



0.10 to 32 A – with thermal and electromagnetic protection

Ics up to 50 kA

| | |
|-----------------------------|-----|
| MS116 manual motor starters | 2/2 |
| Technical data | 2/3 |
| Main accessories | 2/6 |

Ics up to 100 kA

| | |
|-----------------------------|------|
| MS132 manual motor starters | 2/12 |
| Technical data | 2/13 |
| Main accessories | 2/16 |

0.10 to 32 A – with electromagnetic protection

| | |
|-----------------------------|------|
| MO132 manual motor starters | 2/22 |
| Technical data | 2/23 |
| Main accessories | 2/24 |

22 to 100 A – with thermal and electromagnetic protection

| | |
|---|------|
| MS450, MS495, MS497 manual motor starters | 2/30 |
| Technical data | 2/31 |
| Main accessories | 2/33 |

16 to 100 A – with electromagnetic protection

| | |
|---|------|
| MO450, MO495, MO496 manual motor starters | 2/38 |
| Technical data | 2/39 |
| Main accessories | 2/41 |

0.10 to 25 A – with thermal and electromagnetic protection

| | |
|-----------------------------|------|
| MS325 manual motor starters | 2/46 |
| Technical data | 2/47 |
| Main accessories | 2/50 |

0.4 to 25 A – with electromagnetic protection

| | |
|-----------------------------|------|
| MO325 manual motor starters | 2/55 |
| Technical data | 2/56 |
| Main accessories | 2/58 |

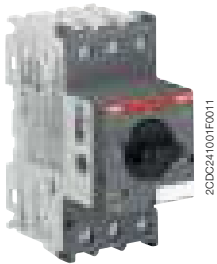
MS116 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection

2



MS116-16



MS116-25



MS116-0.16-HKF1-11



MS116-32-HKF1-11

Description

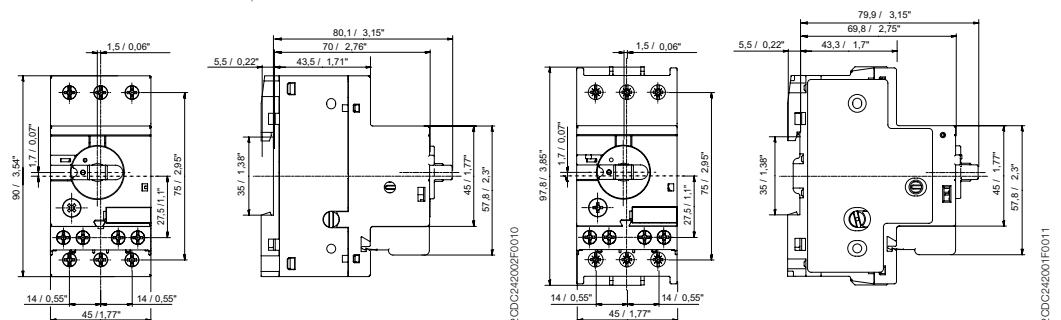
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

MS116 is a compact and economic range for motor protection up to 7.5 kW (400 V) / 32 A in width of 45 mm. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase bus bars, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory.

Ordering details

| Rated operational power 400 V AC-3 | Rated operational current | Short-circuit breaking capacity I_{cs} at 400 V AC | Rated instantaneous short-circuit current setting I_i | Type | Order code | Weight (1 pce) |
|--|---------------------------|--|---|--------------------|-----------------|----------------|
| kW | A | kA | A | | | kg |
| 0.03 | 0.10 ... 0.16 | 50 | 1.56 | MS116-0.16 | 1SAM250000R1001 | 0.225 |
| 0.06 | 0.16 ... 0.25 | 50 | 2.44 | MS116-0.25 | 1SAM250000R1002 | 0.225 |
| 0.09 | 0.25 ... 0.40 | 50 | 3.90 | MS116-0.4 | 1SAM250000R1003 | 0.225 |
| 0.12 | 0.40 ... 0.63 | 50 | 6.14 | MS116-0.63 | 1SAM250000R1004 | 0.225 |
| 0.25 | 0.63 ... 1.00 | 50 | 11.50 | MS116-1.0 | 1SAM250000R1005 | 0.225 |
| 0.55 | 1.00 ... 1.60 | 50 | 18.40 | MS116-1.6 | 1SAM250000R1006 | 0.265 |
| 0.75 | 1.60 ... 2.50 | 50 | 28.75 | MS116-2.5 | 1SAM250000R1007 | 0.265 |
| 1.5 | 2.50 ... 4.00 | 50 | 50.00 | MS116-4.0 | 1SAM250000R1008 | 0.265 |
| 2.2 | 4.00 ... 6.30 | 50 | 78.75 | MS116-6.3 | 1SAM250000R1009 | 0.265 |
| 4.0 | 6.30 ... 10.0 | 50 | 150 | MS116-10 | 1SAM250000R1010 | 0.265 |
| 5.5 | 8.00 ... 12.0 | 25 | 180 | MS116-12 | 1SAM250000R1012 | 0.265 |
| 7.5 | 10.0 ... 16.0 | 16 | 240 | MS116-16 | 1SAM250000R1011 | 0.265 |
| 9.0 | 16.0 ... 20.0 | 10 | 300 | MS116-20 | 1SAM250000R1013 | 0.310 |
| 12.5 | 20.0 ... 25.0 | 10 | 375 | MS116-25 | 1SAM250000R1014 | 0.310 |
| 15.5 | 25.0 ... 32.0 | 10 | 480 | MS116-32 | 1SAM250000R1015 | 0.310 |
| 0.03 | 0.10 ... 0.16 | 50 | 1.56 | MS116-0.16-HKF1-11 | 1SAM250005R1001 | 0.240 |
| 0.06 | 0.16 ... 0.25 | 50 | 2.44 | MS116-0.25-HKF1-11 | 1SAM250005R1002 | 0.240 |
| 0.09 | 0.25 ... 0.40 | 50 | 3.90 | MS116-0.4-HKF1-11 | 1SAM250005R1003 | 0.240 |
| 0.12 | 0.40 ... 0.63 | 50 | 6.14 | MS116-0.63-HKF1-11 | 1SAM250005R1004 | 0.240 |
| 0.25 | 0.63 ... 1.00 | 50 | 11.50 | MS116-1.0-HKF1-11 | 1SAM250005R1005 | 0.240 |
| 0.55 | 1.00 ... 1.60 | 50 | 18.40 | MS116-1.6-HKF1-11 | 1SAM250005R1006 | 0.280 |
| 0.75 | 1.60 ... 2.50 | 50 | 28.75 | MS116-2.5-HKF1-11 | 1SAM250005R1007 | 0.280 |
| 1.5 | 2.50 ... 4.00 | 50 | 50.00 | MS116-4.0-HKF1-11 | 1SAM250005R1008 | 0.280 |
| 2.2 | 4.00 ... 6.30 | 50 | 78.75 | MS116-6.3-HKF1-11 | 1SAM250005R1009 | 0.280 |
| 4.0 | 6.30 ... 10.0 | 50 | 150 | MS116-10.0-HKF1-11 | 1SAM250005R1010 | 0.280 |
| 5.5 | 8.00 ... 12.0 | 25 | 180 | MS116-12.0-HKF1-11 | 1SAM250005R1012 | 0.280 |
| 7.5 | 10.0 ... 16.0 | 16 | 240 | MS116-16.0-HKF1-11 | 1SAM250005R1011 | 0.280 |
| 9.0 | 16.0 ... 20.0 | 10 | 300 | MS116-20-HKF1-11 | 1SAM250005R1013 | 0.326 |
| 12.5 | 20.0 ... 25.0 | 10 | 375 | MS116-25-HKF1-11 | 1SAM250005R1014 | 0.326 |
| 15.5 | 25.0 ... 32.0 | 10 | 480 | MS116-32-HKF1-11 | 1SAM250005R1015 | 0.326 |

Main dimensions mm, inches



MS116 ≤ 16 A & MS116-HKF1-11 ≤ 16 A

MS116 ≥ 20 A & MS116-HKF1-11 ≥ 20 A

MS116 manual motor starters

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MS116 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC |
| Rated frequency | 50/60 Hz |
| Trip class | 10A |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 230 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|------------|---|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| MS116-0.16 | No back-up fuse required up to $I_{cc} = 50$ kA | | | | | | | | | | | | | | |
| MS116-0.25 | | | | | | | | | | | | | | | |
| MS116-0.4 | | | | | | | | | | | | | | | |
| MS116-0.63 | | | | | | | | | | | | | | | |
| MS116-1.0 | | | | | | | | | | | | | | | |
| MS116-1.6 | No back-up fuse required up to $I_{cc} = 30$ kA | | | | | | | | | | | | | | |
| MS116-2.5 | | | | | | | 10 | 10 | 25 | 10 | 10 | 25 | 5 | 5 | 25 |
| MS116-4.0 | | | | | | | 6 | 6 | 25 | 6 | 6 | 25 | 2 | 2 | 25 |
| MS116-6.3 | | | | | | | 6 | 6 | 63 | 6 | 6 | 63 | 2 | 2 | 40 |
| MS116-10 | | | | | | | 6 | 6 | 63 | 6 | 6 | 63 | 2 | 2 | 50 |
| MS116-12 | 25 | 25 | 80 | 25 | 25 | 80 | 6 | 6 | 63 | 6 | 6 | 63 | 2 | 2 | 50 |
| MS116-16 | 16 | 16 | 80 | 16 | 16 | 80 | 6 | 6 | 63 | 4 | 4 | 63 | 2 | 2 | 63 |
| MS116-20 | 10 | 15 | - | 10 | 15 | - | 3 | 6 | - | 3 | 4 | - | 2 | 2 | - |
| MS116-25 | 10 | 15 | - | 10 | 15 | - | 3 | 6 | - | 3 | 4 | - | 2 | 2 | - |
| MS116-32 | 10 | 10 | - | 10 | 10 | - | 3 | 6 | - | 3 | 4 | - | 2 | 2 | - |

MS116-10: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.

MS116-16: No need for back-up fuse in networks with a prospective current of up to 16 kA at 400 V.

With an appropriate 80 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

MS116-32: No need for back-up fuse in networks with a prospective current of up to 15 kA at 400 V.

MS116 manual motor starters

Technical data

Main circuit – Utilization characteristics according to UL/CSA

| | | |
|---------------------------------|--|---------------------------------------|
| Type | MS116 | |
| Standards | UL 508, CSA 22.2 No. 14 | |
| Maximum operational voltage | 600 V AC | |
| Manual motor controller ratings | See table "UL 508 – Manual motor controller" | |
| Trip rating | 125 % FLA | |
| Motor ratings | Horse power | See table "Motor rating, three phase" |
| | Full load amps (FLA) | See table "Motor rating, three phase" |
| | Locked rotor amps (LRA) | See table "Motor rating, three phase" |

Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

| Type | 110-120 V AC | | | 220-240 V AC | | | 440-480 V AC | | | 500-600 V AC | | |
|------------|--------------|------|------|--------------|------|------|--------------|------|------|--------------|------|------|
| | hp | FLA | LRA | hp | FLA | LRA | hp | FLA | LRA | hp | FLA | LRA |
| MS116-0.16 | - | 0.16 | 0.96 | - | 0.16 | 0.96 | - | 0.16 | 0.96 | - | 0.16 | 0.96 |
| MS116-0.25 | - | 0.25 | 1.5 | - | 0.25 | 1.5 | - | 0.25 | 1.5 | - | 0.25 | 1.5 |
| MS116-0.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 |
| MS116-0.63 | - | 0.63 | 3.78 | - | 0.63 | 3.78 | - | 0.63 | 3.78 | - | 0.63 | 3.78 |
| MS116-1.0 | - | 1.0 | 6.0 | - | 1.0 | 6.0 | - | 1.0 | 6.0 | 1/2 | 0.9 | 8 |
| MS116-1.6 | - | 1.6 | 9.6 | - | 1.6 | 9.6 | 3/4 | 1.6 | 12.5 | 3/4 | 1.3 | 10 |
| MS116-2.5 | - | 2.5 | 15.0 | 1/2 | 2.2 | 20 | 1 | 2.1 | 15 | 1-1/2 | 2.4 | 16 |
| MS116-4.0 | - | 4.0 | 16.0 | 1 | 4.2 | 30 | 2 | 3.4 | 25 | 3 | 3.9 | 25.6 |
| MS116-6.3 | 1/2 | 4.4 | 40 | 1-1/2 | 6.4 | 40 | 3 | 4.8 | 32 | 5 | 6.1 | 36.8 |
| MS116-10 | 1 | 8.4 | 60 | 3 | 9.6 | 64 | 5 | 7.6 | 46 | 7-1/2 | 9 | 50.8 |
| MS116-12 | 1-1/2 | 12 | 80 | 3 | 9.6 | 64 | 7-1/2 | 11 | 63.5 | 10 | 11 | 64.8 |
| MS116-16 | 2 | 13.6 | 100 | 5 | 15.2 | 92 | 10 | 14 | 81 | 10 | 11 | 64.8 |
| MS116-20 | 3 | 19.2 | 128 | 5 | 15.2 | 92 | 10 | 14 | 81 | 15 | 17 | 93 |
| MS116-25 | 3 | 19.2 | 128 | 7-1/2 | 22 | 127 | 15 | 21 | 116 | 20 | 22 | 116 |
| MS116-32 | 5 | 30.4 | 184 | 10 | 28 | 162 | 20 | 27 | 145 | 25 | 27 | 146 |

UL 508 – Manual motor controller

| Type | Maximum fuse type K5 o. RK5 per UL/NEC 480 V / 600 V A | Maximum short-circuit current for motor disconnect ¹⁾ | | | |
|------------|--|--|----|-------|----|
| | | 480 V | | 600 V | |
| | | kA | kA | kA | kA |
| MS116-0.16 | 100 | 30 | 5 | 18 | 5 |
| MS116-0.25 | 100 | 30 | 5 | 18 | 5 |
| MS116-0.4 | 100 | 30 | 5 | 18 | 5 |
| MS116-0.63 | 100 | 30 | 5 | 18 | 5 |
| MS116-1.0 | 100 | 30 | 5 | 18 | 5 |
| MS116-1.6 | 100 | 30 | 5 | 18 | 5 |
| MS116-2.5 | 100 | 30 | 5 | 18 | 5 |
| MS116-4.0 | 100 | 18 | 5 | 18 | 5 |
| MS116-6.3 | 100 | 18 | 5 | 18 | 5 |
| MS116-10 | 100 | 18 | 5 | 18 | 5 |
| MS116-12 | 100 | 18 | 5 | 18 | 5 |
| MS116-16 | 100 | 18 | 5 | 18 | 5 |
| MS116-20 | 100 | 18 | 5 | 18 | 5 |
| MS116-25 | 100 | 18 | 5 | 18 | 5 |
| MS116-32 | 100 | 18 | 5 | 18 | 5 |

¹⁾ Suitable as motor disconnect only when provided with padlock SA1 or SA3...



MS116 manual motor starters

Technical data

General technical data

| | | |
|---|---|----------------|
| Type | MS116 | |
| Pollution degree | 3 | |
| Phase loss sensitive | Yes | |
| Ambient air temperature | | |
| Operation | Open - compensated without derating | -25 ... +55 °C |
| | Open | -25 ... +70 °C |
| | Enclosed (IB132) | 0 ... +40 °C |
| Storage | -50 ... +80 °C | |
| Ambient air temperature compensation | Continuous | |
| Maximum operating altitude permissible | 2000 m | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 5 g / 3 ... 150 Hz | |
| Mounting position | Position 1-6 (optional for single mounting) | |
| Mounting | DIN-rail (EN 60715) | |
| Group mounting | On request | |
| Minimum distance to other units same type | Horizontal | 0 mm |
| | Vertical | 150 mm |
| Minimum distance to electrical conductive board | Horizontal, up to 400 V | 0 mm |
| | Horizontal, up to 690 V | > 1.5 mm |
| | Vertical | 75 mm |
| Degree of protection | Enclosure / terminals | IP20 |

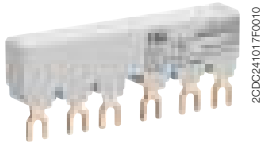
Connecting characteristics

| Main circuit | | MS116 ≤ 16 A | MS116 ≥ 20 A |
|--|----------|----------------------------------|---------------------------|
| Type | | | |
| Connecting capacity | | | |
|  Solid | 1 or 2 x | 1 ... 4 mm ² | 2.5 ... 6 mm ² |
|  Flexible | 1 or 2 x | 0.75 ... 2.5 mm ² | 1 ... 6 mm ² |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 16-12 | AWG 12-8 |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 16-12 | AWG 12-8 |
| Stripping length | | 9 mm | 10 mm |
| Tightening torques | | 0.8 ... 1.2 Nm / 10 ... 12 lb.in | 2.0 Nm / 18 lb.in |
| Connection screw | | M3.5 (Pozidriv 2 / 5.5 mm) | M4 (Pozidriv 2 / 6.5 mm) |

MS116 manual motor starters

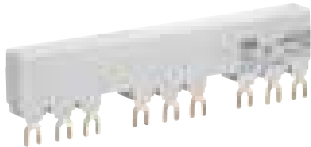
Main accessories

2



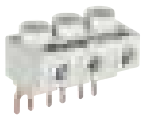
PS1-2-0-65

2CDC241017F0010



PS1-3-1-100

2CDC241014F0010



S1-M1-25

1SBC101228F0014



S1-M2-25

1SBC101266F0014



SA1

SKO108B91

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 100 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|-------------|-----------------|---------|----------------------|
| Three-phase busbars | | | | | | |
| 65 | 2 | 0 | PS1-2-0-65 | 1SAM201906R1102 | 10 | 0.034 |
| 65 | 3 | 0 | PS1-3-0-65 | 1SAM201906R1103 | 10 | 0.055 |
| 65 | 4 | 0 | PS1-4-0-65 | 1SAM201906R1104 | 10 | 0.077 |
| 65 | 5 | 0 | PS1-5-0-65 | 1SAM201906R1105 | 10 | 0.098 |
| 65 | 2 | 1 | PS1-2-1-65 | 1SAM201906R1112 | 10 | 0.036 |
| 65 | 3 | 1 | PS1-3-1-65 | 1SAM201906R1113 | 10 | 0.060 |
| 65 | 4 | 1 | PS1-4-1-65 | 1SAM201906R1114 | 10 | 0.087 |
| 65 | 5 | 1 | PS1-5-1-65 | 1SAM201906R1115 | 10 | 0.108 |
| 65 | 2 | 2 | PS1-2-2-65 | 1SAM201906R1122 | 10 | 0.040 |
| 65 | 3 | 2 | PS1-3-2-65 | 1SAM201906R1123 | 10 | 0.067 |
| 65 | 4 | 2 | PS1-4-2-65 | 1SAM201906R1124 | 10 | 0.095 |
| 65 | 5 | 2 | PS1-5-2-65 | 1SAM201906R1125 | 10 | 0.122 |
| 100 | 3 | 0 | PS1-3-0-100 | 1SAM201916R1103 | 10 | 0.084 |
| 100 | 4 | 0 | PS1-4-0-100 | 1SAM201916R1104 | 10 | 0.117 |
| 100 | 5 | 0 | PS1-5-0-100 | 1SAM201916R1105 | 10 | 0.154 |
| 100 | 3 | 1 | PS1-3-1-100 | 1SAM201916R1113 | 10 | 0.094 |
| 100 | 4 | 1 | PS1-4-1-100 | 1SAM201916R1114 | 10 | 0.134 |
| 100 | 5 | 1 | PS1-5-1-100 | 1SAM201916R1115 | 10 | 0.172 |
| 100 | 3 | 2 | PS1-3-2-100 | 1SAM201916R1123 | 10 | 0.105 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------------------------------|--|-------------------|----------|-----------------|---------|----------------------|
| Three-phase feeder terminals | | | | | | |
| 65 | 25 | Flat | S1-M1-25 | 1SAM201907R1101 | 10 | 0.038 |
| 65 | 25 | High | S1-M2-25 | 1SAM201907R1102 | 10 | 0.051 |
| 65 | 25 | UL type E and IEC | S1-M3-25 | 1SAM201907R1103 | 10 | 0.042 |
| 100 | 35 | UL type E and IEC | S1-M3-35 | 1SAM201913R1103 | 10 | 0.060 |

