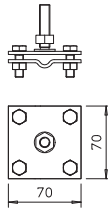


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250 VA	Rd 8-10/FL30	25	10,260	5312922
250 V4A	Rd 8-10/FL30	10	10,260	5312925

V2A Stainless steel, grade 304 V4A Stainless steel, grade 316 Ti /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20

Cross-connector for flat conductors and round conductors

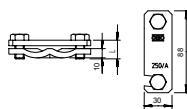


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 GB 10x45	8-10 x FL30	10	34,800	5312657

V2A Stainless steel, grade 304 /100 pc.
FT/VA Hot-dip galvanised/stainless steel, grade 304

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

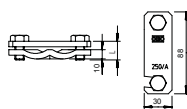
Diagonal clamp



Type	Dimen- sion L mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250 A-FT	40	Rd 6-22/max. FL50	25	28,800	5313015
250 AS-FT	20	Rd 6-22/max. FL50	25	26,000	5313031
250 A	40	Rd 6-22/max. FL50	25	28,800	5313058

- St Steel /100 pc.
FT Hot-dip galvanised
- For reinforced steels Ø 6-22 mm and flat conductor 50 x 4
 - Installed with screws M10 x 40
 - AS version with screws M10 x 20
 - Simple installation with open slot

Diagonal clamp

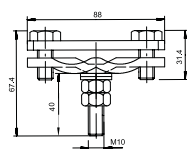


Type	Dimen- sion L mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250 A-VA	40	Rd 6-22/max. FL50	10	28,800	5313023

V2A Stainless steel, grade 304 /100 pc.

- For reinforced steels Ø 6-22 mm and flat conductor 50 x 4
- Installed with screws M10 x 40
- AS version with screws M10 x 20
- Simple installation with open slot

Diagonal clamp with bolt



Type	Dimen- sion L mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250 A-BO	25	Rd 6-22/max. FL50	25	33,000	5313066

St Steel /100 pc.
F Hot-dip galvanised

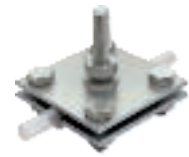
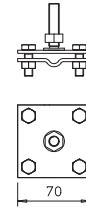
- For reinforced steels Ø 6-22 mm and flat conductor 50 x 4
- Installed with screws M10 x 25
- Simple installation with open slot
- With flange-welded bolts M10 x 40, inc. 2 washers and 2 nuts

Cross-connector for flat conductors and round conductors

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 GB 10x45	8-10 x FL30	10	34,800	5312657

V2A Stainless steel, grade 304 /100 pc.
 FT/VA Hot-dip galvanised/stainless steel, grade 304

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



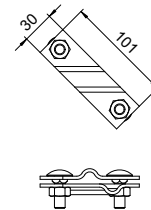
Diagonal clamp

BEST TESTED

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2760 8-10 V4A	Rd 8-10	25	20,600	5313013
2760 8	Rd 8-10	5	27,120	5001612

V2A Stainless steel, grade 304 V4A Stainless steel, 316Ti / 316L /100 pc. /pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- To connect round conductors 8–10 mm
- Mounted with 2 truss-head bolts M10 x 30 and 2 hexagonal bolts M10
- Type 2760 8 with adapter plate

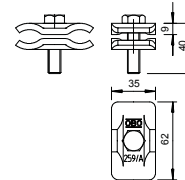


Parallel clamp

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
259 A ST	Ø 10-20	25	18,800	5315557
259 A FT	Ø 10-20	25	18,800	5315514
259 A VA	Ø 10-20	10	18,800	5315522

St Steel V2A Stainless steel, grade 304 /100 pc.
 FT Hot-dip galvanised

- For connecting reinforced steels Ø 10–20 mm
- Mounted with M10 x 40 bolts

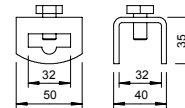


Variable earthing terminal

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1813 KL	FL30 x Rd 8-10	50	18,000	5014425

St Steel /pc.
 FT Hot-dip galvanised

- Suitable for connection for Rd 10 x FL 30, FL 30 x FL 30
- Quick mounting using a hexagonal bolt M10 x 20 (F)

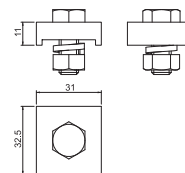


Connection terminal for round conductor

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1818	Rd 8-10	10	17,600	5012015

St Steel /100 pc.
 FT Hot-dip galvanised

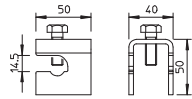
- For connecting round conductor Rd 8-10
- With 1 hexagonal bolt M12 x 40, 1 hexagonal nut M12 and 1 lock washer, stainless steel



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Earthing systems

Connection terminal for reinforced steels



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1814 ST	FL30x5 x Rd8-14	25	20,000	5014476
1814 FT	FL30x5 x Rd8-14	25	20,000	5014468

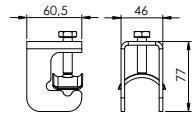
St Steel

FT Hot-dip galvanised

/pc.

- For reinforced steels with diameters 8-14 mm and FL 30 x 5
- Simple mounting through open slot
- Side suspension possible

Connection terminal for large reinforced steels



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1814 ST D37	FL30x3-4mm /Rd 10 x Rd 16-37	25	30,000	5014477
1814 FT D37	FL30x3-4mm /Rd 10 x Rd 16-37	25	30,000	5014469

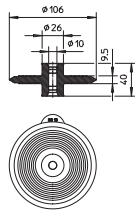
St Steel

FT Hot-dip galvanised

/pc.

- For armoured steel with 16-37 mm diameter and round conductors and flat conductors
- Rapid installation using open slot and only one M10 screw
- Rotatable metal pressure trough for simple, safe mounting

Sealing sleeve for round conductors



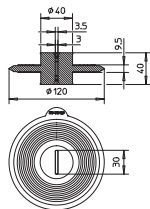
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DW RD10	RD 10	1	13,000	2360041

TPE Thermoplastic elastomer

/100 pc.

- Sealing sleeve for penetrations with waterproof foundation plates/walls (e.g. white trough)
- For mounting on connection lugs with stainless steel tightening straps
- With pressurised water testing to 5 bar

Sealing sleeve for flat conductors



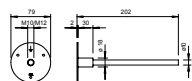
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
DW FL30x3,5	FL 30x3,5	1	18,000	2360043

TPE Thermoplastic elastomer

/100 pc.

- Sealing sleeve for penetrations with waterproof foundation plates/walls (e.g. white trough)
- For mounting on connection lugs with stainless steel tightening straps
- With pressurised water testing to 5 bar

Fixed earthing terminal



Type	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
205 B-M10 VA	M10	10	25,500	5420008
205 B-M12 VA	M12	10	25,500	5420016

V4A Stainless steel, grade 316 L

/pc.

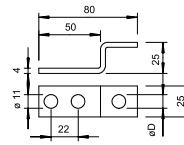
- Connection to earthing systems, conductors and reinforcement
- Contact plate: ϕ 79 mm, made of rustproof stainless steel (V4A)
- Clamping bolt ϕ 10 mm, rustproof (V2A)
- Incl. plastic cover for simple installation



End piece

Type	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5011 11	11	10	7,064	5304997

St Steel
FT Hot-dip galvanised

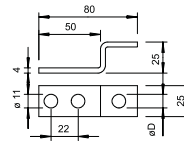


- For attaching to steel structures or bolting to fixed earthing terminals
- For attachments: Round conductor Rd 8-10 and flat conductor FL 30 x 3.5
- 2 attaching holes Ø 11 mm
- 1 attaching holes Ø D mm

End piece

Type	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5011 VA M10 11	11	10	7,064	5334934
5011 VA M12 13	13	10	7,048	5334942

V4A Stainless steel, grade 316 Ti

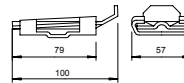


- For attaching to steel structures or bolting to fixed earthing terminals
- For attachments: Round conductor Rd 8-10 and flat conductor FL 30 x 3.5
- 2 attaching holes Ø 11 mm
- 1 attaching holes Ø D mm

Wedge connector

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1813 DIN 10/FL30 x FL30	10/FL30 x FL30	5	20,000	5014212

St Steel
FT Hot-dip galvanised

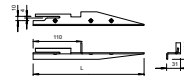


- DIN 48834, Form A
- Suitable for connecting Rd 10 x FL 30, FL 30 x FL 30
- Quick installation with high contact force

Spacer

Type	Fit mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1811 10/FL30 x 3,5 250	10/FL30 x 3,5	250	25	19,000	5014018
1811 L 10/FL30 x 3,5 400	10/FL30 x 3,5	400	25	31,500	5014026

St Steel
FT Hot-dip galvanised

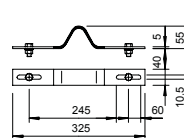


- For professional laying of round conductors and flat conductors according to DIN VDE 0185-305 (IEC 62305)
- DIN 48833
- Suitable for mounting round conductors Rd 10 or flat conductors FL 30 x 3.5

Expansion piece

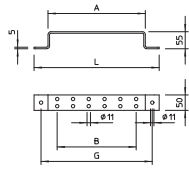
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
1807	1	27,000	5016142

Alu Aluminium



- For expansion joints when laying foundation earthers
- With 2 hexagonal bolts M10 x 30
- 2 hexagonal nuts M10, 2 steel washers, hot galvanised, and 2 rustproof steel serrated washers

Earthing connection bar



Type	Dimension L mm	Dimension A mm	Dimension B mm	Dimension G mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1805 2 FT	200	110	51	155	10	54,800	5016029
1805 4 FT	302	212	153	257	20	77,000	5016037
1805 6 FT	404	314	255	359	10	97,100	5016045

St Steel

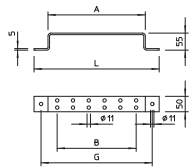
FT Hot-dip galvanised

1805/...: For connecting different earthing systems

- With 2 mounting holes Ø 11 mm
- 1805/2: With 4 attaching holes
- 1805/4: With 8 attaching holes
- 1805/6: With 12 attaching holes

/pc.

Earthing connection bar



Type	Dimension L mm	Dimension A mm	Dimension B mm	Dimension G mm	Pack. pcs	Weight kg/100 pcs.	Item No.
1805 2 VA	200	110	51	155	10	54,800	5016096
1805 4 VA	302	212	153	257	20	77,000	5016118
1805 6 VA	404	314	255	359	10	97,100	5016126

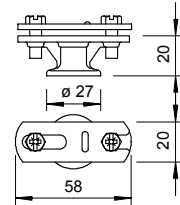
V4A Stainless steel, grade 316 Ti

1805/...: For connecting different earthing systems

- With 2 mounting holes Ø 11 mm
- 1805/2: With 4 attaching holes
- 1805/4: With 8 attaching holes
- 1805/6: With 12 attaching holes

/pc.

Cable bracket for flat conductor



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 BZ-FL		100	6,280	5230446
113 B-Z-HD-FL		100	7,000	5230462

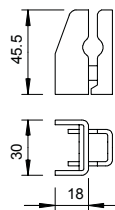
Zn Die-cast zinc

G Electrogalvanised

- With female thread M8 or through hole for wood screws
- For flat conductor FL 30
- Sliding over-piece for quick installation

/100 pc.

Cable bracket for Rd 8–10 and FL 30



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
835	Rd 8/10/ FL30x3,5	1	12,100	5033209

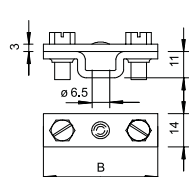
St Steel

FT Hot-dip galvanised

- For round conductor Rd 8-10 and flat conductor FL 30 x 3.5
- Supplied with hexagonal wood bolt 6 x 70 and straddling dowel 910/N

/100 pc.

Spacer clip for flat conductor with fastening hole Ø 6.5



Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
831 30	max. FL30	54	25	3,580	5032032
831 40	max. FL40	65	25	3,894	5032040

St Steel

FT Hot-dip galvanised

- Fit: FL 30 and FL 40
- With mounting hole Ø 6.5 and 2 hexagonal bolts M6 x 16 (F)

/100 pc.

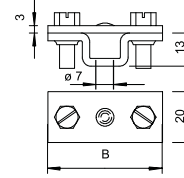
Spacer clip for flat conductor, with fastening hole Ø 7

Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
832 30	max. FL30	55	25	7,416	5032539
832 40	max. FL40	65	25	7,612	5032547

St Steel /100 pc.

FT Hot-dip galvanised

- Fit: FL 30 and FL 40
- With mounting hole Ø 7 mm and 2 hexagonal bolts M6 x 16



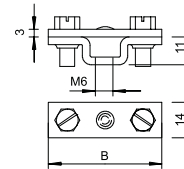
Spacer clip for flat conductor, with threaded connection M6

Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
831 30 M6	max. FL30	54	25	3,712	5032237
831 40 M6	max. FL40	65	25	3,880	5032245

St Steel /100 pc.

FT Hot-dip galvanised

- Fit: FL 30 and FL 40
- With attaching thread M6 and 2 hexagonal bolts M6 x 16 (F)



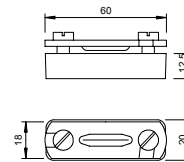
Spacer clip for flat conductor, with polyamide base

Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
833 35	max. FL30	60	25	4,228	5033039

St Steel /100 pc.

FT Hot-dip galvanised

- Fit: FL 30
- With mounting hole 6.2 x 22 mm
- With 2 cylinder bolts M6 x 16 and over-piece from hot-dip galvanised steel
- Bottom section from polyamide, black



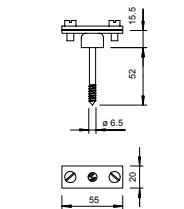
Spacer clip for flat conductor, with wood screw and spacer

Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
370 H	max. FL30	55	100	10,200	5025206

St Steel /100 pc.

FT Hot-dip galvanised

- Fit: FL 30
- With spacer and cylinder bolts M6 x 16 (G)
- With wood bolts



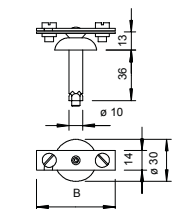
Spacer clip for flat conductor, with steel spreading anchor Ø 10

Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
710 30	max. FL30	52	25	5,044	5028035
710 40	max. FL40	62	25	5,360	5028043

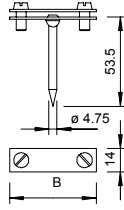
St Steel /100 pc.

G Electrogalvanised

- Fit: FL 30 and FL 40
- With steel straddling dowel Ø 10 mm, spacer and 2 cylinder bolts M5 x 14 (G)



Spacer clip for flat conductor, with square pin

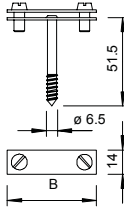


Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
708 30 SP	max. FL30	52	50	3,148	5030021

St Steel /100 pc.
G Electrogalvanised

- Fit: FL 30 and FL 40
- With 2 cylinder bolts M5 x 12 (G) and over-piece
- With square pin

Spacer clip for flat conductor, with wood screw



Type	Fit mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
708 30 HG	max. FL30	52	50	3,148	5030234
708 40 HG	max. FL40	52	50	3,474	5030242

St Steel /100 pc.
G Electrogalvanised

- Fit: FL 30 and FL 40
- With 2 cylinder bolts M5 x 12 (G) and over-piece
- With wood screw



Earthing enhancing compound

Type	Dimension		Pack. pcs	Weight kg/100 pcs.	Item No.
	mm	m			
OEC 25	25	kg	1	2.500,000	5009200

/pc.

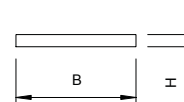


- To improve and maintain a constant earth electrode resistance
- Highly swellable and powdery special clay

Plastic corrosion protection strip

Type	Width mm	Length m	Pack. pcs	Weight kg/100 pcs.	Item No.
356 100	100	10	1	122,200	2360101

PETRO Petrolatum /pc.

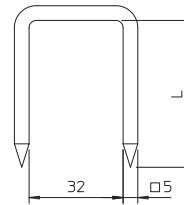


- Approx. 1.1 mm thick
- Width: 50 mm or 100 mm, made of petrolatum-coated chemical fibre fabric
- Can be processed cold

Strip steel crimp

Type	Length mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
366 50	50	max. FL30	100	2,300	5059496

St Steel /100 pc.
FT Hot-dip galvanised

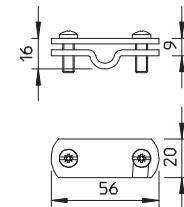


- Fit: FL 30

Number plates

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-ALU 8-10	RD 8 - 10 / FL30	5	2,500	3049256
311 N-ALU 16	RD 16 - FL30	5	2,800	3049345

/100 pc.

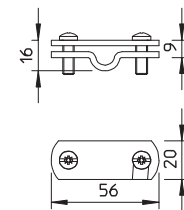


- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)

Number plates

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-VA 8-10	RD 8 - 10 / FL30	5	5,600	3049221
311 N-VA 16	RD 16 - FL30	5	6,400	3049329

/100 pc.

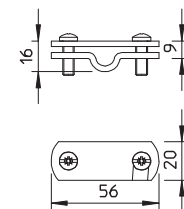


- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)

Number plates

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-CU 8-10	RD 8 - 10 / FL30	5	6,400	3049205

Cu Copper /100 pc.





- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)



Air-termination and down-conductor systems



Air-termination and down conductor systems

	Conductor material	510
	Air-termination devices	513
	Air-termination rods	520
	Roof conductor holder	526
	Conductor bracket	536
	Connectors and connection terminals	545
	Connection and separating terminals	567
	Earth entries	571
	Accessories	572

Air-termination rods



FangFix-Junior

Length	Item no.	Page
1 m	5403 30 8	513



Tapered tubular air-termination rod

Length	Item no.	Page
1.5 m	5401 98 0	513
2.0 m	5401 98 3	513
2.5 m	5401 98 6	513
3.0 m	5401 98 9	513
3.5 m	5401 99 3	513
4.0 m	5401 99 5	513



Threaded air-termination rod

Length	Item no.	Page
1.0 m	5401 77 1	517
1.5 m	5401 80 1	517
2.0 m	5401 83 6	517
3.0 m	5401 87 9	517



Concrete blocks

Type	Item no.	Page
FangFix	5403 20 0	514
FangFix	5403 20 5	514
Loose	5403 22 7	514
FangFix	5403 10 3	515
FangFix	5403 11 0	515
Loose	5403 11 7	515
Thread	5402 89 1	517

Air-termination rod systems up to 8 m



isFang air-termination rod, AL

Length	Item no.	Page
4.0 m	5402 86 4	520
4.5 m	5402 86 6	520
5.0 m	5402 86 8	520
5.5 m	5402 87 0	520
6.0 m	5402 87 2	520
6.5 m	5402 87 4	520
7.0 m	5402 87 6	520
7.5 m	5402 87 8	520
8.0 m	5402 88 0	520



isFang air-termination rod, insulated

Length	Item no.	Page
4.0 m	5408 94 3	521
6.0 m	5408 94 7	521
4.0 m	5408 94 2	521
6.0 m	5408 94 6	521



isFang stand

Spr.	Item no.	Page
1.0 m	5408 96 6	521
1.5 m	5408 96 7	521
1.0 m	5408 96 8	521
1.5 m	5408 96 9	521

Air-termination rod systems 10 m, 12 m, 14 m, 19 m Accessories, air-termination rod systems



irod

Length	Item no.	Page
10 m	5400 81 0	524
12 m	5400 81 2	524
14 m	5400 81 4	524
19 m	5400 81 7	524



Accessories

Type	Item no.	Page
isFang 3B-G1	5408 97 1	521
isFang 3B-G2	5408 97 2	521
isFang 3B-G3	5408 97 9	
isFang 3B-G4	5408 97 5	
F-FIX-S16	5403 22 7	514
F-FIX-B16	5403 23 8	522
3B		

Roof cable holder



Ridge

Surface	Item no.	Page
V2A	5203 01 8	526
V2A	5202 83 3	526
V2A	5203 01 5	526
V2A	5202 51 0	527
Copper-plated	5203 02 3	526
Copper-plated	5202 86 8	526
Copper-plated	5202 59 0	527
FT	5202 56 6	527



Tile

Surface	Item no.	Page
V2A	5215 55 5	528
V2A	5215 55 2	528
V2A	5215 54 4	528
V2A	5215 62 5	528
V2A	5215 66 8	529
Copper	5216 19 2	528
Copper	5216 18 4	528
Copper	5215 74 9	529



Slate

Surface	Item no.	Page
V2A	5215 83 8	530
V2A	5215 43 9	530
V2A	5215 37 4	530
Copper-plated	5215 85 4	530
Copper-plated	5215 47 1	530
Copper-plated	5215 38 2	530



Flat roof

Colour	Item no.	Page
Black	5218 69 1	532
Black	5218 67 5	532
Black	5218 74 8	532
Black	5218 75 6	532
Black	5218 86 1	532
Grey	5218 69 3	532
Grey	5218 67 7	532
Grey	5218 99 9	533

Connector



Vario quick connector 8-10

Surface	Item no.	Page
FT	5311 50 0	545
FT	5311 70 5	545
Copper	5311 52 7	545
V2A	5311 55 1	545
ALU	5311 51 9	545
V4A	5311 40 4	545
Bimetal	5311 53 5	546



Vario quick connector 6-8

Surface	Item no.	Page
FT	5311 41 0	546
Copper-plated	5311 41 7	546
Copper-plated	5311 40 7	546



Fix contact clamping screw Rd 8-10

Surface	Item no.	Page
FT	5304 10 5	547
FT	5304 10 7	547
FT	5304 20 2	547
FT	5304 31 8	547
Copper-plated	5304 11 3	547



Flat roof

Surface	Item no.	Page
FT	5304 16 4	548
Copper-plated	5304 17 2	548
V2A	5304 27 0	548
V2A	5304 17 6	548

Terminals and clips



Fold

Surface	Item no.	Page
FT	5317 01 0	556
FT	5317 40 1	557
FT	5317 42 8	558
Copper-plated	5317 05 3	556
Copper-plated	5317 25 8	557
Copper-plated	5317 45 2	557
V2A	5317 20 8	556
V2A	5317 48 1	557



Trays

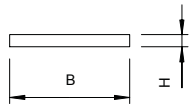
Surface	Item no.	Page
FT	5316 45 0	559
FT	5316 30 8	559
FT	5316 51 0	560
Copper-plated	5316 46 8	559
Copper-plated	5316 25 1	560
Copper-plated	5316 15 4	560
Copper-plated	5316 15 4	560
V2A	5316 45 9	559
V2A	5316 32 4	559



Downspout

Surface	Item no.	Page
Strip galvanised	5350 86 7	564
Strip galvanised	5351 05 7	565
Copper-plated	5350 88 3	564
Copper-plated	5351 45 6	565
Copper-plated	5351 47 2	565
V2A	5350 90 5	564
V2A	5351 25 1	565
ALU	5351 35 9	565

Galvanised steel flat conductor for earth



Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
5052 DIN 20X2.5	20 x 2,5	50	122	50	41,000	5019340
5052 DIN 25X3	25 x 3	75	84	50	59,700	5019342
5052 DIN 30X3	30 x 3	90	71	50	70,650	5019344
5052 DIN 30X3.5	30 x 3,5	105	30	25	84,000	5019345
5052 DIN 30X3.5	30 x 3,5	105	60	50	84,000	5019347
5052 DIN 30X4	30 x 4	120	52	50	97,000	5019350
5052 DIN 40X4	40 x 4	160	40	51	128,000	5019355
5052 DIN 40X5	40 x 5	200	30	50	162,000	5019360

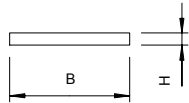
St Steel

price/100 m

FT Hot-dip galvanised

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- Zinc coating: 500 g/m² (approx. 70 µm)
- For lightning protection, earthing systems and ring equipotential bonding

Stainless steel flat conductor



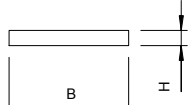
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
5052 V2A 30X3.5	30 x 3,5	105	50	42	82,500	5018501
5052 V4A 30X3.5	30 x 3,5	105	50	42	82,425	5018706
5052 V4A 30X3.5	30 x 3,5	105	25	21	82,425	5018730

V2A Stainless steel, grade 304 V4A Stainless steel, 316Ti / 316L

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- According to the foundation earther standard DIN 18014, V4A is required in the earth
- For use in areas at risk of corrosion
- For lightning protection, earthing systems and ring equipotential bonding

Flat conductor, copper



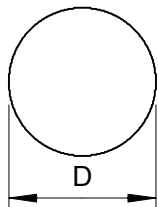
Type	Dimension W x H mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
FL 20-CU	20 x 2,5	50	45	20	44,500	5021804

Cu Copper

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Meets the requirements of VDE 0185-305 (IEC 62305)
- For lightning protection, earthing systems and ring equipotential bonding

Round conductor, galvanised steel



Type	Nominal size Ø mm	Cross- section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-FT	8	50	125	50	40,000	5021081
RD 8-FT 50	8	50	50	20	40,000	5021050
RD 10	10	78	80	50	63,000	5021103

St Steel

price/100 m

FT Hot-dip galvanised

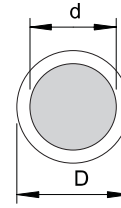
- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 10 can also be used in the earth
- Zinc coating: 350 g/m² (approx. 50 µm)

Round conductor, galvanised steel with PVC jacketing



Type	Colour	Dimension d mm	Dimension D mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 10-PVC	Black	10	13	78	75	50	67,200	5021162

St Steel price/100 m
FT Hot-dip galvanised



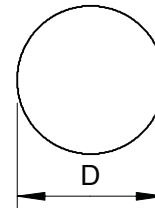
- Conforms to the requirements according to VDE V 0185-305, (IEC 62305)
- Zinc coating: 350 g/m² (approx. 50 µm)
- With PVC sheathing

Round conductor, aluminium



Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-ALU	8	50	150	20	13,500	5021286
RD 8-ALU-T	8	50	150	20	13,500	5021294
RD 8-ALU-T 75	8	50	75	10	13,500	5021296
RD 10-ALU	10	78	95	20	21,000	5021308

Alu Aluminium price/100 m



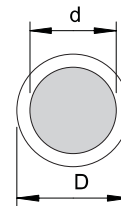
- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 8 ALU: Semi-hard (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 8 ALU-T: Can be subjected to torsion (E-AlMgSi0.5 corresponds to DIN 48801)
- RD 10 ALU: Pure aluminium (E-Al corresponds to DIN 48801)
- AL and ALMgSi may not be routed directly on, in or under plaster, mortar or concrete, nor routed in the earth

Round conductor, aluminium, with PVC sheathing



Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-PVC	8/11	50	100	20	20,000	5021332

Alu Aluminium price/100 m



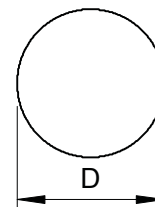
- Meets the requirements of VDE 0185-305 (IEC 62305)
- With PVC jacketing (halogen-free)
- Suitable for routing on, in or under plasterwork, mortar or concrete

Round conductor, stainless steel



Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-V2A	8	50	125	50	40,000	5021235
RD 10-V2A	10	78	50	32	63,000	5021227
RD 10-V2A	10	78	80	50	63,000	5021239
RD 8-V4A	8	50	125	50	40,000	5021644
RD 10-V4A 20	10	78	20	12	63,000	5021640
RD 10-V4A	10	78	50	32	63,000	5021642
RD 10-V4A	10	78	80	50	63,000	5021647

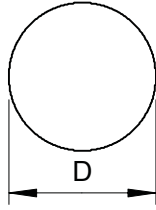
V2A Stainless steel, grade 304 V4A Stainless steel, 316Ti / 316L price/100 m



- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)
- RD 10-V4A for applications in the earth
- According to the foundation earthing standard DIN 18014, V4A is required in the earth



Round conductor, copper



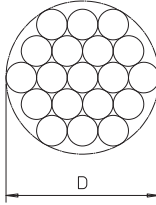
Type	Nominal size Ø mm	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
RD 8-CU	8	50	100	45	45,000	5021480
RD 10-CU	10	78	50	35	70,000	5021502

Cu Copper

price/100 m

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Stranded & tinned copper conductor



Type	Dimension D mm	Individual wires	Cross-section mm ²	Normal ring ca. m	Normal ring ca. kg	Weight kg/100 m	Item No.
S 11-CU	10.5	19 x Ø 2,1	70	50	30	58,600	5021654
S 9-CU	9	19 x Ø 1,8	50	100	45	45,000	5021652
S 11-CU SN	10.5	19 x Ø 2,1	70	50	30	58,600	5021656

Cu Copper

price/100 m

Sn Tin-plated

- According to DIN EN 62561-2 (VDE 0185-561-2)
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

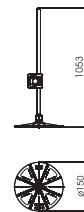


Stand for FangFix Junior system

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-JUNIOR	1000	10	10	32,000	5403308

Alu Aluminium /pc.