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-------|-----------------|---------|----------------------|
| Protection cover for busbars | BS1-3 | 1SAM201908R1001 | 50 | 0.003 |
| Lock handle | SA1 | GJF1101903R0001 | 10 | 0.003 |
| Padlock | SA2 | GJF1101903R0002 | 10 | 0.020 |
| Lock handle box SA1/SA2 | SA3 | GJF1101903R0003 | 10 | 0.050 |
| Screw fixing kit | FS116 | 1SAM201909R1001 | 1 | 0.020 |

MS116 manual motor starters

Main accessories



HKF1-11

1SBC101208F0014



HK1-11

1SBC101208F0014



SK1-11

1SBC101210F0014



AA1-24

1SBC101211F0014



UA1-24

1SBC101212F0014

Description

MS116 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signalling contact signals tripping regardless if it was caused by short-circuit or overload. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts: N.O. | Auxiliary contacts: N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) |
|--------------------------|--------------------------|-------------|------|------------|---------|----------------|
|--------------------------|--------------------------|-------------|------|------------|---------|----------------|

Auxiliary contacts – mountable on the front

| | | | | | | |
|---|---|--|---------|-----------------|----|-------|
| 1 | 1 | | HKF1-11 | 1SAM201901R1001 | 10 | 0.015 |
| 1 | 1 | | HKF1-20 | 1SAM201901R1002 | 10 | 0.015 |

Auxiliary contacts – mountable on the right

| | | | | | | |
|---|---|--------------------|---------|-----------------|---|-------|
| 1 | 1 | max. 2 pieces | HK1-11 | 1SAM201902R1001 | 2 | 0.035 |
| 2 | 0 | max. 2 pieces | HK1-20 | 1SAM201902R1002 | 2 | 0.035 |
| 0 | 2 | max. 2 pieces | HK1-02 | 1SAM201902R1003 | 2 | 0.035 |
| 2 | 0 | with lead contacts | HK1-20L | 1SAM201902R1004 | 2 | 0.035 |

Signalling contacts – mountable on the right

| | | | | | | |
|---|---|----------------------------------|--------|-----------------|---|-------|
| 1 | 1 | for tripped alarm, max. 2 pieces | SK1-11 | 1SAM201903R1001 | 2 | 0.035 |
| 2 | 0 | for tripped alarm, max. 2 pieces | SK1-20 | 1SAM201903R1002 | 2 | 0.035 |
| 0 | 2 | for tripped alarm, max. 2 pieces | SK1-02 | 1SAM201903R1003 | 2 | 0.035 |

| Rated control supply voltage | Frequency | Type | Order code | Pkg qty | Weight (1 pce) |
|------------------------------|-----------|------|------------|---------|----------------|
|------------------------------|-----------|------|------------|---------|----------------|

V Hz kg

Shunt trip units – mountable on the left

| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50/60 | AA1-24 | 1SAM201910R1001 | 1 | 0.100 |
| 110 | 50/60 | AA1-110 | 1SAM201910R1002 | 1 | 0.100 |
| 200 ... 240 | 50/60 | AA1-230 | 1SAM201910R1003 | 1 | 0.100 |
| 350 ... 415 | 50/60 | AA1-400 | 1SAM201910R1004 | 1 | 0.100 |

Undervoltage releases – mountable on the left

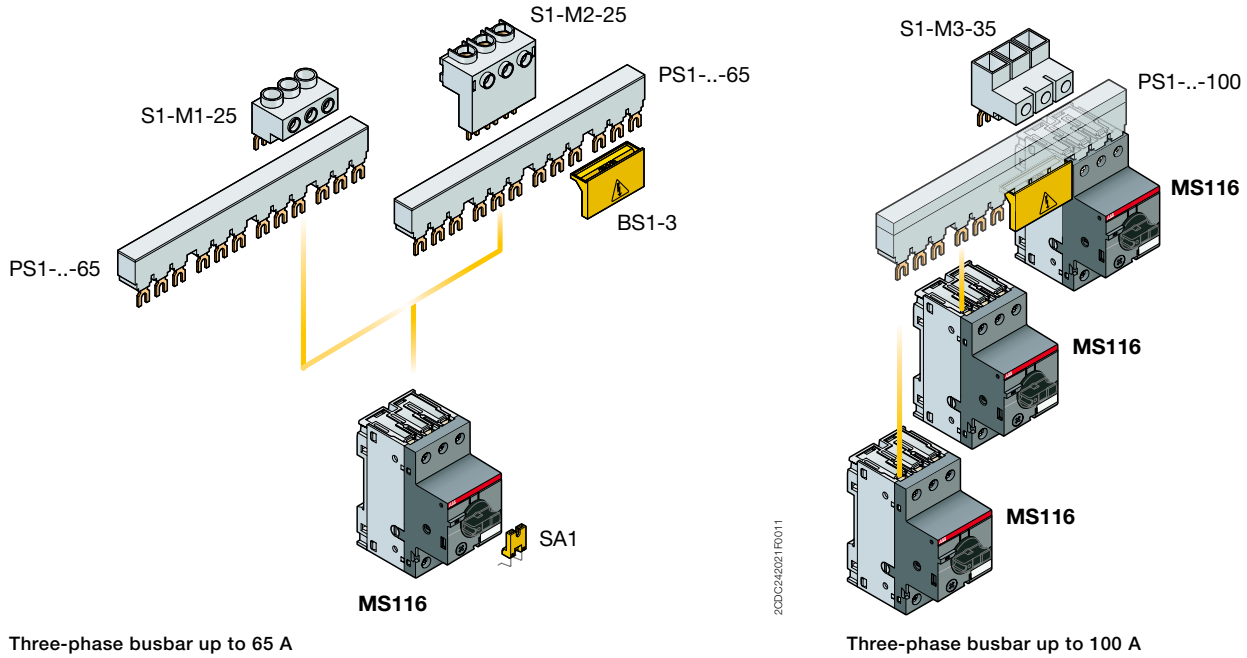
| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50 | UA1-24 | 1SAM201904R1001 | 1 | 0.100 |
| 48 | 50 | UA1-48 | 1SAM201904R1002 | 1 | 0.100 |
| 60 | 50 | UA1-60 | 1SAM201904R1003 | 1 | 0.100 |
| 110 ... 120 | 50/60 | UA1-120 | 1SAM201904R1004 | 1 | 0.100 |
| 208 | 60 | UA1-208 | 1SAM201904R1008 | 1 | 0.100 |
| 230 ... 240 | 50/60 | UA1-230 | 1SAM201904R1005 | 1 | 0.100 |
| 400 | 50 | UA1-400 | 1SAM201904R1006 | 1 | 0.100 |
| 415 ... 480 | 50/60 | UA1-415 | 1SAM201904R1007 | 1 | 0.100 |

MS116 manual motor starters

Main accessories

Manual motor starter with three-phase busbar systems

2



Three-phase busbar up to 65 A

Three-phase busbar up to 100 A

General technical data

| Type | PS1-xxx-65 | PS1-xxx-100 | S1-Mx-25 | S1-Mx-35 |
|--|--|--------------------|--------------------|--------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | | |
| Rated operational voltage U_n | 690 V | | | |
| Rated operational current I_n | 65 A | 100 A | 65 A | 100 A |
| Rated frequency | 50/60 Hz | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | |
| Rated insulation voltage U_i | 690 V AC | | | |
| Pollution degree | 3 | | | |
| Cross-section | 10 mm ² | 16 mm ² | 25 mm ² | 35 mm ² |
| Ambient air temperature | Operation -25 ... +70 °C Storage -50 ... +80 °C | | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | | |

Electrical connection

Main circuit

| Type | S1-Mx-25 | S1-Mx-35 |
|-------------------------|--------------------------------|---------------------------|
| Connecting capacity | | |
| Solid | 1 x : 6 ... 25 mm ² | 10 ... 35 mm ² |
| Flexible | 1 x : 6 ... 16 mm ² | 10 ... 35 mm ² |
| Stranded acc. to UL/CSA | 1 x : AWG 10-4 | AWG 8-2 |
| Flexible acc. to UL/CSA | 1 x : AWG 10-6 | AWG 8-2 |
| Stripping length | 10 mm | 12 mm |
| Tightening torques | 2.5 Nm / 22 lb.in | 4.5 Nm / 40 lb.in |
| Connection screw | PZ2 (6 mm) | Hexagon SW4 |

MS116 manual motor starters



Main accessories

General technical data

| Type | HK1 | SK1 | HKF1 |
|--|--|-----------------|---------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | |
| Rated operational voltage U_e | 690 V AC / 600 V DC | | 250 V AC / 250 V DC |
| Conventional free-air thermal current I_{th} | 65 A | 100 A | 100 A |
| Rated frequency | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V AC | | |
| Pollution degree | 3 | | |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | |
| Number of poles | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 1 N.C. + 1 N.O. | 1 N.C. + 1 N.O. |
| I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | |
| | 24 V, 120 V, 50/60 Hz | 6 A | 3 A |
| | 240 V, 50/60 Hz | 4 A | 1.5 A |
| | 400 V, 50/60 Hz | 3 A | - |
| | 440 V, 600 V, 690 V, 50/60 Hz | 1 A | - |
| I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | |
| | 24 V | 2 A | 1 A |
| | 125 V | 0.55 A | 0.27 A |
| | 250 V | 0.27 A | 0.11 A |
| | 440 V, 600 V | 0.15 A | - |
| Minimum switching capacity | 17 V / 3 mA | | |
| Short-circuit protective device | N.C., 95-96 | 10 A Type gG | |
| | N.O., 97-98 | 10 A Type gG | |
| Duty time | 100 % | | |
| Mounting | Right side of MMS | | Front of MMS |
| Mounting positions | 1-6 | | |
| Mechanical durability | 50000 cycles | | - |
| Electrical durability | 50000 cycles | | - |

Electrical connection

Main circuit

| Type | HK1 | SK1 | HKF1 |
|--|--------------------------|------------------------------|------|
| Connecting capacity | | | |
|  Solid | 1 or 2 x | 1 ... 1.5 mm ² | |
|  Flexible | 1 or 2 x | 0.75 ... 1.5 mm ² | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 16-14 | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 16-14 | |
| Stripping length | 8 mm | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 lb.in | | |
| Connection screw | M3 (Pozidriv 2) | | |

MS116 manual motor starters

Main accessories

2



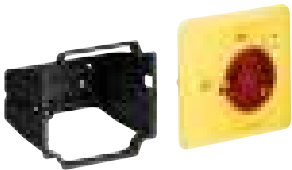
2CDC241003F0010

IB132-Y



2CDC241003F0010

IB132-G



2CDC241002F0010

DMS132-Y



2CDC241001F0010

DMS132-G

Description

IB132 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

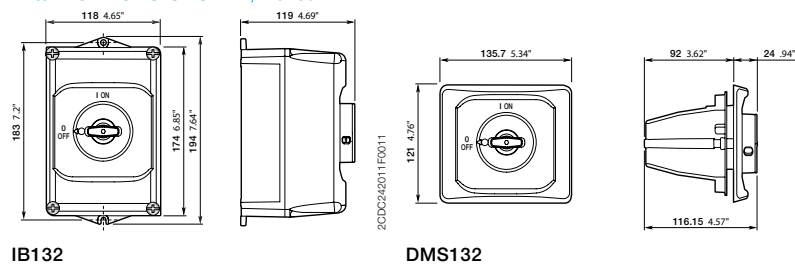
DMS132 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|------------|----------|-----------------|---------|-------------------|
| Enclosures IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | IB132-Y | 1SAM201911R1011 | 1 | 0.370 |
| | Grey/black | IB132-G | 1SAM201911R1010 | 1 | 0.370 |
| Door mounting kit IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | DMS132-Y | 1SAM201912R1011 | 1 | 0.170 |
| | Grey/black | DMS132-G | 1SAM201912R1010 | 1 | 0.170 |

Indication I-O-T and ON-OFF-T

Main dimensions mm, inches



MS116 manual motor starters

Main accessories



2CDC241003F0011

MSHD-LB



2CDC241002S0011

MSHD-LY



2CDC241004S0011

MSMN



2CDC241005S0011

MSOX-30



2CDC241001S0012

MSH-AR

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------|------|------------|------------|-------------------------|
|-------------|-------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|-----------------------|-----------------|---|-------|
| Black | MSHD-LB ¹⁾ | 1SAM201920R1001 | 1 | 0.065 |
| Yellow | MSHD-LY | 1SAM201920R1002 | 1 | 0.065 |

¹⁾ Indication I-O and ON-OFF

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Driver shafts

Driver shaft - combination driver & shaft. Shaft diameter 6 mm.

| | | | | |
|----|-----------------------|-----------------|---|-------|
| 32 | MSOX-32 ¹⁾ | 1SAM101924R0003 | 1 | 0.010 |
| 30 | MSOX-30 ²⁾ | 1SAM101924R0013 | 1 | 0.010 |

¹⁾ MSOX-32 is for normal vertical use

²⁾ MSOX-30 is for horizontal use

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Shaft alignment ring

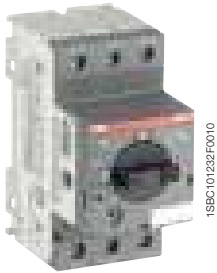
The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy.

| | | | |
|--------|-----------------|---|-------|
| MSH-AR | 1SAM201920R1000 | 1 | 0.010 |
|--------|-----------------|---|-------|

MS132 manual motor starters

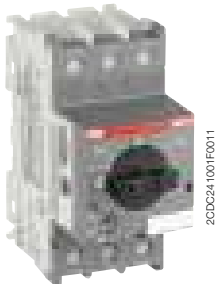
0.10 to 32 A – with thermal and electromagnetic protection

2



MS132-10

1SBC101232F0010



MS132-32

2CDC241001F0011



MS132-0.16-HKF1-11

2CDC241014F0011



MS132-32-HKF1-11

2CDC241015F0011

Description

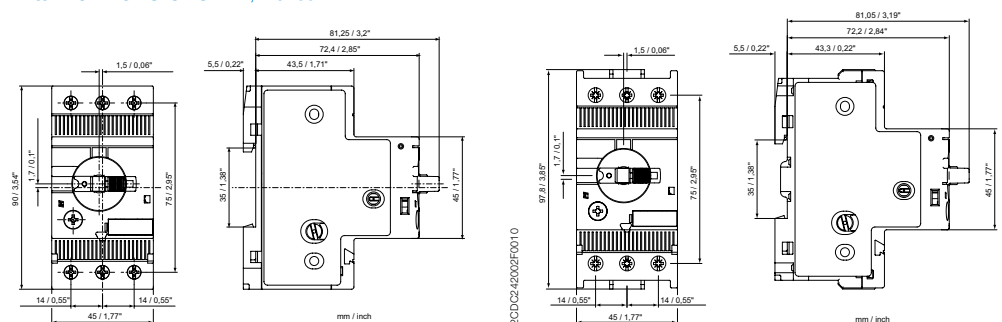
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

MS132 is a compact and powerful range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. Further features are the built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase bus bars, power in-feed blocks.

Ordering details

| Rated operational power 400 V AC-3 | Setting range | Short-circuit breaking capacity I_{cs} at 400 V AC | Rated instantaneous short-circuit current setting I_i | Type | Order code | Weight (1 pce) |
|------------------------------------|---------------|--|---|--------------------|-----------------|----------------|
| kW | A | kA | A | | | kg |
| 0.03 | 0.10 ... 0.16 | 100 | 1.56 | MS132-0.16 | 1SAM350000R1001 | 0.215 |
| 0.06 | 0.16 ... 0.25 | 100 | 2.44 | MS132-0.25 | 1SAM350000R1002 | 0.215 |
| 0.09 | 0.25 ... 0.40 | 100 | 3.90 | MS132-0.4 | 1SAM350000R1003 | 0.215 |
| 0.12 | 0.40 ... 0.63 | 100 | 6.14 | MS132-0.63 | 1SAM350000R1004 | 0.215 |
| 0.25 | 0.63 ... 1.00 | 100 | 11.50 | MS132-1.0 | 1SAM350000R1005 | 0.215 |
| 0.55 | 1.00 ... 1.60 | 100 | 18.40 | MS132-1.6 | 1SAM350000R1006 | 0.265 |
| 0.75 | 1.60 ... 2.50 | 100 | 28.75 | MS132-2.5 | 1SAM350000R1007 | 0.265 |
| 1.5 | 2.50 ... 4.00 | 100 | 50.00 | MS132-4.0 | 1SAM350000R1008 | 0.265 |
| 2.2 | 4.00 ... 6.30 | 100 | 78.75 | MS132-6.3 | 1SAM350000R1009 | 0.265 |
| 4.0 | 6.30 ... 10.0 | 100 | 150 | MS132-10 | 1SAM350000R1010 | 0.265 |
| 5.5 | 8.00 ... 12.0 | 100 | 180 | MS132-12 | 1SAM350000R1012 | 0.310 |
| 7.5 | 10.0 ... 16.0 | 100 | 240 | MS132-16 | 1SAM350000R1011 | 0.310 |
| 9.0 | 16.0 ... 20.0 | 100 | 300 | MS132-20 | 1SAM350000R1013 | 0.310 |
| 12.5 | 20.0 ... 25.0 | 50 | 375 | MS132-25 | 1SAM350000R1014 | 0.310 |
| 15.5 | 25.0 ... 32.0 | 25 | 480 | MS132-32 | 1SAM350000R1015 | 0.310 |
| 0.03 | 0.10 ... 0.16 | 100 | 1.56 | MS132-0.16-HKF1-11 | 1SAM350005R1001 | 0.231 |
| 0.06 | 0.16 ... 0.25 | 100 | 2.44 | MS132-0.25-HKF1-11 | 1SAM350005R1002 | 0.231 |
| 0.09 | 0.25 ... 0.40 | 100 | 3.90 | MS132-0.4-HKF1-11 | 1SAM350005R1003 | 0.231 |
| 0.12 | 0.40 ... 0.63 | 100 | 6.14 | MS132-0.63-HKF1-11 | 1SAM350005R1004 | 0.231 |
| 0.25 | 0.63 ... 1.00 | 100 | 11.50 | MS132-1.0-HKF1-11 | 1SAM350005R1005 | 0.231 |
| 0.55 | 1.00 ... 1.60 | 100 | 18.40 | MS132-1.6-HKF1-11 | 1SAM350005R1006 | 0.281 |
| 0.75 | 1.60 ... 2.50 | 100 | 28.75 | MS132-2.5-HKF1-11 | 1SAM350005R1007 | 0.281 |
| 1.5 | 2.50 ... 4.00 | 100 | 50.00 | MS132-4.0-HKF1-11 | 1SAM350005R1008 | 0.281 |
| 2.2 | 4.00 ... 6.30 | 100 | 78.75 | MS132-6.3-HKF1-11 | 1SAM350005R1009 | 0.281 |
| 4.0 | 6.30 ... 10.0 | 100 | 150 | MS132-10.0-HKF1-11 | 1SAM350005R1010 | 0.281 |
| 5.5 | 8.00 ... 12.0 | 100 | 180 | MS132-12.0-HKF1-11 | 1SAM350005R1012 | 0.326 |
| 7.5 | 10.0 ... 16.0 | 100 | 240 | MS132-16.0-HKF1-11 | 1SAM350005R1011 | 0.326 |
| 9.0 | 16.0 ... 20.0 | 100 | 300 | MS132-20-HKF1-11 | 1SAM350005R1013 | 0.326 |
| 12.5 | 20.0 ... 25.0 | 50 | 375 | MS132-25-HKF1-11 | 1SAM350005R1014 | 0.326 |
| 15.5 | 25.0 ... 32.0 | 25 | 480 | MS132-32-HKF1-11 | 1SAM350005R1015 | 0.326 |

Main dimensions mm, inches



MS132 ≤ 10 A

MS132 ≥ 12 A

MS132 manual motor starters

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MS132 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC / 250 V DC |
| Rated frequency | DC, 50/60 Hz |
| Trip class | 10 (10A for 1SAM350000R1001) |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 230 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|------------|--|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| MS132-0.16 | | | | | | | | | | | | | | | |
| MS132-0.25 | | | | | | | | | | | | | | | |
| MS132-0.4 | | | | | | | | | | | | | | | |
| MS132-0.63 | | | | | | | | | | | | | | | |
| MS132-1.0 | | | | | | | | | | | | | | | |
| MS132-1.6 | | | | | | | | | | | | | | | |
| MS132-2.5 | No back-up fuse required up to $I_{cc} = 100$ kA | | | | | | | | | | | | | | |
| MS132-4.0 | | | | | | | 20 | 20 | 35 | 20 | 20 | 35 | 3 | 3 | on request |
| MS132-6.3 | | | | | | | 20 | 20 | 63 | 20 | 20 | 63 | 3 | 3 | on request |
| MS132-10 | | | | | | | 20 | 20 | 100 | 20 | 20 | 100 | 3 | 3 | on request |
| MS132-12 | | | | | | | 20 | 20 | 100 | 20 | 20 | 100 | 3 | 3 | on request |
| MS132-16 | | | | | | | 20 | 20 | 125 | 20 | 20 | 125 | 3 | 3 | on request |
| MS132-20 | | | | | | | 20 | 20 | 125 | 20 | 20 | 125 | 3 | 3 | on request |
| MS132-25 | 50 | 50 | 125 | 50 | 50 | 125 | 20 | 20 | 125 | 10 | 10 | 125 | 3 | 3 | on request |
| MS132-32 | 25 | 50 | 125 | 25 | 50 | 125 | 20 | 20 | 125 | 10 | 10 | 125 | 3 | 3 | on request |

MS132-16: No need for back-up fuse in networks with a prospective current of up to 100 kA at 400 V.

MS132-32: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.

With an appropriate 125 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA

MS132 manual motor starters

Technical data

Main circuit – Utilization characteristics according to UL/CSA

| | | |
|---------------------------------|--|---------------------------------------|
| Type | MS132 | |
| Standards | UL 508, CSA 22.2 No. 14 | |
| Maximum operational voltage | 600 V AC | |
| Manual motor controller ratings | See table "UL 508 – Manual motor controller" | |
| Trip rating | 125 % FLA | |
| Motor ratings | Horse power | See table "Motor rating, three phase" |
| | Full load amps (FLA) | See table "Motor rating, three phase" |
| | Locked rotor amps (LRA) | See table "Motor rating, three phase" |

Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

| Type | 110-120 V AC | | | 220-240 V AC | | | 440-480 V AC | | | 500-600 V AC | | |
|------------|--------------|------|-------|--------------|------|-------|--------------|------|-------|--------------|------|-------|
| | hp | FLA | LRA | hp | FLA | LRA | hp | FLA | LRA | hp | FLA | LRA |
| MS132-0.16 | - | 0.16 | 0.96 | - | 0.16 | 0.96 | - | 0.16 | 0.96 | - | 0.16 | 0.96 |
| MS132-0.25 | - | 0.25 | 1.5 | - | 0.25 | 1.5 | - | 0.25 | 1.5 | - | 0.25 | 1.5 |
| MS132-0.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 |
| MS132-0.63 | - | 0.63 | 3.78 | - | 0.63 | 3.78 | - | 0.63 | 3.78 | - | 0.63 | 3.78 |
| MS132-1.0 | - | 1.0 | 6.0 | - | 1.0 | 6.0 | - | 1.0 | 6.0 | 1/2 | 1.0 | 6.0 |
| MS132-1.6 | - | 1.6 | 9.6 | - | 1.6 | 9.6 | 3/4 | 1.6 | 9.6 | 3/4 | 1.6 | 9.6 |
| MS132-2.5 | - | 2.5 | 15.0 | 1/2 | 2.5 | 15.0 | 1 | 2.5 | 15.0 | 1-1/2 | 2.5 | 15.0 |
| MS132-4.0 | - | 4.0 | 24.0 | 1 | 4.0 | 24.0 | 2 | 4.0 | 24.0 | 3 | 3.9 | 26.0 |
| MS132-6.3 | 1/2 | 6.3 | 37.8 | 1-1/2 | 6.3 | 37.8 | 3 | 4.8 | 32.0 | 5 | 6.1 | 37.0 |
| MS132-10 | 3/4 | 10.0 | 60.0 | 3 | 9.6 | 64.0 | 5 | 7.6 | 46.0 | 7-1/2 | 9.0 | 51.0 |
| MS132-12 | 1-1/2 | 12.0 | 72.0 | 3 | 9.6 | 64.0 | 7-1/2 | 11.0 | 64.0 | 10 | 11.0 | 65.0 |
| MS132-16 | 2 | 16.0 | 84.0 | 5 | 15.2 | 92.0 | 10 | 14.0 | 81.0 | 10 | 11.0 | 65.0 |
| MS132-20 | 3 | 19.2 | 128.0 | 5 | 15.2 | 92.0 | 10 | 14.0 | 81.0 | 15 | 17.0 | 93.0 |
| MS132-25 | 3 | 19.2 | 128.0 | 7-1/2 | 22.0 | 127.0 | 15 | 21.0 | 116.0 | 20 | 22.0 | 116.0 |
| MS132-32 | 5 | 30.4 | 184.0 | 10 | 28.0 | 162.0 | 20 | 27.0 | 145.0 | 25 | 27.0 | 146.0 |

UL 508 – Manual motor controller

| Type | Maximum short-circuit current for motor disconnect ¹⁾ | | for group installation | | for self-protected combination motor controller (type E) in combination with feeder block S1-M3-xx | | for tap conductor protection | |
|------------|--|-------|------------------------|-------|--|--------------|------------------------------|-------|
| | 480 V | 600 V | 480 V | 600 V | 480Y / 277 V | 600Y / 347 V | 480 V | 600 V |
| | kA | kA | kA | kA | kA | kA | kA | kA |
| MS132-0.16 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-0.25 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-0.4 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-0.63 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-1.0 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-1.6 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-2.5 | 65 | 47 | 65 | 47 | 65 | 47 | 65 | 47 |
| MS132-4.0 | 65 | 18 | 65 | 30 | 65 | 18 | 65 | 18 |
| MS132-6.3 | 65 | 18 | 65 | 30 | 65 | - | 65 | 18 |
| MS132-10 | 65 | 18 | 65 | 30 | 65 | - | 65 | 18 |
| MS132-12 | 30 | 18 | 30 | 30 | 30 | - | 30 | 18 |
| MS132-16 | 30 | 18 | 30 | 30 | 30 | - | 30 | 18 |
| MS132-20 | 30 | 18 | 30 | 30 | 30 | - | 30 | 18 |
| MS132-25 | 30 | 18 | 30 | 30 | 30 | - | 30 | 18 |
| MS132-32 | 30 | 18 | 30 | 30 | 30 | - | 30 | 18 |



MS132 manual motor starters

Technical data

General technical data

| | | |
|---|---|----------------|
| Type | MS132 | |
| Pollution degree | 3 | |
| Phase loss sensitive | Yes | |
| Ambient air temperature | | |
| Operation | Open - compensated without derating | -25 ... +60 °C |
| | Open | -25 ... +70 °C |
| | Enclosed (IB132) | 0 ... +40 °C |
| Storage | -50 ... +80 °C | |
| Ambient air temperature compensation | Continuous | |
| Maximum operating altitude permissible | 2000 m | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 5 g / 3 ... 150 Hz | |
| Mounting position | Position 1-6 (optional for single mounting) | |
| Mounting | DIN-rail (EN 60715) | |
| Group mounting | On request | |
| Minimum distance to other units same type | Horizontal | 0 mm |
| | Vertical | 150 mm |
| Minimum distance to electrical conductive board | Horizontal, up to 400 V | 0 mm |
| | Horizontal, up to 690 V | > 1.5 mm |
| | Vertical | 75 mm |
| Degree of protection | Enclosure / terminals | IP20 |

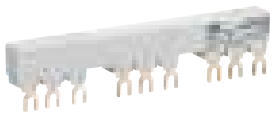
Connecting characteristics

| Main circuit | | MS132-0.16 ... MS132-10 | MS132-12 ... MS132-16 | MS132-20 ... MS132-32 |
|--|-----------------|----------------------------------|------------------------------|---------------------------|
| Type | | | | |
| Connecting capacity | | | | |
|  Solid | 1 or 2 x | 1 ... 4 mm ² | 1 ... 4 mm ² | 2.5 ... 6 mm ² |
|  Flexible | 1 or 2 x | 0.75 ... 2.5 mm ² | 0.75 ... 2.5 mm ² | 1 ... 6 mm ² |
| | | Stranded acc. to UL/CSA | AWG 16-12 | AWG 12-8 |
| | | Flexible acc. to UL/CSA | AWG 16-12 | AWG 12-8 |
| Stripping length | | 9 mm | 10 mm | 10 mm |
| Tightening torques | | 0.8 ... 1.2 Nm / 10 ... 12 lb.in | 1.5 Nm / 14 lb.in | 2.0 Nm / 18 lb.in |
| Connection screw | | M3.5 (Pozi driv 2) | M4 (Pozi driv 2) | M4 (Pozi driv 2) |

MS132 manual motor starters

Main accessories

2



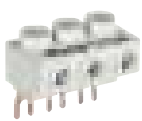
2CDC241007F0010

PS1-3-1-65



2CDC241014F0010

PS1-3-1-100



1SBC10128F0014

S1-M1-25



1SBC10126F0014

S1-M2-25



1SBC101214F0014

S1-M3-25



SK0108B91

SA2

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 100 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|-------------|-----------------|---------|----------------------|
| Three-phase busbars | | | | | | |
| 65 | 2 | 0 | PS1-2-0-65 | 1SAM201906R1102 | 10 | 0.034 |
| 65 | 3 | 0 | PS1-3-0-65 | 1SAM201906R1103 | 10 | 0.055 |
| 65 | 4 | 0 | PS1-4-0-65 | 1SAM201906R1104 | 10 | 0.077 |
| 65 | 5 | 0 | PS1-5-0-65 | 1SAM201906R1105 | 10 | 0.098 |
| 65 | 2 | 1 | PS1-2-1-65 | 1SAM201906R1112 | 10 | 0.036 |
| 65 | 3 | 1 | PS1-3-1-65 | 1SAM201906R1113 | 10 | 0.060 |
| 65 | 4 | 1 | PS1-4-1-65 | 1SAM201906R1114 | 10 | 0.087 |
| 65 | 5 | 1 | PS1-5-1-65 | 1SAM201906R1115 | 10 | 0.108 |
| 65 | 2 | 2 | PS1-2-2-65 | 1SAM201906R1122 | 10 | 0.040 |
| 65 | 3 | 2 | PS1-3-2-65 | 1SAM201906R1123 | 10 | 0.067 |
| 65 | 4 | 2 | PS1-4-2-65 | 1SAM201906R1124 | 10 | 0.095 |
| 65 | 5 | 2 | PS1-5-2-65 | 1SAM201906R1125 | 10 | 0.122 |
| 100 | 3 | 0 | PS1-3-0-100 | 1SAM201916R1103 | 10 | 0.084 |
| 100 | 4 | 0 | PS1-4-0-100 | 1SAM201916R1104 | 10 | 0.117 |
| 100 | 5 | 0 | PS1-5-0-100 | 1SAM201916R1105 | 10 | 0.154 |
| 100 | 3 | 1 | PS1-3-1-100 | 1SAM201916R1113 | 10 | 0.094 |
| 100 | 4 | 1 | PS1-4-1-100 | 1SAM201916R1114 | 10 | 0.134 |
| 100 | 5 | 1 | PS1-5-1-100 | 1SAM201916R1115 | 10 | 0.172 |
| 100 | 3 | 2 | PS1-3-2-100 | 1SAM201916R1123 | 10 | 0.105 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------------------------------|--|-------------------|----------|-----------------|---------|----------------------|
| Three-phase feeder terminals | | | | | | |
| 65 | 25 | Flat | S1-M1-25 | 1SAM201907R1101 | 10 | 0.038 |
| 65 | 25 | High | S1-M2-25 | 1SAM201907R1102 | 10 | 0.051 |
| 65 | 25 | UL type E and IEC | S1-M3-25 | 1SAM201907R1103 | 10 | 0.042 |
| 100 | 35 | UL type E and IEC | S1-M3-35 | 1SAM201913R1103 | 10 | 0.060 |

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-------|-----------------|---------|----------------------|
| Protection cover for busbars | BS1-3 | 1SAM201908R1001 | 50 | 0.003 |
| Padlock | SA2 | GJF1101903R0002 | 10 | 0.020 |
| Screw fixing kit | FS116 | 1SAM201909R1001 | 1 | 0.020 |

MS132 manual motor starters

Main accessories



HKF1-11

1SBC101208F0014



HK1-11

1SBC101209F0014



SK1-11

1SBC101210F0014



CK1-11

1SBC101286F0014



AA1-24

1SBC101211F0014



UA1-24

1SBC101212F0014

Description

MS132 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. Two different signalling contacts are available. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signalling contact SK signals tripping regardless if it was caused by short-circuit or overload. The signalling contact CK signals tripping in case it was caused by short-circuit. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts N.O. | Auxiliary contacts N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------------------|-------------------------|-------------|------|------------|---------|-------------------|
|-------------------------|-------------------------|-------------|------|------------|---------|-------------------|

Auxiliary contacts – mountable on the front

| | | | | | | |
|---|---|--|---------|-----------------|----|-------|
| 1 | 1 | | HKF1-11 | 1SAM201901R1001 | 10 | 0.015 |
| 1 | 1 | | HKF1-20 | 1SAM201901R1002 | 10 | 0.015 |

Auxiliary contacts – mountable on the right

| | | | | | | |
|---|---|--------------------|---------|-----------------|---|-------|
| 1 | 1 | max. 2 pieces | HK1-11 | 1SAM201902R1001 | 2 | 0.035 |
| 2 | 0 | max. 2 pieces | HK1-20 | 1SAM201902R1002 | 2 | 0.035 |
| 0 | 2 | max. 2 pieces | HK1-02 | 1SAM201902R1003 | 2 | 0.035 |
| 2 | 0 | with lead contacts | HK1-20L | 1SAM201902R1004 | 2 | 0.035 |

Signalling contacts – mountable on the right

| | | | | | | |
|---|---|--|--------|-----------------|---|-------|
| 1 | 1 | for tripped alarm, max. 2 pieces | SK1-11 | 1SAM201903R1001 | 2 | 0.035 |
| 2 | 0 | for tripped alarm, max. 2 pieces | SK1-20 | 1SAM201903R1002 | 2 | 0.035 |
| 0 | 2 | for tripped alarm, max. 2 pieces | SK1-02 | 1SAM201903R1003 | 2 | 0.035 |
| 1 | 1 | for short-circuit alarm, max. 2 pieces | CK1-11 | 1SAM301901R1001 | 2 | 0.035 |
| 2 | 0 | for short-circuit alarm, max. 2 pieces | CK1-20 | 1SAM301901R1002 | 2 | 0.035 |
| 0 | 2 | for short-circuit alarm, max. 2 pieces | CK1-02 | 1SAM301901R1003 | 2 | 0.035 |

| Rated control supply voltage | Frequency | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-----------|------|------------|---------|-------------------|
| V | Hz | | | | kg |

Shunt trip units – mountable on the left

| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50/60 | AA1-24 | 1SAM201910R1001 | 1 | 0.100 |
| 110 | 50/60 | AA1-110 | 1SAM201910R1002 | 1 | 0.100 |
| 200 ... 240 | 50/60 | AA1-230 | 1SAM201910R1003 | 1 | 0.100 |
| 350 ... 415 | 50/60 | AA1-400 | 1SAM201910R1004 | 1 | 0.100 |

Undervoltage releases – mountable on the left

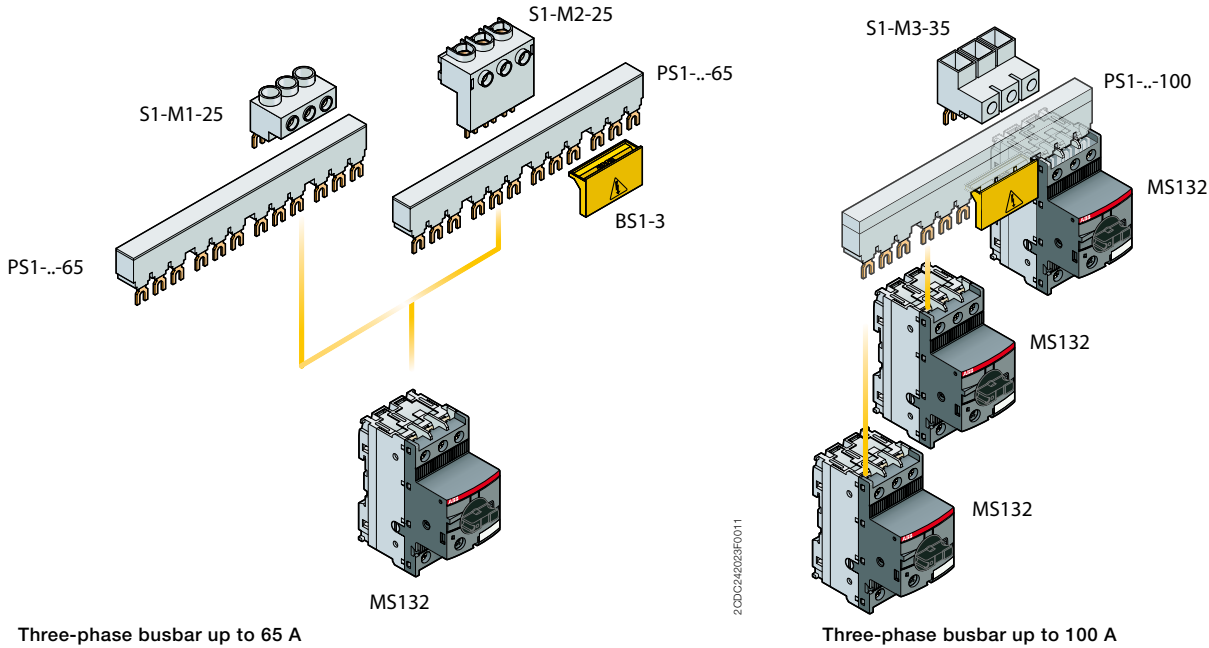
| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50 | UA1-24 | 1SAM201904R1001 | 1 | 0.100 |
| 48 | 50 | UA1-48 | 1SAM201904R1002 | 1 | 0.100 |
| 60 | 50 | UA1-60 | 1SAM201904R1003 | 1 | 0.100 |
| 110 ... 120 | 50/60 | UA1-120 | 1SAM201904R1004 | 1 | 0.100 |
| 208 | 60 | UA1-208 | 1SAM201904R1008 | 1 | 0.100 |
| 230 ... 240 | 50/60 | UA1-230 | 1SAM201904R1005 | 1 | 0.100 |
| 400 | 50 | UA1-400 | 1SAM201904R1006 | 1 | 0.100 |
| 415 ... 480 | 50/60 | UA1-415 | 1SAM201904R1007 | 1 | 0.100 |