- Incl. aluminium interception rod 1,000 mm long (Ø 10 mm)
- Quick mounting of the interception rod in the base using plug technology
- With Vario quick connector 249

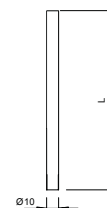


Air-termination rod for FangFix-Junior

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 J1000	1000	10	10	21,800	5401970

Alu Aluminium /100 pc.

- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Ø 10 mm, Alu
- Without thread
- Suitable for use in FangFix-Junior

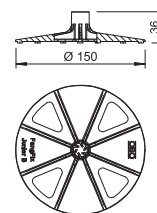


Base for FangFix Junior

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-BASIS	10	3,790	5403324

PP Polypropylene /pc.

- For mounting Ø 10 mm interception rods up to an overall length of 1,000 mm
- Quick installation of interception rod in base using plug-in system
- Quick and easy installation

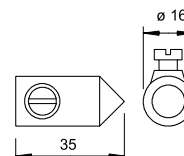


Air-termination tip

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
120 A	Rd 8-10	10	2,500	5405068

Zn Die-cast zinc /100 pc.
G Electrogalvanised

- To be used for Rd 8–10 (corrosion protection)
- With cylinder bolt M6 x 10
- Made of die-cast zinc, bolts made of hot-galvanised steel

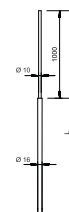


Tapered pipe air-termination rod

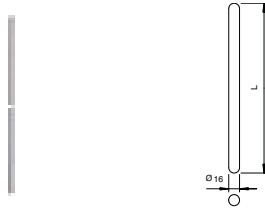
Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 VL1500	1500	10/16	10	38,000	5401980
101 VL2000	2000	10/16	10	55,000	5401983
101 VL2500	2500	10/16	10	72,000	5401986
101 VL3000	3000	10/16	10	88,000	5401989
101 VL3500	3500	10/16	10	105,000	5401993
101 VL4000	4000	10/16	10	120,000	5401995

Alu Aluminium /100 pc.

- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- From a free length of > 2.5 m, an additional fastening, e.g. insulated spacer is recommended
- Last metre is tapered from Ø 16 mm to Ø 10 mm, material: AlMgSi
- Matches stand system FangFix



Air-termination/earth entry rod, rounded-off on both ends



Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
101 A-1500	1500	16	—	10	240,000	5400155

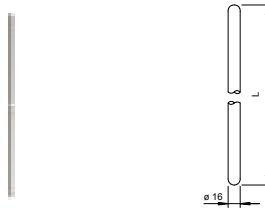
St Steel

FT Hot-dip galvanised

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

/100 pc.

Air-termination/earth entry rod, rounded-off on both ends



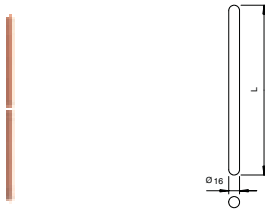
Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
200 V4A-1500	1500	16	—	10	242,000	5420504
200 V4A-2000	2000	16	—	10	320,000	5420539

V4A Stainless steel, grade 316 Ti

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

/100 pc.

Air-termination/earth entry rod, rounded-off on both ends



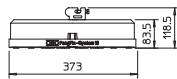
Type	Length mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
101 A-CU	1500	16	—	10	272,100	5400627

Cu Copper

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

/100 pc.

Stand for FangFix system 16 kg



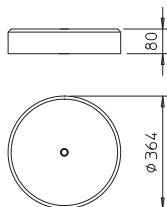
Type	Fit mm	Nominal size Ø		Pack. pcs	Weight kg/100 pcs.	Item No.
		mm	mm			
F-FIX-16	Rd 8	373	—	1	1.732,500	5403200
F-FIX-16B	Rd 8	373	—	54	1.732,500	5403205

BET Concrete

- System consists of FangFix stone with base and clamp
- FangFix clamp made of VA; lightning current tested with 100 kA (10/350)
- 16 kg stone of Ø 365 mm, high level of stability
- Quick and easy mounting of air-termination rod using anchors
- Concrete, frost-resistant
- The FangFix stone can be stacked

/100 pc.

Concrete block for FangFix-System 16 kg



Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.

BET Concrete

- 16 kg stone of Ø 365 mm, high level of stability
- Concrete, frost-resistant
- Stackable

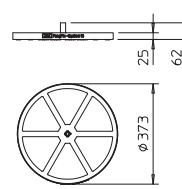
/100 pc.

Base for FangFix system 16 kg

Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B16	373	10	16,400	5403235

PP Polypropylene /100 pc.

Edge protection with integrated dowel (basic) suitable for FangFix system.



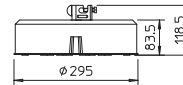
Stand for FangFix system 10 kg



Type	Fit mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-10	Rd 8	295	1	1.058,000	5403103
F-FIX-10B	Rd 8	295	72	1.058,000	5403110

BET Concrete /100 pc.

- System consists of FangFix stone with base and clamp
- FangFix clamp made of VA; lightning current tested with 100 kA (10/350)
- 10 kg stone of Ø 289 mm, high level of stability
- Quick and easy mounting of air-termination rod using anchors
- Concrete, frost-resistant
- The FangFix stone can be stacked

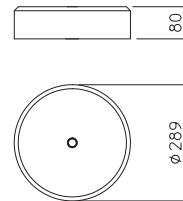


Concrete block for FangFix system 10 kg

Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S10	289	1	1.000,000	5403117

BET Concrete /100 pc.

- 10 kg stone of Ø 289 mm, high level of stability
- Concrete, frost-resistant
- Stackable

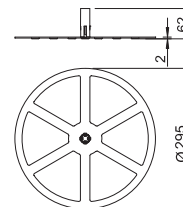


Base for FangFix system 10 kg

Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B10	295	10	7,600	5403124

PP Polypropylene /100 pc.

Edge protection with integrated dowel (basic) suitable for FangFix 10 system.



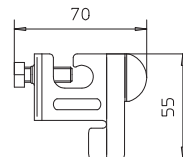
Terminal for FangFix system



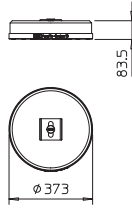
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-KL	Rd 8	5	8,700	5403219

V2A Stainless steel, grade 304 /100 pc.

- FangFix terminal, VA for RD 8 mm
- Tested with H (100 kA) to DIN EN 50164-1
- Round conductor installed on the air-termination rod with only one screw



Stand - TrayFix set

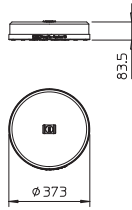


Type	From tray width mm	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
TrayFix-16-L	100	1	1.700,000	5403098

/pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO cable tray systems MKSM, SKSM and IKSM
- Adapted to OBO mesh cable tray systems with a minimum width of 100 mm
- Set consisting of TrayFix mounting adapter and concrete block including base for FangFix-System 16 kg

Stand - TrayFix set

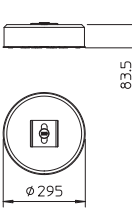


Type	From tray width mm	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
TrayFix-16-S	100	1	1.700,000	5403099

/pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO mesh cable systems with a minimum width of 100 mm
- Set consisting of clamping piece, fastening plug and concrete block including base for FangFix-System 16 kg

Stand - TrayFix set

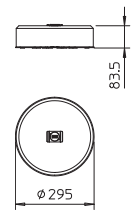


Type	From tray width mm	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
TrayFix-10-L	100	1	1.100,000	5403101

/pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO cable tray systems MKSM, SKSM and IKSM
- Adapted to OBO mesh cable tray systems with a minimum width of 100 mm
- Set consisting of TrayFix mounting adapter and concrete block including base for FangFix-System 10 kg

Stand - TrayFix set

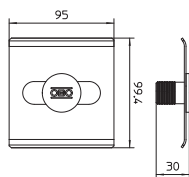


Type	From tray width mm	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
TrayFix-10-S	100	1	1.000,000	5403102

/pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO mesh cable systems with a minimum width of 100 mm
- Set consisting of clamping piece, fastening plug and concrete block including base for FangFix-System 10 kg

TrayFix mounting adapter for mesh cable trays on FangFix system



Type	Dimension	Pack.	Weight	Item No.
		pcs	kg/100 pcs.	
TrayFix	∅ 20mm	25	9,850	5403100

/100 pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO cable tray systems MKSM, SKSM and IKSM
- Adapted to OBO mesh cable tray systems with a minimum width of 100 mm

Air-termination rod, one end rounded

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 ALU-1000	1000	16	10	55,000	5401771
101 ALU-1500	1500	16	10	81,000	5401801
101 ALU-2000	2000	16	10	109,000	5401836
101 ALU-2500	2500	16	10	136,000	5401852
101 ALU-3000	3000	16	5	162,000	5401879

Alu Aluminium

/100 pc.



- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- From a free length of > 2.5 m, an additional fastening, e.g. insulated spacer is recommended
- Ø 16 mm, aluminium
- For stand system with M16 internal thread

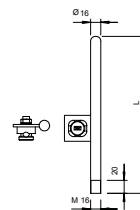
Air-termination rod, one end rounded with connection strap

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 A-L100	1000	16	10	160,000	5402808
101 A-L150	1500	16	10	240,000	5402859

St Steel

FT Hot-dip galvanised

/100 pc.



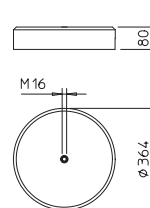
- With thread M16 x 20
- With connecting strap
- Including pre-mounted connector type 5001 DIN for round conductor Rd 8-10
- For stands with female thread M16

Stand 16 kg with female thread

Type	Length mm	Nominal size Ø mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
101 B2-16 M16	364		M16	1	1.600,000	5402958

BET Concrete

/100 pc.



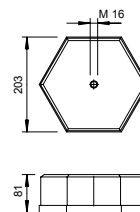
- Weight 16 kg
- From frost-resistant concrete
- Female thread M16
- Recommended air-termination rod length max. 3.0 m, depending on wind load zone

Stand 6.9 kg with female thread

Type	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
101 ST	M16	4	690,000	5402891

BET Concrete

/100 pc.



- Weight 6.9 kg
- From frost-resistant concrete
- Female thread M16
- Recommended air-termination rod length max. 1.0 m

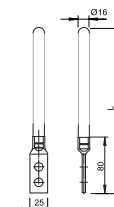
Air-termination/earth entry rod with connection tabs

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 F1000	1000	16	10	160,000	5424100
101 F1500	1500	16	10	240,000	5424151
101 F2000	2000	16	10	320,000	5424208

St Steel

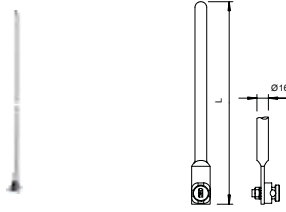
FT Hot-dip galvanised

/100 pc.



- With 2 attaching holes Ø 12 mm
- One end rounded

Air-termination/earth entry rod with connection tabs and connector



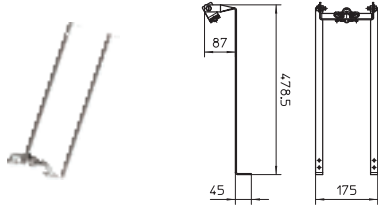
Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 G1000	1000	16	10	164,300	5402107
101 G1500	1500	16	10	240,000	5402158

Steel / 100 pc.

Hot-dip galvanised

- 1 attaching hole Ø 12 mm
- With pre-mounted conductor for Rd 8-10
- One end rounded

Air-termination rod holder for sloping roof



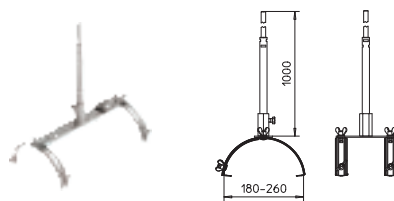
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
SD-Fix	1	81,000	5403335

V2A Stainless steel, grade 304 /pc.

Stand system: rod holder for sloping roofs, for simple, quick and secure fastening of Ø 16 mm interception rods.

- System consists of a bracket made of V2A stainless steel
- Quick and easy mounting
- Adjustable angle
- In the case of high interception rods (> 1 m), additional fastening with insulated spaces is necessary

Air-termination rod holder for ridge tiles



Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-132	110	1	62,000	5403330
F-Fix-132-300	300	1	78,000	5403333

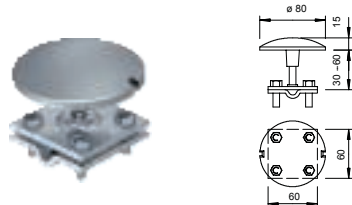
V2A Stainless steel, grade 304 /pc.

Rod holder for ridge tiles, for simple, quick and safe fastening of Ø 16 mm interception rods

- System consisting of holder made of V2A stainless steel and aluminium interception rod
- Quick and easy mounting thanks to pre-mounted air-termination rod
- Air-termination rod length:
- Air-termination rod length: 1,000 mm
- Width adjustable between 180–260 mm
- Spacing of the ridge holders: 110 mm (5403330)
- Spacing of the ridge holders: 300 mm (5403333)

Application: To protect roof structures such as photovoltaic and TV/SAT systems.

Mushroom-shaped air-termination with connectors



Type	Fit mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
128 F	Rd 8-10/ FL30	80	5	40,000	5405769

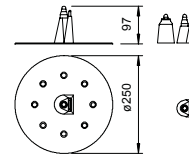
Steel /pc.

Hot-dip galvanised

- Mushroom-shaped interceptor from aluminium
- With pre-mounted cross-piece and hexagonal bolt M8 x 25, hot-dip galvanised steel
- For round conductor Rd 8-10 and flat conductor FL 30

Roof penetration

Type	Fit	Pack.	Weight	Item No.
	mm	pcs	kg/100 pcs.	
330 K	Rd 8-10/ FL20 u. FL30	5	14,400	5201101
PA Polyamide		/100 pc.		
<ul style="list-style-type: none"> • For round conductor Rd 8-10 • Air-termination rods Rd 16 • Flat conductor FL 20 and FL 30 • Colour: black 				



isFang air-termination rod



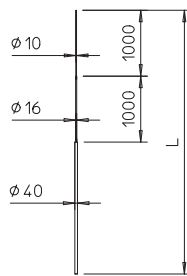
Type	Dimension B mm	Dimension D mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 3B-4000	2000	1000	4000	1	400,000	5402864
101 3B-4500	2500	1000	4500	1	480,000	5402866
101 3B-5000	3000	1000	5000	1	550,000	5402868
101 3B-5500	3500	1000	5500	1	630,000	5402870
101 3B-6000	4000	1000	6000	1	700,000	5402872
101 3B-6500	4500	1000	6500	1	780,000	5402874
101 3B-7000	5000	1000	7000	1	850,000	5402876
101 3B-7500	5500	1000	7500	1	930,000	5402878
101 3B-8000	5500	1500	8000	1	1.000,000	5402880

Alu Aluminium

/pc.

- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Tapered air-termination rod
- Suitable for 40 mm isFang tripod stand and isFang support systems

Dimensions



isFang, insulated air-termination rod

Type	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 4000 AL	1240	1500	1000	4000	1	580,000	5408943
isFang 6000 AL	3340	1500	1000	6000	1	600,000	5408947
isFang 4000	1240	1500	1000	4000	1	680,000	5408942
isFang 6000	3340	1500	1000	6000	1	1.260,000	5408946

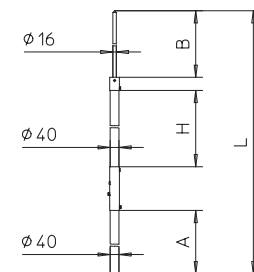
GFK Fibre-glass-reinforced plastic

/pc.

- For isolated creation of air-termination systems
- Suitable for isFang air-termination rod stands, type isFang 3B-100/150
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- For mounting on the building structure with isFang support
- Fastening of the OBO isCon® cable possible using accessories



Dimensions



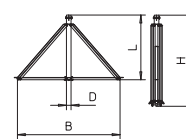
isFang air-termination rod stand

Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-100 AL	1000	40	600	885	1	380,000	5408966
isFang 3B-150 AL	1500	40	900	1275	1	560,000	5408967
isFang 3B-100	1000	40	600	885	1	620,000	5408968
isFang 3B-150	1500	40	900	1275	1	950,000	5408969

V2A Stainless steel, grade 304 **Alu** Aluminium

/pc.

Folding tripod stand for screwless installation of free-standing interception rods with a diameter of 40 mm, e.g. for OBO isCon® cable. Roof slope to max. 5 degrees. Incl. Rd 8–10 crossbar for rapid round conductor fastening. The concrete plinth and threaded rods are to be ordered separately.



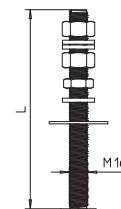
isFang-3B threaded rod

Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-G1	270	3	48,000	5408971
isFang 3B-G2	340	3	60,400	5408972
isFang 3B-G3	430	3	76,600	5408973
isFang 3B-G4	500	3	75,000	5408905

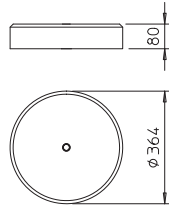
V2A Stainless steel, grade 304

/pc.

- For fastening on 1, 2, 3 or 4 FangFix concrete bases with tripod stand



Concrete block for FangFix-System 16 kg

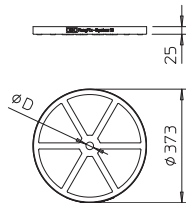


Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S16	365	1	1,700,000	5403227
BET Concrete				

- 16 kg stone of Ø 365 mm, high level of stability
- Concrete, frost-resistant
- Stackable

/100 pc.

Base for FangFix system 16 kg for mounting the isFang tripod

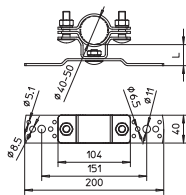


Type	Nominal size Ø mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B16 3B	373	25	10	15,800	5403238
PP Polypropylene					

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16

/100 pc.

isFang support for wall mounting, 30 mm spacing

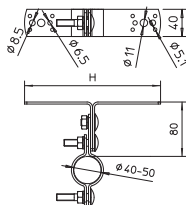


Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW30	—	30	2	62,000	5408952
V2A Stainless steel, grade 304					

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

/pc.

isFang support for wall mounting, 80 mm spacing

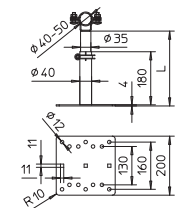


Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW80	—	80	2	63,000	5408950
V2A Stainless steel, grade 304					

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

/pc.

isFang support for wall mounting, 200–300 mm spacing

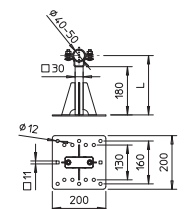


Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200	—	300	2	230,000	5408954
V2A Stainless steel, grade 304					

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

/pc.

Support for wall mounting, 200 mm spacing



Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200 12	50	200	2	240,000	5408910
V2A Stainless steel, grade 304					

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

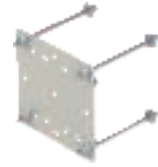
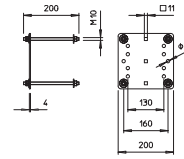
/pc.

Mounting set for T support

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200 Set	200x200mm	2	188,600	5408914

V2A Stainless steel, grade 304

- Set for mounting isFang TW200 onto double T support
- Suitable for double T support, e.g. widths 100, 120

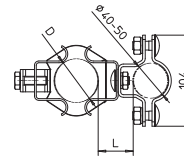


isFang support for pipe mounting, ø 50–300 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TR100	300	40	2	77,000	5408956

V2A Stainless steel, grade 304

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 50–300mm.

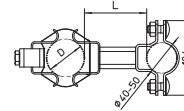


isFang support for spaced pipe mounting, ø 50–300 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TR100 100	300	100	2	95,500	5408955
isFang TR100 200	300	200	2	121,000	5408957
isFang TR100 300	300	300	2	146,000	5408959

V2A Stainless steel, grade 304

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 50–300 mm.

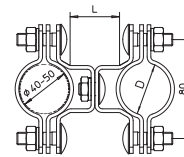


isFang support for pipe mounting, ø 40–50 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS40-50	50	40	2	90,000	5408958

V2A Stainless steel, grade 304

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 40–50 mm.

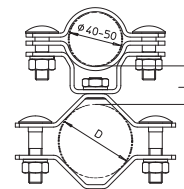


isFang support for pipe mounting, ø 50–60 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS50-60	60	30	2	76,000	5408960

V2A Stainless steel, grade 304

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 50–60 mm.

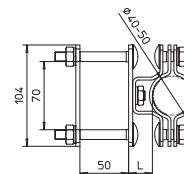


isFang support for corner pipe mounting, 50 x 50 mm

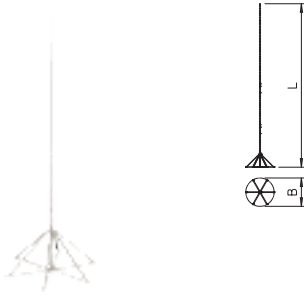
Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS50x50	—	30	2	82,000	5408964

V2A Stainless steel, grade 304

Fastening clip to fasten the insulated support pipes on the structure to be protected or for construction-side corner pipes of 50x50 mm.



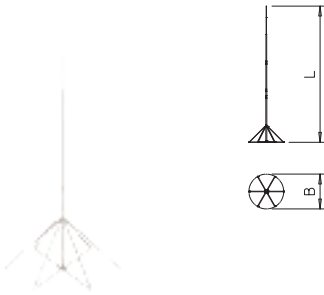
10 m air-termination rod with 6-legged air-termination rod stand



Type	Dimension D Ø mm	Dimension B mm	Length mm	Materials combination	Pack. pcs	Weight kg/100 pcs.	Item No.
irod 10	48.3	1800	10000	Alu/ V2A	1	6.500,000	5400810
V2A Stainless steel, grade 304							/pc.

- Tele lightning protection system against direct lightning strikes into plants, such as biogas plants
- Consisting of interception rod and interception rod stand
- Please order concrete foot, edge protection and threaded rods separately

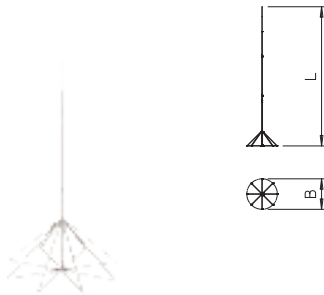
12 m air-termination rod with 6-legged air-termination rod stand



Type	Dimension D Ø mm	Dimension B mm	Length mm	Materials combination	Pack. pcs	Weight kg/100 pcs.	Item No.
irod 12	85	3000	12000	Alu/ V2A	1	10.900,000	5400812
V2A Stainless steel, grade 304							/pc.

- Tele lightning protection system against direct lightning strikes into plants, such as biogas plants, gas pressure regulation plants, control and greenfield photovoltaic systems
- Consisting of interception rod and interception rod stand
- Please order concrete foot, edge protection and threaded rods separately

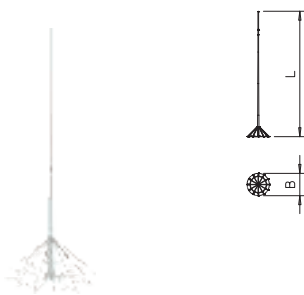
14 m air-termination rod with 8-legged air-termination rod stand



Type	Dimension D Ø mm	Dimension B mm	Length mm	Materials combination	Pack. pcs	Weight kg/100 pcs.	Item No.
irod 14	85	3200	14000	Alu/ V2A	1	15.400,000	5400814
V2A Stainless steel, grade 304							/pc.

- Tele lightning protection system against direct lightning strikes into plants, such as biogas plants, gas pressure regulation plants, control and greenfield photovoltaic systems
- Consisting of air-termination rod and air-termination rod stand
- Please order concrete foot, edge protection and threaded rods separately

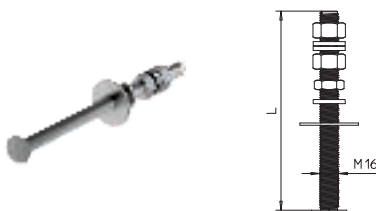
19 m air-termination rod with 12-legged air-termination rod stand



Type	Dimension D Ø mm	Dimension B mm	Length mm	Materials combination	Pack. pcs	Weight kg/100 pcs.	Item No.
irod 19	198	3400	19500	Alu/ V2A/ St (FT)	1	41.500,000	5400817
V2A Stainless steel, grade 304							/pc.

- Tele lightning protection system against direct lightning strikes into plants, such as biogas plants, gas-pressure regulation plants, control and greenfield photovoltaic systems
- Consisting of air-termination rod and air-termination rod stand
- Please order concrete foot and edge protection separately
- Including 800-mm threaded rods

isFang-3B threaded rod



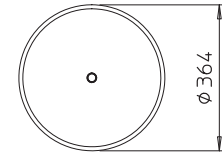
Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-G1	270	3	48,000	5408971
isFang 3B-G2	340	3	60,400	5408972
isFang 3B-G3	430	3	76,600	5408973
isFang 3B-G4	500	3	75,000	5408905
V2A Stainless steel, grade 304				/pc.

- For fastening on 1, 2, 3 or 4 FangFix concrete bases with tripod stand

Concrete block for FangFix-System 16 kg

Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S16	365	1	1.700,000	5403227
BET Concrete				/100 pc.

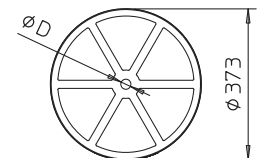
- 16 kg stone of Ø 365 mm, high level of stability
- Concrete, frost-resistant
- Stackable



Base for FangFix system 16 kg for mounting the isFang tripod

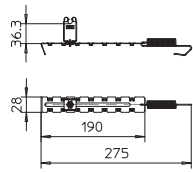
Type	Nominal size Ø mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B16 3B	373	25	10	15,800	5403238
PP Polypropylene				/100 pc.	