MS132 manual motor starters

Main accessories

2

Manual motor starter with three-phase busbar systems



General technical data

| Type | PS1-xxx-65 | PS1-xxx-100 | S1-Mx-25 | S1-Mx-35 |
|--|--|--------------------|--------------------|--------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | | |
| Rated operational voltage U_n | 690 V | | | |
| Rated operational current I_n | 65 A | 100 A | 65 A | 100 A |
| Rated frequency | 50/60 Hz | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | |
| Rated insulation voltage U_i | 690 V AC | | | |
| Pollution degree | 3 | | | |
| Cross-section | 10 mm ² | 16 mm ² | 25 mm ² | 35 mm ² |
| Ambient air temperature | Operation: -25 ... +70 °C Storage: -50 ... +80 °C | | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | | |

Electrical connection

Main circuit

| Type | S1-Mx-25 | S1-Mx-35 |
|-------------------------|------------------------------|---------------------------|
| Connecting capacity | | |
| Solid | 1 x 6 ... 25 mm ² | 10 ... 35 mm ² |
| Flexible | 1 x 6 ... 16 mm ² | 10 ... 35 mm ² |
| Stranded acc. to UL/CSA | 1 x AWG 10-4 | AWG 8-2 |
| Flexible acc. to UL/CSA | 1 x AWG 10-6 | AWG 8-2 |
| Stripping length | 10 mm | 12 mm |
| Tightening torques | 2.5 Nm / 22 lb.in | 4.5 Nm / 40 lb.in |
| Connection screw | PZ2 (6 mm) | Hexagon SW4 |

MS132 manual motor starters



Main accessories

General technical data

| Type | HK1 | SK1 | CK1 | HKF1 |
|--|--|-----------------|--------------------------------------|---------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | | |
| Rated operational voltage U_e | 690 V AC / 600 V DC | | | 250 V AC / 250 V DC |
| Conventional free-air thermal current I_{th} | 65 A | 100 A | 65 A | 100 A |
| Rated frequency | 50/60 Hz | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | |
| Rated insulation voltage U_i | 690 V AC | | | |
| Pollution degree | 3 | | | |
| Ambient air temperature | Operation | -25 ... +70 °C | | |
| | Storage | -50 ... +80 °C | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | | |
| Number of poles | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 1 N.C. + 1 N.O. | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 1 N.C. + 1 N.O. |
| I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | | |
| | 24 V, 120 V, 50/60 Hz | 6 A | | 3 A |
| | 240 V, 50/60 Hz | 4 A | | 1.5 A |
| | 400 V, 50/60 Hz | 3 A | | - |
| | 440 V, 600 V, 690 V, 50/60 Hz | 1 A | | - |
| I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | | |
| | 24 V | 2 A | | 1 A |
| | 125 V | 0.55 A | | 0.27 A |
| | 250 V | 0.27 A | | 0.11 A |
| | 440 V, 600 V | 0.15 A | | - |
| Minimum switching capacity | 17 V / 3 mA | | | |
| Short-circuit protective device | N.C., 95-96 | 10 A Type gG | | |
| | N.O., 97-98 | 10 A Type gG | | |
| Duty time | 100 % | | | |
| Mounting | Right side of MMS | | | Front of MMS |
| Mounting positions | 1-6 | | | |
| Mechanical durability | 50000 cycles | | 100000 cycles | - |
| Electrical durability | 50000 cycles | | 100000 cycles | - |

Electrical connection

Main circuit

| Type | HK1 | SK1 | CK1 | HKF1 |
|--|--------------------------|------------------------------|-----|---------------------------|
| Connecting capacity | | | | |
|  Solid | 1 or 2 x | 1 ... 1.5 mm ² | | 1 ... 2.5 mm ² |
|  Flexible | 1 or 2 x | 0.75 ... 1.5 mm ² | | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 16-14 | | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 16-14 | | |
| Stripping length | 8 mm | | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 lb.in | | | |
| Connection screw | M3 (Pozidriv 2) | | | |

MS132 manual motor starters

Main accessories

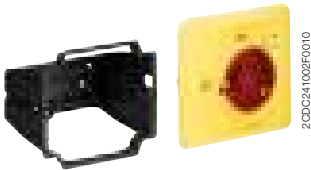
2



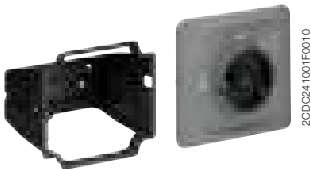
IB132-Y



IB132-G



DMS132-Y



DMS132-G

Description

IB132 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

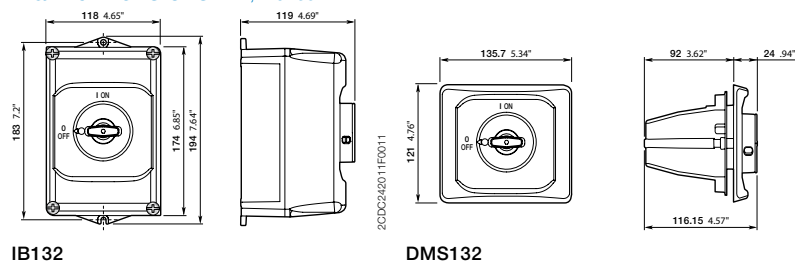
DMS132 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

| Description | Colour | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|------------|----------|-----------------|---------|----------------------|
| Enclosures IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | IB132-Y | 1SAM201911R1011 | 1 | 0.370 |
| | Grey/black | IB132-G | 1SAM201911R1010 | 1 | 0.370 |
| Door mounting kit IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | DMS132-Y | 1SAM201912R1011 | 1 | 0.170 |
| | Grey/black | DMS132-G | 1SAM201912R1010 | 1 | 0.170 |

Indication I-O-T and ON-OFF-T

Main dimensions mm, inches



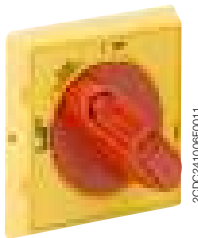
MS132 manual motor starters

Main accessories



MSHD-LTB

2CDC241007F0011



MSHD-LTY

2CDC241008F0011



MSMN

2CDC241009S0011



MSOX-30

2CDC241005S0011



MSH-AR

2CDC241001S0012

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Colour | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------|------|------------|------------|-------------------------|
|-------------|--------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|------------------------|-----------------|---|-------|
| Black | MSHD-LTB ¹⁾ | 1SAM201920R1011 | 1 | 0.065 |
| Yellow | MSHD-LTY ¹⁾ | 1SAM201920R1012 | 1 | 0.065 |

¹⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Driver shafts

Driver shaft - combination driver & shaft. Shaft diameter 6 mm.

| | | | | |
|----|-----------------------|-----------------|---|-------|
| 32 | MSOX-32 ¹⁾ | 1SAM101924R0003 | 1 | 0.010 |
| 30 | MSOX-30 ²⁾ | 1SAM101924R0013 | 1 | 0.010 |

¹⁾ MSOX-32 is for normal vertical use

²⁾ MSOX-30 is for horizontal use

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Shaft alignment ring

The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy.

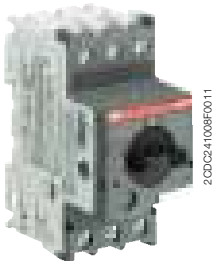
| | | | |
|--------|-----------------|---|-------|
| MSH-AR | 1SAM201920R1000 | 1 | 0.010 |
|--------|-----------------|---|-------|

MO132 manual motor starters magnetic only 0.10 to 32 A – with electromagnetic protection

2



MO132-6.3



MO132-32

Description

Manual motor starters magnetic only are electromechanical protection devices for the main circuit. They are used mainly to switch motors manually ON/OFF and protect them fuse less against short-circuit.

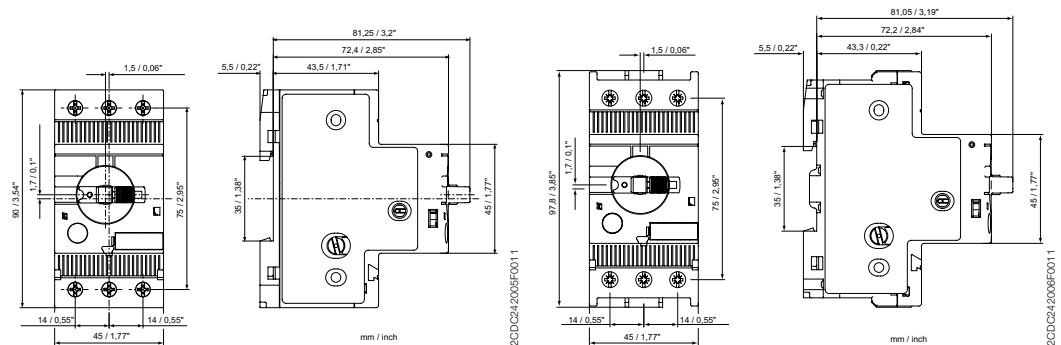
Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds. Fuse less starter combinations are setup together with contactors and overload relays.

Ordering details

| Rated operational power 400 V AC-3 ¹⁾ kW | Rated operational current A | Short-circuit breaking capacity I _{CS} at 400 V AC kA | Rated instantaneous short-circuit current setting I _i A | Type | Order code | Weight (1 pce) kg |
|--|--------------------------------|---|---|------------|-----------------|----------------------|
| 0.03 | 0.16 | 100 | 1.56 | MO132-0.16 | 1SAM360000R1001 | 0.215 |
| 0.06 | 0.25 | 100 | 2.44 | MO132-0.25 | 1SAM360000R1002 | 0.215 |
| 0.09 | 0.40 | 100 | 3.90 | MO132-0.4 | 1SAM360000R1003 | 0.215 |
| 0.12 | 0.63 | 100 | 6.14 | MO132-0.63 | 1SAM360000R1004 | 0.215 |
| 0.25 | 1.0 | 100 | 11.50 | MO132-1.0 | 1SAM360000R1005 | 0.215 |
| 0.55 | 1.6 | 100 | 18.40 | MO132-1.6 | 1SAM360000R1006 | 0.265 |
| 0.75 | 2.5 | 100 | 28.75 | MO132-2.5 | 1SAM360000R1007 | 0.265 |
| 1.5 | 4.0 | 50 | 50.00 | MO132-4.0 | 1SAM360000R1008 | 0.265 |
| 2.2 | 6.3 | 50 | 78.75 | MO132-6.3 | 1SAM360000R1009 | 0.265 |
| 4.0 | 10 | 50 | 125.00 | MO132-10 | 1SAM360000R1010 | 0.265 |
| 5.5 | 12 | 50 | 150.00 | MO132-12 | 1SAM360000R1012 | 0.310 |
| 7.5 | 16 | 50 | 200.00 | MO132-16 | 1SAM360000R1011 | 0.310 |
| 9.0 | 20 | 50 | 250.00 | MO132-20 | 1SAM360000R1013 | 0.310 |
| 12.5 | 25 | 50 | 313.00 | MO132-25 | 1SAM360000R1014 | 0.310 |
| 15.5 | 32 | 25 | 400.00 | MO132-32 | 1SAM360000R1015 | 0.310 |

¹⁾ For overload protection of motors, an appropriate thermal or electronic overload relay must be used

Main dimensions mm, inches



MO132 manual motor starters magnetic only

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MO132 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC |
| Rated frequency | 50/60 Hz |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity
 I_{cu} Rated ultimate short-circuit breaking capacity
 I_{cc} Prospective short-circuit current at installation location
 Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 230 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|------------|--|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| MO132-0.16 | No back-up fuse required up to $I_{cc} = 100$ kA | | | | | | | | | | | | | | |
| MO132-0.25 | | | | | | | | | | | | | | | |
| MO132-0.4 | | | | | | | | | | | | | | | |
| MO132-0.63 | | | | | | | | | | | | | | | |
| MO132-1.0 | | | | | | | | | | | | | | | |
| MO132-1.6 | | | | | | | | | | | | | | | |
| MO132-2.5 | | | | | | | | | | | | | | | |
| MO132-4.0 | | 20 | 20 | 35 | 20 | 20 | 35 | 20 | 20 | 35 | 3 | 3 | * | | |
| MO132-6.3 | | 20 | 20 | 63 | 20 | 20 | 63 | 20 | 20 | 63 | 3 | 3 | * | | |
| MO132-10 | | 20 | 20 | 100 | 20 | 20 | 100 | 20 | 20 | 100 | 3 | 3 | * | | |
| MO132-12 | | 20 | 20 | 100 | 20 | 20 | 100 | 20 | 20 | 100 | 3 | 3 | * | | |
| MO132-16 | | 20 | 20 | 125 | 20 | 20 | 125 | 20 | 20 | 125 | 3 | 3 | * | | |
| MO132-20 | | 20 | 20 | 125 | 20 | 20 | 125 | 20 | 20 | 125 | 3 | 3 | * | | |
| MO132-25 | 50 | 50 | 125 | 50 | 50 | 125 | 10 | 10 | 125 | 10 | 10 | 125 | 3 | 3 | * |
| MO132-32 | 25 | 50 | 125 | 25 | 50 | 125 | 10 | 10 | 125 | 10 | 10 | 125 | 3 | 3 | * |

*not available yet

General technical data

| | |
|---|---|
| Type | MO132 |
| Pollution degree | 3 |
| Phase loss sensitive | Yes |
| Ambient air temperature | Operation: -25 ... +60 °C Storage: -50 ... +80 °C |
| Ambient air temperature compensation | Continuous |
| Maximum operating altitude permissible | 2000 m |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms |
| Resistance to vibrations acc. to IEC 60068-2-6 | 5 g / 3 ... 150 Hz |
| Mounting position | Position 1-6 (optional for single mounting) |
| Mounting | DIN-rail (EN 60715) |
| Group mounting | On request |
| Minimum distance to other units same type | Horizontal: 0 mm Vertical: 150 mm |
| Minimum distance to electrical conductive board | Horizontal, up to 400 V: 0 mm Horizontal, up to 690 V: > 1.5 mm Vertical: 75 mm |
| Degree of protection | Enclosure / terminals: IP20 |

Connecting characteristics

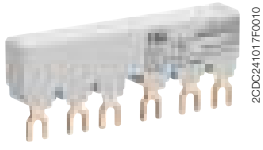
Main circuit

| Type | MO132-0.16 ... MO132-10 | MO132-12 ... MO132-16 | MO132-20 ... MO132-32 |
|---------------------|---------------------------------------|------------------------------|---------------------------|
| Connecting capacity | 1 or 2 x 1 ... 4 mm ² | 1 ... 4 mm ² | 2.5 ... 6 mm ² |
| | 1 or 2 x 0.75 ... 2.5 mm ² | 0.75 ... 2.5 mm ² | 1 ... 6 mm ² |
| | 1 or 2 x AWG 16-12 | AWG 16-12 | AWG 12-8 |
| | 1 or 2 x AWG 16-12 | AWG 16-12 | AWG 12-8 |
| Stripping length | 9 mm | 10 mm | 10 mm |
| Tightening torques | 0.8 ... 1.2 Nm / 10 ... 12 lb.in | 1.5 Nm / 14 lb.in | 2.0 Nm / 18 lb.in |
| Connection screw | M3.5 (Pozi driv 2) | M4 (Pozi driv 2) | M4 (Pozi driv 2) |

MO132 manual motor starters magnetic only

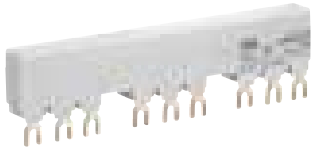
Main accessories

2



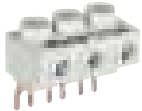
PS1-2-0-65

2CDC241017F0010



PS1-3-1-100

2CDC241014F0010



S1-M1-25

1SBC101226F0014



S1-M2-25

1SBC101268F0014



SA1

SKO106B91

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 100 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|-------------|-----------------|---------|----------------------|
| Three-phase busbars | | | | | | |
| 65 | 2 | 0 | PS1-2-0-65 | 1SAM201906R1102 | 10 | 0.034 |
| 65 | 3 | 0 | PS1-3-0-65 | 1SAM201906R1103 | 10 | 0.055 |
| 65 | 4 | 0 | PS1-4-0-65 | 1SAM201906R1104 | 10 | 0.077 |
| 65 | 5 | 0 | PS1-5-0-65 | 1SAM201906R1105 | 10 | 0.098 |
| 65 | 2 | 1 | PS1-2-1-65 | 1SAM201906R1112 | 10 | 0.036 |
| 65 | 3 | 1 | PS1-3-1-65 | 1SAM201906R1113 | 10 | 0.060 |
| 65 | 4 | 1 | PS1-4-1-65 | 1SAM201906R1114 | 10 | 0.087 |
| 65 | 5 | 1 | PS1-5-1-65 | 1SAM201906R1115 | 10 | 0.108 |
| 65 | 2 | 2 | PS1-2-2-65 | 1SAM201906R1122 | 10 | 0.040 |
| 65 | 3 | 2 | PS1-3-2-65 | 1SAM201906R1123 | 10 | 0.067 |
| 65 | 4 | 2 | PS1-4-2-65 | 1SAM201906R1124 | 10 | 0.095 |
| 65 | 5 | 2 | PS1-5-2-65 | 1SAM201906R1125 | 10 | 0.122 |
| 100 | 3 | 0 | PS1-3-0-100 | 1SAM201916R1103 | 10 | 0.084 |
| 100 | 4 | 0 | PS1-4-0-100 | 1SAM201916R1104 | 10 | 0.117 |
| 100 | 5 | 0 | PS1-5-0-100 | 1SAM201916R1105 | 10 | 0.154 |
| 100 | 3 | 1 | PS1-3-1-100 | 1SAM201916R1113 | 10 | 0.094 |
| 100 | 4 | 1 | PS1-4-1-100 | 1SAM201916R1114 | 10 | 0.134 |
| 100 | 5 | 1 | PS1-5-1-100 | 1SAM201916R1115 | 10 | 0.172 |
| 100 | 3 | 2 | PS1-3-2-100 | 1SAM201916R1123 | 10 | 0.105 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------------------------------|--|-------------------|----------|-----------------|---------|----------------------|
| Three-phase feeder terminals | | | | | | |
| 65 | 25 | Flat | S1-M1-25 | 1SAM201907R1101 | 10 | 0.038 |
| 65 | 25 | High | S1-M2-25 | 1SAM201907R1102 | 10 | 0.051 |
| 65 | 25 | UL type E and IEC | S1-M3-25 | 1SAM201907R1103 | 10 | 0.042 |
| 100 | 35 | UL type E and IEC | S1-M3-35 | 1SAM201913R1103 | 10 | 0.060 |

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-------|-----------------|---------|----------------------|
| Protection cover for busbars | BS1-3 | 1SAM201908R1001 | 50 | 0.003 |
| Padlock + two keys | SA2 | GJF1101903R0002 | 10 | 0.020 |
| Screw fixing kit | FS116 | 1SAM201909R1001 | 1 | 0.020 |

MO132 manual motor starters magnetic only

Main accessories



HKF1-11

1SBC101208FC014



HK1-11

1SBC101208FC014



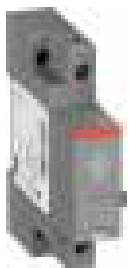
SK1-11

1SBC101210FR014



AA1-24

1SBC101211FR014



UA1-24

1SBC101212FR014

Description

MO132 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts: N.O. | Auxiliary contacts: N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) |
|--------------------------|--------------------------|-------------|------|------------|---------|----------------|
|--------------------------|--------------------------|-------------|------|------------|---------|----------------|

Auxiliary contacts – mountable on the front

| | | | | | | |
|---|---|--|---------|-----------------|----|-------|
| 1 | 1 | | HKF1-11 | 1SAM201901R1001 | 10 | 0.015 |
| 1 | 1 | | HKF1-20 | 1SAM201901R1002 | 10 | 0.015 |

Auxiliary contacts – mountable on the right

| | | | | | | |
|---|---|--------------------|---------|-----------------|---|-------|
| 1 | 1 | Max. 2 pieces | HK1-11 | 1SAM201902R1001 | 2 | 0.035 |
| 2 | 0 | Max. 2 pieces | HK1-20 | 1SAM201902R1002 | 2 | 0.035 |
| 0 | 2 | Max. 2 pieces | HK1-02 | 1SAM201902R1003 | 2 | 0.035 |
| 2 | 0 | With lead contacts | HK1-20L | 1SAM201902R1004 | 2 | 0.035 |

Signalling contacts – mountable on the right

| | | | | | | |
|---|---|----------------------------------|--------|-----------------|---|-------|
| 1 | 1 | For tripped alarm, max. 2 pieces | SK1-11 | 1SAM201903R1001 | 2 | 0.035 |
| 2 | 0 | For tripped alarm, max. 2 pieces | SK1-20 | 1SAM201903R1002 | 2 | 0.035 |
| 0 | 2 | For tripped alarm, max. 2 pieces | SK1-02 | 1SAM201903R1003 | 2 | 0.035 |

| Rated control supply voltage | Frequency | Type | Order code | Pkg qty | Weight (1 pce) |
|------------------------------|-----------|------|------------|---------|----------------|
|------------------------------|-----------|------|------------|---------|----------------|

V Hz kg

Shunt trip units – mountable on the left

| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50/60 | AA1-24 | 1SAM201910R1001 | 1 | 0.100 |
| 110 | 50/60 | AA1-110 | 1SAM201910R1002 | 1 | 0.100 |
| 200 ... 240 | 50/60 | AA1-230 | 1SAM201910R1003 | 1 | 0.100 |
| 350 ... 415 | 50/60 | AA1-400 | 1SAM201910R1004 | 1 | 0.100 |

Undervoltage releases – mountable on the left

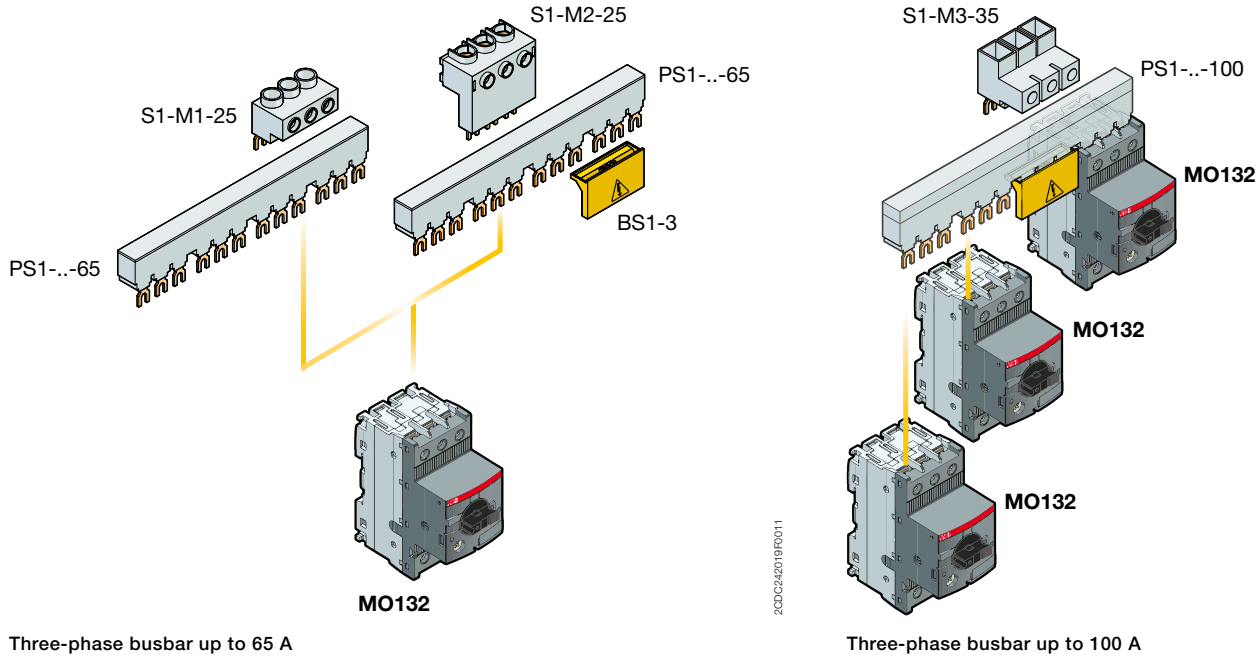
| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 24 | 50 | UA1-24 | 1SAM201904R1001 | 1 | 0.100 |
| 48 | 50 | UA1-48 | 1SAM201904R1002 | 1 | 0.100 |
| 60 | 50 | UA1-60 | 1SAM201904R1003 | 1 | 0.100 |
| 110 ... 120 | 50/60 | UA1-120 | 1SAM201904R1004 | 1 | 0.100 |
| 208 | 60 | UA1-208 | 1SAM201904R1008 | 1 | 0.100 |
| 230 ... 240 | 50/60 | UA1-230 | 1SAM201904R1005 | 1 | 0.100 |
| 400 | 50 | UA1-400 | 1SAM201904R1006 | 1 | 0.100 |
| 415 ... 480 | 50/60 | UA1-415 | 1SAM201904R1007 | 1 | 0.100 |

MO132 manual motor starters magnetic only

Main accessories

Manual motor starter with three-phase busbar systems

2



General technical data

| Type | PS1-xxx-65 | PS1-xxx-100 | S1-Mx-25 | S1-Mx-35 |
|--|--|--------------------|--------------------|--------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | | |
| Rated operational voltage U_n | 690 V | | | |
| Rated operational current I_n | 65 A | 100 A | 65 A | 100 A |
| Rated frequency | 50/60 Hz | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | |
| Rated insulation voltage U_i | 690 V AC | | | |
| Pollution degree | 3 | | | |
| Cross-section | 10 mm ² | 16 mm ² | 25 mm ² | 35 mm ² |
| Ambient air temperature | Operation -25 ... +70 °C Storage -50 ... +80 °C | | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | | |

Electrical connection

Main circuit

| Type | S1-Mx-25 | S1-Mx-35 |
|-------------------------|------------------------------|---------------------------|
| Connecting capacity | | |
| Solid | 1 x 6 ... 25 mm ² | 10 ... 35 mm ² |
| Flexible | 1 x 6 ... 16 mm ² | 10 ... 35 mm ² |
| Stranded acc. to UL/CSA | 1 x AWG 10-4 | AWG 8-2 |
| Flexible acc. to UL/CSA | 1 x AWG 10-6 | AWG 8-2 |
| Stripping length | 10 mm | 12 mm |
| Tightening torques | 2.5 Nm / 22 lb.in | 4.5 Nm / 40 lb.in |
| Connection screw | PZ2 (6 mm) | Hexagon SW4 |

MO132 manual motor starters magnetic only



Main accessories

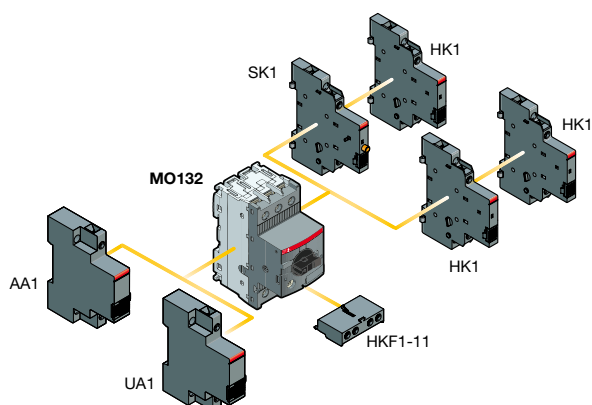
General technical data

| Type | HK1 | SK1 | HKF1 |
|--|--|-----------------|---------------------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | |
| Rated operational voltage U_e | 690 V AC / 600 DC | | 250 V AC / 250 V DC |
| Conventional free-air thermal current I_{th} | 65 A | 100 A | 100 A |
| Rated frequency | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V AC | | |
| Pollution degree | 3 | | |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | |
| Number of poles | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 1 N.C. + 1 N.O. | 1 N.C. + 1 N.O. |
| I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | |
| | 24 V, 120 V, 50/60 Hz | 6 A | 3 A |
| | 240 V, 50/60 Hz | 4 A | 1.5 A |
| | 400 V, 50/60 Hz | 3 A | - |
| | 440 V, 600 V, 690 V, 50/60 Hz | 1 A | - |
| I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | |
| | 24 V | 2 A | 1 A |
| | 125 V | 0.55 A | 0.27 A |
| | 250 V | 0.27 A | 0.11 A |
| | 440 V, 600 V | 0.15 A | - |
| Minimum switching capacity | 17 V / 3 mA | | |
| Short-circuit protective device | N.C., 95-96 | 10 A Type gG | |
| | N.O., 97-98 | 10 A Type gG | |
| Duty time | 100 % | | |
| Mounting | Right side of MMS | | Front of MMS |
| Mounting positions | 1-6 | | |
| Mechanical durability | 50000 cycles | | - |
| Electrical durability | 50000 cycles | | - |

Electrical connection

Main circuit

| Type | HK1 | SK1 | HKF1 |
|--|--------------------------|------------------------------|------|
| Connecting capacity | | | |
|  Solid | 1 or 2 x | 1 ... 1.5 mm ² | |
|  Flexible | 1 or 2 x | 0.75 ... 1.5 mm ² | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 16-14 | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 16-14 | |
| Stripping length | 8 mm | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 lb.in | | |
| Connection screw | M3 (Pozidriv 2) | | |



2CDC242018F0011

2CDC131036C0201_7s9

MO132 manual motor starters magnetic only

Main accessories

2



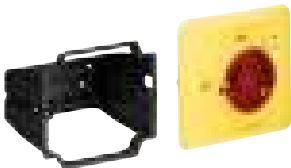
IB132-Y

2CDC241004F0010



IB132-G

2CDC241003F0010



DMS132-Y

2CDC241002F0010



DMS132-G

2CDC241001F0010

Description

IB132 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

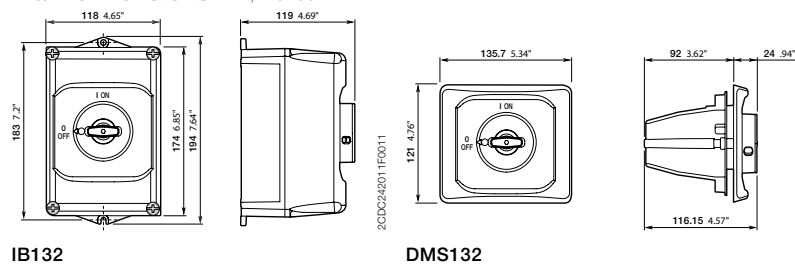
DMS132 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|------------|----------|-----------------|---------|-------------------|
| Enclosures IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | IB132-Y | 1SAM201911R1011 | 1 | 0.370 |
| | Grey/black | IB132-G | 1SAM201911R1010 | 1 | 0.370 |
| Door mounting kit IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | DMS132-Y | 1SAM201912R1011 | 1 | 0.170 |
| | Grey/black | DMS132-G | 1SAM201912R1010 | 1 | 0.170 |

Indication I-O-T and ON-OFF-T

Main dimensions mm, inches



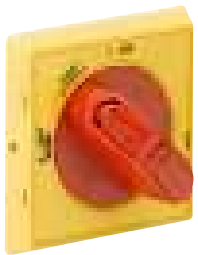
MO132 manual motor starters magnetic only

Main accessories



MSHD-LTB

2CDC241007F0011



MSHD-LTY

2CDC241008F0011



MSMN

2CDC241004S0011



MSOX-30

2CDC241005S0011



MSH-AR

2CDC241001S0012

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------|------|------------|------------|-------------------------|
|-------------|-------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|------------------------|-----------------|---|-------|
| Black | MSHD-LTB ¹⁾ | 1SAM201920R1011 | 1 | 0.065 |
| Yellow | MSHD-LTY ¹⁾ | 1SAM201920R1012 | 1 | 0.065 |

¹⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Driver shafts

Driver shaft - combination driver & shaft. Shaft diameter 6 mm.

| | | | | |
|----|-----------------------|-----------------|---|-------|
| 32 | MSOX-32 ¹⁾ | 1SAM101924R0003 | 1 | 0.010 |
| 30 | MSOX-30 ²⁾ | 1SAM101924R0013 | 1 | 0.010 |

¹⁾ MSOX-32 is for normal vertical use

²⁾ MSOX-30 is for horizontal use

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Shaft alignment ring

The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy.

| | | | |
|--------|-----------------|---|-------|
| MSH-AR | 1SAM201920R1000 | 1 | 0.010 |
|--------|-----------------|---|-------|

MS450, MS495, MS497 manual motor starters

22 to 100 A – with thermal and electromagnetic protection

2



2CDC241024F0009

MS450-40



1S5BC101164F0014

MS495-40



2CDC241022F0011

MS497-100

Description

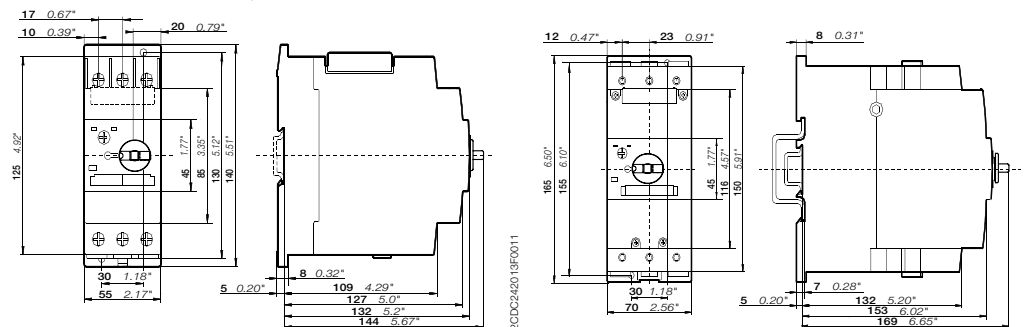
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

Ordering details

| Rated operational power 400 V AC-3 | Setting range | Short-circuit breaking capacity I_{cs} at 400 V AC | Rated instantaneous short-circuit current setting I_i | Type | Order code | Weight (1 pce) |
|--|----------------|--|---|-----------|-----------------|----------------|
| kW | A | kA | A | | | kg |
| MS450 manual motor starter | | | | | | |
| 15.8 | 28.0 ... 40.0 | 25 | 520.00 | MS450-40 | 1SAM450000R1005 | 1.047 |
| 22 | 36.0 ... 45.0 | 25 | 585.00 | MS450-45 | 1SAM450000R1006 | 1.039 |
| 22 | 40.0 ... 50.0 | 25 | 650.00 | MS450-50 | 1SAM450000R1007 | 1.027 |
| MS495 manual motor starter | | | | | | |
| 30 | 45.0 ... 63.0 | 25 | 819.00 | MS495-63 | 1SAM550000R1007 | 2.247 |
| 37 | 57.0 ... 75.0 | 25 | 975.00 | MS495-75 | 1SAM550000R1008 | 2.253 |
| 45 | 70.0 ... 90.0 | 25 | 1170.00 | MS495-90 | 1SAM550000R1009 | 2.280 |
| 55 | 80.0 ... 100.0 | 25 | 1235.00 | MS495-100 | 1SAM550000R1010 | 2.295 |
| MS497 manual motor starter | | | | | | |
| 15 | 22.0 ... 32.0 | 50 | 416.00 | MS497-32 | 1SAM580000R1004 | 2.222 |
| 18.5 | 28.0 ... 40.0 | 50 | 520.00 | MS497-40 | 1SAM580000R1005 | 2.203 |
| 22 | 36.0 ... 50.0 | 50 | 650.00 | MS497-50 | 1SAM580000R1006 | 2.230 |
| 30 | 45.0 ... 63.0 | 50 | 819.00 | MS497-63 | 1SAM580000R1007 | 2.255 |
| 37 | 57.0 ... 75.0 | 50 | 975.00 | MS497-75 | 1SAM580000R1008 | 2.266 |
| 45 | 70.0 ... 90.0 | 50 | 1170.00 | MS497-90 | 1SAM580000R1009 | 2.268 |
| 55 | 80.0 ... 100.0 | 50 | 1235.00 | MS497-100 | 1SAM580000R1010 | 2.275 |

Main dimensions mm, inches



MS450

MS495, MS497

MS450, MS495, MS497 manual motor starters

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MS450, MS495, MS497 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC / 450 V DC |
| Rated frequency | 50/60 Hz |
| Trip class | 10 |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 240 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|---------------------------------------|--|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| Short-circuit protection MS450 | | | | | | | | | | | | | | | |
| MS450-40 | No back-up fuse required up to $I_{cc} = 100$ kA | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MS450-45 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MS450-50 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 80 |

MS450: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MS495

| | | | | | | | | | | | | | |
|-----------|--|----|----|-----|----|----|-----|---|----|-----|---|---|-----|
| MS495-40 | No back-up fuse required up to $I_{cc} = 100$ kA | 25 | 50 | 125 | 20 | 50 | 125 | 6 | 12 | 125 | 3 | 6 | 63 |
| MS495-50 | | 25 | 50 | 125 | 20 | 50 | 125 | 6 | 12 | 125 | 3 | 6 | 80 |
| MS495-63 | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 12 | 160 | 3 | 6 | 80 |
| MS495-75 | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 100 |
| MS495-90 | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 125 |
| MS495-100 | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 125 |

MS495-40: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 125 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.
MS495-100: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MS497

| | | | | | | | | | | | | | | |
|-----------|--|----|-----|--|----|-----|--|-----|-----|-----|-----|----|-----|-----|
| MS497-32 | No back-up fuse required up to $I_{cc} = 100$ kA | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 11 | 22 | 100 | 7 | 12 | 63 | |
| MS497-40 | | 50 | 100 | | 50 | 100 | | 9 | 18 | 160 | 6 | 12 | 80 | |
| MS497-50 | | 50 | 100 | | 50 | 100 | | 7.5 | 15 | 160 | 5 | 10 | 100 | |
| MS497-63 | | 50 | 100 | | 50 | 70 | | 200 | 7.5 | 15 | 160 | 4 | 7.5 | 100 |
| MS497-75 | | 50 | 100 | | 50 | 70 | | 200 | 5 | 10 | 160 | 3 | 6 | 125 |
| MS497-90 | | 50 | 100 | | 50 | 70 | | 200 | 5 | 10 | 160 | 3 | 6 | 160 |
| MS497-100 | | 50 | 100 | | 50 | 70 | | 200 | 5 | 10 | 160 | 3 | 6 | 160 |

MS497-32: No need for back-up fuse in networks with a prospective current of up to 100 kA at 440 V.
MS497-90: No need for back-up fuse in networks with a prospective current of up to 70 kA at 440 V.
With an appropriate 200 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.