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16



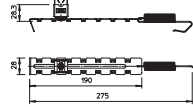
Roof conductor holder, ridge

Ridge conductor holder with tensioning spring



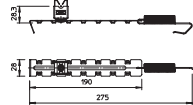
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 U 35	Rd 8	35	20	6,800	5203018
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • For round conductor Rd 8 • Clamping range 280-380 mm 					

Ridge conductor holder with tensioning spring



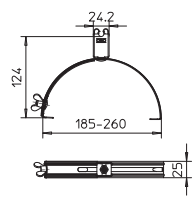
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 U	Rd 8	20	20	6,000	5203015
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • For round conductor Rd 8 • Clamping range 280-380 mm 					

Ridge conductor holder with tensioning spring



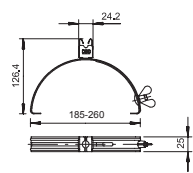
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 U-CU	Rd 8	20	10	0,600	5203023
V2A Stainless steel, grade 304					/100 pc.
Cu Copper-plated					
<ul style="list-style-type: none"> • For round conductor Rd 8 • Clamping range 280-380 mm 					

Roof conductor holder for ridge tiles, 185–260 mm, Rd 8



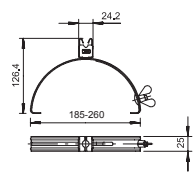
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 VA 35	Rd 8	35	20	13,700	5202836
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • Adjustable width from 185-260 mm • Fast installation using wing screw 					

Roof conductor holder for ridge tiles, 185–260 mm, Rd 8



Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 VA	Rd 8	20	20	12,900	5202833
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • Adjustable width from 185-260 mm • Fast installation using wing screw 					

Roof conductor holder for ridge tiles, 185–260 mm, Rd 8



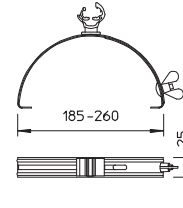
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 CU	Rd 8	20	10	13,400	5202868
Cu Copper					/100 pc.
<ul style="list-style-type: none"> • Adjustable width from 185-260 mm • Fast installation using wing screw 					

Roof conductor holder for ridge tiles, 185–260 mm, Rd 8–10

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 K-VA	Rd 8-10	20	20	10,900	5202515

V2A Stainless steel, grade 304 /100 pc.

- Adjustable width from 185-260 mm
- Bottom part made of non-rusting stainless steel (V2A)
- Infinitely adjustable conductor holder
- Conductor holder of polyamide
- Fast installation using wing screw

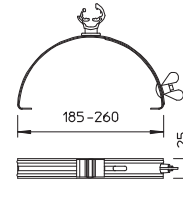


Roof conductor holder for ridge tiles, 185–260 mm, Rd 8–10

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 K-CU	Rd 8-10	20	10	11,600	5202590

Cu Copper /100 pc.

- Adjustable width from 185-260 mm
- Bottom part made of copper
- Infinitely adjustable conductor holder
- Conductor holder of polyamide
- Fast installation using wing screw



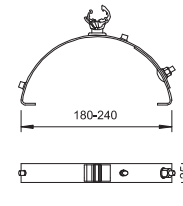
Roof conductor holder for ridge tiles, 180–240 mm, Rd 8–10

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 N-DK	Rd 8-10	20	20	19,700	5202566

St Steel /100 pc.

FT Hot-dip galvanised

- Adjustable from 180–240 mm
- With conductor 177/20, polyamide, grey
- With 3 M8 threaded nipples for positioning the holder



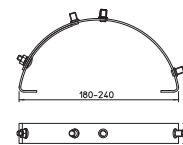
Roof conductor holder for ridge tiles with M8 threaded bolts

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 GB-M8	—	—	20	18,700	5202568

St Steel /100 pc.

FT Hot-dip galvanised

- Adjustable from 180–240 mm
- With conductor 177/20, polyamide, grey
- With 3 M8 threaded nipples for positioning the holder

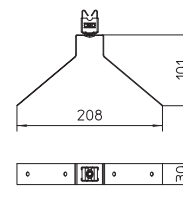


Roof conductor holder for ridge tiles, metal roofs, Rd 8

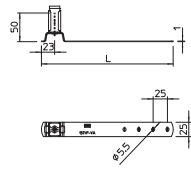
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
132 P VA	Rd 8	20	20	8,420	5202510

V2A Stainless steel, grade 304 /100 pc.

- For round conductors Rd 8
- Suitable for metal roofs



Roof conductor holder for tiled roofs, Rd 8



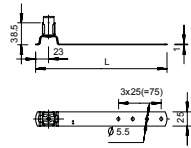
Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 F-VA 230 35	Rd 8	50	230	20	8,300	5215555
157 F-VA 280 35	Rd 8	50	280	20	9,700	5215582

V2A Stainless steel, grade 304

/100 pc.

- Conductor holder from stainless steel (V2A)
- Including drill hole in bottom section for quick installation

Roof conductor holder for tiled roofs, Rd 8



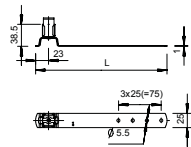
Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 F-VA 230	Rd 8	38.5	230	20	8,350	5215552
157 F-VA 280	Rd 8	38.5	280	20	10,170	5215579
157 F-VA 410	Rd 8	38.5	410	20	14,880	5215595

V2A Stainless steel, grade 304

/100 pc.

- Conductor holder from stainless steel (V2A)
- Including drill hole in bottom section for quick installation

Roof conductor holder for tiled roofs, Rd 8



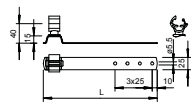
Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 F-CU 230	Rd 8	38.5	230	10	10,300	5216192
157 F-CU 280	Rd 8	38.5	280	10	11,100	5216206
157 F-CU 410	Rd 8	38.5	410	10	14,500	5216257

Cu Copper

/100 pc.

- Conductor holder from copper plated stainless steel (V2A)
- Including drill hole in bottom section for quick installation

Roof conductor holder for tiled roofs, Rd 8-10



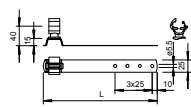
Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 FK-VA 230	Rd 8-10	40	230	20	7,800	5215544
157 FK-VA 280	Rd 8-10	40	280	20	10,170	5215587
157 FK-VA 410	Rd 8-10	40	410	20	14,880	5215609

V2A Stainless steel, grade 304

/100 pc.

- Conductor holder of polyamide
- Including drill hole in bottom section for quick installation

Roof conductor holder for tiled roofs, Rd 8-10



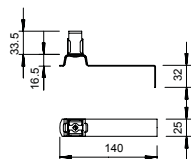
Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 FK-CU 230	Rd 8-10	40	230	10	8,800	5216184
157 FK-CU 280	Rd 8-10	40	280	10	9,600	5216214

Cu Copper

/100 pc.

- Conductor holder of polyamide
- Including drill hole in bottom section for quick installation

Roof conductor holder for tiled roofs, angled, Rd 8



Type	Installation			Pack. pcs	Weight kg/100 pcs.	Item No.
	Fit mm	height mm	Length mm			
157 I-VA	Rd 8	26.5	140	20	7,150	5215625

V2A Stainless steel, grade 304

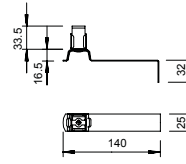
/100 pc.

- Conductor holder high-grade stainless steel (V2A)
- Curved bottom strip for quick installation

Roof conductor holder for tiled roofs, angled, Rd 8

Type	Fit mm	Installation		Pack. pcs	Weight kg/100 pcs.	Item No.
		height mm	Length mm			
157 I-CU	Rd 8	26.5	140	10	7,800	5215749
Cu Copper						/100 pc.

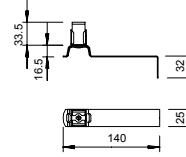
- Conductor holder copper plated high-grade stainless steel (V2A)
- Curved bottom strip for quick installation



Roof conductor holder for tiled roofs, angled, flexible, Rd 8

Type	Fit mm	Installation		Pack. pcs	Weight kg/100 pcs.	Item No.
		height mm	Length mm			
157 FX-AL	Rd 8	26.5	140	20	3,900	5215875
Alu Aluminium						/100 pc.

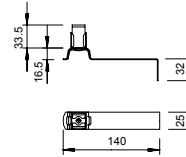
- With flexible bottom section from aluminium for matching to roof tiles (easy to flex)
- Holder from stainless steel (V2A)
- Curved bottom section for quick installation



Roof conductor holder for tiled roofs, angled, flexible, Rd 8

Type	Fit mm	Installation		Pack. pcs	Weight kg/100 pcs.	Item No.
		height mm	Length mm			
157 FX-CU	Rd 8	26.5	140	10	7,500	5215879
Cu Copper						/100 pc.

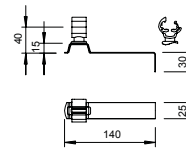
- With flexible bottom section from copper for matching to roof tiles (easy to flex)
- Holder from copper plated stainless steel (V2A)
- Curved bottom section for quick installation



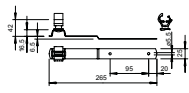
Roof conductor holder for tiled roofs, angled, Rd 8-10

Type	Fit mm	Installation		Pack. pcs	Weight kg/100 pcs.	Item No.
		height mm	Length mm			
157 IK-VA	Rd 8-10	40	140	20	7,150	5215668
V2A Stainless steel, grade 304						/100 pc.

- Conductor holder of polyamide
- Curved bottom strip for quick installation



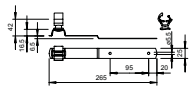
Roof cable holder for slated roofs, crimped, Rd 8-10



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 EK-VA	Rd 8-10	265	42	20	7,800	5215838
V2A Stainless steel, grade 304						/100 pc.

- Conductor holder of polyamide
- With Ø 5.5 mm drill hole

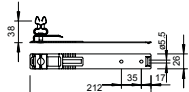
Roof cable holder for slated roofs, crimped, Rd 8-10



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 EK-CU	Rd 8-10	265	42	10	8,800	5215854
Cu Copper						/100 pc.

- Conductor holder of polyamide
- With Ø 5.5 mm drill hole

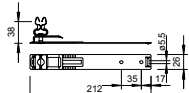
Roof cable holder for slated roofs, Rd 8



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 L-VA	Rd 8	212	32	20	8,000	5215439
V2A Stainless steel, grade 304						/100 pc.

- With Ø 5.5 mm drill hole and beading

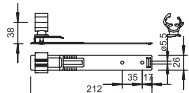
Roof cable holder for slated roofs, Rd 8



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 L-CU	Rd 8	212	32	10	9,900	5215471
Cu Copper						/100 pc.

- With Ø 5.5 mm drill hole and beading

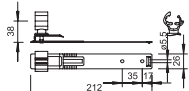
Roof cable holder for slated roofs, Rd 8-10



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 LK-VA	Rd 8-10	212	38	20	8,000	5215374
V2A Stainless steel, grade 304						/100 pc.

- With Ø 5.5 mm drill hole and beading
- Conductor holder of polyamide

Roof cable holder for slated roofs, Rd 8-10



Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 LK-CU	Rd 8-10	212	38	10	8,400	5215382
Cu Copper						/100 pc.

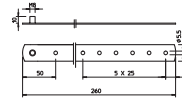
- With Ø 5.5 mm drill hole and beading
- Conductor holder of polyamide



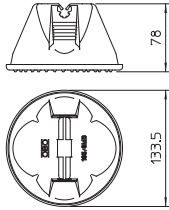
Roof cable holder for slated roofs with M8 threaded bolts

Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.	
							157 GB-M8
V2A Stainless steel, grade 304							/100 pc.

- With Ø 5.5 mm drill hole
- With 3 M8 threaded nipples for positioning the holder



Roof conductor holder for flat roofs



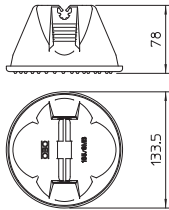
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 MBG-8	Rd 8	12	106,000	5218691
165 MBG-8 FO	Rd 8	12	106,000	5218692
165 MBG-10	Rd 10	12	106,000	5218675
165 MBG-10 FO	Rd 10	12	106,000	5218676

PA/PE Polyamide/Polyethylene

/100 pc.

- Closed form with base
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve made of polyethylene, black, bottom polypropylene, black
- Base made of polyamide PA 6, black, UV-stabilised and weather-resistant
- Base can be used on almost roofing felt systems (bitumen, PVC)
- Types 165 MBG...FO: Packed in foil bag

Roof conductor holder for flat roofs



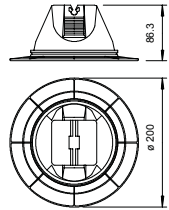
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 KRB-I	Rd 8	9	144,000	5218888

PA/PE Polyamide/Polyethylene

/100 pc.

- Closed form with base
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve made of polyethylene, black, bottom polypropylene, black
- Base made of polyamide PA 6, black, UV-stabilised and weather-resistant
- Base can be used on almost roofing felt systems (bitumen, PVC)
- Types 165 MBG...FO: Packed in foil bag

Roof conductor holder for flat roofs, with increased base section



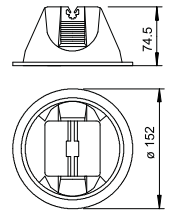
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 MBG-8 200	Rd 8	12	111,000	5218748
165 MBG-10 200	Rd 10	12	111,000	5218756

PE Polyethylene

/100 pc.

- DIN 48829 Form B 1
- Closed form with bottom
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve from polyethylene, black, bottom polypropylene, black
- With larger bottom section (Ø 200 mm) for improved stability

Roof conductor holder for flat roofs, without base



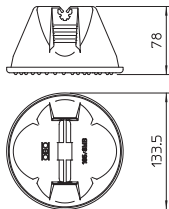
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 OBG-8	Rd 8	12	100,000	5218683

PE Polyethylene

/100 pc.

- Without bottom
- With double conductor holder
- Filling weight 1 kg (frost-resistant concrete)
- Sleeve from polyethylene, black

Roof conductor holder for flat roofs, grey



Type	Fit mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
165 MBG-8 GR	Rd 8	Grey	12	106,000	5218693
165 MBG-10 GR	Rd 10	Grey	12	106,000	5218677

PA/PE Polyamide/Polyethylene

/100 pc.

- Closed form with base
- With double cable holder
- Filling weight 1 kg (frost resistant concrete)
- Case made from polyethylene, light grey, UV-stabilised and weatherproof
- Base made from polyamide PA 6, light grey, UV-stabilised and weatherproof
- Base suitable for nearly all roofing membrane systems (Bitumen, PVC)

Flat conductor adapter for roof conductor holder, type 165/MBG

Type	Fit	Colour	mm	Pack.	Weight	Item No.
				pcs	kg/100 pcs.	
165 MBG HFL	Rd 8	Black		12	0,670	5218885

PP Polypropylene /100 pc.

- Flat conductor holder FL 30 x 3.5 mm
- For fastening to 165/MBG in fit Rd 8

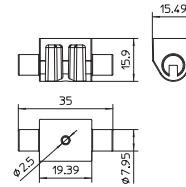


Universal adapter for roof conductor holder, type 165/MBG

Type	Fit	Colour	mm	Pack.	Weight	Item No.
				pcs	kg/100 pcs.	
165 MBG UH	Rd 8	Black		25	0,280	5218882

PP Polypropylene /pc.

- Universal adapter with drill hole \varnothing 2.5 mm
- E.g. for OBO Golden Sprint screw, type 4758 4 x L (L = depending on application)
- For fastening to 165/MBG

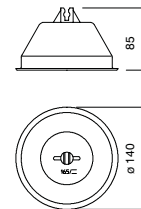


Roof conductor holder for flat roofs, plastic sleeve

Type	Fit	mm	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
165 KR	Rd 8		50	5,300	5218861

PE Polyethylene /100 pc.

- For self-filling with concrete
- Potential filling weight: approx. 1.3 kg
- Sleeve from polyethylene, black

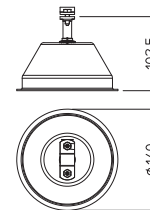


Roof conductor holder for flat roofs, with raised cable bracket

Type	Fit	mm	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
165 KRB SO	Rd 8-10		9	144,000	5218977

/100 pc.

- For self-filling with concrete
- Potential filling weight: approx. 1.3 kg
- Sleeve from polyethylene, black

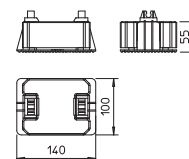


Roof conductor holder for flat roofs, recyclable

Type	Fit	mm	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
165 R-8-10	Rd 8-10		10	106,000	5218997

PE Polyethylene /100 pc.

- For round conductors Rd 8 to 10
- With polyethylene plastic holder, black
- Block made of frost-resistant concrete
- Weight 1 kg
- Block can be split into plastic and concrete (recyclable)

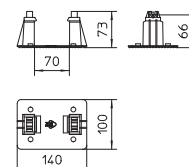


Roof conductor holder, for plastic film roofs

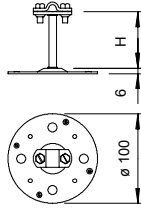
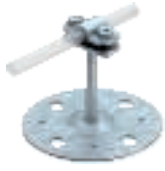
Type	Fit	mm	Pack.	Weight	Item No.
			pcs	kg/100 pcs.	
165 R-8-10 OBG	Rd 8-10		100	6,760	5218999

PE Polyethylene /100 pc.

- For flat roofs
- For round conductors Rd 8 to 10
- Polyethylene plastic holder, light grey
- For clamping in roof strips



Roof conductor holder, suitable for bonding straight to flat roofs



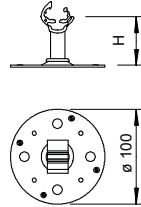
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 B 60	Rd 8-10	60	50	26,100	5218810
165 B 100	Rd 8-10	100	50	27,700	5218829

SI Steel /100 pc.

FT Hot-dip galvanised

- With conductor holder and bottom section, hot-dip galvanised steel
- Bottom section Ø 100 mm

Roof conductor holder, 55 mm, suitable for bonding straight to flat roofs



Type	Fit mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
165 NBK 55	Rd 8-10	100	75	17,060	5218314

PA Polyamide /100 pc.

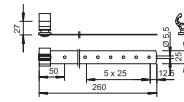
- Suitable for bonding straight to flat roofs
- Conductor holder of polyamide
- Bottom section, hot-dip galvanised steel
- Bottom section Ø 100 mm



Roof conductor holder for tiled and slated roofs, Rd 8–10

Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 NB-VA	Rd 8-10	260	27	20	6,000	5215277
V2A Stainless steel, grade 304 /100 pc.						

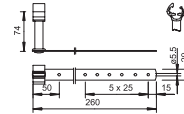
- With Ø 5.5 mm drill hole
- Conductor holder of polyamide



Roof conductor holder for tiled and slated roofs, 74 mm height

Type	Fit mm	Length mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
157 ND-VA	Rd 8-10	260	74	20	6,000	5215307
V2A Stainless steel, grade 304 /100 pc.						

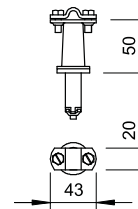
- High roof cable holder: 74 mm
- With perforation Ø 5.5 mm
- Polyamide cable bracket



Roof conductor holder for tiled, slated and corrugated roofs, with crossbar

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
133 A	Rd 8-10	50	20	9,000	5202248
PA Polyamide /100 pc.					

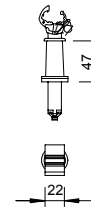
- With weatherproof clamping collar from soft PVC
- Required drill hole Ø = 16 mm
- Spacer from polyamide, grey



Roof conductor holder for tiled, slated and corrugated roofs, with cable bracket

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
133 NB	Rd 8-10	67	20	8,000	5202213
PA Polyamide /100 pc.					

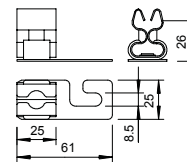
- With weather-proof clamping collar from soft-PVC
- Required drill hole-Ø = 16 mm
- Spacer and conductor holder from polyamide, grey



Roof conductor holder for tiled, slated and corrugated roofs, Rd 8

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
159 VA-V	Rd 8	21	20	3,900	5217075
V2A Stainless steel, grade 304 /100 pc.					

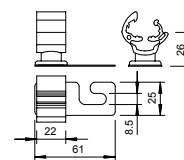
- Bottom section and conductor holder stainless steel (V2A)
- Bottom section with Ø 8.5 mm slot



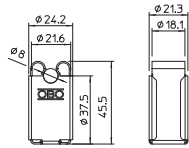
Roof conductor holder for tiled, slated and corrugated roofs, Rd 8–10

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
159 K-VA	Rd 8-10	21	20	2,540	5216818
V2A Stainless steel, grade 304 /100 pc.					

- Bottom section stainless steel (V2A)
- Bottom section with Ø 8.5 mm slot
- Conductor holder of polyamide

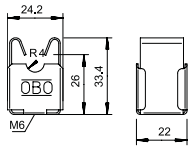


Screwless conductor bracket, raised construction type, for Rd 8 mm, through-way Ø 5 mm



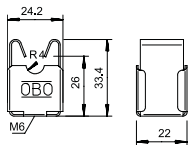
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 35 VA M6	Rd 8	35	20	2,680	5207342
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • With female thread M6 or through hole Ø 5 mm • From stainless steel (V2A) 					

Screwless conductor bracket for Rd 8 mm, through-way Ø 5 mm



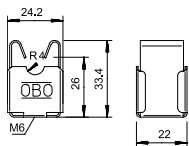
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 VA M6	Rd 8	20	20	2,500	5207339
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • With female thread M6 or through hole Ø 5 mm • From stainless steel (V2A) 					

Screwless conductor bracket for Rd 8 mm, through-way Ø 5 mm



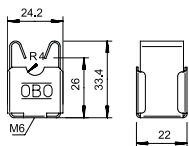
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 VA-VK M6	Rd 8	20	20	2,500	5207800
V2A Stainless steel, grade 304					/100 pc.
Cu Copper-plated					
<ul style="list-style-type: none"> • With female thread M6 or through hole Ø 5 mm • From stainless steel (V2A) • VA-VK: copper-plated 					

Screwless conductor bracket for Rd 8 mm, through-way Ø 7 mm



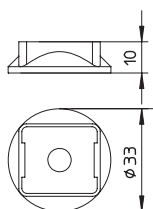
Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 VA M8	Rd 8	20	20	1,900	5207347
V2A Stainless steel, grade 304					/100 pc.
<ul style="list-style-type: none"> • With female thread M8 or through hole Ø 5 mm • From stainless steel (V2A) 					

Screwless conductor bracket for Rd 8 mm, through-way Ø 7 mm



Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 VA-VK M8	Rd 8	20	20	1,900	5207819
V2A Stainless steel, grade 304					/100 pc.
Cu Copper-plated					
<ul style="list-style-type: none"> • With female thread M8 or through hole Ø 5 mm • From stainless steel (V2A) • VA-VK: copper-plated 					

Washer for conductor bracket, type 177



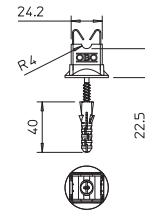
Type	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
177 U	Light grey	20	0,295	5207371
PP Polypropylene				
/100 pc.				
<ul style="list-style-type: none"> • For simple wall installation • UV-resistant 				

Screwless conductor bracket for Rd 8 mm, fastening with screw and anchor

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 VA B-HD	Rd 8	20	50	2,900	5207901

V2A Stainless steel, grade 304 /100 pc.

- With female thread M8 or through hole Ø 5 mm
- From stainless steel (V2A)
- With pre-mounted wood screws (5 x 60) and plastic dowels (8 x 40).

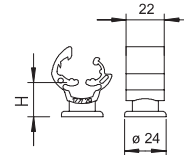


Universal conductor bracket Rd 8–10 mm

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 M8	Rd 8-10	20	20	1,050	5207444
177 30 M8	Rd 8-10	30	20	1,200	5207460
177 55 M8	Rd 8-10	55	20	1,450	5207487

PA Polyamide /100 pc.

- With female thread M8 or through hole Ø 7 mm
- Weather and temperature-resistant from -35 °C to +90 °C

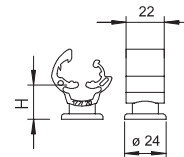


Universal conductor bracket Rd 8–10 mm, copper-plated

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 CU	Rd 8-10	20	10	1,050	5207746
177 30 CU	Rd 8-10	30	10	1,200	5207754
177 55 CU	Rd 8-10	55	10	1,450	5207762

PA Polyamide /100 pc.

- With female thread M8 for screwing and through hole for wood screws
- Colour: copper
- Weather and temperature-resistant from -35 °C to +90 °C

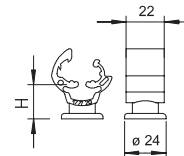


Universal conductor bracket Rd 8–10 mm with pre-mounted wood screw

Type	Fit mm	Installation height mm	Pack. pcs	Weight kg/100 pcs.	Item No.
177 B-HD20	Rd 8-10	20	50	1,930	5207851
177 B-HD30	Rd 8-10	30	50	2,080	5207878

PA Polyamide /100 pc.

- With female thread M8 for screwing and through hole for wood screws
- For round conductor Rd 8-10
- Weather and temperature-resistant from -35 °C to +90 °C
- With pre-mounted wood screws (5 x 60) and plastic dowels (8 x 40).

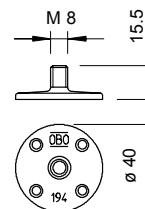


Type	Colour	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
194	Grey	M8	100	0,548	5207258

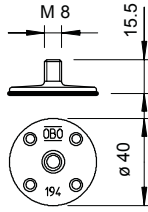
PA Polyamide /100 pc.

- With threaded stem M8
- For mounting conductor supports with M8 female thread
- For bonding to concrete, steel or brickwork

Bonding base



Bonding base including industrial bonding pad

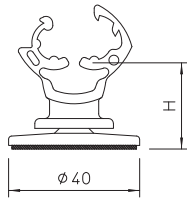


Type	Colour	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
194 K	Grey	M8	20	0,600	5207266

PA Polyamide /100 pc.

- With threaded pin M8
- To accept cable supports with M8 internal thread
- For bonding to concrete, steel or smooth substrates
- Not suitable for rough surfaces such as plaster, wood, bitumen strips
- Processing at > +15 °C and on cleaned substrate
- To route the arrestor, cannot be used on the roof
- Use on sheet roofs after agreement with the responsible roofing contractors

Conductor bracket, Rd 8–10 mm with bonding base

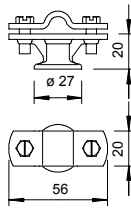


Type	Pack. pcs	Weight kg/100 pcs.	Item No.
177 20 KL	50	1,650	5207451

PA Polyamide /100 pc.