MS450, MS495, MS497 manual motor starters

Technical data

General technical data

| Type | | MS450 | MS495 | MS497 |
|---|-------------------------------------|---|-----------------------------------|-------|
| Pollution degree | | 3 | | |
| Phase loss sensitive | | Yes | | |
| Ambient air temperature | | | | |
| Operation | Open - compensated without derating | -20 ... +60 °C | | |
| | Open | -20 ... +70 °C | | |
| | Enclosed | -20 ... +35 °C | | |
| Storage | | -50 ... +80 °C | | |
| Ambient air temperature compensation | | Continuous | | |
| Maximum operating altitude permissible | | 2000 m | | |
| Resistance to shock acc. to IEC 60068-2-27 | | 25 g / 11 ms | - | |
| Resistance to vibrations acc. to IEC 60068-2-6 | | 2 g / 5-150 Hz | | |
| Mounting position | | Position 1-6 (optional for single mounting) | | |
| Mounting | | DIN-rail 35 mm (EN 60715) | DIN-rail 15 mm / 75 mm (EN 60715) | |
| Minimum distance to other units same type | Horizontal | 0 mm | 0 mm | |
| | Vertical - up to 240 V | - | 50 mm | |
| | Vertical - up to 440 V | - | 70 mm | |
| | Vertical - up to 500 V | - | 110 mm | |
| | Vertical - up to 690 V | - | 150 mm | |
| | Vertical | 50 mm | - | |
| Minimum distance to electrical conductive board | Horizontal | 10 mm | - | |
| | Horizontal - up to 500 V | - | 10 mm | |
| | Horizontal - up to 690 V | - | 30 mm | |
| | Vertical - up to 240 V | - | 50 mm | |
| | Vertical - up to 440 V | - | 70 mm | |
| | Vertical - up to 500 V | - | 110 mm | |
| | Vertical - up to 690 V | - | 150 mm | |
| | Vertical | 50 mm | - | |
| Degree of protection | Enclosure / terminals | IP20 | | |

Connecting characteristics

| Main circuit | | Type | | MS450 | MS495 | MS497 |
|---|----------|----------|------------------------------|-----------------------------|-----------------------------|----------------------------|
| Connecting capacity | | | | | | |
|  | Solid | 1 or 2 x | | 0.75 ... 16 mm ² | 2.5 ... 16 mm ² | 2.5 ... 16 mm ² |
| | | | | | | |
|  | Flexible | 1 x | | 0.75 ... 35 mm ² | 10 ... 70 mm ² | 10 ... 70 mm ² |
| | | | 2 x | | 0.75 ... 25 mm ² | 10 ... 50 mm ² |
| Stranded acc. to UL/CSA | | 1 x | | AWG 18-2 | AWG 10-2/0 | AWG 10-2/0 |
| | | 2 x | AWG 18-2 | AWG 10-1/0 | AWG 10-1/0 | |
| Flexible acc. to UL/CSA | | 1 x | AWG 18-2 | AWG 10-2/0 | AWG 10-2/0 | |
| | | 2 x | AWG 18-2 | AWG 10-1/0 | AWG 10-1/0 | |
| Stripping length | | | 13 mm | 17 mm | 17 mm | |
| Tightening torques | | | 3 - 4.5 Nm / 27 ... 40 lb.in | 4 - 6 Nm / 35 - 53 lb.in | 4 - 6 Nm / 35 - 53 lb.in | |
| Connection screw | | | Pozidriv 2 | Hexagon 4 | Hexagon 4 | |

MS450, MS495, MS497 manual motor starters

Main accessories



SA2

SKO109B01

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost-effective solution. A variety of different three-phase busbars up to 108A are in the assortment. Between 2 and 4 manual motor starters with none or two lateral auxiliary contacts can be connected.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|

Three-phase busbars for MS450 only

| | | | | | | |
|-----|---|---|---------|-----------------|---|-------|
| 108 | 2 | 0 | PS4-2-0 | 1SAM401911R1001 | 5 | 0.134 |
| 108 | 3 | 0 | PS4-3-0 | 1SAM401911R1002 | 5 | 0.206 |
| 108 | 4 | 0 | PS4-4-0 | 1SAM401911R1003 | 5 | 0.280 |
| 108 | 2 | 1 | PS4-2-2 | 1SAM401911R1004 | 5 | 0.148 |
| 108 | 3 | 1 | PS4-3-2 | 1SAM401911R1005 | 5 | 0.250 |
| 108 | 4 | 1 | PS4-4-2 | 1SAM401911R1006 | 5 | 0.362 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|--|---------------|------|------------|---------|----------------------|
|--------------------------------|--|---------------|------|------------|---------|----------------------|

Three-phase feeder terminals for MS450 only

| | | | | | | |
|-----|----|------|-------|-----------------|---|-------|
| 108 | 25 | Flat | S4-M1 | 1SAM401911R1007 | 2 | 0.106 |
|-----|----|------|-------|-----------------|---|-------|

| Description | For MMS | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|---------------------|----------------------|-----------------|---------|----------------------|
| Protection cover for busbar | PS4 | BS4-3 | 1SAM401911R1008 | 10 | 0.001 |
| Disconnecter module | MS450 | TB450 | 1SAM401910R1001 | 1 | 0.315 |
| Terminal shroud | MS450 | KA450 | 1SAM401908R1001 | 1 | 0.154 |
| Terminal shroud | MS495 | KA495 | 1SAM501901R1001 | 10 | 0.018 |
| Terminal shroud | MS495 | KA495C ¹⁾ | 1SAM501902R1001 | 10 | 0.038 |
| Terminal insulation barrier for UL508E | MS495 | DX495 | 1SAM401912R1001 | 1 | 0.154 |
| Padlock + 2 keys | MS450, MS495, MS497 | SA2 | GJF1101903R0002 | 10 | 0.020 |

¹⁾ Is plugged onto the housing after removing the box terminals, if using cable lugs.

MS450, MS495, MS497 manual motor starters

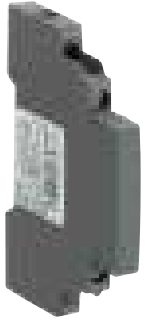
Main accessories

2



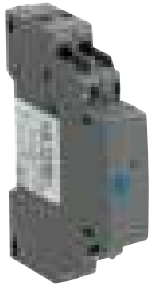
HK4-11

2CDC241026S0011



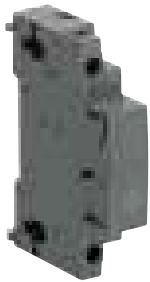
HKS4-20

2CDC241022S0011



SK4-11

2CDC241024S0011



AA4-24

2CDC241023S0011

Description

MS450, MS495, MS497 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts N.O. | Auxiliary contacts N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) |
|-------------------------|-------------------------|-------------|------|------------|---------|----------------|
|-------------------------|-------------------------|-------------|------|------------|---------|----------------|

Auxiliary contacts – mountable on the front

| | | | | | | |
|---|---|------------|--------|-----------------|----|-------|
| 1 | 1 | | HK4-11 | 1SAM401901R1001 | 10 | 0.017 |
| | | Changeover | HK4-W | 1SAM401901R1002 | 10 | 0.015 |

Auxiliary contacts – mountable on the left

| | | | | | | |
|---|---|---------------|---------|-----------------|---|-------|
| 1 | 1 | Max. 1 pieces | HKS4-11 | 1SAM401902R1001 | 2 | 0.045 |
| 2 | 0 | Max. 1 pieces | HKS4-20 | 1SAM401902R1002 | 2 | 0.045 |
| 0 | 2 | Max. 1 pieces | HKS4-02 | 1SAM401902R1003 | 2 | 0.045 |

Signalling contacts – mountable on the right

| | | | | | | |
|---|---|--|--------|-----------------|---|-------|
| 2 | 2 | Separate signalling acc. UL508E 1 N.O. + 1 N.C. for short circuit and 1NO+NC for general tripping , max. 2 pieces | SK4-11 | 1SAM401904R1001 | 1 | 0.093 |
|---|---|--|--------|-----------------|---|-------|

| Rated control supply voltage | Frequency | Type | Order code | Pkg qty | Weight (1 pce) |
|------------------------------|-----------|------|------------|---------|----------------|
|------------------------------|-----------|------|------------|---------|----------------|

V Hz kg

Shunt trip units – mountable on the left

| | | | | | |
|-------------|-------|---------|-----------------|---|-------|
| 20 ... 24 | 50/60 | AA4-24 | 1SAM401907R1001 | 1 | 0.135 |
| 90 ... 110 | 50/60 | AA4-110 | 1SAM401907R1002 | 1 | 0.135 |
| 200 ... 240 | 50/60 | AA4-230 | 1SAM401907R1003 | 1 | 0.128 |
| 350 ... 415 | 50/60 | AA4-400 | 1SAM401907R1004 | 1 | 0.125 |

Undervoltage releases – mountable on the left

| | | | | | |
|---------|-------|------------|-----------------|---|-------|
| 24 | 50/60 | UA4-24 | 1SAM401905R1004 | 1 | 0.134 |
| 110/120 | 50/60 | UA4-110 | 1SAM401905R1001 | 1 | 0.134 |
| 230/240 | 50/60 | UA4-230 | 1SAM401905R1002 | 1 | 0.131 |
| 400/440 | 50/60 | UA4-400 | 1SAM401905R1003 | 1 | 0.129 |
| 230/240 | 50/60 | UA4-HK-230 | 1SAM401906R1001 | 1 | 0.140 |
| 400/440 | 50/60 | UA4-HK-400 | 1SAM401906R1002 | 1 | 0.137 |

MS450, MS495, MS497 manual motor starters



Main accessories

General technical data

| | | | |
|---|-----------|--------------------|--------------------|
| Type | | PS4-xxx | S4-M1 |
| Standards | | IEC/EN 60947-1 | |
| Rated operational voltage U_n | | 690 V AC | |
| Rated operational current I_n | | 108 A | |
| Rated frequency | | 50/60 Hz | |
| Rated impulse withstand voltage U_{imp} | | 6 kV | |
| Rated insulation voltage U_i | | 690 V AC | |
| Pollution degree | | 3 | |
| Cross-section | | 10 mm ² | 25 mm ² |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |

Electrical connection

Main circuit

| | | |
|--|-----|----------------------------|
| Type | | S4-M1 |
| Connecting capacity | | |
|  Solid | 1 x | 2.5 ... 50 mm ² |
|  Flexible | 1 x | 4 ... 16 mm ² |
| Stranded acc. to UL/CSA | 1 x | AWG 14-4 |
| Flexible acc. to UL/CSA | 1 x | AWG 14-4 |
| Tightening torques | | 4 Nm |
| Connection screw | | Pozidriv 2 |

MS450, MS495, MS497 manual motor starters



Main accessories

General technical data

| Type | HK4-11 | HK4-W | HKS4 | SK4 | |
|--|--|---------------------|-----------------------------------|------------------|--------|
| Standards | IEC/EN 60947-1, IEC/EN 60947-5-1, UL 508, CSA22.2 No. 14 | | | | |
| Rated operational voltage U_e | 230 V AC / 220 V DC | 690 V AC / 220 V DC | 690 V AC | 690 V AC | |
| Conventional free-air thermal current I_{th} | 2.5 A | 5 A | 10 A | 10 A | |
| Rated frequency | DC, 50/60 Hz | | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | | |
| Rated insulation voltage U_i | 300 V | 300 V | 690 V | 690 V | |
| Pollution degree | 3 | | | | |
| Ambient air temperature | Operation -20 ... +70 °C Storage -50 ... +80 °C | | | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 2 g / 5 ... 150Hz | | | | |
| Number of poles | 1 N.C. + 1 N.O. | Changeover | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 2 N.C. + 2 N.O. | |
| I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | | | |
| | 24 V, 50/60 Hz | 2 A | 4 A | 6 A | 6 A |
| | 230 V, 50/60 Hz | 0.5 A | 3 A | 4 A | 4 A |
| | 400 V, 50/60 Hz | - | 1.5 A | 3 A | 3 A |
| | 690 V, 50/60 Hz | - | 0.5 A | 1 A | 1 A |
| I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | | | |
| | 24 V | 1 A | 1 A | 2 A | 2 A |
| | 48 V | 0.3 A | - | - | - |
| | 60 V | 0.15 A | - | - | - |
| | 110 V | - | 0.22 A | 0.5 A | 0.5 A |
| | 230 V | - | 0.1 A | 0.25 A | 0.25 A |
| Minimum switching capacity | 17 V / 1 mA | | | | |
| Short-circuit protective device | 10 A Type gG | | | | |
| Duty time | 100 % | | | | |
| Mounting | Front of MMS | Front of MMS | Left side of MMS | Left side of MMS | |
| Mounting positions | 1-6 | | | | |
| Mechanical durability | 100000 cycles | | | | |
| Electrical durability | 100000 cycles | | | | |

Electrical connection

Main circuit

| Type | HK4-11 | HK4-W | HKS4 | SK4 |
|--|-----------------------------------|--|------|-----|
| Connecting capacity | | | | |
|  Solid | 1 x | 0.5... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
|  Flexible | 1 x | 0.5 ... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Stripping length | 10 mm | | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 ... 10.3 lb.in | | | |
| Connection screw | Pozidriv 2 | | | |

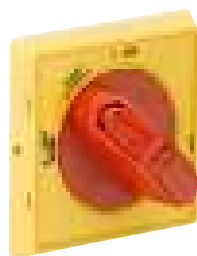
MS450, MS495, MS497 manual motor starters

Main accessories



2CDC241007F0011

MSHD-LTB



2CDC241006F0011

MSHD-LTY



2CDC241004F0011

MSMN

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------|------|------------|------------|-------------------------|
|-------------|-------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|------------------------|-----------------|---|-------|
| Black | MSHD-LTB ¹⁾ | 1SAM201920R1011 | 1 | 0.065 |
| Yellow | MSHD-LTY ¹⁾ | 1SAM201920R1012 | 1 | 0.065 |

¹⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

MO450, MO495, MO496 manual motor starters magnetic only 16 to 100 A – with electromagnetic protection

2



MO450-40

STO2901



MO495-75

STO2901



MO496-100

2CDC241021S0011

Description

The manual motor starter magnetic only is used to manually switch on and off motors and to protect them reliably and without the need for a fuse from short-circuits.

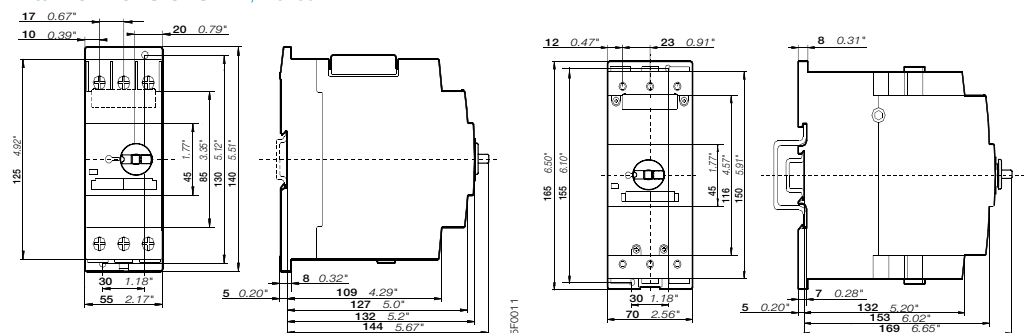
Further features are the build-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter magnetic only is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

Ordering details

| Rated operational power 400 V AC-3 ¹⁾ kW | Rated operational current A | Short-circuit breaking capacity I _{cs} at 400 V AC kA | Rated instantaneous short-circuit current setting I _i A | Type | Order code | Weight (1 pce) kg |
|--|--------------------------------|---|---|-----------|-----------------|----------------------|
| MO450 manual motor starter | | | | | | |
| 15.8 | 40 | 25 | 520.00 | MO450-40 | 1SAM460000R1005 | 1.033 |
| 22 | 45 | 25 | 585.00 | MO450-45 | 1SAM460000R1006 | 1.040 |
| 22 | 50 | 25 | 650.00 | MO450-50 | 1SAM460000R1007 | 1.019 |
| MO495 manual motor starter | | | | | | |
| 30 | 63 | 25 | 819.00 | MO495-63 | 1SAM560000R1007 | 2.244 |
| 37 | 75 | 25 | 975.00 | MO495-75 | 1SAM560000R1008 | 2.247 |
| 45 | 90 | 25 | 1170.00 | MO495-90 | 1SAM560000R1009 | 2.269 |
| 55 | 100 | 25 | 1235.00 | MO495-100 | 1SAM560000R1010 | 2.292 |
| MO496 manual motor starter | | | | | | |
| 7.5 | 16 | 50 | 208.00 | MO496-16 | 1SAM590000R1001 | 2.175 |
| 9.0 | 20 | 50 | 260.00 | MO496-20 | 1SAM590000R1002 | 2.188 |
| 12.5 | 25 | 50 | 325.00 | MO496-25 | 1SAM590000R1003 | 2.219 |
| 15 | 32 | 50 | 416.00 | MO496-32 | 1SAM590000R1004 | 2.208 |
| 18.5 | 40 | 50 | 520.00 | MO496-40 | 1SAM590000R1005 | 2.218 |
| 22 | 50 | 50 | 650.00 | MO496-50 | 1SAM590000R1006 | 2.218 |
| 30 | 63 | 50 | 819.00 | MO496-63 | 1SAM590000R1007 | 2.248 |
| 37 | 75 | 50 | 975.00 | MO496-75 | 1SAM590000R1008 | 2.278 |
| 45 | 90 | 50 | 1170.00 | MO496-90 | 1SAM590000R1009 | 2.266 |
| 55 | 100 | 50 | 1235.00 | MO496-100 | 1SAM590000R1010 | 2.293 |

¹⁾ For overload protection of motors, an appropriate thermal or electronic overload relay must be used

Main dimensions mm, inches



MO450

MO495, MO496

MO450, MO495, MO496 manual motor starters magnetic only

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MO450, MO495, MO496 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC / 450 V DC |
| Rated frequency | 50/60 Hz |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 240 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|---------------------------------------|--|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| Short-circuit protection MO450 | | | | | | | | | | | | | | | |
| MO450-40 | No back-up fuse required up to $I_{cc} = 100$ kA | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MO450-45 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MO450-50 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 80 |

MO450: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MO495

| | | | | | | | | | | | | | | | |
|-----------|--|--|--|----|----|-----|----|----|-----|---|----|-----|---|---|-----|
| MO495-63 | | | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 12 | 160 | 3 | 6 | 80 |
| MO495-75 | | | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 100 |
| MO495-90 | | | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 125 |
| MO495-100 | | | | 25 | 50 | 160 | 20 | 50 | 160 | 6 | 8 | 160 | 3 | 5 | 125 |

MO495-100: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MO496

| | | | | | | | | | | | | | | | |
|-----------|--|--|--|----|-----|--|----|-----|--|-----|----|-----|---|-----|-----|
| MO496-16 | No back-up fuse required up to $I_{cc} = 100$ kA | | | 50 | 100 | | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 11 | 22 | 100 | 7 | 12 | 63 |
| MO496-20 | | | | 50 | 100 | | 50 | 100 | | 11 | 22 | 100 | 7 | 12 | 63 |
| MO496-25 | | | | 50 | 100 | | 50 | 100 | | 11 | 22 | 100 | 7 | 12 | 63 |
| MO496-32 | | | | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 50 | 100 | | 11 | 22 | 100 | 7 | 12 | 63 |
| MO496-40 | | | | 50 | 100 | | 50 | 100 | | 9 | 18 | 160 | 6 | 12 | 80 |
| MO496-50 | | | | 50 | 100 | | 50 | 100 | | 7.5 | 15 | 160 | 5 | 10 | 100 |
| MO496-63 | | | | 50 | 100 | | 50 | 70 | 200 | 7.5 | 15 | 160 | 4 | 7.5 | 100 |
| MO496-75 | | | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 125 |
| MO496-90 | | | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 160 |
| MO496-100 | | | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 160 |

MO496-32: No need for back-up fuse in networks with a prospective current of up to 100 kA at 440 V.
MO496-90: No need for back-up fuse in networks with a prospective current of up to 70 kA at 440 V.
With an appropriate 200 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.



MO450, MO495, MO496 manual motor starters magnetic only

Technical data

General technical data

| Type | | MO450 | MO495 | MO496 |
|---|-------------------------------------|---|-----------------------------------|-------|
| Pollution degree | | 3 | | |
| Phase loss sensitive | | Yes | | |
| Ambient air temperature | | | | |
| Operation | Open - compensated without derating | -20 ... +60 °C | | |
| | Open | -20 ... +70 °C | | |
| | Enclosed | -20 ... +35 °C | | |
| Storage | | -50 ... +80 °C | | |
| Ambient air temperature compensation | | Continuous | | |
| Maximum operating altitude permissible | | 2000 m | | |
| Resistance to shock acc. to IEC 60068-2-27 | | 25 g / 11 ms | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | | 2 g / 5-150 Hz | - | |
| Mounting position | | Position 1-6 (optional for single mounting) | | |
| Mounting | | DIN-rail 35 mm (EN 60715) | DIN-rail 15 mm / 75 mm (EN 60715) | |
| Minimum distance to other units same type | Horizontal | 0 mm | 0 mm | |
| | Vertical - up to 240 V | - | 50 mm | |
| | Vertical - up to 440 V | - | 70 mm | |
| | Vertical - up to 500 V | - | 110 mm | |
| | Vertical - up to 690 V | - | 150 mm | |
| | Vertical | 50 mm | - | |
| Minimum distance to electrical conductive board | Horizontal | 10 mm | - | |
| | Horizontal - up to 500 V | - | 10 mm | |
| | Horizontal - up to 690 V | - | 30 mm | |
| | Vertical - up to 240 V | - | 50 mm | |
| | Vertical - up to 440 V | - | 70 mm | |
| | Vertical - up to 500 V | - | 110 mm | |
| | Vertical - up to 690 V | - | 150 mm | |
| | Vertical | 50 mm | - | |
| Degree of protection | Enclosure / terminals | IP20 | | |

Connecting characteristics

| Main circuit | | | MO450 | MO495 | MO496 |
|---|-------------------------|-----------------|------------------------------|----------------------------|----------------------------|
| Type | | | | | |
| Connecting capacity | | | | | |
|  | Solid | 1 or 2 x | 0.75 ... 16 mm ² | 2.5 ... 16 mm ² | 2.5 ... 16 mm ² |
|  | Flexible | 1 x | 0.75 ... 35 mm ² | 10 ... 70 mm ² | 10 ... 70 mm ² |
| | | 2 x | 0.75 ... 25 mm ² | 10 ... 50 mm ² | 10 ... 50 mm ² |
| | Stranded acc. to UL/CSA | 1 x | AWG 18-2 | AWG 10-2/0 | AWG 10-2/0 |
| | | 2 x | AWG 18-2 | AWG 10-1/0 | AWG 10-1/0 |
| | Flexible acc. to UL/CSA | 1 x | AWG 18-2 | AWG 10-2/0 | AWG 10-2/0 |
| | | 2 x | AWG 18-2 | AWG 10-1/0 | AWG 10-1/0 |
| Stripping length | | | 13 mm | 17 mm | 17 mm |
| Tightening torques | | | 3 - 4.5 Nm / 27 ... 40 lb.in | 4 - 6 Nm / 35 - 53 lb.in | 4 - 6 Nm / 35 - 53 lb.in |
| Connection screw | | | Pozidriv 2 | Hexagon 4 | Hexagon 4 |

MO450, MO495, MO496 manual motor starters magnetic only

Main accessories



SA2

SKO109B91

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 108 A are in the assortment. Between 2 and 4 manual motor starter with none or two lateral auxiliary contacts can be connected.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|

Three-phase busbars for MO450 only

| | | | | | | |
|-----|---|---|---------|-----------------|---|-------|
| 108 | 2 | 0 | PS4-2-0 | 1SAM401911R1001 | 5 | 0.134 |
| 108 | 3 | 0 | PS4-3-0 | 1SAM401911R1002 | 5 | 0.206 |
| 108 | 4 | 0 | PS4-4-0 | 1SAM401911R1003 | 5 | 0.280 |
| 108 | 2 | 1 | PS4-2-2 | 1SAM401911R1004 | 5 | 0.148 |
| 108 | 3 | 1 | PS4-3-2 | 1SAM401911R1005 | 5 | 0.250 |
| 108 | 4 | 1 | PS4-4-2 | 1SAM401911R1006 | 5 | 0.362 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|--|---------------|------|------------|---------|----------------------|
|--------------------------------|--|---------------|------|------------|---------|----------------------|

Three-phase feeder terminals for MO450 only

| | | | | | | |
|-----|----|------|-------|-----------------|---|-------|
| 108 | 25 | Flat | S4-M1 | 1SAM401911R1007 | 2 | 0.106 |
|-----|----|------|-------|-----------------|---|-------|

| Description | for MMS | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|---------------------|-----------------------|-----------------|---------|----------------------|
| Protection cover for busbar | PS4 | BS4-3 | 1SAM401911R1008 | 10 | 0.001 |
| Disconnecter module | MO450 | TB450 | 1SAM401910R1001 | 1 | 0.315 |
| Terminal shroud | MO450 | KA450 | 1SAM401908R1001 | 1 | 0.154 |
| Terminal shroud | MO495 | KA495 | 1SAM501901R1001 | 10 | 0.018 |
| Terminal shroud | MO495 | KA495C ⁽¹⁾ | 1SAM501902R1001 | 10 | 0.038 |
| Terminal insulation barrier for UL508E | MO495 | DX495 | 1SAM401912R1001 | 1 | 0.154 |
| Padlock + 2 keys | MO450, MO495, MO496 | SA2 | GJF1101903R0002 | | |

⁽¹⁾ is plugged onto the housing after removing the box terminals, if using cable lugs or buses

MO450, MO495, MO496 manual motor starters magnetic only

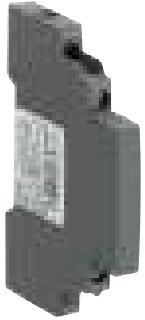
Main accessories

2



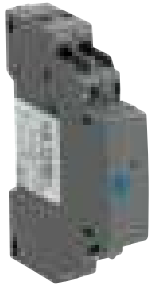
HK4-11

2CDC24102850011



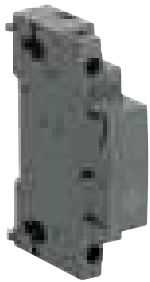
HKS4-20

2CDC24102850011



SK4-11

2CDC24102850011



AA4-24

2CDC24102850011

Description

MO450, MO495, MO497 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts N.O. | Auxiliary contacts N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|-------------------------|--|---------|-----------------|---------|----------------------|
| Auxiliary contacts – mountable on the front | | | | | | |
| 1 | 1 | | HK4-11 | 1SAM401901R1001 | 10 | 0.017 |
| - | - | Changeover | HK4-W | 1SAM401901R1002 | 10 | 0.015 |
| Auxiliary contacts – mountable on the left | | | | | | |
| 1 | 1 | Max. 1 pieces | HKS4-11 | 1SAM401902R1001 | 2 | 0.045 |
| 2 | 0 | Max. 1 pieces | HKS4-20 | 1SAM401902R1002 | 2 | 0.045 |
| 0 | 2 | Max. 1 pieces | HKS4-02 | 1SAM401902R1003 | 2 | 0.045 |
| Signalling contacts – mountable on the right | | | | | | |
| 2 | 2 | Separate signalling acc. UL508E 1 N.O. + 1 N.C. for short circuit and 1 N.O. + 1 N.C. for general tripping, max. 2 pieces | SK4-11 | 1SAM401904R1001 | 1 | 0.093 |

| Rated control supply voltage V | Frequency Hz | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|-----------------|------------|-----------------|---------|----------------------|
| Shunt trip units – mountable on the left | | | | | |
| 20 ... 24 | 50/60 | AA4-24 | 1SAM401907R1001 | 1 | 0.135 |
| 90 ... 110 | 50/60 | AA4-110 | 1SAM401907R1002 | 1 | 0.135 |
| 200 ... 240 | 50/60 | AA4-230 | 1SAM401907R1003 | 1 | 0.128 |
| 350 ... 415 | 50/60 | AA4-400 | 1SAM401907R1004 | 1 | 0.125 |
| Undervoltage releases – mountable on the left | | | | | |
| 24 | 50/60 | UA4-24 | 1SAM401905R1004 | 1 | 0.134 |
| 110/120 | 50/60 | UA4-110 | 1SAM401905R1001 | 1 | 0.134 |
| 230/240 | 50/60 | UA4-230 | 1SAM401905R1002 | 1 | 0.131 |
| 400/440 | 50/60 | UA4-400 | 1SAM401905R1003 | 1 | 0.129 |
| 230/240 | 50/60 | UA4-HK-230 | 1SAM401906R1001 | 1 | 0.140 |
| 400/440 | 50/60 | UA4-HK-400 | 1SAM401906R1002 | 1 | 0.137 |

MO450, MO495, MO496 manual motor starters magnetic only



Main accessories

General technical data

| | | | |
|---|-----------|--------------------|--------------------|
| Type | | PS4-xxx | S4-M1 |
| Standards | | IEC/EN 60947-1 | |
| Rated operational voltage U_e | | 690 V AC | |
| Rated operational current I_e | | 108 A | |
| Rated frequency | | 50/60 Hz | |
| Rated impulse withstand voltage U_{imp} | | 6 kV | |
| Rated insulation voltage U_i | | 690 V AC | |
| Pollution degree | | 3 | |
| Cross-section | | 10 mm ² | 25 mm ² |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |

Electrical connection

Main circuit

| | | |
|--|-----|----------------------------|
| Type | | S4-M1 |
| Connecting capacity | | |
|  Solid | 1 x | 2.5 ... 50 mm ² |
|  Flexible | 1 x | 4 ... 16 mm ² |
| Stranded acc. to UL/CSA | 1 x | AWG 14-4 |
| Flexible acc. to UL/CSA | 1 x | AWG 14-4 |
| Tightening torques | | 4 Nm |
| Connection screw | | Pozidriv 2 |

MO450, MO495, MO496 manual motor starters magnetic only



Main accessories

General technical data

| Type | HK4-11 | HK4-W | HKS4 | SK4 | |
|--|--|---------------------|-----------------------------------|------------------|--------|
| Standards | IEC/EN 60947-1, IEC/EN 60947-5-1, UL 508, CSA22.2 No. 14 | | | | |
| Rated operational voltage U_o | 230 V AC / 220 V DC | 690 V AC / 220 V DC | 690 V AC | 690 V AC | |
| Conventional free-air thermal current I_{th} | 2.5 A | 5 A | 10 A | 10 A | |
| Rated frequency | DC, 50/60 Hz | | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | | |
| Rated insulation voltage U_i | 300 V | 300 V | 690 V | 690 V | |
| Pollution degree | 3 | | | | |
| Ambient air temperature | Operation -20 ... +70 °C Storage -50 ... +80 °C | | | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 2 g / 5 ... 150Hz | | | | |
| Number of poles | 1 N.C. + 1 N.O. | Changeover | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 2 N.C. + 2 N.O. | |
| I_o / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | | | |
| | 24 V, 50/60 Hz | 2 A | 4 A | 6 A | 6 A |
| | 230 V, 50/60 Hz | 0.5 A | 3 A | 4 A | 4 A |
| | 400 V, 50/60 Hz | - | 1.5 A | 3 A | 3 A |
| | 690 V, 50/60 Hz | - | 0.5 A | 1 A | 1 A |
| I_o / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | | | |
| | 24 V | 1 A | 1 A | 2 A | 2 A |
| | 48 V | 0.3 A | - | - | - |
| | 60 V | 0.15 A | - | - | - |
| | 110 V | - | 0.22 A | 0.5 A | 0.5 A |
| | 230 V | - | 0.1 A | 0.25 A | 0.25 A |
| Minimum switching capacity | 17 V / 1 mA | | | | |
| Short-circuit protective device | 10 A Type gG | | | | |
| Duty time | 100 % | | | | |
| Mounting | Front of MMS | Front of MMS | Left side of MMS | Left side of MMS | |
| Mounting positions | 1-6 | | | | |
| Mechanical durability | 100000 cycles | | | | |
| Electrical durability | 100000 cycles | | | | |

Electrical connection

Main circuit

| Type | HK4-11 | HK4-W | HKS4 | SK4 |
|--|-----------------------------------|--|------|-----|
| Connecting capacity | | | | |
|  Solid | 1 x | 0.5... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
|  Flexible | 1 x | 0.5 ... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Stripping length | 10 mm | | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 ... 10.3 lb.in | | | |
| Connection screw | Pozidriv 2 | | | |

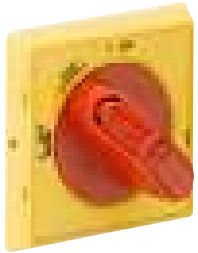
MO450, MO495, MO496 manual motor starters magnetic only

Main accessories



2CDC241007F0011

MSHD-LTB



2CDC241006F0011

MSHD-LTY



2CDC241004F0011

MSMN

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------|------|------------|------------|-------------------------|
|-------------|-------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|------------------------|-----------------|---|-------|
| Black | MSHD-LTB ¹⁾ | 1SAM201920R1011 | 1 | 0.065 |
| Yellow | MSHD-LTY ¹⁾ | 1SAM201920R1012 | 1 | 0.065 |

¹⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

MS325 manual motor starters

0.10 to 25 A – with thermal and electromagnetic protection

2



MS325-16

Description

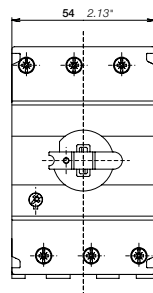
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

MS325 is a compact and powerful range for motor protection up to 12.5 kW (400 V) / 25 A in width of 54 mm. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starters are suitable for three- and single-phase applications. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessories.

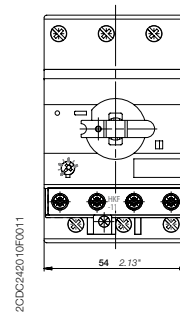
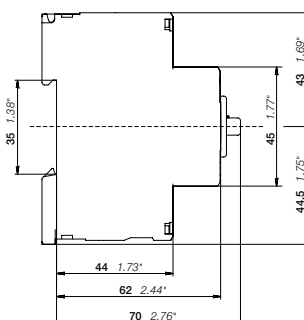
Ordering details

| Rated operational power 400 V AC-3 | Setting range | Short-circuit breaking capacity I_{cs} at 400 V AC | Rated instantaneous short-circuit current setting I_i | Type | Order code | Weight (1 pce) |
|--|---------------|--|---|------------------|-----------------|----------------|
| kW | A | kA | A | | | kg |
| 0.03 | 0.10 ... 0.16 | 100 | 1.56 | MS325-0.16 | 1SAM150000R1001 | 0.280 |
| 0.06 | 0.16 ... 0.25 | 100 | 2.44 | MS325-0.25 | 1SAM150000R1002 | 0.280 |
| 0.09 | 0.25 ... 0.40 | 100 | 3.9 | MS325-0.4 | 1SAM150000R1003 | 0.280 |
| 0.12 | 0.40 ... 0.63 | 100 | 6.14 | MS325-0.63 | 1SAM150000R1004 | 0.280 |
| 0.25 | 0.63 ... 1.00 | 100 | 11.5 | MS325-1 | 1SAM150000R1005 | 0.310 |
| 0.55 | 1.00 ... 1.60 | 100 | 18.4 | MS325-1.6 | 1SAM150000R1006 | 0.340 |
| 0.75 | 1.60 ... 2.50 | 100 | 28.75 | MS325-2.5 | 1SAM150000R1007 | 0.340 |
| 1.5 | 2.50 ... 4.00 | 100 | 50 | MS325-4 | 1SAM150000R1008 | 0.340 |
| 2.2 | 4.00 ... 6.30 | 100 | 78.75 | MS325-6.3 | 1SAM150000R1009 | 0.340 |
| 4.0 | 6.30 ... 9.00 | 100 | 135 | MS325-9 | 1SAM150000R1010 | 0.340 |
| 5.5 | 9.00 ... 12.5 | 75 | 180 | MS325-12.5 | 1SAM150000R1011 | 0.340 |
| 7.5 | 12.5 ... 16.0 | 60 | 240 | MS325-16 | 1SAM150000R1012 | 0.340 |
| 9.0 | 16.0 ... 20.0 | 55 | 300 | MS325-20 | 1SAM150000R1013 | 0.340 |
| 12.5 | 20.0 ... 25.0 | 50 | 375 | MS325-25 | 1SAM150000R1014 | 0.340 |
| 0.03 | 0.10 ... 0.16 | 100 | 1.56 | MS325-0.16-HKF11 | 1SAM150005R0001 | 0.300 |
| 0.06 | 0.16 ... 0.25 | 100 | 2.44 | MS325-0.25-HKF11 | 1SAM150005R0002 | 0.300 |
| 0.09 | 0.25 ... 0.40 | 100 | 3.9 | MS325-0.4-HKF11 | 1SAM150005R0003 | 0.300 |
| 0.12 | 0.40 ... 0.63 | 100 | 6.14 | MS325-0.63-HKF11 | 1SAM150005R0004 | 0.300 |
| 0.25 | 0.63 ... 1.00 | 100 | 11.5 | MS325-1-HKF11 | 1SAM150005R0005 | 0.330 |
| 0.55 | 1.00 ... 1.60 | 100 | 18.4 | MS325-1.6-HKF11 | 1SAM150005R0006 | 0.360 |
| 0.75 | 1.60 ... 2.50 | 100 | 28.75 | MS325-2.5-HKF11 | 1SAM150005R0007 | 0.360 |
| 1.5 | 2.50 ... 4.00 | 100 | 50 | MS325-4-HKF11 | 1SAM150005R0008 | 0.360 |
| 2.2 | 4.00 ... 6.30 | 100 | 78.75 | MS325-6.3-HKF11 | 1SAM150005R0009 | 0.360 |
| 4.0 | 6.30 ... 9.00 | 100 | 135 | MS325-9-HKF11 | 1SAM150005R0010 | 0.360 |
| 5.5 | 9.00 ... 12.5 | 75 | 180 | MS325-12.5-HKF11 | 1SAM150005R0011 | 0.360 |
| 7.5 | 12.5 ... 16.0 | 60 | 240 | MS325-16-HKF11 | 1SAM150005R0012 | 0.360 |
| 9.0 | 16.0 ... 20.0 | 55 | 300 | MS325-20-HKF11 | 1SAM150005R0013 | 0.360 |
| 12.5 | 20.0 ... 25.0 | 50 | 375 | MS325-25-HKF11 | 1SAM150005R0014 | 0.360 |

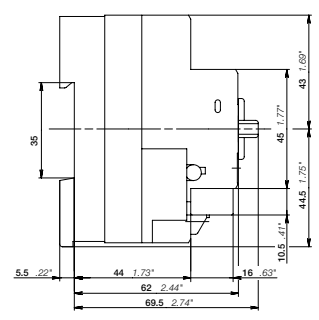
Main dimensions mm, inches



MS325



MS325 + HKF11



MS325 manual motor starters

Technical data

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MS325 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC / 440 V DC |
| Rated frequency | 50/60 Hz |
| Trip class | 10A |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 230 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| MS325-0.16 | | | | | | | | | | | | | | | |
| MS325-0.25 | | | | | | | | | | | | | | | |
| MS325-0.4 | | | | | | | | | | | | | | | |
| MS325-0.63 | | | | | | | | | | | | | | | |
| MS325-1 | | | | | | | | | | | | | | | |
| MS325-1.6 | | | | | | | | | | | | | | | |
| MS325-2.5 | | | | | | | | | | | | | 40 | 40 | 25 |
| MS325-4 | | | | | | | | | | | 60 | 60 | 40 | 10 | 40 |
| MS325-6.3 | | | | | | | 70 | 70 | 50 | | 40 | 40 | 50 | 7 | 40 |
| MS325-9 | | | | | | | 50 | 50 | 80 | | 30 | 30 | 80 | 5 | 50 |
| MS325-12.5 | | | | 75 | 75 | 80 | 45 | 45 | 80 | | 27 | 27 | 80 | 4.5 | 50 |
| MS325-16 | | | | 60 | 60 | 100 | 40 | 40 | 100 | | 25 | 25 | 100 | 4 | 50 |
| MS325-20 | | | | 55 | 55 | 100 | 35 | 35 | 100 | | 22 | 22 | 100 | 3.5 | 50 |
| MS325-25 | | | | 50 | 50 | 125 | 30 | 30 | 125 | | 20 | 20 | 125 | 3 | 50 |

MS325-9: No need for back-up fuse in networks with a prospective current of up to 100 kA at 400 V.