- For bonding to concrete, steel or smooth substrates
- Not suitable for rough surfaces such as plaster, wood, bitumen strips
- Processing at > +15 °C and on cleaned substrate
- To route the arrestor, cannot be used on the roof
- Use on sheet roofs after agreement with the responsible roofing contractors

Conductor bracket with crossbar Rd 8–10 mm

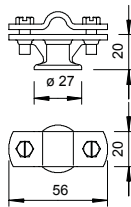


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 Z8-10	Rd 8-10	20	6,202	5229960

Zn Die-cast zinc /100 pc.
G Electrogalvanised

- With female thread M8 or through hole Ø 7 mm
- Over-piece installed with 2 hexagonal bolts
- Version HD with wood screws (5 x 60) and plastic dowels (8 x 40)

Conductor bracket with crossbar Rd 8–10 mm

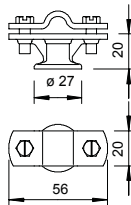


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 8-10	Rd 8-10	20	9,600	5230217

Zn Die-cast zinc /100 pc.
Cu Copper-plated

- With female thread M8 or through hole Ø 7 mm
- Over-piece installed with 2 hexagonal bolts

Conductor bracket with crossbar, wood screw, plastic anchor Rd 8-10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 B-Z-HD	Rd 8-10	100	6,580	5230322

Zn Die-cast zinc /100 pc.
VZ Galvanised

- With female thread M8 or through hole Ø 7 mm
- Over-piece installed with 2 hexagonal bolts
- Version HD with wood screws (5 x 60) and plastic dowels (8 x 40)

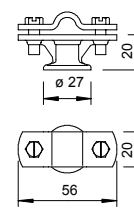


Conductor bracket with crossbar, wood screw, plastic anchor Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 B-MS-HD 8-10	Rd 8-10	100	7,280	5230365

- Zn Die-cast zinc
- Cu Copper-plated

- With female thread M8 or through hole Ø 7 mm
- Over-piece installed with 2 hexagonal bolts
- Version HD with wood screws (5 x 60) and plastic dowels (8 x 40)

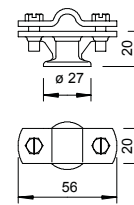


Conductor bracket with hinged crossbar Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 Z-K 8-10	Rd 8-10	20	6,202	5229961

- Zn Die-cast zinc
- G Electrogalvanised

- With female thread M8 or through hole Ø 7 mm
- Hinge crossbar for quick swivel mounting
- Crossbar mounted with 2 hexagonal bolts

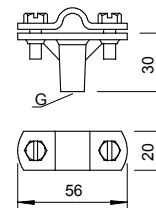


Conductor bracket with hinged crossbar Rd 8-10, 30 mm mounting height

Type	Fit mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
168 8-10 M6	Rd 8-10	M6	20	7,800	5229162
168 DIN-K-M8	Rd 8-10	M8	20	7,780	5229839

- Zn Die-cast zinc
- G Electrogalvanised

- With female thread (G)
- With over-piece and 2 hexagonal bolts
- Installed height 30 mm

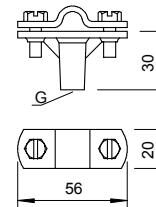


Conductor bracket with hinged crossbar Rd 8-10, 30 mm mounting height

Type	Fit mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
168 ZN-M6	Rd 8-10	M6	20	8,660	5229367
168 DIN-K-M8	Rd 8-10	M8	20	8,440	5229383

- Zn Die-cast zinc
- Cu Copper-plated

- With female thread (G)
- With over-piece and 2 hexagonal bolts
- Installed height 30 mm

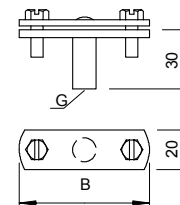


Conductor bracket with crossbar FL, 30 mm mounting height

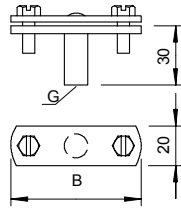
Type	Dimension B mm	Fit mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
168 FL40-M8	66	FL 40	M8	20	8,200	5229553

- TG Cast iron
- FT Hot-dip galvanised

- For flat strip
- With female thread (G)
- Installed height 30 mm



Conductor bracket with crossbar FL, 30 mm mounting height



Type	Dimension B mm	Fit mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
168 FL30-M6	56	FL 30	M6	20	7,640	5229464
168 DIN 30	56	FL 30	M8	20	7,320	5229480

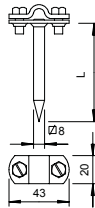
Zn Die-cast zinc

G Electrogalvanised VZ Galvanised

- For flat strip
- With female thread (G)
- Installed height 30 mm

/100 pc.

Conductor bracket with crossbar Rd 8–10 mm, with square pin



Type	Fit mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
163 70 FT	Rd 8-10	70	50	8,476	5223075
163 100 FT	Rd 8-10	100	50	10,056	5223105
163 150 FT	Rd 8-10	150	50	14,400	5223156
163 200 FT	Rd 8-10	200	20	18,880	5223202

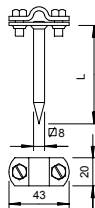
St Steel

FT Hot-dip galvanised

- Complete with over-piece and hexagonal bolts
- With square pin for quick installation
- With hexagonal bolts, VA

/100 pc.

Conductor bracket with crossbar Rd 8–10 mm, with square pin



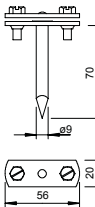
Type	Fit mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
163 100 CU	Rd 8-10	100	10	10,840	5223601

Cu Copper

- Complete with over-piece and hexagonal bolts
- With square pin for quick installation
- With hexagonal bolts, VA

/100 pc.

Conductor bracket with crossbar FL 30 mm, with round pin



Type	Fit mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
166 LS 70	FL30	70	50	9,140	5226570

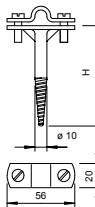
St Steel

FT Hot-dip galvanised

- With over-piece and 2 hex-head screws (VA)
- Round pin Ø 9 mm

/100 pc.

Conductor bracket with crossbar Rd 8–10 mm, with wood screw thread



Type	Fit mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
176 A 65	Rd 8-10	65	50	9,536	5227070
176 A 80	Rd 8-10	80	50	10,025	5227089
176 A 100	Rd 8-10	100	50	11,500	5227100
176 A 150	Rd 8-10	150	20	13,100	5227151

TG Cast iron

F Hot-dip galvanised

- Also for flat conductor to FL 30
- With wood screw thread
- Bottom section, hot-dip galvanised cast iron
- Over-piece and screws, hot dipped galvanised steel

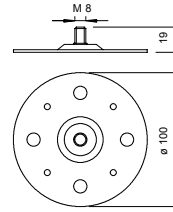
/100 pc.



Conductor bracket

Type	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
199 DIN	M8	10	14,200	5208017
St	Steel			/100 pc.
FS	Strip-galvanised			

- With threaded pin M8
- Suitable for direct bonding
- Threaded pin brass and base plate hot-dip galvanised steel

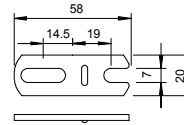


Base plate

Hinge crossbar for FL 30 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 FL	FL30	50	2,460	5228328
St	Steel			/100 pc.
FT	Hot-dip galvanised			

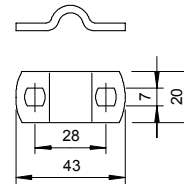
- With slot for quick installation



Crossbar for Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 K8-10 ST	Rd 8-10	100	2,000	5228123
St	Steel			/100 pc.
FT	Hot-dip galvanised			

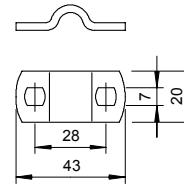
- For round conductor Rd 8-10



Crossbar for Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 K8-10 VA	Rd 8-10	100	2,100	5228134
V2A	Stainless steel, grade 304			/100 pc.

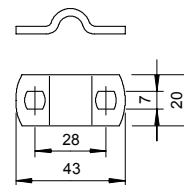
- For round conductor Rd 8-10



Crossbar for Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 K8-10 CU	Rd 8-10	100	2,260	5228131
Cu	Copper			/100 pc.

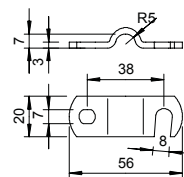
- For round conductor Rd 8-10



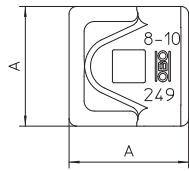
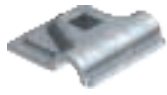
Hinge crossbar for Rd 8-10 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 8-10	Rd 8-10	100	2,680	5228026
St	Steel			/100 pc.
FT	Hot-dip galvanised			

- With open slot for quick installation



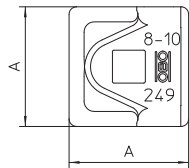
Clamping block for Rd 8-10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ST-OT	Rd 8-10	40	100	3,240	5311503
St Steel Ft Hot-dip galvanised • For round conductor fastening RD 8-10 • Suitable for M10 bolts					

/100 pc.

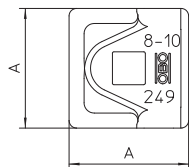
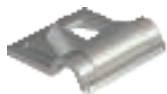
Clamping block for Rd 8-10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ALU-OT	Rd 8-10	44	100	2,100	5311585
Alu Aluminium • For round conductor fastening RD 8-10 • Suitable for M10 bolts					

/100 pc.

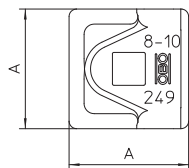
Clamping block for Rd 8-10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA-OT	Rd 8-10	40	100	3,130	5311554
V2A Stainless steel, grade 304 • For round conductor Rd 8-10 • Suitable for M10 bolts					

/100 pc.

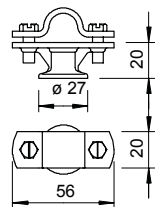
Clamping block for Rd 8-10 mm



Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU-OT	Rd 8-10	40	100	3,580	5311530
Cu Copper • For round conductor fastening RD 8-10 • Suitable for M10 bolts					

/100 pc.

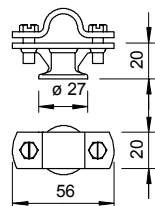
Rod holder for 16 mm interception and earth entry rods



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 Z-16	Rd 16	10	6,000	5412609
Zn Die-cast zinc Vz Galvanised • For lightning and ground insertion rods Rd 16 • Installed with over-piece and hex-head screws M6 x 16 • With female thread M8 or through hole Ø 7 mm				

/100 pc.

Rod holder for 16 mm interception and earth entry rods



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 ZN-16	Rd 16	10	10,100	5412633
Zn Die-cast zinc Cu Copper-plated • For lightning and ground insertion rods Rd 16 • Installed with over-piece and hex-head screws M6 x 16 • With female thread M8 or through hole Ø 7 mm				

/100 pc.

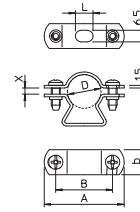
Rod holder for 16 mm interception and earth entry rods



Type	Clamping range D mm	Hole size mm	Bolt	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
733 16 VA	14 - 16	6.5 x 10	5 x M12	500	50	2,430	1362011

V2A Stainless steel, grade 304 /100 pc.

- * Size M16 is not suitable for nail device
- * Sizes M16 - PG16 are not suitable for bolt-firing tool

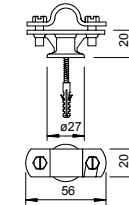


Rod holder for 16 mm interception and earth entry rods, with screw and anchor

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 B-Z-HD	Rd 16	100	6,000	5412803

Zn Die-cast zinc /100 pc.
VZ Galvanised

- For lightning and ground insertion rods Rd 16
- Installed with over-piece and hexagonal bolts M6 x 16 (VA)
- Female thread M8 for screwing and through hole for wood screws
- Pre-mounted with wood screw 5 x 60 and plastic dowels 8 x 40

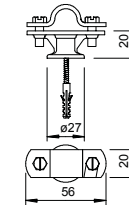


Rod holder for 16 mm interception and earth entry rods, with screw and anchor

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 B-HD-16	Rd 16	100	10,100	5412811

Zn Die-cast zinc /100 pc.
Cu Copper-plated

- For lightning and ground insertion rods Rd 16
- Installed with over-piece and hexagonal bolts M6 x 16 (VA)
- Female thread M8 for screwing and through hole for wood screws
- Pre-mounted with wood screw 5 x 60 and plastic dowels 8 x 40

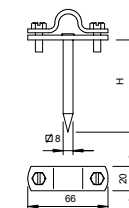


Rod holder for 16 mm interception and earth entry rods, with square pin

Type	Fit mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
112 DIN-100	Rd 16	100	10	12,412	5410096

St Steel /100 pc.
F Hot-dip galvanised

- For lightning and ground insertion rods
- Over-piece with 2 hexagonal bolts M6 x 16 (VA)
- With square pin

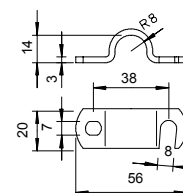


Crossbar, round conductors and interception rods 16 mm

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
156 16	Rd 16	50	3,230	5228220

St Steel /100 pc.
FT Hot-dip galvanised

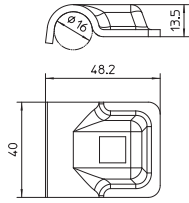
- With open slot for quick installation



02 TBS Masterkatalog Länder / en / 30/11/2016 (LLExpport_04408) / 30/11/2016

Air-termination and down conductor systems

Clamping block for Rd 16 mm



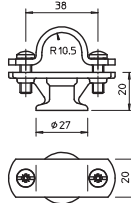
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 VA-OT	16	100	5,700	5311573

V2A Stainless steel, grade 304

/100 pc.

- For round conductor fastening RD 16
- Suitable for M10 bolts

Rod holder for 20 mm rods



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 Z-20	Rd 20	20	8,200	5230527

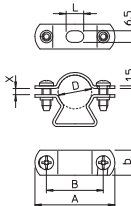
Zn Die-cast zinc

/100 pc.

VZ Galvanised

- Installed with over-piece and hex-head screws M6 x 16
- With female thread M8 or through hole ϕ 7 mm.

Rod holder for 20 mm rods



Type	Clamping range D mm	Hole size mm	Bolt	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
733 21 VA	19 - 21	6,5 x 10	5 x M16	500	50	2,740	1362046

V2A Stainless steel, grade 304

/100 pc.

* Size M16 is not suitable for nail device

* Sizes M16 - PG16 are not suitable for bolt-firing tool



Vario quick connector



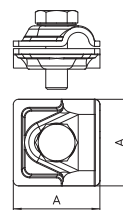
Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ST	Rd 8-10	40	20	10,800	5311500
249 B ST	Rd 8-10	40	100	10,800	5311705

St Steel

FT Hot-dip galvanised

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



Vario quick connector

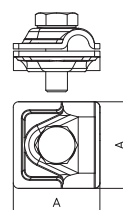


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ALU	Rd 8-10	44	30	6,600	5311519
249 B ALU	Rd 8-10	44	100	7,250	5311713

Alu Aluminium

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



Vario quick connector

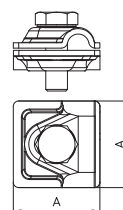


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA	Rd 8-10	40	10	10,700	5311551

V2A Stainless steel, grade 304

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



Vario quick connector

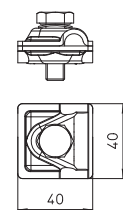


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 V4A	Rd 8-10	—	10	9,500	5311404

V4A Stainless steel, 316Ti / 316L

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



Vario quick connector

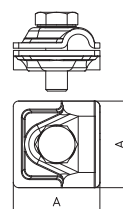


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU	Rd 8-10	40	10	11,900	5311527

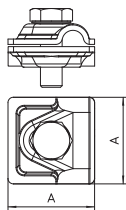
Cu Copper

- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



Variable bi-metal quick connector

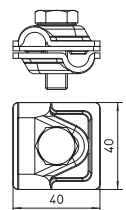


Type	Fit mm	Dimen- sion A mm	Material upper part	Material lower part	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ZV	Rd 8-10	44	Cu	Al	10	14,220	5311535

Cu Copper /100 pc.

- Intermediate plate, copper/aluminium, top section copper and aluminium
- For T, cross and parallel connectors
- Quick installation using hexagonal bolt M10 x 30, high-grade stainless steel
- With spring washer according to DIN 137
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Variable earthing connector Rd 6-8 / 8-10 mm

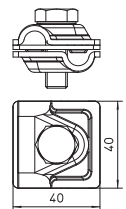


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 6-10 ST	RD 6-8 / 8-10	40	20	13,100	5311410

St Steel /100 pc.
FT Hot-dip galvanised

- For T, intersection and parallel connections with adapter plates
- Quick mounting using an M10 x 30 bolt, made from rustproof stainless steel
- With sprung washer to DIN 137
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Variable earthing connector Rd 6-8 / 8-10 mm

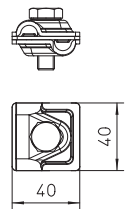


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 6-10 CU	RD 6-8 / 8-10	40	10	14,540	5311417

Cu Copper /100 pc.

- For T, intersection and parallel connections with adapter plates
- Quick mounting using an M10 x 30 bolt, made from rustproof stainless steel
- With sprung washer to DIN 137
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Vario quick connector Rd 6-8 / Rd 6-8 mm

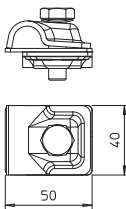


Type	Fit mm	Dimen- sion A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 6-8 CU	RD 6-8 / 6-8	40	10	12,710	5311407

Cu Copper /100 pc.
Cu Copper-plated

- For T, intersection and parallel connections with adapter plates
- Quick mounting using an M10 x 30 bolt, made from rustproof stainless steel
- With sprung washer to DIN 137
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Vario quick connector Rd 8-10x16



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10X16 VA	8-10X16	10	16,300	5311590

V2A Stainless steel, grade 304 /100 pc.

- For T, intersection and parallel connections with adapter plates
- Quick mounting using an M10 x 30 bolt, made from rustproof stainless steel
- With sprung washer to DIN 137
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

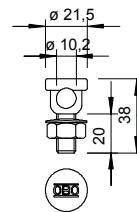
Connector, Rd 8–10 mm with M10 thread

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5000	Rd 8-10	20	4,630	5304008

St Steel

F Hot-dip galvanised

- With bore hole 10.2 mm
- With thread M10
- Including pre-mounted nut M10 and serrated washer
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector Rd 8–10 mm, single

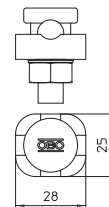


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 DIN-FT	Rd 8-10	20	7,450	5304105
5001 DIN-FT+VA	Rd 8-10	20	7,450	5304107

St Steel

FT Hot-dip galvanised

- With fix contact clamping screw, nut and serrated washer
- With bore hole 10.2 mm
- With pre-mounted pressure piece, die-cast zinc
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector Rd 8–10 mm, single

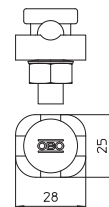


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 ZN-CU	Rd 8-10	10	8,760	5304113

Zn Die-cast zinc

Cu Copper-plated

- With fix contact clamping screw, nut and serrated washer
- With bore hole 10.2 mm
- With pre-mounted pressure piece, die-cast zinc
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector Rd 8–10 mm, double

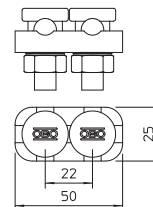


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5002 DIN-FT	Rd 8-10	20	14,240	5304202

St Steel

FT Hot-dip galvanised

- With 2 fix contact clamping screws, nut and serrated washer
- Including pre-mounted connecting pressure piece, die-cast zinc or copper-plated die-cast zinc
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector Rd 8–10 mm, triple

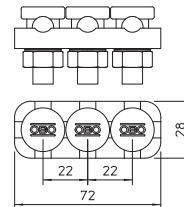


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5003	Rd 8-10	10	22,420	5304318

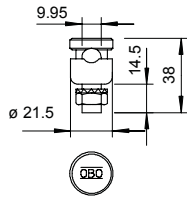
TG Cast iron

FT Hot-dip galvanised

- With 3 fix contact clamping screws, nut and serrated washer
- With pre-mounted connecting pressure piece, die-cast zinc
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connector, Rd 8–10 mm with pressure trough



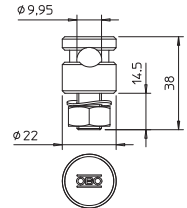
Type	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 N-FT	Rd 8-10	20	5,900	5304164

- St** Steel
- FT** Hot-dip galvanised

/100 pc.

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Connector, Rd 8–10 mm with pressure trough



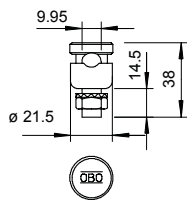
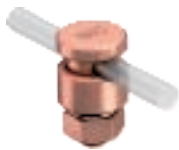
Type	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 N-VA	Rd 8-10	10	6,800	5304176

- V2A** Stainless steel, grade 304

/100 pc.

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Connector, Rd 8–10 mm with pressure trough



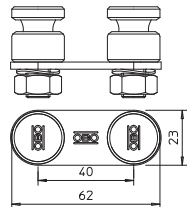
Type	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
5001 N-CU	Rd 8-10	10	6,750	5304172

- Cu** Copper

/100 pc.

- With 1 fix contact clamping screw, nut and serrated washer
- Including pre-mounted pressure sump, steel
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Connector, Rd 8–10 mm, double, with pressure trough



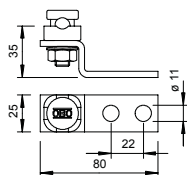
Type	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
5002 N-VA	Rd 8-10	10	16,200	5304270

- V2A** Stainless steel, grade 304

/100 pc.

- With 2 Fix-Kontakt clamping bolts, nuts and serrated washers
- With pre-mounted pressure trough made of VA
- Corresponds to the requirements of VDE 0185-305 (IEC 62305)

Connection and end piece with connector



Type	Material symbol	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
5009	St	Rd 8-10	10	14,500	5304970

- St** Steel
- F** Hot-dip galvanised

/100 pc.

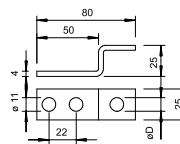
- With 2 attaching holes Ø 11 mm
- Installed with connector (single-piece) type 5001 DIN-FT
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connection and end piece

Type	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5011	11	10	7,064	5304997

St Steel
FT Hot-dip galvanised

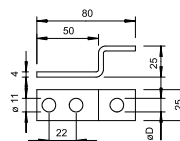


- For attaching to steel structures or bolting to fixed earthing terminals
- For attachments: Round conductor Rd 8-10 and flat conductor FL 30 x 3.5
- 2 attaching holes Ø 11 mm
- 1 attaching holes Ø D mm

Connection and end piece

Type	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5011 VA M10	11	10	7,064	5334934
5011 VA M12	13	10	7,048	5334942

V4A Stainless steel, grade 316 Ti

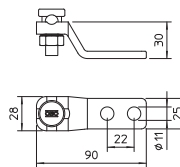


- For attaching to steel structures or bolting to fixed earthing terminals
- For attachments: Round conductor Rd 8-10 and flat conductor FL 30 x 3.5
- 2 attaching holes Ø 11 mm
- 1 attaching holes Ø D mm

Connection and end piece, DIN version

Type	Fit mm	Material symbol	Pack. pcs	Weight kg/100 pcs.	Item No.
5005 DIN-FT	Rd 8-10	St	10	15,518	5304601

St Steel
F Hot-dip galvanised

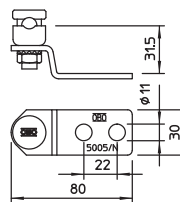


- With 2 attaching holes and 1 fix contact clamping screw 5000...
- With 2 attaching holes Ø 11 mm
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Connection and end piece with connector and pressure trough

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5005 N-FT	Rd 8-10	10	11,600	5304660

St Steel
FT Hot-dip galvanised

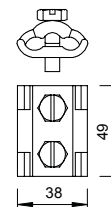


- With 2 attaching holes Ø 11 mm
- Including pre-mounted connector 5001 N
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Parallel connector Rd 8–10 mm, M8 x 25

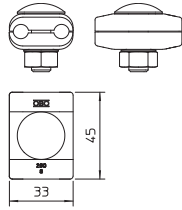
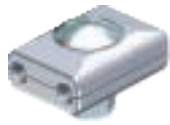
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
259 8-10	Rd 8-10	25	13,230	5315506

TG Cast iron
FT Hot-dip galvanised



- With 2 hex-head screws M8 x 25, hot-dip galvanised steel

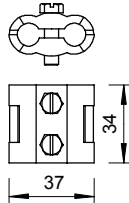
Parallel connector Rd 8 mm, M10 x 30



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
260 8	Rd 8	50	13,930	5315700
Zn	Die-cast zinc			/100 pc.
G	Electrogalvanised			

- With flat, round screw M10 x 30 and hexagonal nut, hot-dip galvanised steel

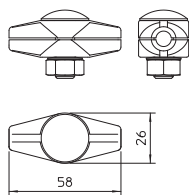
Parallel connector Rd 8–10 mm, M6 x 20



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
260 8-10 MS	Rd 8-10	50	15,820	5315654
CuZn	Brass			/100 pc.
Cu	Copper-plated			

- With 2 hexagonal bolts M6 x 20 from copper

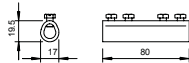
Straight connector Rd 8 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
239	Rd 8	20	12,510	5329078
Zn	Die-cast zinc			/100 pc.
G	Electrogalvanised			

- With truss-head bolt M10 x 30 and hexagonal nut M10
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)

Straight connector Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
237 N FT	Rd 8-10	20	8,560	5328209
St	Steel			/100 pc.
F	Hot-dip galvanised			

- With 4 hexagonal bolts M6 x 10
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)

Straight connector Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
237 N CU	Rd 8-10	10	8,760	5328284
Cu	Copper			/100 pc.

- With 4 hexagonal bolts M6 x 10
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)



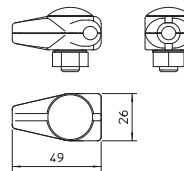
T connector Rd 8 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
244	Rd 8	10	11,580	5311039

Zn Die-cast zinc
G Electrogalvanised

- With truss-head bolt M10 x 30 and hexagonal nut M10
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)



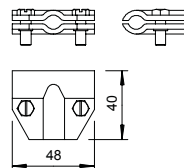
T connector Rd 8-10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
245 8-10 FT	Rd 8-10	10	9,401	5311101

St Steel
FT Hot-dip galvanised

- With 2 hexagonal bolts M6 x 16 (VA)
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)



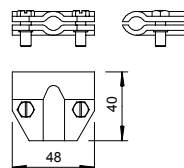
T connector Rd 8-10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
245 8-10 CU	Rd 8 - 10	10	11,560	5311152

Cu Copper

- With 2 hexagonal bolts M6 x 16 (VA)
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)



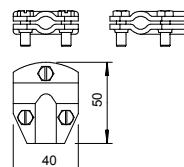
T connector Rd 8-10 mm, triple-screwed



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
247 8-10 FT	Rd 8-10	10	10,934	5311209

St Steel
FT Hot-dip galvanised

- With 3 hexagonal bolts M6 x 16 (VA)



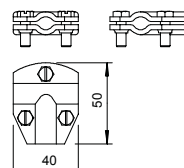
T connector Rd 8-10 mm, triple-screwed



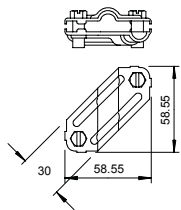
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
247 8-10 CU	Rd 8-10	10	10,750	5311268

Cu Copper

- With 3 hexagonal bolts M6 x 16 (VA)
- Complies with the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)



Cross-connector for round conductors and flat conductors

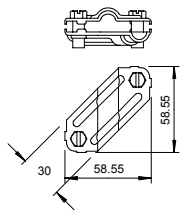


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250	Rd 8-10/FL30	25	10,260	5312906

SI Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20 (F)

Cross-connector for round conductors and flat conductors

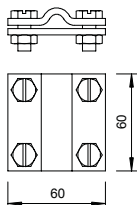


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
250 VA	Rd 8-10/FL30	25	10,260	5312922
250 V4A	Rd 8-10/FL30	10	10,260	5312925

V2A Stainless steel, grade 304 V4A Stainless steel, grade 316 Ti /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- Fit: Rd 8-10 x FL 30
- Fit: FL 30 x FL 30
- Mounted with 2 hexagonal bolts M8 x 20

Cross-connector for round conductors and flat conductors DIN

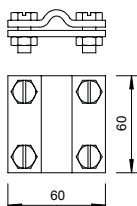


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10xFL30 FT	8-10 x FL30	25	28,500	5312655

SI Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for round conductors and flat conductors DIN



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10xFL30V4A	8-10 x FL30	10	28,500	5312656

V4A Stainless steel, grade 316 Ti /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

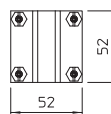
Cross-connector Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
251 8-10	Rd 8-10	25	11,690	5312035

St Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- For round conductors, fit: Rd 8-10 x Rd 8-10
- With 4 hexagonal bolts M6 x 16 (VA)



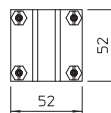
Cross-connector Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
251 CU	Rd 8-10	10	12,400	5312132

Cu Copper /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- With 4 hexagonal bolts M6 x 16, must of rust-proof steel (VA)



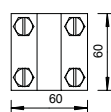
Cross-connector Rd 8–10 mm, wide version



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
253 8X8	Rd 8-10	25	30,700	5312604

St Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)



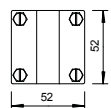
Cross-connector with intermediate plate for Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
254 DIN 8-10 FT	Rd 8-10	25	16,660	5314038

St Steel /100 pc.
FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- For round conductors, fit: Rd 8-10 x Rd 8-10
- With adapter plate
- Mounted with 4 hexagonal bolts M6 x 20 and 4 hexagonal nuts M6



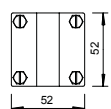
Cross-connector with intermediate plate for Rd 8–10 mm



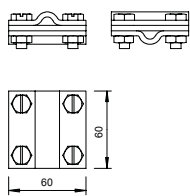
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
254 DIN 8-10 CU	Rd 8-10	10	17,410	5314135

Cu Copper /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10
- With adapter plate
- Mounted with 4 hexagonal bolts M6 x 20 and 4 hexagonal nuts M6 (F) made of rustproof steel (VA)



Cross-connector with intermediate plate for Rd 8–10 mm, wide version



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 FT	Rd 8-10	25	33,530	5312310

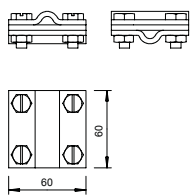
St Steel

/100 pc.

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for Rd 8–10 mm, wide version



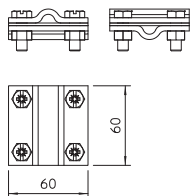
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 V4A	Rd 8-10	10	33,530	5312318

V4A Stainless steel, grade 316 Ti

/100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector with intermediate plate for Rd 8–10 mm, wide version



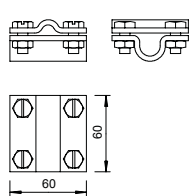
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10 CU	Rd 8-10	10	38,940	5312418

Cu Copper

/100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 8-10 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

Cross-connector for Rd 8–10 x Rd 16 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
253 10X16	Rd 8-10 x 16	25	29,800	5312809

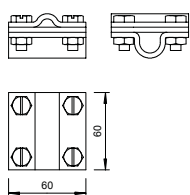
St Steel

/100 pc.

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8 (F)

Cross-connector with intermediate plate for Rd 8–10 x Rd 16 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10X16 FT	Rd 8-10 x 16	25	38,800	5312345

St Steel

/100 pc.

FT Hot-dip galvanised

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8

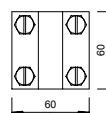
Cross-connector with intermediate plate for Rd 8–10 x Rd 16 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10x16 V4A	Rd 8-10 x 16	10	39,000	5312346

V4A Stainless steel, grade 316 Ti /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



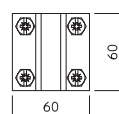
Cross-connector with intermediate plate for Rd 8–10 x Rd 16 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
252 8-10x16 CU	Rd 8-10 x 16	10	43,985	5312442

Cu Copper /100 pc.

- Meets the requirements of VDE 0185-305-3 (IEC/ EN 62305-3)
- Fit: Rd 8-10 x Rd 16 / FL 30
- With adapter plate
- Mounted with 4 hexagonal bolts M8 x 25 and 4 hexagonal nuts M8



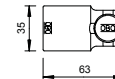
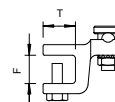
Folding and construction clamp, 10–20 mm



Type	Fit mm	Dimension T mm	Dimen- sion L mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5004 DIN-FT 12	Rd 8-10	20	55	max. 12	10	18,730	5304407
5004 DIN-FT 20	Rd 8-10	25	63	10 - 20	10	30,600	5304504

TG Cast iron /100 pc.
FT Hot-dip galvanised

- Flange thickness to 12 or 10–20 mm
- With pre-mounted Fix-Kontakt clamping screw 5000
- 2 hexagonal bolts M8 x 20, screws made of hot galvanised steel,
- Terminal block made of malleable iron, hot galvanised
- Mounting of the round conductors either vertical or transverse to structure
- Corresponds to the requirements of DIN VDE 0185-305-3



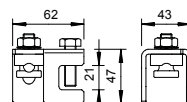
Construction clamp to 20 mm



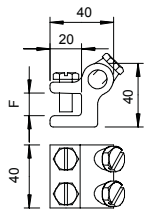
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
5010 20 FT	Rd 8-10	4 - 20	10	30,600	5304520

St Steel /100 pc.
FT Hot-dip galvanised

- Round conductors can be installed vertical or transverse to structure
- For affixing to structures with a flange thickness of up to 20 mm
- Affixing to structures with a hexagonal bolt M10
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



Connection terminal to 14 mm



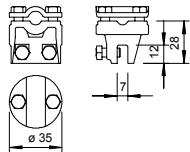
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
272 8	Rd 8-10	max. 8	20	22,800	5318084
272 14	Rd 8-10	max. 14	20	25,230	5318149

TG Cast iron /100 pc.

FT Hot-dip galvanised

- Flange thickness to 8 and/or 14 mm
- With 4 hexagonal bolts M8
- Conforms to the requirements according to DIN V VDE V 0185-3, Section 4.5

Folding clamp up to 7 mm plate thickness



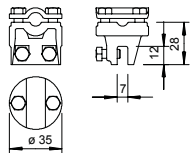
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
269 8-10	Rd 8-10	max. 7	20	14,460	5317010

Zn Die-cast zinc /100 pc.

G Electrogalvanised

- Plate thickness to 7 mm
- For conductor arrangement transverse and parallel to plate with 4 hexagonal bolts M6 x 16
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Folding clamp up to 7 mm plate thickness



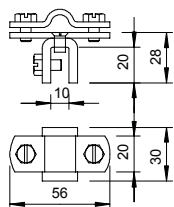
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
269 MS	Rd 8-10	max. 7	10	14,480	5317053

Zn Die-cast zinc /100 pc.

Cu Copper-plated

- Plate thickness to 7 mm
- For conductor arrangement transverse and parallel to plate with 4 hexagonal bolts M6 x 16
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

Folding clamp Rd 8-10 up to 10 mm plate thickness



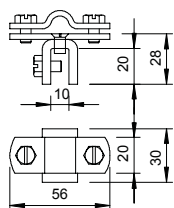
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
270 8-10 FT	Rd 8-10	max. 10	20	13,810	5317207

St Steel /100 pc.

FT Hot-dip galvanised

- Metal thickness to 10 mm
- For cable routing transverse and in parallel to the plate
- Corresponds to the requirements to DIN V VDE V 0185-3 section 4.5

Folding clamp Rd 8-10 up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
270 8-10 VA	Rd 8-10	max. 10	10	13,800	5317208

V2A Stainless steel, grade 304 /100 pc.

- Metal thickness to 10 mm
- For cable routing transverse and in parallel to the plate
- Corresponds to the requirements to DIN V VDE V 0185-3 section 4.5

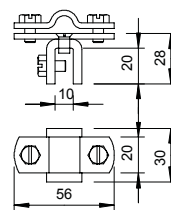
Folding clamp Rd 8-10 up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
270 8-10 CU	Rd 8-10	max. 10	10	14,740	5317258

Cu Copper /100 pc.

- Metal thickness to 10 mm
- For cable routing transverse and in parallel to the plate
- Corresponds to the requirements to DIN V VDE V 0185-3 section 4.5



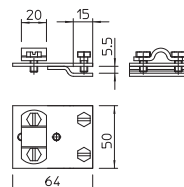
Folding clamp up to 5 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
271 8-10	Rd 8-10	max. 5	20	14,060	5317401

St Steel /100 pc.
FT Hot-dip galvanised

- Plate thickness to 5 mm
- For conductor routing transverse and longitudinal to plate
- With 4 hexagonal bolts M6 x 12
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)
- 271 Cu: with hexagonal bolts stainless steel (VA)

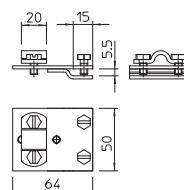


Folding clamp up to 5 mm plate thickness

Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
271 8-10 VA	Rd 8-10	max. 5	10	15,000	5317481

V2A Stainless steel, grade 304 /100 pc.

- Plate thickness to 5 mm
- For conductor routing transverse and longitudinal to plate
- With 4 hexagonal bolts M6 x 12
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)
- 271 Cu: with hexagonal bolts stainless steel (VA)



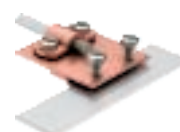
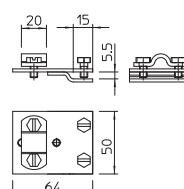
Folding clamp up to 5 mm plate thickness



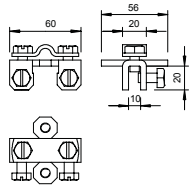
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
271 CU	Rd 8-10	max. 5	10	15,230	5317452

Cu Copper /100 pc.

- Plate thickness to 5 mm
- For conductor routing transverse and longitudinal to plate
- With 4 hexagonal bolts M6 x 12
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)
- 271 Cu: with hexagonal bolts stainless steel (VA)



Folding clamp up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
273 8-10	Rd 8-10	max. 10	50	17,000	5317223

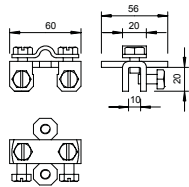
St Steel

FT Hot-dip galvanised

- Plate thickness to 10 mm
- Conductor routing transverse and longitudinal to plate with 2 hexagonal bolts M8 x 10 and 2 hexagonal bolts M8 x 16 (F)

/100 pc.

Folding clamp up to 10 mm plate thickness



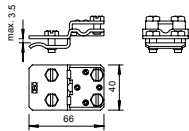
Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
273 CU	Rd 8-10	max. 10	10	18,500	5317274

Cu Copper

- Plate thickness to 10 mm
- Conductor routing transverse and longitudinal to plate with 2 hexagonal bolts M8 x 10 and 2 hexagonal bolts M8 x 16 (F)
- 273 Cu: with hexagonal bolts, stainless steel (VA)

/100 pc.

Folding clamp and connection terminal up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
274 8-10	Rd 8-10	max. 10	20	10,400	5317428

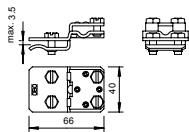
St Steel

FT Hot-dip galvanised

- Plate thickness to 10 mm
- For conductor routing transverse and longitudinal to plate
- 4 hexagonal bolts M6 x 16
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.

Folding clamp and connection terminal up to 10 mm plate thickness



Type	Fit mm	Clamping range mm	Pack. pcs	Weight kg/100 pcs.	Item No.
274 CU	Rd 8-10	max. 10	10	11,340	5317479

Cu Copper

- Plate thickness to 10 mm
- For conductor routing transverse and longitudinal to plate
- 4 hexagonal bolts M6 x 16
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)

/100 pc.



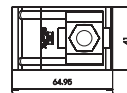
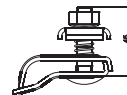
Gutter clamp RK-FIX

Type	Fit mm	Material symbol	Inter- face	Pack. pcs	Weight kg/100 pcs.	Item No.
RK-FIX	2 x Rd 8	St	FT	25	19,100	5316450

St Steel

FT Hot-dip galvanised

- For up to 2 conductor cables Rd 8
- With double crossbar
- Suitable for all bead thicknesses (15–25 mm)
- With 1 truss-head bolt M10 x 45
- Nut and bolt made of VA stainless steel
- With spring for prefixing for rain gutter

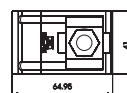


Gutter clamp RK-FIX

Type	Fit mm	Material symbol	Inter- face	Pack. pcs	Weight kg/100 pcs.	Item No.
RK-FIX VA	2 x Rd 8	V2A	—	10	19,100	5316459

V2A Stainless steel, grade 304

- For up to 2 conductor cables Rd 8
- With double crossbar
- Suitable for all bead thicknesses (15–25 mm)
- With 1 truss-head bolt M10 x 45
- Nut and bolt made of VA stainless steel
- With spring for prefixing for rain gutter
- Tested to DIN EN 50164-1



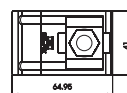
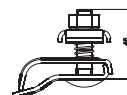
Gutter clamp RK-FIX

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
RK-FIX CU	2 x Rd 8	10	21,000	5316468

V2A Stainless steel, grade 304

Cu Copper-plated

- For up to 2 conductor cables Rd 8
- With double crossbar
- Suitable for all bead thicknesses (15–25 mm)
- With 1 truss-head bolt M10 x 45
- Nut and bolt made of VA stainless steel
- With spring for prefixing for rain gutter
- Tested to DIN EN 50164-1



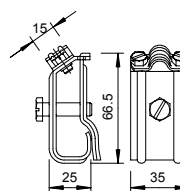
Gutter clamp for all bead thicknesses

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
267	Rd 8-10	25	13,950	5316308

St Steel

FT Hot-dip galvanised

- Fits all bead thicknesses
- With 1 hexagonal bolt M8 x 30
- 2 hexagonal bolts M6 x 12

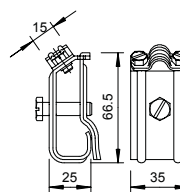


Gutter clamp for all bead thicknesses

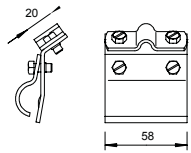
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
267 VA	Rd 8-10	10	11,360	5316324

V2A Stainless steel, grade 304

- Fits all bead thicknesses
- With 1 hexagonal bolt M8 x 30
- 2 hexagonal bolts M6 x 12
- VA version also for use as bimetal conductor (holder)



Gutter clamp for bead thickness 15–22 mm



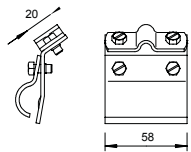
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
262 A-DIN FT	Rd 8-10	25	19,610	5316219

St Steel
FT Hot-dip galvanised

• Suitable for bulge thickness 15–22 mm
 • With 4 hexagonal bolts M6 x 16 (VA)

/100 pc.

Gutter clamp for bead thickness 15–22 mm



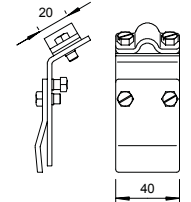
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
262 A-DIN CU	Rd 8-10	10	20,840	5316251

Cu Copper

• Suitable for bulge thickness 15–22 mm
 • With 4 hexagonal bolts M6 x 16 (VA)

/100 pc.

Roof gutter clamp for all bead thicknesses



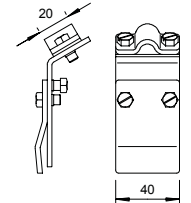
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
262	Rd 8-10	25	20,300	5316014

St Steel
FT Hot-dip galvanised

• With 4 hexagonal bolts M6 x 16
 • Fits all bead thicknesses

/100 pc.

Roof gutter clamp for all bead thicknesses



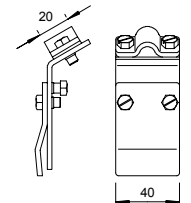
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
262 CU	Rd 8-10	10	20,940	5316154

Cu Copper

• With 4 hexagonal bolts M6 x 16
 • Fits all bead thicknesses

/100 pc.

Bi-metal roof gutter clamp for all bead thicknesses



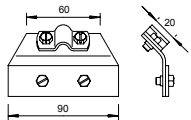
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
262 ZM	Rd 8-10	10	23,100	5316170

St Steel
FT Hot-dip galvanised

• Fits all bead thicknesses
 • Bi-metal for attaching round conductors aluminium or steel to roof gutters without corrosion to different metals

/100 pc.

Snow catching grate clamp



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
264	Rd 8-10	25	18,640	5316510

St Steel
F Hot-dip galvanised

• Plate thickness to 8 mm
 • With 4 hexagonal bolts M6 x 16

/100 pc.

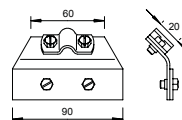


Snow catching grate clamp

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
264 CU	Rd 8-10	10	21,140	5316553

Cu Copper

- Plate thickness to 8 mm
- With 4 hexagonal bolts M6 x 16



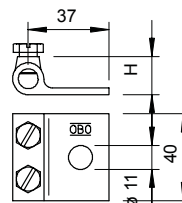
Clamping shoe

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
319 8	Rd 8	25	7,800	5325307
319 10	Rd 10	25	9,650	5325315

TG Cast iron

F Hot-dip galvanised

- With Ø 11 mm attaching hole
- 2 hexagonal bolts M8 x 16
- Bolts hot-dip galvanised steel and clamping element hot dipped galvanised cast steel



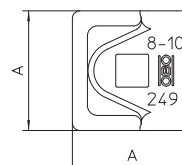
Connection terminal, equipotential bonding, Rd 8–10 mm

Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ST-OT	Rd 8-10	40	100	3,240	5311503

St Steel

FT Hot-dip galvanised

- For round conductor fastening RD 8-10
- Suitable for M10 bolts

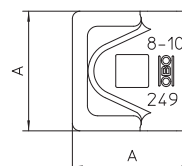


Connection terminal, equipotential bonding, Rd 8–10 mm

Type	Dimension A mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 ALU-OT	44	Rd 8-10	100	2,100	5311585

Alu Aluminium

- For round conductor fastening RD 8-10
- Suitable for M10 bolts

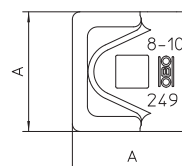


Connection terminal, equipotential bonding, Rd 8–10 mm

Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 VA-OT	Rd 8-10	40	100	3,130	5311554

V2A Stainless steel, grade 304

- For round conductor Rd 8-10
- Suitable for M10 bolts

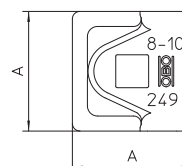


Connection terminal, equipotential bonding, Rd 8–10 mm

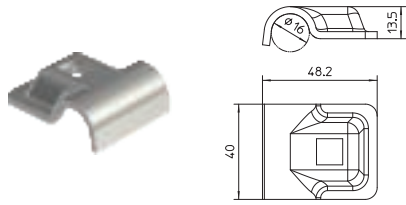
Type	Fit mm	Dimension A mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 8-10 CU-OT	Rd 8-10	40	100	3,580	5311530

Cu Copper

- For round conductor fastening RD 8-10
- Suitable for M10 bolts



Connection terminal, equipotential bonding, Rd 16 mm



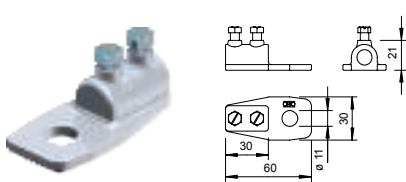
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
249 VA-OT	16	100	5,700	5311573

V2A Stainless steel, grade 304

/100 pc.

- For round conductor fastening RD 16
- Suitable for M10 bolts

End piece



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
280 8-10	Rd 8-10	20	6,300	5320011

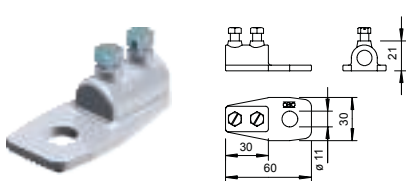
Zn Die-cast zinc

/100 pc.

G Electrogalvanised

- With Ø 11 mm attaching hole
- 2 hexagonal bolts M6 x 12, bolts hot-dip galvanised steel or VA
- Clamping element from die-cast zinc or copper-plated die-cast zinc

End piece



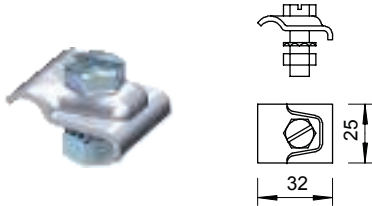
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
280 VK	Rd 8-10	20	9,000	5320054

Zn Die-cast zinc

/100 pc.

- With Ø 11 mm attaching hole
- 2 hexagonal bolts M6 x 12, bolts hot-dip galvanised steel or VA
- Clamping element from die-cast zinc or copper-plated die-cast zinc

Universal clamping block Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
324 S-FT	Rd 8-10	20	3,400	5326303

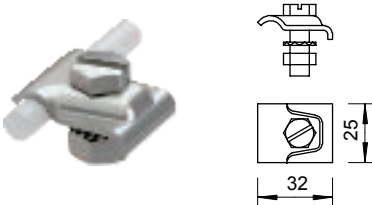
St Steel

/100 pc.

FT Hot-dip galvanised

- Including hexagonal bolt M8 x 25, washer and nuts

Universal clamping block Rd 8–10 mm



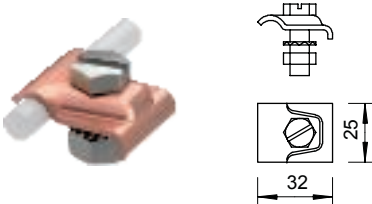
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
324 S-VA	Rd 8-10	10	3,400	5326311

V2A Stainless steel, grade 304

/100 pc.

- Including hexagonal bolt M8 x 25, washer and nuts

Universal clamping block Rd 8–10 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
324 S-CU	Rd 8-10	10	3,660	5326338

Cu Copper

/100 pc.

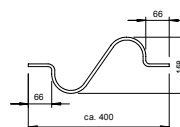
- Including hexagonal bolt M8 x 25, washer and nuts

Expansion piece

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
172 AR	10	7,500	5218926

Alu Aluminium

- For equalising temperature-related length changes
- Necessary on conductor lengths over 20 m
- From round conductor Rd 8-Al

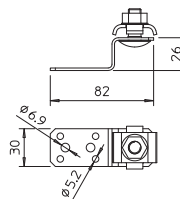


Connection component

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
287	20	1,600	5320704

Alu Aluminium

- With 1 attaching hole Ø 11 mm
- 4 mounting holes Ø 5.2 mm
- 2 mounting holes Ø 6.9 mm

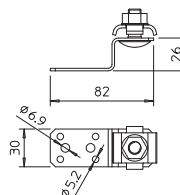


Connection component

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
287 CU	10	5,600	5320690

Cu Copper

- With 1 attaching hole Ø 11 mm
- 4 mounting holes Ø 5.2 mm
- 2 mounting holes Ø 6.9 mm



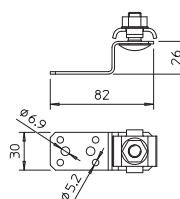
Connection component with double crossbar



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
287 DCT	Rd 8	10	6,450	5320707

Alu Aluminium

- Conforming to VDE 0185-305 (IEC 62305) standards
- Quick mounting thanks to an M10x30 screw from rustproof stainless steel
- 4 mounting holes Ø 5.2 mm
- 2 mounting holes Ø 6.9 mm

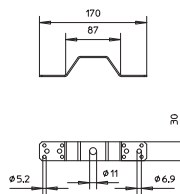


Connection and bridging component

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
288 DIN	20	2,900	5320712

Alu Aluminium

- With 1 attaching hole Ø 11 mm
- With 2 x 4 mounting hole Ø 5.2 mm
- With 2 x 2 mounting hole Ø 6.9 mm

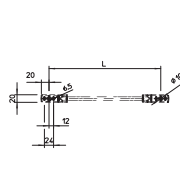


Bridging cable

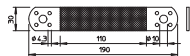
Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
853 200	200	10	4,840	5331008
853 300	300	10	7,260	5331013
853 400	400	10	9,680	5331017

Cu Copper

- From flexible copper cable 16 mm²
- Coating: black, chlorinated India rubber mixture
- With 1 mounting hole Ø 10.5 mm per attachment side
- With 2 mounting holes Ø 7.3 mm per attachment side
- For applications outside or inside suitable



Connection and expansion strip



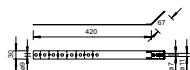
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
856	10	8,125	5331501

Cu Copper

/100 pc.

- Copper strip 35 mm², tin-plated
- Highly-flexible with rigid ends
- Each end with mounting hole Ø 10 mm and 4 mounting holes Ø 4.3 mm

Universal downspout clamp 60–130 mm



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
301 V	5	11,900	5350867

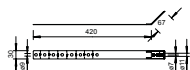
St Steel

/100 pc.

FS Strip-galvanised

- Adjustable for pipes from 60-130 mm
- With 2x attaching holes Ø 7 mm
- With 1x attaching hole Ø 9 mm
- With 1x attaching hole Ø 11 mm
- Including hexagonal bolt M6 x 20 and nuts M6

Universal downspout clamp 60–130 mm



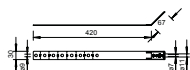
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
301 V-VA	5	11,800	5350905

V2A Stainless steel, grade 304

/100 pc.

- Adjustable for pipes from 60-130 mm
- With 2x attaching holes Ø 7 mm
- With 1x attaching hole Ø 9 mm
- With 1x attaching hole Ø 11 mm
- Including hexagonal bolt M6 x 20 and nuts M6

Universal downspout clamp 60–130 mm



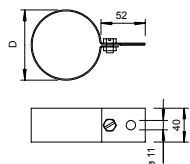
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
301 V-CU	5	13,500	5350883

Cu Copper

/100 pc.

- Adjustable for pipes from 60-130 mm
- With 2x attaching holes Ø 7 mm
- With 1x attaching hole Ø 9 mm
- With 1x attaching hole Ø 11 mm
- Including hexagonal bolt M6 x 20 and nuts M6

Downspout clamp



Type	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 DIN-80	80	10	19,580	5350085
301 DIN-90	90	10	21,880	5350093
301 DIN-100	100	10	19,880	5350107
301 DIN-110	110	10	24,920	5350115
301 DIN-120	120	10	26,240	5350123

St Steel

/100 pc.

FS Strip-galvanised

- To connect cables and downspouts
- Similar to DIN 48818 C
- Strip galvanised (rd. 275 g/m² = 40 µm average value)
- With 1x hexagonal bolt M8 x 20
- With 1x hexagonal nut M8 and 1 stainless steel serrated washer
- With connection hole Ø 11 mm

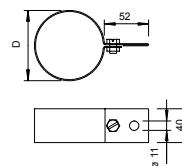
Downspout clamp

Type	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 CU-80	80	10	22,500	5350689
301 CU-100	100	10	26,230	5350700
301 CU-110	110	10	30,400	5350719
301 CU-120	120	10	31,400	5350727

Cu Copper

/100 pcs.

- With 1x hexagonal bolt M8 x 20
- With 1x hexagonal nut M8 and 1 serrated disc made of rustproof steel
- With connection hole \varnothing 11 mm



Downspout clamp for routing Rd 8–10 mm behind pipe

Type	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 S-100	100	10	5,200	5351057
301 S-120	120	10	5,950	5351073

St Steel

/100 pcs.

FS Strip-galvanised

- With beading
- For round conductor Rd 8-10
- Including hexagonal bolt M6 x 20 and nuts M6



Downspout clamp for routing Rd 8–10 mm behind pipe

Type	Material symbol	Inter-face	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 S-AL-100	Alu	—	100	10	4,100	5351359
301 S-AL-120	Alu	—	120	10	4,600	5351375

Alu Aluminium

/100 pcs.

- With beading
- For round conductor Rd 8-10
- Including hexagonal bolt M6 x 20 and nuts M6



Downspout clamp for routing Rd 8–10 mm behind pipe

Type	Material symbol	Inter-face	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 S-VA-100	V2A	—	100	10	5,200	5351251
301 S-VA-120	V2A	—	120	10	5,950	5351286

V2A Stainless steel, grade 304

/100 pcs.

- With beading
- For round conductor Rd 8-10
- Including hexagonal bolt M6 x 20 and nuts M6



Downspout clamp for routing Rd 8–10 mm behind pipe

Type	Material symbol	Inter-face	For pipe mm	Pack. pcs	Weight kg/100 pcs.	Item No.
301 S-CU-100	Cu	—	100	10	5,850	5351456
301 S-CU-120	Cu	—	120	10	6,700	5351472

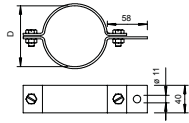
Cu Copper

/100 pcs.

- With beading
- For round conductor Rd 8-10
- Including hexagonal bolt M6 x 20 and nuts M6



Pipe clamp



Type	For pipe mm	For pipe inch	Pack. pcs	Weight kg/100 pcs.	Item No.
303 DIN-3/8	17.2	3/8	5	22,600	5102057
303 DIN-1/2	21.3	1/2	5	23,280	5102073
303 DIN-3/4	26.9	3/4	5	25,640	5102081
303 DIN-1	33.7	1	5	28,300	5102111
303 DIN-1 1/4	42.4	1 1/4	5	31,300	5102138
303 DIN-1 1/2	48.3	1 1/2	5	33,220	5102154
303 DIN-2	60.3	2	5	36,840	5102197
303 DIN-2 1/2	76.1	2 1/2	10	39,400	5102219
303 DIN-3	88.9	3	10	43,300	5102235
303 DIN-3 1/2	100	3 1/2	10	64,900	5102251
303 DIN-4	114.3	4	10	66,800	5102278

SI Steel

FT Hot-dip galvanised

/100 pc.

- DIN 48818, Form D
- With Ø 11 mm mounting hole
- 2 hexagonal bolts M8 x 20 (4 inch = M10)
- 2 hex-head nuts M8 (4 inch = M10)



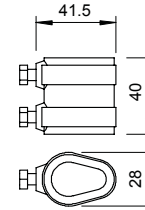
Separating piece, open



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
223 O DIN ZN	Rd 8-10/16	20	12,500	5335140

Zn Die-cast zinc
G Electrogalvanised

- With 2 hexagonal bolts, stainless steel (VA)
- Clamping element, die-cast zinc



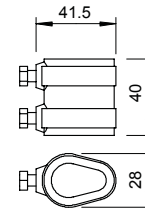
Separating piece, open



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
223 O DIN MS	Rd 8-10/16	20	14,900	5335167

Zn Die-cast zinc
Cu Copper-plated

- With 2 hexagonal bolts, stainless steel (VA)
- Clamping element, copper-plated die-cast zinc



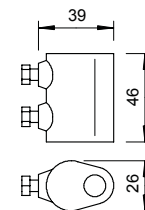
Separating piece, closed



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
223 DIN ZN	Rd 8-10/16	20	10,500	5335205

Zn Die-cast zinc
G Electrogalvanised

- For fitting round conductors Rd 8-10 to ground insertion rods Rd 16
- Including 2 hexagonal bolts, high-grade stainless steel (V2A)
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



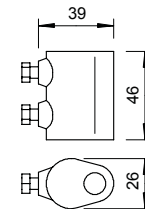
Separating piece, closed



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
223 DIN MS	Rd 8-10/16	10	11,700	5335256

Zn Die-cast zinc
Cu Copper-plated

- For fitting round conductors Rd 8-10 to ground insertion rods Rd 16
- Including 2 hexagonal bolts, high-grade stainless steel (V2A)
- Conforms to the requirements according to DIN VDE 0185-305 (IEC 62305)



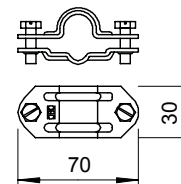
Universal separating piece



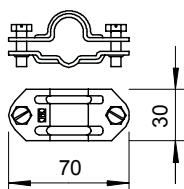
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
226 8-10	Rd 8-10/FL30 x 16	20	8,600	5336007

Sl Steel
FT Hot-dip galvanised

- For fitting round conductors Rd 8–10 to Rd 16 or flat conductors FL30
- Including 2 hexagonal bolts M8 x 20 high-grade stainless steel (V2A)
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)



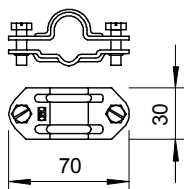
Universal separating piece



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
226 VA	Rd 8-10/FL30 x 16	10	8,700	5336058
V2A Stainless steel, grade 304				/100 pc.

- For fitting round conductors Rd 8–10 to Rd 16 or flat conductors FL30
- Including 2 hexagonal bolts M8 x 20 high-grade stainless steel (V2A)
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)

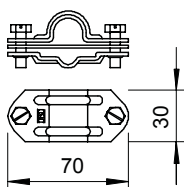
Universal separating piece



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
226 CU	Rd 8-10/FL30 x 16	10	9,700	5336023
Cu Copper				/100 pc.

- For fitting round conductors Rd 8–10 to Rd 16 or flat conductors FL30
- Including 2 hexagonal bolts M8 x 20 high-grade stainless steel (V2A)
- Conforms to the requirements according to VDE 0185-305 (IEC 62305)

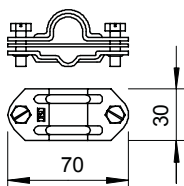
Universal bi-metal separating piece



Type	Fit mm	Material upper part	Material lower part	Pack. pcs	Weight kg/100 pcs.	Item No.
226 ZV VA	Rd 8-10/FL30 x 16	VA	Cu	10	11,000	5336074
Cu Copper						/100 pc.

- Fit: Rd 8-10 x 16, FL 30 x Rd 16
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)
- Intermediate plate, aluminium/copper

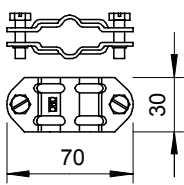
Universal bi-metal separating piece



Type	Fit mm	Material upper part	Material lower part	Pack. pcs	Weight kg/100 pcs.	Item No.
226 ZV CU	Rd 8-10/FL30 x 16	Cu	VA	10	11,900	5336090
V2A Stainless steel, grade 304						/100 pc.

- Fit: Rd 8-10 x 16, FL 30 x Rd 16
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)
- Intermediate plate, aluminium/copper

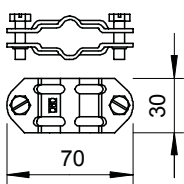
Separating piece for Rd 8–10 and FL 30 mm



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
233 8	Rd 8-10/FL30 x Rd 8-10/FL30	20	8,200	5336309
St Steel				/100 pc.
FT Hot-dip galvanised				

- For fitting round conductors Rd 8-10 or flat conductors FL 30
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)

Separating piece for Rd 8–10 and FL 30 mm



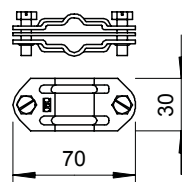
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
233 VA	Rd 8-10/FL30 x Rd 8-10/FL30	10	8,300	5336341
V2A Stainless steel, grade 304				/100 pc.

- For fitting round conductors Rd 8-10 or flat conductors FL 30
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)

Bi-metal separating piece for Rd 8–10 and FL 30 mm

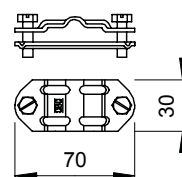
Type	Fit mm	Material upper part	Material lower part	Pack. pcs	Weight kg/100 pcs.	Item No.
233 ZV	Rd 8-10/FL30 x Rd 8-10/FL30	Cu	VA	10	10,100	5336376
V2A Stainless steel, grade 304						/100 pc.

- For fitting round conductors Rd 8-10 to flat conductors FL 30
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)
- Intermediate plate aluminium/copper, top section copper, bottom section stainless steel


Separating piece for Rd 8–10 and FL 30–40 mm

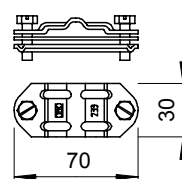
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
233 A VA	8-10xFL30-40	10	8,300	5336457
V2A Stainless steel, grade 304				/100 pc.

- Fit: Rd 8-10 x FL 30-40
- With 2 hexagonal bolts M8 x 20 (VA)


Bi-metal separating piece for Rd 8–10 and FL 30–40 mm

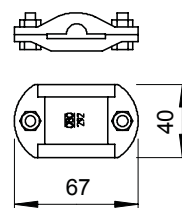
Type	Fit mm	Material upper part	Material lower part	Pack. pcs	Weight kg/100 pcs.	Item No.
233 A ZV	Rd 8-10 x FL30-40	Cu	VA	10	10,400	5336503
Cu Copper						/100 pc.

- Fit: Rd 8-10 x FL 30-40, FL 30 x FL 30-40
- With 2 hexagonal bolts M8 x 20, stainless steel (VA)
- Intermediate plate, aluminium/copper
- Top section copper, bottom section stainless steel


Malleable iron separating piece

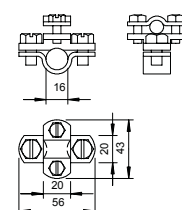
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
292 DIN	Rd 8-10 x FL30	10	19,259	5340012
TG Cast iron				/100 pc.
F Hot-dip galvanised				

- For round conductor/flat conductor
- Fit: Rd 8-10 x FL 30
- With 2 hexagonal bolts M8 x 25 and 2 hexagonal nuts M8, stainless steel (VA)
- Clamping parts, hot-dip galvanised cast iron


Rod clamp

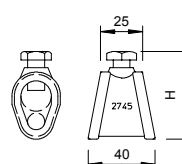
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
108 B DIN	Rd 8-10/16	10	13,970	5416566
St Steel				/100 pc.
FT Hot-dip galvanised				

- Rod clamp for connecting round conductors Rd 8–10 to connector rods Rd 16
- Mounted with 2 hexagonal bolts M8 x 16 and M6 x 12
- Adapter from malleable iron
- Crossbar and bolts from hot dip galvanised steel

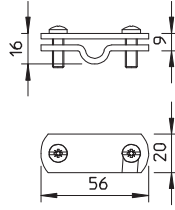

Connection clamp

Type	For earth rods Ø mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
2745 20 MS	20	7-12.5/S95 mm ²	5	16,000	5001560
CuZn Brass					
Cu Copper-plated					

- For earth rod connectors Ø 20 or conductors 95 mm²
- For round conductor attachments Rd 7-12.5 with hexagonal bolts M10 x 25, copper (Cu)



Number plates

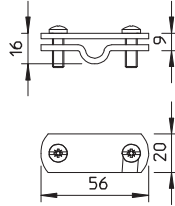


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-ALU 8-10	RD 8 - 10 / FL30	5	2,500	3049256
311 N-ALU 16	RD 16 - FL30	5	2,800	3049345

/100 pc.

- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)

Number plates

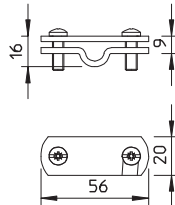


Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-VA 8-10	RD 8 - 10 / FL30	5	5,600	3049221
311 N-VA 16	RD 16 - FL30	5	6,400	3049329

/100 pc.

- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)

Number plates



Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
311 N-CU 8-10	RD 8 - 10 / FL30	5	6,400	3049205

Cu Copper

/100 pc.

- To identify the point of separation to DIN 48821
- Suitable for universal labelling (e.g. stamped numbers)

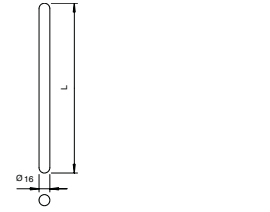


Air-termination/earth entry rod, rounded-off on both ends

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 A-1500	1500	16	10	240,000	5400155

St Steel /100 pc.
FT Hot-dip galvanised

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

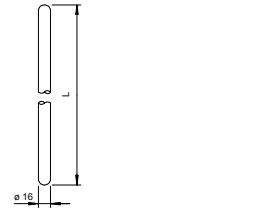


Air-termination/earth entry rod, rounded-off on both ends

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
200 V4A-1500	1500	16	10	242,000	5420504
200 V4A-2000	2000	16	10	320,000	5420539

V4A Stainless steel, grade 316 Ti /100 pc.

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

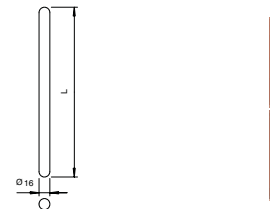


Air-termination/earth entry rod, rounded-off on both ends

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 A-CU	1500	16	10	272,100	5400627

Cu Copper /100 pc.

- Full material Ø 16 mm
- Rounded on both ends
- Suitable for FangFix stand system

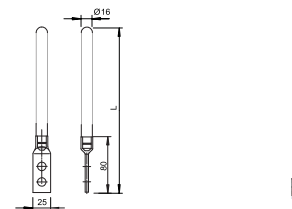


Air-termination/earth entry rod with connection tabs

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 F1500	1500	16	10	240,000	5424151
101 F2000	2000	16	10	320,000	5424208

St Steel /100 pc.
FT Hot-dip galvanised

- With 2 attaching holes Ø 12 mm
- One end rounded

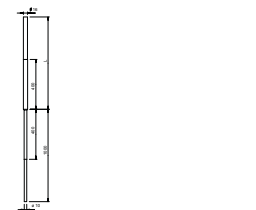


Earth entry rod, tapered and partially insulated

Type	Length mm	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
204 KS-2000	2000	16/10	1	230,000	5430011
204 KS-2500	2500	16/10	1	310,000	5430062

St Steel /pc.
F Hot-dip galvanised

- 16 mm earth entry with 10 mm connection
- With mounted heat-shrinkable sleeve (corrosion protection)

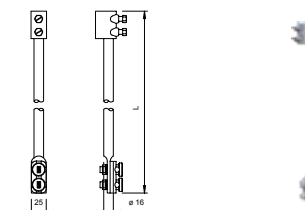


Earth entry rod with separating piece and connector

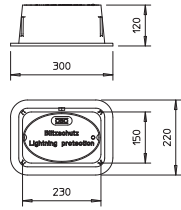
Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
204 KL-1500	Rd 8-10	10	260,700	5430151

St Steel /100 pc.

- With separating piece type 223 DIN and connector type 5002 DIN



Inspection pit



Type

5700

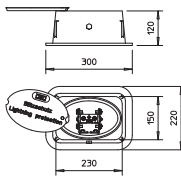
EN-GJL Cast iron

- Without base
- Cast iron, painted black
- Without cut-off unit
- To VDE 0185-561-5 (IEC 62561-5) suitable for heavy loads (up to 40 kN/ 4.0 t)

Pack. pcs	Weight kg/100 pcs.	Item No.
1	720,000	5106002

/pc.

Inspection pit with integrated separation piece



Type

5700 SP

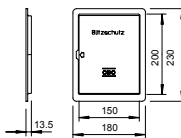
EN-GJL Cast iron

- Without base
- Cast iron, painted black
- With built-in cut-off unit for round conductors Rd 8-10 and flat conductors to FL 40
- To VDE 0185-561-5 (IEC 62561-5) suitable for heavy loads (up to 40 kN/ 4.0 t)

Pack. pcs	Weight kg/100 pcs.	Item No.
1	770,000	5106003

/pc.

Inspection door



Type

5800 VZ

St Steel

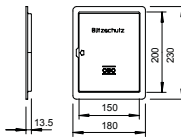
FS Strip-galvanised

- Lightweight design for flush-mounted separation points
- Claw length approx. 80 mm

Pack. pcs	Weight kg/100 pcs.	Item No.
1	46,000	5106133

/pc.

Inspection door



Type

5800 VA

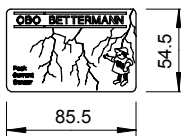
V2A Stainless steel, grade 304

- Lightweight design for flush-mounted separation points
- Claw length approx. 80 mm

Pack. pcs	Weight kg/100 pcs.	Item No.
1	46,000	5106141

/pc.

Magnetic card PCS



Type

PCS

Magnetic card for recording pulsed/lightning currents.

- Contents = 10 pieces

Pack. PU	Weight kg/100 PUs	Item No.
1	8,000	5091438

/VPE

Magnetic card and holder

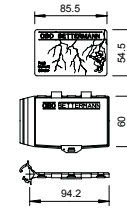


Type	Pack. PU	Weight		Item No.
		kg/100 PUs	PU	
MK-B	1	31,000		5091322

/VPE

PCS magnetic card to record pulse/lightning currents including holder

- Holder can be leaded
- For mounting on round conductor Rd 8-10
- Simple holder mounting through clamping
- 1 PU = 10 units



Magnetic card holder

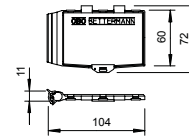


Type	Pack. PU	Weight		Item No.
		kg/100 PUs	PU	
PCS-H	1	31,000		5091527

/VPE

Magnetic card holder for mounting PCS cards.

- Sealable holder
- For installing on round conductor Rd 8-10
- Simple holder installation by means of clamp
- 1 PU = 10 pieces



Magnetic card reader

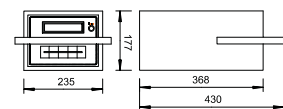


Type	Country version	Nom. voltage V	Measuring range	Measuring tolerances	Pack. pcs	Weight		Item No.
						kg/100 pcs.	pcs.	
PCS-CS-D	EN	230	3 -- 120 kA	< 2 kA (< 2%)	1	750,000		5091683
PCS-CS-GB	GB	230	3 -- 120 kA	< 2 kA (< 2%)	1	750,000		5091691

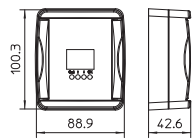
/pc.

Magnetic card reader for reading and analysing PCS cards.

- Inc. rechargeable battery for 4 h continuous, no-mains operation
- Large, clear display



Lightning strike counter



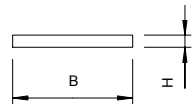
Type	Measuring range	Pack. pcs	Weight kg/100 pcs.	Item No.
LSC I+II	1 kA - 100 kA	1	36,000	5091722

Plastic /pc.

The LSC I+II lightning current meter measures and permanently saves pulse currents, together with the date and time. This ensures constant monitoring in order to notice if any lightning has struck the lightning protection system. Should this be the case, then the lightning protection system must be maintained according to VDE 0185-305 (IEC 62305).

- Saving and display of time and date
- Usable both inside and outside due to its protection class of IP65
- Cable clip for round conductor or flat conductor
- Direct mounting on the arrester or the PE cable of the surge protection device
- Long lifespan of the internal lithium batteries
- LCD display
- Internal battery

Plastic corrosion protection strip



Type	Width mm	Length m	Pack. pcs	Weight kg/100 pcs.	Item No.
356 50	50	10	1	71,500	2360055
356 100	100	10	1	122,200	2360101

PETRO Petrolatum /pc.

- Approx. 1.1 mm thick
- Width: 50 mm or 100 mm, made of petrolatum-coated chemical fibre fabric
- Can be processed cold

Zinc repairs

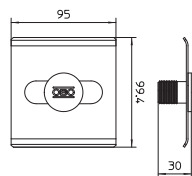


Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
ZSF	400ml	1	45,000	2362970

/pc.

Zinc spray for treatment of unprotected surfaces and cutting edges. Can contents: 400 ml.

TrayFix mounting adapter for mesh cable trays on FangFix system



Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
TrayFix	∅ 20mm	25	9,850	5403100

/100 pc.

- Mounting system for the fastening of mesh cable trays and cable trays on FangFix stone e.g. cable routing on a flat roof.
- Adapted to OBO cable tray systems MKSM, SKSM and IKSM
- Adapted to OBO mesh cable tray systems with a minimum width of 100 mm



Angler spreading anchor



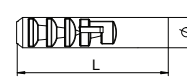
Type	Dowel Ø mm	Dimension L mm	Wood screws Ø mm	Pull-out value N	Pack. pcs	Weight kg/100 pcs.	Item No.
910 N 5x25 GRW	5	25	2,5-4	2100	100	0,051	2349043
910 N 6x30 GRW	6	30	3,5-5	3300	100	0,052	2349051
910 N 6x60 GRW	6	60	3,5-5	3300	100	0,080	2349078
910 N 8x40 GRW	8	40	4,5-6	4500	100	0,140	2349086
910 N 10x50 GRW	10	50	6-8	9400	50	0,306	2349108
910 N 12x60 GRW	12	60	8-10	11600	25	0,459	2349124

PA Polyamide /100 pc.

Required minimum bolt length = anchor length + component thickness + 1 x bolt Ø.

Withdrawal force applies to wood screws of the largest bolt diameter in concrete of class B25.

Our safety value recommendation: 5x



Screw-in anchor with M6 thread

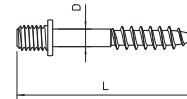


Type	Shank length mm	Shank-Ø mm	Thread length mm	Wood thread outer-Ø mm	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
985 M6 25	25	4.3	8	5	3000	100	0,412	3133028
985 M6 35	35	4.3	8	5	2000	100	0,533	3133036

St Steel /100 pc.

G Electrogalvanised

With wood screw shank and M6 thread.



Screw-in anchor with M8 thread

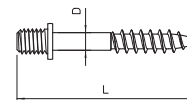


Type	Shank length mm	Thread length mm	Wood thread outer-Ø mm	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
985 M8 35	35	10	6	1200	100	1,288	3133230

St Steel /100 pc.

G Electrogalvanised

With wood screw shank and M8 thread.



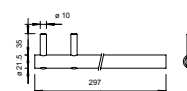
Directional irons

Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
364	297	1	35,000	3051013

St Steel /pc.

FT Hot-dip galvanised

• Directional iron for bending and aligning conductors

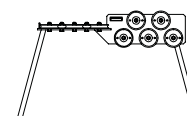


Wire straightening machine

Type	Pack. pcs	Weight kg/100 pcs.	Item No.
5900	1	3.300,000	3059006

St Steel /pc.

- Factory-set for round conductor Rd 8
- Structure, steel, painted
- Straightening rolls, galvanised cast iron





OBO isCon® system
Insulated lightning protection



Insulated lightning protection



Insulated lightning protection

581



OBO isCon® system

588

isCon® down-conductor



Black

Ring size	Item no.	Page
25 m	5408 00 2	588
100 m	5408 00 4	588
250 m	5408 00 6	588



Grey

Ring size	Item no.	Page
25 m	5407 99 5	588
100 m	5407 99 7	588



Connection elements

	Item no.	Page
Rd 10	5408 02 2	588
M 16	5408 02 4	593



Potential connection

	Item no.	Page
Clip	5408 03 6	589
Holder	5408 05 6	589
Holder	5408 06 4	589
Clip	5057 59 9	595

isCon® air-termination rod systems, routed externally



Mast

Length	Item no.	Page
4.0 m	5408 94 3	521
6.0 m	5408 94 7	521
4.0 m	5408 94 2	521
6.0 m	5408 94 6	521



Stand

Spr.	Item no.	Page
1.0 m	5408 96 6	521
1.5 m	5408 96 7	521
1.0 m	5408 96 8	521
1.5 m	5408 96 9	521



Connection plates

-pole	Item no.	Page
2	5408 02 6	595
3	5408 02 8	595



Accessories

	Item no.	Page
Tool	5408 01 3	588
Cable tie	2381 92 4	
Spacer	5408 04 3	591
Concrete block	5403 22 7	514
Threaded rod	5408 97 1	521
Threaded rod	5408 97 2	521
Threaded rod	5408 97 3	521
Threaded rod	5408 90 5	594
Basic	5403 23 8	522

isCon® air-termination rod systems, routed internally



Mast, without outlet

Length	Item no.	Page
4.0 m	5408 93 4	596
6.0 m	5408 93 6	596
8.0	5408 86 8	596
10.0 m	5408 87 0	596



Support system for mast without outlet

Mounting location	Item no.	Page
Wall	5408 95 2	522
Wall	5408 95 0	522
Wall	5408 95 4	522
Wall	5408 91 0	597
T support	5408 91 4	597
Pipe	5408 95 6	523
Pipe	5408 95 5	523
Pipe	5408 95 7	523
Pipe	5408 95 9	523
Pipe	5408 95 8	523
Pipe	5408 96 0	523
Corner pipe	5408 96 4	523



Mast, with outlet

Length	Item no.	Page
4.0 m	5408 93 8	592
6.0 m	5408 94 0	592
8.0 m	5408 88 8	592
10.0 m	5408 89 0	592



Stand, with outlet

Spr.	Item no.	Page
1.0 m	5408 93 0	592
1.5 m	5408 93 2	592
2.5 m	5408 90 2	592



The plus of insulated lightning protection

- + Variable combination of components
- + Multifunctional
- + For cables and insulation rods
- + For maintenance of the separation distance to VDE 0185-305 (IEC 62305)



Insulated lightning protection Components and sets

Isolated lightning protection systems allow standard-compliant lightning protection according to IEC 62305. The separation distance to electronic systems required by the standard can be maintained by the different versions of the insulated lightning protection.

The individual components and systems allow the creation of different solutions, according to requirements.

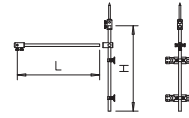
The insulated lightning protection system consists of GFK rods with a diameter of 16 or 20 mm:

- There is a comprehensive range of system accessories available for both variants.
- Two material thicknesses
- Can be obtained as a set for different applications

Insulated lightning protection set, 3-corner fastening

Type	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 3-ES-16	16	750	1500	1	207,100	5408976

/pc.



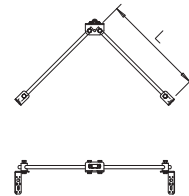
3-corner fastening for an insulated interception unit at the separating distance s.

- Mounting on walls and roof structures with two fastening plates
- Acceptance of air-termination rods and round conductors with 8, 16 and 20 mm diameter

Insulated lightning protection set, V fastening

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 VS-16	16	750	1	201,800	5408978

/pc.



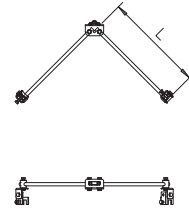
V fastening for an insulated interception unit at the separating distance s.

- Mounting on walls and roof structures with two wall connection brackets
- Acceptance of air-termination rods and round conductors with 8, 16 and 20 mm diameter

Insulated lightning protection set, IR fastening

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 FS-16	16	750	1	235,500	5408980

/pc.



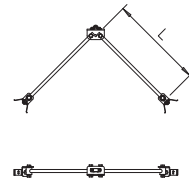
Fold fastening for insulated interception unit at separating spacing s.

- Mounting on folds with thicknesses of up to 20 mm.
- Seat for air-termination rods and round conductors of 8, 16 and 20 mm diameter

Insulated lightning protection set, VRS fastening

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 VRS-16	16	750	1	209,400	5408982

/pc.



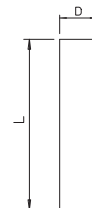
Pipe V fastening: For an insulated interceptor unit at the separation distance, see mounting on pipes with two pipe clips. To accept interception rods and round conductors of 8, 16 and 20 mm diameter.

Insulating rod

Type	Nominal size Ø mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 20-3000	20	3000	5	190,000	5408105
101 20-6000	20	6000	5	380,000	5408148
101 16-750	16	750	5	30,000	5408107
101 16-1500	16	1500	5	60,000	5408108
101 16-3000	16	3000	5	120,000	5408109

GFK Fibre-glass-reinforced plastic

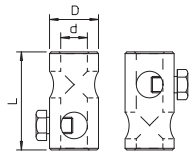
/pc.



To erect insulated interception devices to VDE 0185-305 (IEC 62305), km = 0.7



T connector



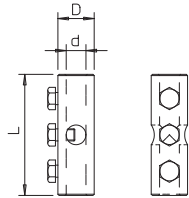
Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 IT	20	65	40	10	20,000	5408156
101 IT-16	16	60	30	10	11,475	5408158

Alu Aluminium

/pc.

- T-link for installation of insulation rods
- With M 10 bolts

K connector



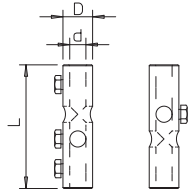
Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 IK	20	100	40	10	20,000	5408296
101 IK-16	16	100	30	10	17,500	5408298

Alu Aluminium

/pc.

- K-link for installation of insulation rods
- With M10 bolts

DK connector



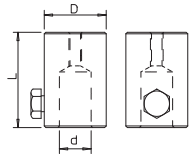
Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 IDK	20	125	40	10	40,000	5408245

Alu Aluminium

/pc.

- DK-connector link for installing insulation rods
- With M10 bolts

Wall connection



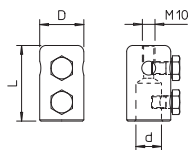
Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 IW-M10	20	60	40	10	20,000	5408687
101 W-16	16	60	30	10	14,200	5408689

Alu Aluminium

/pc.

- For installing insulating rods to structures or walls
- With female thread M8
- With M10 bolts

End piece



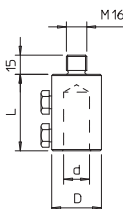
Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 IES	20	60	35	10	20,000	5408393
101 IES-16	16	60	30	10	10,000	5408395

Alu Aluminium

/pc.

- End piece for attaching round conductors Rd 8-10 and air-termination tips, type 101 ISP
- With M10 bolts

Connection piece



Type	Dimen-	Length	Dimen-	Pack.	Weight	Item No.
	sion d Ø	mm	sion D			
101 A-M16	20	60	40	10	20,000	5408350
101 A-16	16	60	30	10	13,000	5408352

Alu Aluminium

/pc.

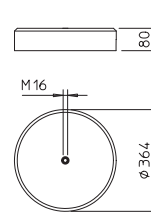
- Fitting with M16 thread
- For installation on stands with M16 female thread
- With M10 bolts

Stand 16 kg with female thread

Type	Nominal size Ø mm	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
101 B2-16 M16	364	M16	1	1.600,000	5402958

BET Concrete /100 pc.

- Weight 16 kg
- From frost-resistant concrete
- Female thread M16
- Recommended air-termination rod length max. 3.0 m, depending on wind load zone

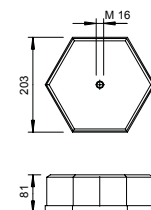


Stand 6.9 kg with female thread

Type	Thread	Pack. pcs	Weight kg/100 pcs.	Item No.
101 ST	M16	4	690,000	5402891

BET Concrete /100 pc.

- Weight 6.9 kg
- From frost-resistant concrete
- Female thread M16
- Recommended air-termination rod length max. 1.0 m

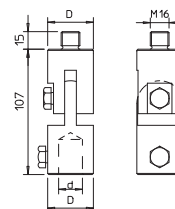


Connection joint

Type	Dimension d Ø mm	Length mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 IAG	20	107	40	10	40,000	5408504

Alu Aluminium /pc.

- Attaching link for installation on concrete stones
- With thread M16 on slanting roof surfaces
- With M10 bolts

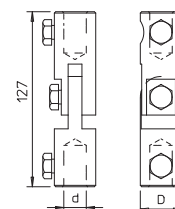


Articulated connector

Type	Dimension d Ø mm	Length mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 IGL-16	16	127	30	10	32,000	5408630

Alu Aluminium /pc.

Link for installation of insulation pipes, including M10 screws.

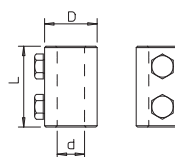


Extension

Type	Dimension d Ø mm	Length mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 IV-16	16	60	30	10	16,000	5408557

Alu Aluminium /pc.

- Extension of insulating rods
- With M10 bolts

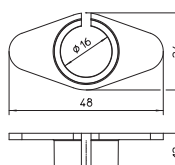


FangFix reducing sleeve

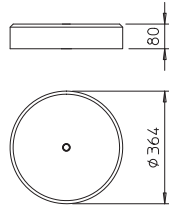
Type	Fit Colour	mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 RH-16	Black	16	25	0,190	5408101

PA Polyamide /100 pc.

Reduces the drill hole of the FangFix block from Ø 20 mm to Ø 16 mm. Suitable for the installation of GFK insulating rods of Ø 16 mm.



Concrete block for FangFix-System 16 kg

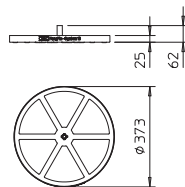


Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S16	365	1	1,700,000	5403227

BET Concrete /100 pc.

- 16 kg stone of Ø 365 mm, high level of stability
- Concrete, frost-resistant
- Stackable

Base for FangFix system 16 kg

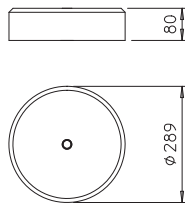


Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B16	373	10	16,400	5403235

PP Polypropylene /100 pc.

Edge protection with integrated dowel (basic) suitable for FangFix system.

Concrete block for FangFix system 10 kg

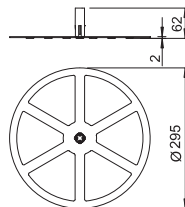


Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S10	289	1	1,000,000	5403117

BET Concrete /100 pc.

- 10 kg stone of Ø 289 mm, high level of stability
- Concrete, frost-resistant
- Stackable

Base for FangFix system 10 kg

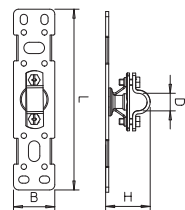


Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B10	295	10	7,600	5403124

PP Polypropylene /100 pc.

Edge protection with integrated dowel (basic) suitable for FangFix 10 system.

Fastening plate

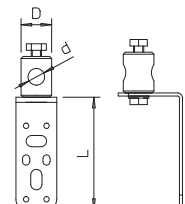


Type	Length mm	Dimen- sion B mm	Dimen- sion H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 BP-16	175	40	42	1	21,200	5408984

/pc.

To mount insulating rods on constructions or walls
Plate made of VA stainless steel
Holder and crosspiece for 16 and 20 mm rods and Rd 8–10 mm

Wall connection, angled



Type	Dimen- sion d mm	Dimen- sion L mm	Dimen- sion D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 WG-16	16	110	30	1	27,960	5408986

V2A Stainless steel, grade 304 /pc.

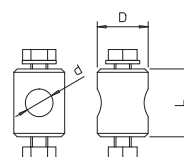
- Wall connection for GFK rods
- Dimension D Ø: 16 mm

Fastening bolts

Type	Dimension d Ø mm	Dimension L mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 BB-16	16	40	30	1	13,920	5408988

Alu Aluminium

For GFK rods, Dimension D Ø: 16 mm

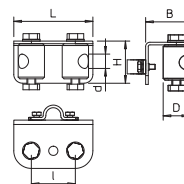


Holder, V support

Type	Dimension d Ø mm	Dimension L mm	Dimension H mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 HV-16	16	90	55	48	1	50,700	5408990

V2A Stainless steel, grade 304

- Rod holder to accept two GFK rods
- Dimension D Ø: 16 mm

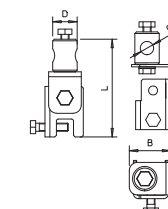


Fold fastening

Type	Dimension d Ø mm	Dimension L mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 F-16	16	121	30	1	45,120	5408992

V2A Stainless steel, grade 304

To fasten a GFK rod on constructions of 4 to 20 mm, Dimension D Ø: 16 mm

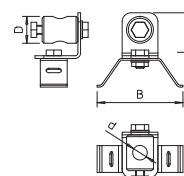


Pipe fastening

Type	Dimension d Ø mm	Dimension L mm	Dimension D Ø mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 R-16	16	81	30	96	1	26,830	5408994

V2A Stainless steel, grade 304

For pipe fastening of a GFK rod using tightening strap, Dimension D Ø: 16 mm

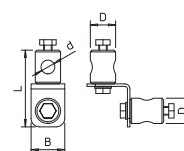


Multi adapter

Type	Dimension d Ø mm	Dimension L mm	Dimension D Ø mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 MA-16	16	91	30	40	1	36,280	5408996

V2A Stainless steel, grade 304

- Connector for two GFK rods
- Dimension D Ø: 16 mm.



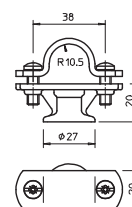
Rod holder

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
113 Z-20	Rd 20	20	8,200	5230527

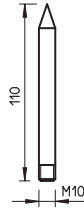
Zn Die-cast zinc

VZ Galvanised

- Installed with over-piece and hex-head screws M6 x 16
- With female thread M8 or through hole Ø 7 mm.



Interception tip

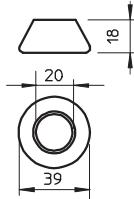


Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 ISP M10	110	10	10,000	5408458

Alu Aluminium /pc.

Interception tip for attaching to end piece, type 101 IES, with M10 thread

Water repellent



Type	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
101 IAB	18	10	2,000	5408733

Alu Aluminium /pc.

Water repellent for mounting on insulation rods with d = 20 mm

Adjustable insulating beam – pipe



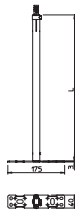
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
ISAV1000R	1	130,000	5408849

GFK Fibre-glass-reinforced plastic /pc.

Variable spacer for cables and air-termination rods to maintain the separation distance.

- Infinitely adjustable distance range (L = 550–1,000 mm)
- Made of fibre glass-reinforced plastic (km = 0.7)
- For pipe mounting (including 2 m tightening strap and tension jack)

Adjustable insulating beam – wall



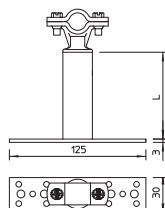
Type	Pack. pcs	Weight kg/100 pcs.	Item No.
ISAV1000W	1	130,000	5408852

GFK Fibre-glass-reinforced plastic /pc.

Variable spacer for cables and air-termination rods to maintain the separation distance.

- Infinitely adjustable distance range (L = 550–1,000 mm)
- Made of fibre glass-reinforced plastic (km = 0.7)
- For wall mounting with 10 4.2 mm fastening holes and 4 6.9 mm fastening holes

Insulated spacer



Type	Length mm	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
ISO-A-500	500	Rd 16	15	36,000	5408806
ISO-A-800	800	Rd 16	15	55,000	5408814
ISO-A-1030	1030	Rd 16	15	68,000	5408820
ISO-A-150 8	150	Rd 8	15	13,800	5408800

Alu Aluminium **PA** Polyamide /pc.

- Mounting foot with 10 connection holes Ø 6.5 mm and 4 connection holes Ø 8.5 mm
- Type ...150 8 with holder suitable for round conductor RD 8
- Application for shelters e.g. golf, barbecue or mountain huts

The plus of the isCon® system

- + Unique structure
- + Equivalent separation distance ≤ 0.75 m (Cuf) or ≤ 1.5 m (solid material)
- + IsCon® air-termination rods fulfil the requirements to Eurocode
- + Suitable for all lightning protection classes
- + Satisfies requirements according to VDE 0185-561-1/-2
- + Satisfies requirements according to CIEC 62561-1/-2



Insulated lightning protection set

Insulated down-conductors are used in the field of external lightning protection to reduce or avoid the separation distance according to VDE 0185-305 (IEC 62305). isCon® creates an equivalent separation distance of 0.75 m in air. In contrast to standard shielded medium-voltage cables with a metallic shield, insulated down-conductors possess a weakly conductive jacket for field control, de-energising the high voltage in the area of the supply point. This thus prevents arcing via the cable jacketing of the insulated down-conductor.

After the first potential connection of the cable jacket, the insulated

down-conductor secures the specified equivalent separation distance.

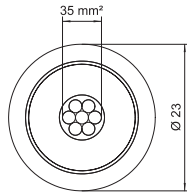
The insulated air-termination rods protect electrical and metallic roof structures, taking the calculated separating distance (s) according to VDE 0185-305-3 (IEC 62305-3) into account. An insulated section of 1.5 metres made of fibre-glass reinforced plastic (GRP) ensures sufficient distance to all roof structures. Even complex building structures can be protected by the comprehensive system accessories.

The three-part aluminium and GRP

air-termination rod with its insulated structure allows the isCon® cable (black and light grey) to be routed inside the air-termination rod. Combining a perfect appearance with perfect functionality, it offers the following advantages:

- Tidy appearance through internal isCon® cable
- 4 variants: 4 m to 10 m height
- Including connection element and potential connection in the mast
- For freestanding installation, can be combined with isFang air-termination rod stand with side exit

isCon® conductor



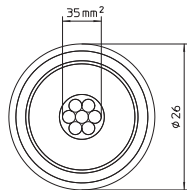
Type	Colour	Cross-section mm ²	Nominal size Ø mm	Normal ring ca. m	Pack. m	Weight kg/100 m	Item No.
isCon 750 SW	Black	35	23	25	25	69,400	5408002
isCon 750 SW	Black	35	23	100	100	69,400	5408004
isCon 750 SW	Black	35	23	250	250	69,400	5408006

price/100 m

Please refer to the mounting instructions for information on routing the OBO isCon® cable.

- Floating discharge-free, high voltage-resistant, insulated arrestor
- For maintenance of the separation distance according to IEC 62305
- Equivalent separation distance $s \leq 0.75$ m in air
- Cable weight 69.4 kg/ 100m
- Halogen-free
- Can be used in potentially explosive areas Ex zone 1/2 and 21/22 when taking the current mounting instructions into account

isCon® conductor in light grey



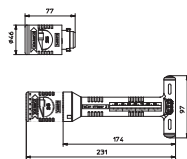
Type	Colour	Cross-section mm ²	Nominal size Ø mm	Normal ring ca. m	Pack. m	Weight kg/100 m	Item No.
isCon 750 LGR	Light grey	35	26	25	25	86,800	5407995
isCon 750 LGR	Light grey	35	26	100	100	86,800	5407997

price/100 m

Please refer to the mounting instructions for information on routing the OBO isCon® cable.

- Floating discharge-free, high voltage-resistant, insulated arrestor
- For maintenance of the separation distance according to IEC 62305
- Equivalent separation distance $s \leq 0.75$ m in air
- Can be used in potentially explosive areas Ex zone 1/2 and 21/22 when taking the current mounting instructions into account
- Cable weight 86.8 kg/ 100 m
- Suitable for routing in the earth
- Can painted different colours
- Halogen-free

Stripping tool for isCon conductor

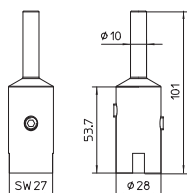


Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs	Item No.
isCon stripper 2	23	1	33,000	5408013

PA/PE Polyamide/Polyethylene /pc.

Stripping tool to remove the insulation of OBO isCon® cable.

Connection element



Type	Dimension D Ø mm	Fit mm	Pack. pcs	Weight kg/100 pcs	Item No.
isCon connect	23	10	2	21,500	5408022

V2A Stainless steel, grade 304 /pc.

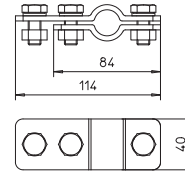
Screw-on termination of the connection for the isCon® cable. Including heat-shrinkable sleeve and screw lock.

Potential connection

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon PAE	∅ 17-25mm	2	36,500	5408036

V2A Stainless steel, grade 304

Potential control to avoid surface discharges on the isCon® cable. Installation takes place after the first 1.5 metres.

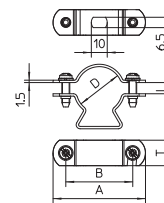


VA cable bracket

Type	Dimension D ∅ mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon H VA	23	50	2,850	5408056
isCon H 26 VA	26	20	3,400	5408064

V2A Stainless steel, grade 304

Cable brackets for isCon® cable for mounting on roof/wall structures.



starQuick cable bracket PA



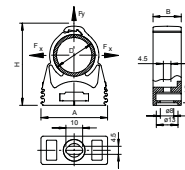
Type	Colour	Dimension D mm	Dimension A mm	Dimension B mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SQ-20 SW	Jet black	23	29	17	50	0,848	2146164
SQ-25 LGR	Light grey	25-28	40	17	50	0,970	2146207

PP Polypropylene PA Polyamide

/100 pc.

Cable brackets for isCon® cables for mounting on the building structure. Can also be used in the first 1.5 m.

Can be arranged next to each other and are made from a UV and weather-resistant polyamide.



starQuick nut M6

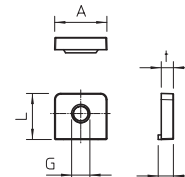


Type	Colour	Thread	Dimension L mm	Dimension h mm	Dimension t mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SQ M6	Light grey	M6	15	5	4	100	0,070	2146509

PC Polycarbonate

/100 pc.

The starQuick nut was developed especially for the starQuick clip. Simply push into the intended opening of the clip. The nut is captive in the clip. Suitable for M6 threads.



starQuick anchor M6

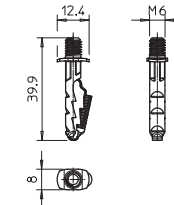


Type	Dowel ∅ mm	Length mm	Bore hole ∅ mm	Bore hole depth mm	Pack. pcs	Weight kg/100 pcs.	Item No.
SQ PP	6	30	6	35	50	0,100	2351706

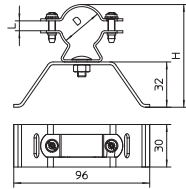
PA Polyamide

/100 pc.

Suitable for concrete, calcareous sandstone, brick or porous concrete masonry with interplay of the starQuick clip and starQuick nut.



VA cable bracket with tightening strap



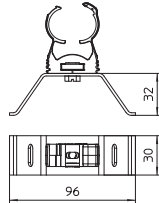
Type	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon HS VA	23	10	25,200	5408052
isCon HS 26 VA	26	10	25,900	5408068

V2A Stainless steel, grade 304

/pc.

Cable brackets for isCon® cable for pipe mounting on 2 m tightening strap.

PA cable bracket with tightening strap



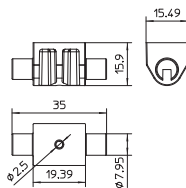
Type	Colour	Dimension Ø mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon HS 26 PA	Light grey	Ø 26mm	26	10	23,200	5408066

PA Polyamide

/pc.

Cable brackets for isCon® cable for pipe mounting on 2 m tightening strap.

Adapter for flat roof cable holder



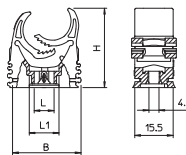
Type	Colour	Fit	Pack. pcs	Weight kg/100 pcs.	Item No.
165 MBG UH	Black	Rd 8	25	0,280	5218882

PP Polypropylene

/pc.

- Universal adapter with drill hole Ø 2.5 mm
- E.g. for OBO Golden Sprint screw, type 4758 4 x L (L = depending on application)
- For fastening to 165/MBG

M-Quick cable bracket PA



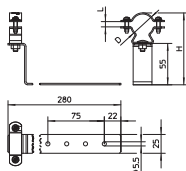
Type	Clamping range D mm	Pull- out value N	Colour	Shipping box pcs	Pack. pcs	Weight kg/100 pcs.	Item No.
M-Quick M25 SW	20 - 25	50	Jet black	600	50	0,930	2153787
M-Quick M32 LGR	25 - 32	60	Light grey	600	50	1,400	2153734

PA Polyamide

/100 pcs.

- Multi-quick metric
- Simple fastening
- Secure locking
- Radial arrangement
- Simplified storage
- Universally applicable

VA roof cable holder, sloping roof



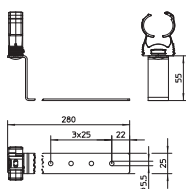
Type	Installation height mm	Dimen- sion D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon H280 VA	55	23	25	16,100	5408047
isCon H280 26 VA	55	26	25	16,900	5408074

V2A Stainless steel, grade 304

/pc.

To route the isCon® cable on pitched roofs.

PA roof cable holder, sloping roof



Type	Colour	Dimension Ø mm	Dimension D Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon H280 PA	Black	280mm	23	25	13,950	5408049
isCon H280 26 PA	Light grey	280mm	26	25	14,060	5408072

PA Polyamide

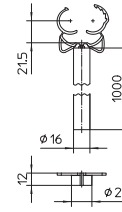
/pc.

To route the isCon® cable on pitched roofs.

Spacer

Type	Clamping range D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon DH	23 - 26	2	41,400	5408043

GFK Fibre-glass-reinforced plastic /pc.
 For stand-off installation of the isCon® cable in the area of the connection. Incl. reducing sleeve for mounting on FangFix concrete block 10 Kg.



Insulated air-termination rod for inner-routed isCon conductor with side exit

Type	Dimen- sion D Ø mm	Dimen- sion A mm	Dimen- sion H mm	Dimen- sion B mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang IN-A 4000	50	1325	1500	1000	4000	1	535,000	5408938
isFang IN-A 6000	50	3325	1500	1000	6000	1	835,000	5408940
isFang IN-A 8000	50	5335	1500	1000	8000	1	1.385,000	5408888
isFang IN-A10000	50	6000	1733	2000	10000	1	1.540,000	5408890

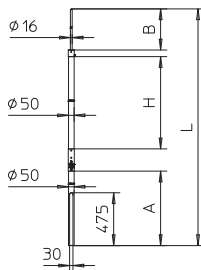
GFK Fibre-glass-reinforced plastic

/pc.

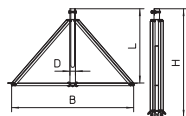
- For installation of the OBO isCon® conductor in the pipe
- With side conductor outlet matching isFang air-termination rod stand with side outlet, type isFang 3B-A
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Inclusive connection element (type isCon IN connect)
- Inclusive potential connection (type IsCon In PAE)



Dimensions



isFang air-termination rod stand with side exit



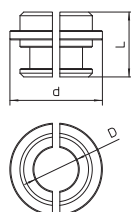
Type	Dimen- sion B mm	Dimen- sion D Ø mm	Dimen- sion L mm	Dimen- sion H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-100-A	1026	50	600	885	1	77,000	5408930
isFang 3B-150-A	1500	50	900	1275	1	123,000	5408932
isFang 3B-250-A	2900	50	1450	2055	1	2.500,000	5408902

V2A Stainless steel, grade 304

/pc.

- Screwless installation of freestanding air-termination rods as well as insulated air-termination rods with 50 mm diameter
- e.g. for internal OBO isCon® conductor
- Roof slope to max. 5 degrees
- Incl. Rd 8–10 crossbar for quick round conductor fastening
- Concrete plinths as well as threaded rods should be ordered separately

Potential connection for installation in the insulated air-termination rod isFang IN



Type	Dimen- sion D Ø mm	Dimen- sion d mm	Dimen- sion L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon IN PAE	23	49.9	35	1	5,900	5408031

Alu Aluminium

/pc.

- To avoid surface discharges on the isCon® cable
- Installation takes place after the first 1.5 metres in the insulated air-termination rod type isFang IN

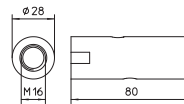
Connection element for installation in the insulated air-termination rod isFang IN



Type	Dimension D		Pack. pcs	Weight kg/100 pcs.	Item No.
	Ø mm	Thread			
isCon IN connect	23	M16	1	27,800	5408024

V2A Stainless steel, grade 304

/pc.



- Screw-on termination of the connection for the isCon® conductor
- Connection and installation of the cable in the insulated air-termination rod
- Tested up to 150 kA (lightning protection Class II)



Insulated air-termination rod



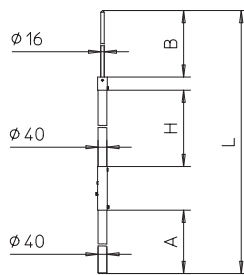
Type	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 4000 AL	1240	1500	1000	4000	1	580,000	5408943
isFang 6000 AL	3340	1500	1000	6000	1	600,000	5408947
isFang 4000	1240	1500	1000	4000	1	680,000	5408942
isFang 6000	3340	1500	1000	6000	1	1.260,000	5408946

GFK Fibre-glass-reinforced plastic

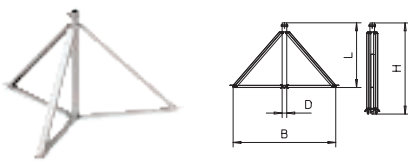
/pc.

- For isolated creation of air-termination systems
- Suitable for isFang air-termination rod stands, type isFang 3B-100/150
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- For mounting on the building structure with isFang support
- Fastening of the OBO isCon® cable possible using accessories

Dimensions



isFang air-termination rod stand



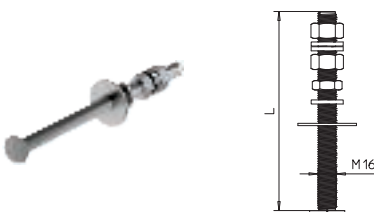
Type	Dimension B mm	Dimension D Ø mm	Dimension L mm	Dimension H mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-100 AL	1000	40	600	885	1	380,000	5408966
isFang 3B-150 AL	1500	40	900	1275	1	560,000	5408967
isFang 3B-100	1000	40	600	885	1	620,000	5408968
isFang 3B-150	1500	40	900	1275	1	950,000	5408969

V2A Stainless steel, grade 304 **Alu** Aluminium

/pc.

Folding tripod stand for screwless installation of free-standing interception rods with a diameter of 40 mm, e.g. for OBO isCon® cable. Roof slope to max. 5 degrees. Incl. Rd 8–10 crossbar for rapid round conductor fastening. The concrete plinth and threaded rods are to be ordered separately.

isFang-3B threaded rod



Type	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang 3B-G1	270	3	48,000	5408971
isFang 3B-G2	340	3	60,400	5408972
isFang 3B-G3	430	3	76,600	5408973
isFang 3B-G4	500	3	75,000	5408905

V2A Stainless steel, grade 304

/pc.

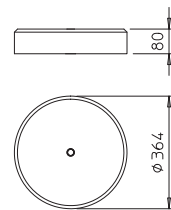
- For fastening on 1, 2, 3 or 4 FangFix concrete bases with tripod stand

Concrete block for FangFix-System 16 kg

Type	Nominal size Ø mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-S16	365	1	1,700,000	5403227

BET Concrete /100 pc.

- 16 kg stone of Ø 365 mm, high level of stability
- Concrete, frost-resistant
- Stackable

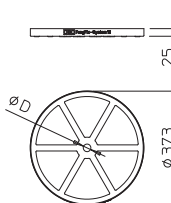


Base for FangFix system 16 kg for mounting the isFang tripod

Type	Nominal size Ø mm	Dimension D mm	Pack. pcs	Weight kg/100 pcs.	Item No.
F-FIX-B16 3B	373	25	10	15,800	5403238

PP Polypropylene /100 pc.

- Edge protection with through hole
- For mounting isFang-3B threaded rod and FangFix concrete block F-FIX-S16

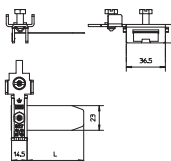


Potential connection clamp for mounting on isFang

Type	Fit mm	Pack. pcs	Weight kg/100 pcs.	Item No.
927 2 6-K	3/8-4"	10	5,500	5057599

V2A Stainless steel, grade 304 /100 pc.

Potential connection for isCon® cable for mounting on insulated air-termination rods of type isFang.



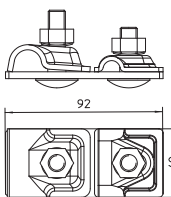
Connection plate for one isCon® conductor



Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon AP1-16 VA	16x8-10mm	1	27,400	5408026

V2A Stainless steel, grade 304 /pc.

Connection plate to connect an isCon® cable with air-termination rod Ø 16 mm.



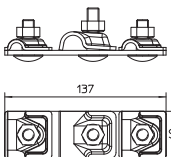
Connection plate for two isCon® conductor



Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon AP2-16 VA	16x8-10mm	1	39,500	5408028

V2A Stainless steel, grade 304 /pc.

Connection plate to connect two isCon® cables with air-termination rod Ø 16 mm.



Cable tie



Type	Dimension B mm	Dimension L mm	Dimension t mm	Colour	Pack. pcs	Weight kg/100 pcs.	Item No.
565 7.6x380 SWUV	7.6	380	2	Black	100	0,533	2331924

PA Polyamide /100 pc.

Cable ties are used for quick, uncomplicated fixing or bundling of cables and pipes to cable support systems or other mounting structures.



Insulated air-termination rod for inner-routed isCon conductor

Type	Dimension D Ø mm	Dimension A mm	Dimension H mm	Dimension B mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang IN 4000	50	1325	1500	1000	4000	1	535,000	5408934
isFang IN 6000	50	3325	1500	1000	6000	1	835,000	5408936
isFang IN 8000	50	5335	1500	1000	8000	1	1.315,000	5408868
isFang IN 10000	50	6000	1733	2000	10000	1	1.540,000	5408870

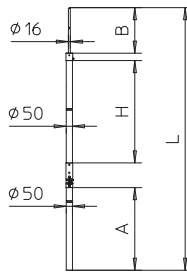
GFK Fibre-glass-reinforced plastic

/pc.

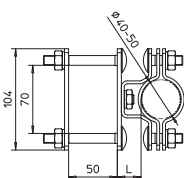
- For installation of the OBO isCon® conductor in the pipe
- For mounting on the building structure with isFang support
- Suitable for wind loads according to Eurocode 1: DIN EN 1991-1-4
- Inclusive connection element (type isCon IN connect)
- Inclusive potential connection (type IsCon In PAE)



Dimensions



isFang support for corner pipe mounting, 50 x 50 mm



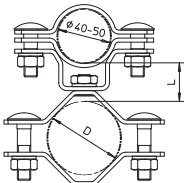
Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS50x50	—	30	2	82,000	5408964

V2A Stainless steel, grade 304

/pc.

Fastening clip to fasten the insulated support pipes on the structure to be protected or for construction-side corner pipes of 50x50 mm.

isFang support for pipe mounting, Ø 50–60 mm



Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS50-60	60	30	2	76,000	5408960

V2A Stainless steel, grade 304

/pc.

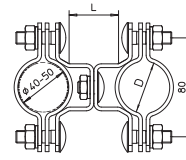
Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of Ø 50–60 mm.

isFang support for pipe mounting, ø 40–50 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TS40-50	50	40	2	90,000	5408958

V2A Stainless steel, grade 304 /pc.

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 40–50 mm.

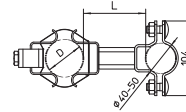


isFang support for spaced pipe mounting, ø 50–300 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TR100 100	300	100	2	95,500	5408955
isFang TR100 200	300	200	2	121,000	5408957
isFang TR100 300	300	300	2	146,000	5408959

V2A Stainless steel, grade 304 /pc.

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 50–300 mm.

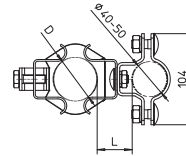


isFang support for pipe mounting, ø 50–300 mm

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TR100	300	40	2	77,000	5408956

V2A Stainless steel, grade 304 /pc.

Tightening strap clip to fasten the insulated support pipes on the structure to be protected or for construction-side pipes of ø 50–300mm.

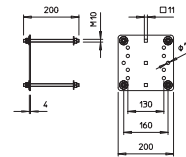


Mounting set for T support

Type	Dimension	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200 Set	200x200mm	2	188,600	5408914

V2A Stainless steel, grade 304 /pc.

- Set for mounting isFang TW200 onto double T support
- Suitable for double T support, e.g. widths 100, 120

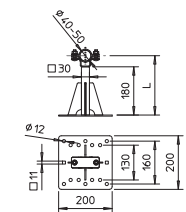


Support for wall mounting, 200 mm spacing

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200 12	50	200	2	240,000	5408910

V2A Stainless steel, grade 304 /pc.

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

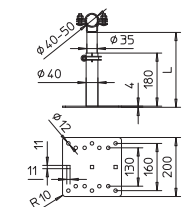


isFang support for wall mounting, 200–300 mm spacing

Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW200	—	300	2	230,000	5408954

V2A Stainless steel, grade 304 /pc.

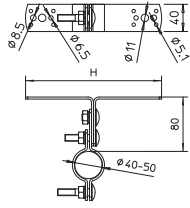
Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.



02 TBS Masterkatalog Länder / en / 30/11/2016 (LLExpert_04408) / 30/11/2016

Insulated lightning protection and OBO isCon system

isFang support for wall mounting, 80 mm spacing



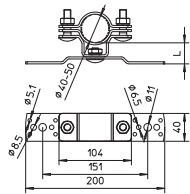
Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW80	—	80	2	63,000	5408950

V2A Stainless steel, grade 304

/pc.

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

isFang support for wall mounting, 30 mm spacing



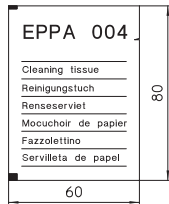
Type	Dimension D Ø mm	Dimension L mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isFang TW30	—	30	2	62,000	5408952

V2A Stainless steel, grade 304

/pc.

Fastening clip to fasten the insulated support pipes on the structure to be protected or on the wall.

Cleaning cloth



Type	Width mm	Length mm	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon EPPA 004	140	200	50	0,420	5408060

Z-PP-P Cellulose-polypropylene paper

/100 pcs.

- Cellulose polypropylene paper with abrasive sections, folded multiple times
- Doused with 2.8 ml impregnation solution
- For cleaning the external jacket of the OBO isCon® cable

Information panel



Type	Pack. pcs	Weight kg/100 pcs.	Item No.
isCon HWS	1	2,000	5408058

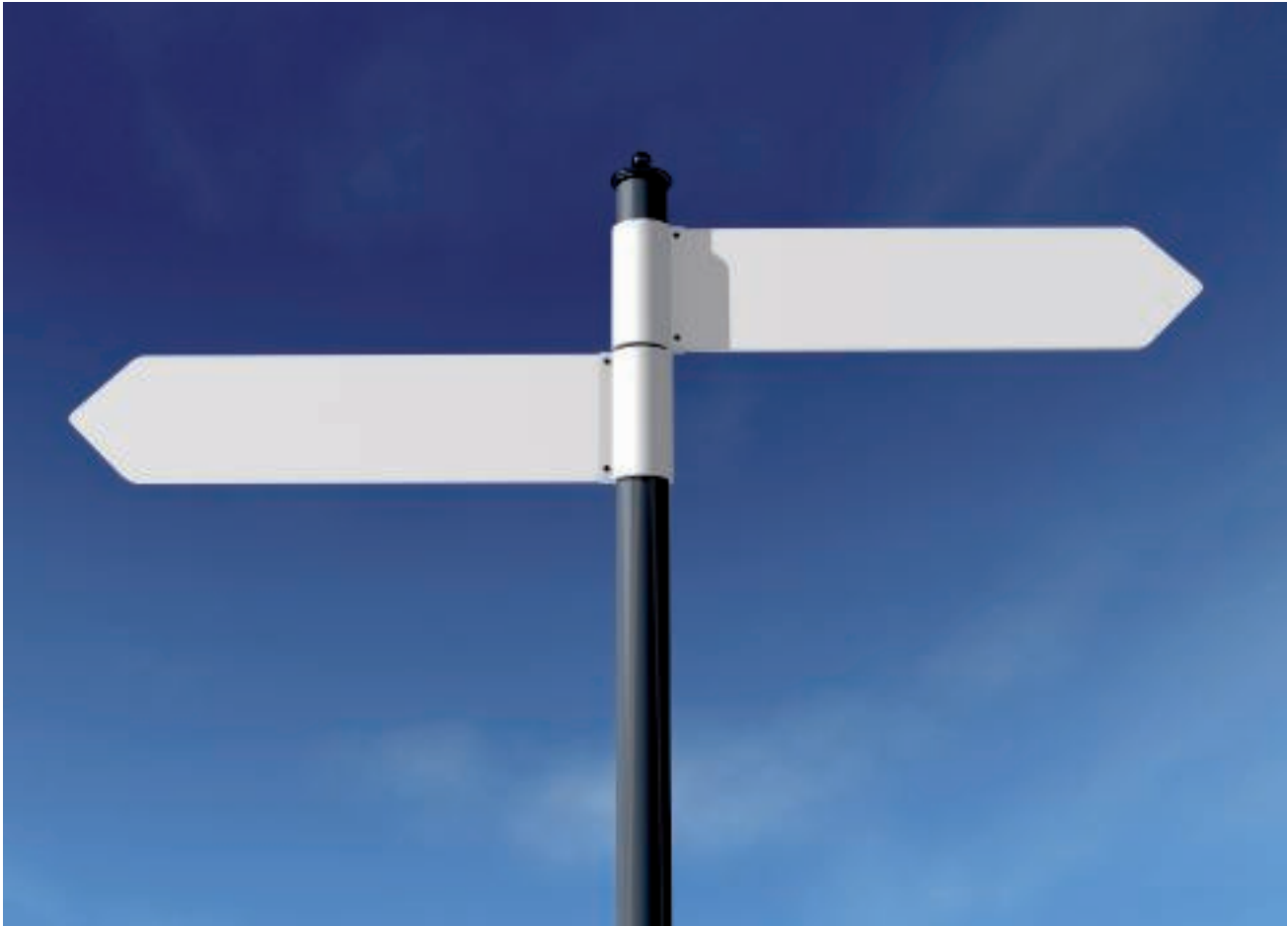
PS Polystyrene

/pc.

Label: "NOTE! Insulated lightning protection with the OBO isCon® system. Only a lightning protection specialist may carry out changes"

- To label the lightning protection system
- Self-adhesive and with 4 fastening holes Ø 6.5 mm







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6398683	5093454	134	6162819	5095284	205	5406853	5098411	415	5009726	5207451	538	5411079	5228220	543
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252 8-10 V4A	5700869	5312318	495
252 8-10 V4A	5700869	5312318	554
252 8-10X16 CU	5418276	5312442	497
252 8-10X16 CU	5418276	5312442	555
252 8-10X16 FT	5418153	5312345	496
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MCD 50-B-OS	5051466	5096852	103
MCF 35-1+FS-440	5990116	5096974	119
MCF 35-P3+FS-440	5995012	5096976	120
MCF-MS-M10	5995029	5096990	121
MCF-MS-P1	5995036	5096992	121
MCF-MS-P3	5995043	5096994	121
MDP-2 D-12-T-10	5787372	5098415	423
MDP-2 D-24-T	5406860	5098422	416
MDP-2 D-24-T-10	5787389	5098425	425
MDP-2 D-48-T	5406891	5098442	419
MDP-2 D-5-T	5406839	5098404	413
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MDP-3 D-48-T	5406907	5098446	420
MDP-3 D-5-T	5406846	5098407	414
MDP-4 D-12-T-10	5773610	5098419	424
MDP-4 D-24-EX	5848523	5098432	432
MDP-4 D-24-T	5406884	5098431	418
MDP-4 D-24-T-10	5625131	5098433	426
MDP-4 D-48-EX	5848530	5098452	433
MDP-4 D-48-T	5406914	5098450	421
MDP-4 D-5-EX	5848516	5098412	431
MDP-4 D-5-T	5406853	5098411	415
MDP-4 D-5-T-10	5625124	5098413	422
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MK-B	5461111	5091322	573
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M-Quick M32 LGR	5741671	2153734	590



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OEC 25	6427925	5009200	505
		/VPE	
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PCS	5461296	5091438	572
		/pc.	
PCS-CS-D	5461654	5091683	447
PCS-CS-D	5461654	5091683	573
PCS-CS-GB	5896111	5091691	447
PCS-CS-GB	5896111	5091691	573
		/VPE	
PCS-H	5461470	5091527	447
PCS-H	5461470	5091527	573
		/100 pc.	
ProtectionBall	6409327	5018014	480
		/pc.	
PS 2-B+C/TT+TNS	5759782	5089748	167
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PS3-B+C-320	5806813	5089755	172
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PS3-VA TNC	5405566	5089768	176
PS3-VA TNC+FS	5405580	5089775	177
PS4-B+C TNS+FS	5405559	5089763	169
PS4-B+C TT+TNS	5405542	5089761	168
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RD 10	5381617	5021103	510
RD 10-ALU	5381976	5021308	481
RD 10-ALU	5381976	5021308	511
RD 10-CU	5382096	5021502	482
RD 10-CU	5382096	5021502	512
RD 10-PVC	5381730	5021162	481
RD 10-PVC	5381730	5021162	511
RD 10-V2A	5801375	5021227	482
RD 10-V2A	5801375	5021227	511
RD 10-V2A	5680567	5021239	482
RD 10-V2A	5680567	5021239	511
RD 10-V4A	5902058	5021642	482
RD 10-V4A	5902058	5021642	511
RD 10-V4A	5680581	5021647	482
RD 10-V4A	5680581	5021647	511
RD 10-V4A 20	6282425	5021640	482
RD 10-V4A 20	6282425	5021640	511
RD 8-ALU	5381914	5021286	481
RD 8-ALU	5381914	5021286	511
RD 8-ALU-T	5901273	5021294	481
RD 8-ALU-T	5901273	5021294	511
RD 8-ALU-T 75	6286232	5021296	481
RD 8-ALU-T 75	6286232	5021296	511
RD 8-CU	5382034	5021480	482
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RD 8-FT	5381556	5021081	481
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RD 8-FT 50	5423898	5021050	481
RD 8-FT 50	5423898	5021050	510
RD 8-PVC	5067474	5021332	481
RD 8-PVC	5067474	5021332	511
RD 8-V2A	5680529	5021235	482
RD 8-V2A	5680529	5021235	511
RD 8-V4A	5680574	5021644	482
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		/pc.	
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S 11-CU	5836209	5021654	512
S 9-CU	6033768	5021652	482
S 9-CU	6033768	5021652	512
S-11-CU SN	5938668	5021656	482
S-11-CU SN	5938668	5021656	512
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SD09-V11 9	5916277	5080061	379
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SD15-V24 15	5916031	5080150	378
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		/100 pc.	
SQ M6	5016069	2146509	589
SQ PP	5016182	2351706	589
SQ-20 SW	5655367	2146164	589
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V10 COMPACT-FS	6098583	5093382	254
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Terms and conditions of sale and delivery of the companies OBO Bettermann GmbH & Co. KG and OBO Bettermann Projekt und Systemtechnik GmbH, and OBO Befestigungselemente GmbH, Menden

1. All our supplies and services shall be governed exclusively by the following terms and conditions, including our additional terms and conditions for cable tray business transactions. All terms and conditions of business and purchasing of the customer shall be valid only if we have acknowledged them in writing. Our quotations are without engagement; they are mere invitations to submit contract offers. Any and all transactions and agreements, including those entered into by our employees and agents shall only be binding upon our written confirmation or invoicing. The foregoing provision shall also apply to any modifications of the agreed formal requirements.

2. The documents and data pertaining to the quotation, such as illustrations, brochures, drawings, dimensions, loading capacity values and weight details are approximate only, unless they are expressly stipulated to be binding.

Samples are non-binding samples for inspection. Any purchase according to sample will be subject to customary deviations and deviations resulting from normal production processes. The properties of the sample shall be no

guaranteed quality of the purchase object unless expressly stated otherwise in the confirmation of order. Samples must be returned to us at the latest within four weeks in perfect condition. If they are not returned within this period in proper condition, we shall be entitled to charge the purchase price for the sample in accordance with our current price list. All information on our products, in particular the illustrations, drawings, weight, dimension and performance data included in our quotations and printed matter shall be regarded as approximate average values and shall not represent any quality guarantee.

With regard to products made according to customer drawings, samples and other instructions of the customer, we will not provide any warranty nor assume any liability for the due and proper functioning of the product or for any other defects if and to the extent they are based upon the customer's specifications. The customer shall indemnify us from any third party claims, including claims for product liability as may be asserted against us for damages resulting from the products unless we have caused such damages by intent or gross negligence. The customer shall warrant that the manufacture and supply of products made in accordance with his instructions will not infringe any proprietary rights of third parties. Should any proprietary rights be asserted against us, we shall be entitled, without any legal review of the third party claims, to withdraw from the contract after hearing the customer, unless the third party withdraws the claims asserted against us under its proprietary rights within eight days by written declaration. The customer shall compensate us for any damage sustained as a result of the assertion of proprietary rights. In case of withdrawal, the work we have carried out so far shall be remunerated. Further rights under the statutory provisions shall not be affected thereby.

Any moulds, tools and design data produced by us for the execution of the order shall be our exclusive property. Unless expressly agreed otherwise, the customer shall not have any claims thereto, even if he has contributed to the costs of producing any such moulds, tools and design data.

3. The packing, shipping route and means of transportation shall be left to our discretion in the absence of any other agreements. They shall be charged at their cost price. We will take back undamaged cases, when being returned carriage paid, at 2/3 of the amount invoiced. The one-way or pool pallets used for transport shall be either exchanged upon taking delivery or returned. The smallest packing units stocked and listed may not be broken up for rationalisation reasons. In case of orders for different quantities, the nearest packing unit will be supplied.

We reserve the right to deviate from the agreed delivery quantity, in particular in the case of custom-made products, to a customary extent or in conformity with national or international standards. In case of a demand for adhering to a precise quantity, an express reference is necessary and subject to confirmation.

Master and call orders shall oblige the customer to accept the total quantity on which the master/call order is based. Where no particular call orders are specified in the contract, the total quantity of the master call order must be called within twelve months. If the customer fails to adhere to call deadlines, we shall be entitled to deliver and charge the total quantity in full after four weeks from written notice with reference to the consequences of any failure to call. Our rights arising from any default of the customer shall not be affected thereby.

4. Unless otherwise agreed, our prices are quoted ex works and do not include packing and insurance. The value added tax at the rate applicable on the date of dispatch will be added to our prices. The purchaser shall ensure the correctness of his VAT identification number, which he must notify to us immediately without being asked. He shall undertake to inform both us and the competent domestic tax authority without delay of any change in his name, address and VAT identification number.

Delivery shall be franco domicile within Germany, i.e. carriage and packing prepaid, if the net order value is in excess of € 1,200. For small orders below € 100 (net excluding value added tax), we shall invoice a lower quantity surcharge of € 10 (net) per order. Upon transfer of our supplies and services to a carrier or forwarding agent, at the latest upon their leaving our warehouse or supply plant, the risk shall pass to the recipient, even in case of deliveries free place of destination.

5. Delivery periods and delivery deadlines shall be approximate only unless we have expressly stated in writing that they are binding. Delivery periods shall commence upon receipt of our confirmation of order, but not before clarification of all execution details, ex place of delivery. The customer shall only be entitled to withdraw from the contract after having granted a reasonable extension of time. We reserve the right to make partial deliveries. Claims for damages and reimbursement of expenses - for any reason whatsoever - shall be subject to the provisions set out in article 10.

In the event of any circumstances that are beyond our control within the scope of normal operating risks and obstruct or make impracticable any delivery, we shall be entitled to suspend delivery by the duration of such obstruction plus a reasonable start-up period or to withdraw from the contract for the part not yet fulfilled. The purchaser can demand a statement from us as to whether we wish to deliver within a reasonable period or withdraw. If we fail to make such a statement, the purchaser may withdraw. Our notice to the purchaser shall be deemed to be sufficient evidence that we have been prevented from delivering.

Delivery time is extended in case of such events as labour disputes, strikes and lockouts, orders from the authorities, difficulties with the procurement of materials, spoiled work or post-processing, shutdowns and staff shortage as well as shortage of means of transport, and general occurrence of unforeseen events beyond our scope of influence, by the length of duration of these events.

6. Payments shall be made upon receipt of invoice less a 3% cash discount for payment within 10 days or net after 30 days from date of invoice. Erection work and all paid labour work must be paid within 10 days without deduction of any cash discount. In case of non-cash payments, the date of the credit note will be deemed to be the date of receipt of payment. Payments received shall always be credited first against costs, then against interest and then against the earliest liability. Cheques and bills of exchange shall only be accepted as means of payment.

Any payment by bill of exchange shall be subject to a prior separate and written agreement, whereby all bill costs shall be borne by the customer and no discount can be granted. The customer shall have no right to refuse performance and no right of retention - for any legal reason whatsoever - unless we have acknowledged his claim beforehand in writing or his claim has the force of law.

The customer shall only be entitled to set off claims which have the force of law, are undisputed or acknowledged by us in writing.

7. We shall retain title to the goods supplied by us until all our claims arising from our business transactions with the customer have been satisfied - current account clause - and all bills of exchange or cheques submitted for payment by the customer have been honoured.

Any treatment or processing of goods subject to our retention of title (reserved goods) shall be carried out for us as the manufacturer in accordance with § 950 BGB (German Civil Code) without any obligation on our part. If our reserved goods are to be regarded as the main item or the main item is owned by the customer, full title to the new item shall pass to us when it is created. In other cases, we shall acquire a co-ownership interest in the new item in the proportion of the sales value of our reserved goods to the other goods used for the new item at the time of processing, intermingling, joining or mixing. The customer shall take custody of our ownership or co-ownership interest free of charge; it shall be treated as reserved goods.

Before transfer of title, our goods shall be neither pledged nor assigned as collateral without our prior consent. In addition, any third party rights or pledges shall be notified to us immediately and we shall be given all details and provided all documents necessary for intervention; otherwise the customer must bear our loss. In the latter case, our total claims against the customer shall also be immediately payable.

The customer shall be entitled to sell or to use our reserved goods in the ordinary course of business subject to the condition that the relevant claims are transferred in accordance with article 8 below. This right shall lapse upon the customer's failure to promptly meet his payment obligations towards us or in the event of any cheque

or bill protests or his suspension of payments. In such cases, we shall be entitled to take back the goods provisionally at the customer's expense and to sell them at our duly exercised discretion after a corresponding reminder has been sent to the customer. We will then pass the due amount to the customer's credit.

8. If our goods are sold before payment of our claim, the customer shall be obliged to retain our title against his purchaser until the goods have been paid for in full by the purchaser. The claim arising against the purchaser from such resale as well as any other ancillary rights or security interests of the customer resulting from the sale and any claims for compensation in case of damage to or destruction of our reserved property, including the relevant insurance sum shall hereby be assigned to us. We hereby accept this assignment. Where our co-ownership interest is sold, the relevant claims shall be assigned in the amount corresponding to the value of our interest.

The customer shall, at our request, inform us of his purchasers, notify them of the assignment made and provide us with any and all documents required to assert our rights.

As long as the customer meets his contractual obligations without delay, he shall be authorised to collect the claims assigned. He shall keep the amounts collected on our behalf separately and remit them to us immediately

as soon and as far as our claims become due. The authorisation shall lapse in case of any cheque or bill protest of the customer or his definite suspension of payments. The customer shall bear the costs incurred for any action

taken against third parties and shall advance them upon request.

If the security provided to us by the retention of title and the anticipatory assignment should exceed the claims to be secured by more than 20%, we shall, at the customer's request, release paid supplies of our choice. Upon payment of all our claims by the customer, assigned claims shall pass to the customer.

9. Any complaints for obvious defects regarding the quantity or quality of our supplies and services that are identifiable upon careful inspection shall without delay, but at the latest within the period of limitation of eight days from arrival of the goods at the address of the customer or the person appointed by him, be notified in writing to us, not to our representatives. Slight deviations in dimensions and designs within the scope of defined technical tolerances shall not give rise to any right of complaint. Any rejected goods may only be returned to us with our prior written authorisation.

In case of justified complaints within the prescribed period, we shall, at our option, take remedial action by way of subsequent performance, by rectifying the defect, supplying non-defective goods or providing a credit note for the lower value calculated.

We shall be entitled to refuse subsequent performance in accordance with the statutory provisions. If we refuse subsequent performance, if any subsequent performance remains unsuccessful or if the customer cannot be reasonably expected to accept any subsequent performance, the latter shall be entitled to withdraw from the contract in compliance with the provisions of the following sentences. The customer shall only be entitled to withdraw from the contract - where a withdrawal is not excluded by law - upon the unsuccessful expiry of a reasonable period for subsequent performance set by him, unless this period was not required under the statutory provisions (§§ 281 para. 2, 323 para. 2, 440, 441 para. 1 BGB (German Civil Code)).

In case of his withdrawal, the customer shall be liable for any deterioration, destruction or loss of use resulting from any negligence or intent on his part. Any claims for damages or reimbursement of expenses of the customer shall be subject to the provisions set out in article 10.

In the case of any fraudulent concealment of a defect or in the case of any provision of a quality guarantee for the goods sold at the time of the passing of risk within the meaning of § 444 BGB (German Civil Code) (seller's declaration that the object sold has a specific property at the time of the passing of risk and that the seller, regardless of any fault on his part, intends to be answerable for any and all consequences resulting from its absence), the customer's rights shall be exclusively governed by the statutory provisions.

We shall - in addition to the statutory grounds for refusal - also be entitled to refuse subsequent performance if and as long as the customer fails to send us, at our request, the rejected goods or a sample thereof; the customer shall have no right of withdrawal for any such refusal. We may further refuse any subsequent performance if the goods concerned have been altered or modified without our consent unless the customer can prove that the defect was not caused by such alteration or modification.

The limitation period for any claims arising from defects shall be one year; in the case of goods which have been used in accordance with their intended purpose for a building and have caused its defectiveness, the limitation period shall be two years. The provisions of §§ 478, 479 BGB (German Civil Code) on recourse in the chain of suppliers shall not be affected thereby.

10. In the case of a pre-contractual, contractual or non-contractual breach of duty, including unsatisfactory delivery, tortious conduct and producer's liability, we shall only be liable for compensatory damages and reimbursement of expenses - subject to further contractual or statutory liability requirements - in the case of intent, gross negligence or slightly negligent breach of a material contractual duty (contractual duty the infringement of which jeopardises the fulfilment of the object of the contract). However - except in the case of intent - our liability shall be limited to the typical contractual damage that was foreseeable at the time the contract was entered into.

The purchaser shall not be permitted to make a claim for expenses incurred in vain.

Except for any breach of material duties, our liability for slight negligence shall be excluded, but in any case be limited to the amount of the purchase price.

Any claim asserted by the customer or a third party for payment of a contractual penalty shall be excluded.

With regard to damages caused by delay, we shall only be liable for slight negligence up to the amount of 5% of the purchase price agreed with us.

The exclusions and limitations of liability set forth above shall not apply in the event that a guarantee is given with respect to the quality of the object sold within the meaning of § 444 BGB (German Civil Code) if a defect is fraudulently concealed or in the event of injury to life, physical injury or injury to health, or strict liability under the German Product Liability Act.

Any and all claims for damages against us, for any legal reason whatsoever, shall become statute-barred at the latest after one year from delivery of the goods to the customer, in the case of tortious liability from the time of knowledge, or grossly negligent ignorance, of the circumstances giving rise to the claim and the person liable to pay damages. This provision shall not apply in the case of liability for intent and in the event that a guarantee is given for the quality of the object sold, in the case of fraudulent concealment of a defect or in the event of injury to life, physical injury or injury to health, or strict liability under the German Product Liability Act. Any shorter limitation periods shall take precedence.

11. We shall be entitled to process and store any customer data obtained with regard to or in connection with the business relationship in accordance with the German Federal Data Protection Act, irrespective of whether such data is provided by the purchaser himself or by any third parties.

12. Place of performance for delivery and payment is Menden/Sauerland. The court of competent jurisdiction for any and all disputes, including disputes with regard to bills of exchange and cheques, is the Local Court (Amtsgericht) of Menden or, at our option, the District Court (Landgericht) of Arnsberg, irrespective of the value of the object in dispute. We shall, however, also be entitled to take legal proceedings against the customer at the place of his registered office.

German law shall be exclusively applicable. The application of international purchase laws is hereby excluded.

Should, for any reason whatsoever, individual provisions of our terms and conditions of sale and delivery be invalid, the validity and binding nature of the other provisions shall not be affected thereby. The customer agrees, that the invalid provision shall be replaced by a valid provision that comes as close as possible to the economic meaning of the invalid provision.

13. The prices of products made of brass and copper are subject to certain fluctuations that are based on the relevant DEL listings. The prices of our brass articles are based on a DEL listing of € 150 for Ms 58, those of our copper products on a DEL value for electrolyte copper of € 200.

In case of any increase or reduction in these prices by more than € 15, a five per cent surcharge or deduction shall be made for each 15 points. The calculation of any such surcharges or deductions shall be based on the DEL listing of the date of our receipt of the order.

Valid from November 2015



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