MS325-16: No need for back-up fuse in networks with a prospective current of up to 60 kA at 400 V.

With an appropriate 100 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA

MS325 manual motor starters

Technical data

Main circuit – Utilization characteristics according to UL/CSA

| | | |
|---------------------------------|--|---------------------------------------|
| Type | MS325 | |
| Standards | UL 508, CSA 22.2 No. 14 | |
| Maximum operational voltage | 600 V AC | |
| Manual motor controller ratings | See table "UL 508 – Manual motor controller" | |
| Trip rating | 125 % FLA | |
| Motor ratings | Horse power | See table "Motor rating, three phase" |
| | Full load amps (FLA) | See table "Motor rating, three phase" |
| | Locked rotor amps (LRA) | See table "Motor rating, three phase" |

Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

| Type | 220-240 V AC | | | 440-480 V AC | | | 500-600 V AC | | |
|------------|--------------|------|-------|--------------|------|-------|--------------|------|-------|
| | hp | FLA | LRA | hp | FLA | LRA | hp | FLA | LRA |
| MS325-0.16 | - | 0.16 | 0.96 | - | 0.16 | 0.96 | - | 0.16 | 0.96 |
| MS325-0.25 | - | 0.25 | 1.5 | - | 0.25 | 1.5 | - | 0.25 | 1.5 |
| MS325-0.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 | - | 0.4 | 2.4 |
| MS325-0.63 | - | 0.63 | 3.78 | - | 0.63 | 3.78 | - | 0.63 | 3.78 |
| MS325-1 | - | 1.0 | 6.0 | 1/2 | 1.1 | 10.0 | 1/2 | 0.9 | 8.0 |
| MS325-1.6 | - | 1.6 | 9.6 | 3/4 | 1.6 | 12.5 | 3/4 | 1.3 | 10.0 |
| MS325-2.5 | 1/2 | 2.2 | 20.0 | 1 | 2.1 | 15.0 | 1-1/2 | 2.4 | 16.0 |
| MS325-4 | 1 | 4.2 | 30.0 | 2 | 3.4 | 25.0 | 3 | 3.9 | 25.6 |
| MS325-6.3 | 1-1/2 | 6.0 | 40.0 | 3 | 4.8 | 32.0 | 5 | 6.1 | 36.8 |
| MS325-9 | 2-1/2 | - | - | 5 | 7.6 | 46.0 | 7-1/2 | 9.0 | 50.8 |
| MS325-12.5 | 3 | 9.6 | 64.0 | 7-1/2 | 11.0 | 63.5 | 10 | 11.0 | 64.8 |
| MS325-16 | 5 | 15.2 | 92.0 | 10 | 14.0 | 81.0 | 10 | 11.0 | 64.8 |
| MS325-20 | 5 | 15.2 | 92.0 | 10 | 14.0 | 81.0 | 15 | 27.0 | 93.0 |
| MS325-25 | 7-1/2 | 22.0 | 127.0 | 15 | 21.0 | 116.0 | 20 | 35.0 | 116.0 |

UL 508 – Manual motor controller

| Type | Max. Circuit Breaker UL/NEC | | Max. fuse type UL/NEC | Maximum fuse type K5 o. RK5 per UL/NEC | Maximum short-circuit current for motor disconnect ¹⁾ | | for group installation | | for Tap Conductor Protection 480Y/277V | UL 508 Type E 480Y/277V |
|------------|-----------------------------|---------|-----------------------|--|--|-------|------------------------|-------|--|-------------------------|
| | 480 V | 600 V | | | 480 V | 600 V | 480 V | 600 V | | |
| | A | A | kA | kA | kA | kA | kA | kA | | |
| MS325-0.16 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-0.25 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-0.4 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-0.63 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-1 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-1.6 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-2.5 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-4 | - | S7H1200 | 1600 (class L) | 1200 | 85 | 50 | 85 | 50 | 18 | 18 |
| MS325-6.3 | S7H1200 | S7H1200 | 600 (class K5) | 1200 | 50 | 50 | 50 | 50 | 18 | 18 |
| MS325-9 | S7H1200 | S4H2500 | 600 (class K5) | 250 | 50 | 50 | 50 | 50 | 18 | 18 |
| MS325-12.5 | S4H250 | S7H1200 | 400 (class K5) | 1200 | 50 | 30 | 50 | 30 | 18 | 18 |
| MS325-16 | S4H250 | S7H1200 | 400 (class K5) | 1200 | 50 | 30 | 50 | 30 | 18 | 18 |
| MS325-20 | S4H250 | S4H250 | 400 (class K5) | 250 | 50 | 30 | 50 | 30 | 18 | 18 |
| MS325-25 | S4H250 | S4H250 | 400 (class K5) | 250 | 50 | 30 | 50 | 30 | 18 | 18 |

¹⁾ Suitable as motor disconnect only when provided with padlock SA1 or SA3...



MS325 manual motor starters

Technical data

General technical data

| | | |
|---|---|----------------|
| Type | MS325 | |
| Pollution degree | 3 | |
| Phase loss sensitive | Yes | |
| Ambient air temperature | | |
| Operation | Open - compensated without derating | -25 ... +70 °C |
| | Open | -25 ... +70 °C |
| | Enclosed (IB325) | 0 ... +40 °C |
| Storage | -50 ... +80 °C | |
| Ambient air temperature compensation | Continuous | |
| Maximum operating altitude permissible | 2000 m | |
| Resistance to shock acc. to IEC 60068-2-27 | 15 g / 1/2 sinusoidal shock for 11 ms | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 5 g / 3 ... 150 Hz | |
| Mounting position | Position 1-6 (optional for single mounting) | |
| Mounting | DIN-rail (EN 60715) | |
| Minimum distance to other units same type | Horizontal | 0 mm |
| | Vertical | 100 mm |
| Minimum distance to electrical conductive board | Horizontal, up to 400 V | > 1.5 mm |
| | Horizontal, up to 690 V | > 1.5 mm |
| | Vertical | 75 mm |
| Degree of protection | Enclosure / terminals | IP20 |

Connecting characteristics

| | | |
|--|-------------------|--------------------------------|
| Main circuit | | |
| Type | MS325 | |
| Connecting capacity | | |
|  Solid | 1 x | 1 x 1 ... 10 mm ² |
| | 2 x | 2 x 1 ... 6 mm ² |
|  Flexible | 1 x | 1 x 1 ... 6 mm ² |
| | 2 x | 2 x 0.75 ... 4 mm ² |
| | 1 or 2 x | AWG 14-8 |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 14-8 |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 14-8 |
| Stripping length | 10 mm | |
| Tightening torques | 1.4 Nm / 14 lb.in | |
| Connection screw | M3.5 (Pozidriv 2) | |

MS325 manual motor starters

Main accessories

2



SKO10891

SA1



SKO10891

SA2



SKO10891

SA3

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 63 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|

Three-phase busbars

| | | | | | | |
|----|---|---|---------|-----------------|----|-------|
| 63 | 2 | 0 | PS3-2-0 | 1SAM101937R0012 | 10 | 0.038 |
| 63 | 3 | 0 | PS3-3-0 | 1SAM101937R0013 | 10 | 0.062 |
| 63 | 4 | 0 | PS3-4-0 | 1SAM101937R0014 | 10 | 0.087 |
| 63 | 5 | 0 | PS3-5-0 | 1SAM101937R0015 | 10 | 0.115 |
| 63 | 6 | 0 | PS3-6-0 | 1SAM101937R0016 | 10 | 0.137 |
| 63 | 2 | 1 | PS3-2-1 | 1SAM101937R0022 | 10 | 0.040 |
| 63 | 3 | 1 | PS3-3-1 | 1SAM101937R0023 | 10 | 0.068 |
| 63 | 4 | 1 | PS3-4-1 | 1SAM101937R0024 | 10 | 0.097 |
| 63 | 5 | 1 | PS3-5-1 | 1SAM101937R0025 | 10 | 0.126 |
| 63 | 3 | 2 | PS3-2-2 | 1SAM101937R0032 | 10 | 0.043 |
| 63 | 4 | 2 | PS3-4-2 | 1SAM101937R0034 | 10 | 0.106 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|--|---------------|------|------------|---------|----------------------|
|--------------------------------|--|---------------|------|------------|---------|----------------------|

Three-phase feeder terminals

| | | | | | | |
|----|----|-------------------|-------|-----------------|----|-------|
| 63 | 25 | Flat | S3-M1 | 1SAM101938R0001 | 10 | 0.041 |
| 63 | 25 | High | S3-M2 | 1SAM101938R0002 | 10 | 0.053 |
| 63 | 35 | UL type E and IEC | S3-M3 | 1SAM101938R0004 | 10 | 0.050 |

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-------|-----------------|---------|----------------------|
| Protection cover for busbars | BS3-3 | 1SAM101938R0003 | 50 | 0.001 |
| Lock handle | SA1 | GJF1101903R0001 | 10 | 0.003 |
| Padlock | SA2 | GJF1101903R0002 | 10 | 0.020 |
| Lock handle box SA1/SA2 | SA3 | GJF1101903R0003 | 10 | 0.050 |

MS325 manual motor starters

Main accessories



63-000

HKF



SST 016 97

HK



SST 290 92 R

SK

Description

MS325 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signalling contact signals tripping regardless if it was caused by short-circuit or overload. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping

Ordering details

| Auxiliary contacts: N.O. | Auxiliary contacts: N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------------------------|----------------------------------|--------|-----------------|---------|----------------------|
| Auxiliary contacts – mountable on the front | | | | | | |
| 1 | 1 | | HKF-11 | 1SAM101928R0001 | 10 | 0.015 |
| 2 | 0 | | HKF-20 | 1SAM101928R0002 | 10 | 0.020 |
| Auxiliary contacts – mountable on the left | | | | | | |
| 1 | 1 | Max. 2 pieces | HK-11 | 1SAM101901R0001 | 2 | 0.030 |
| 2 | 0 | Max. 2 pieces | HK-20 | 1SAM101901R0002 | 2 | 0.030 |
| 0 | 2 | Max. 2 pieces | HK-02 | 1SAM101901R0003 | 2 | 0.030 |
| Signalling contacts – mountable on the left | | | | | | |
| 1 | 1 | For tripped alarm, max. 1 pieces | SK-11 | 1SAM101904R0003 | 10 | 0.030 |
| Signalling contacts – mountable on the right | | | | | | |
| 1 | 1 | For short-circuit alarm | CK-11 | 1SAM101943R0001 | 10 | 0.035 |

| Rated control supply voltage V | Frequency Hz | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|-----------------|---------|-----------------|---------|----------------------|
| Shunt trip units – mountable as slide in | | | | | |
| 24 ... 60 | 50/60 | AA-24 | 1SAM101909R0001 | 10 | 0.025 |
| 110 ... 240 | 50/60 | AA-230 | 1SAM101909R0002 | 10 | 0.025 |
| 220 ... 415 | 50/60 | AA-400 | 1SAM101909R0003 | 10 | 0.025 |
| Undervoltage releases – mountable as slide in | | | | | |
| 24 | 50 | UAF-24 | 1SAM101903R0024 | 10 | 0.02 |
| 48 | 50 | UAF-48 | 1SAM101903R0048 | 10 | 0.02 |
| 60 | 50 | UAF-60 | 1SAM101903R0060 | 10 | 0.02 |
| 110 | 50 | UAF-110 | 1SAM101903R0110 | 10 | 0.02 |
| 230 | 50 | UAF-230 | 1SAM101903R0230 | 10 | 0.02 |
| 400 | 50 | UAF-400 | 1SAM101903R0400 | 10 | 0.02 |
| 415 | 50 | UAF-415 | 1SAM101903R0415 | 10 | 0.02 |
| 500 | 50 | UAF-500 | 1SAM101903R0500 | 10 | 0.02 |

MS325 manual motor starters



Main accessories

General technical data

| Type | PS3 | S3-M1/S3-M2 | S3-M3 |
|--|--|--------------------|-------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | |
| Rated operational voltage U_o | 690 V AC | | |
| Rated operational current I_o | 63 A | | |
| Rated frequency | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V AC | | |
| Pollution degree | 3 | | |
| Cross-section | 10 mm ² | 25 mm ² | |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |
| Resistance to shock acc. to IEC 60068-2-27 | 15 g / 11 ms | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | |

Electrical connection

Main circuit

| Type | PS3, S3-Mx |
|--|--------------------------------|
| Connecting capacity | |
|  Solid | 1 x : 6 ... 25 mm ² |
|  Flexible | 1 x : 6 ... 16 mm ² |
| Stranded acc. to UL/CSA | 1 x : AWG 10-4 |
| Flexible acc. to UL/CSA | 1 x : AWG 10-6 |
| Stripping length | 10 mm |
| Tightening torques | 2.5 Nm / 22 lb.in |
| Connection screw | PZ2 (6 mm) |

MS325 manual motor starters

Main accessories



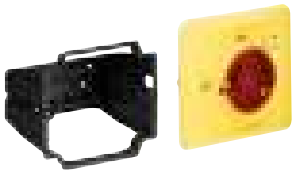
2CDC241004F0010

IB325-Y



2CDC241003F0010

IB325-G



2CDC241002F0010

DMS325-Y



2CDC241001F0010

DMS325-G

Description

IB325 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

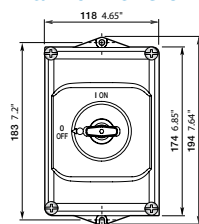
DMS325 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

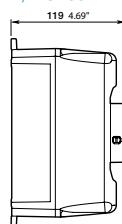
| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|------------|----------|-----------------|---------|-------------------|
| Enclosures IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | IB325-G | 1SAM101940R1000 | 1 | 0.370 |
| | Grey/black | IB325-Y | 1SAM101940R1001 | 1 | 0.370 |
| Door mounting kit IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | DMS325-G | 1SAM101941R1000 | 1 | 0.170 |
| | Grey/black | DMS325-Y | 1SAM101941R1001 | 1 | 0.170 |

Indication I-O and ON-OFF

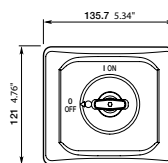
Main dimensions mm, inches



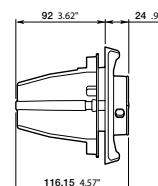
IB325



2CDC242011F0011



DMS325



2CDC242012F0011

MS325 manual motor starters

Main accessories

2



2CDC241003R0011

MSHD-LB



2CDC241002R0011

MSHD-LY



2CDC241004S0011

MSMN



2CDC241005S0011

MSOX-30



2CDC241001S0012

MSH-AR

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------------------|----------|-----------------|------------|-------------------------|
| Shafts | | | | | |
| For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver. | 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| | 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| | 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| | 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------|-----------------------|-----------------|------------|-------------------------|
| Selector type handles IP64 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX. | Black | MSHD-LB ¹⁾ | 1SAM201920R1001 | 1 | 0.065 |
| | Yellow | MSHD-LY | 1SAM201920R1002 | 1 | 0.065 |

¹⁾ Indication I-O and ON-OFF

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|---------------------|-----------------|------------|-------------------------|
| Driver | | | | |
| Coupling driver for use with 6 mm OXS6... types up to 180 mm. | MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| | MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------------------|-----------------------|-----------------|------------|-------------------------|
| Driver shafts | | | | | |
| Driver shaft - combination driver & shaft. Shaft diameter 6 mm. | 32 | MSOX-32 ¹⁾ | 1SAM101924R0003 | 1 | 0.010 |
| | 30 | MSOX-30 ²⁾ | 1SAM101924R0013 | 1 | 0.010 |

¹⁾ MSOX-32 is for normal vertical use

²⁾ MSOX-30 is for horizontal use

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------|-----------------|------------|-------------------------|
| Shaft alignment ring | | | | |
| The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy. | MSH-AR | 1SAM201920R1000 | 1 | 0.010 |

MO325 manual motor starters magnetic only

0.4 to 25 A – with electromagnetic protection



MO325-16

2CDC241003R0009

Description

The MO325 manual motor starters magnetic only are 54 mm width devices. These devices are used to manually switch on and off motors and to protect them reliably and without the need for a fuse from short-circuits.

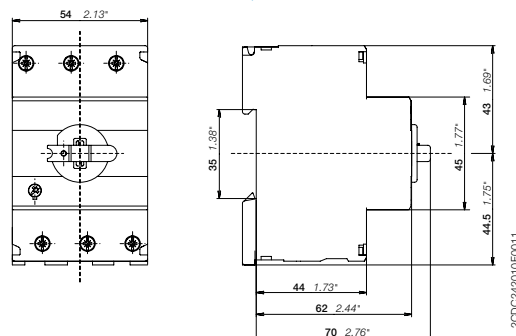
Further features are the build-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter magnetic only is suitable for three- and single-phase applications. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

Ordering details

| Rated operational power 400 V AC-3 ¹⁾ | Rated operational current | Short-circuit breaking capacity I _{CS} at 400 V AC | Rated instantaneous short-circuit current setting I _n | Type | Order code | Weight (1 pce) |
|--|---------------------------|---|--|------------|-----------------|----------------|
| kW | A | kA | A | | | kg |
| 0.09 | 0.40 | 100 | 3.9 | MO325-0.4 | 1SAM160000R1003 | 0.280 |
| 0.12 | 0.63 | 100 | 6.14 | MO325-0.63 | 1SAM160000R1004 | 0.280 |
| 0.25 | 1.0 | 100 | 11.5 | MO325-1 | 1SAM160000R1005 | 0.310 |
| 0.55 | 1.6 | 100 | 18.4 | MO325-1.6 | 1SAM160000R1006 | 0.340 |
| 0.75 | 2.5 | 100 | 28.75 | MO325-2.5 | 1SAM160000R1007 | 0.340 |
| 1.5 | 4.0 | 100 | 50 | MO325-4 | 1SAM160000R1008 | 0.340 |
| 2.2 | 6.3 | 100 | 78.75 | MO325-6.3 | 1SAM160000R1009 | 0.340 |
| 4.0 | 9.0 | 100 | 135 | MO325-9 | 1SAM160000R1010 | 0.340 |
| 5.5 | 12.5 | 75 | 180 | MO325-12.5 | 1SAM160000R1011 | 0.340 |
| 7.5 | 16 | 60 | 240 | MO325-16 | 1SAM160000R1012 | 0.340 |
| 9.0 | 20 | 55 | 300 | MO325-20 | 1SAM160000R1013 | 0.340 |
| 12.5 | 25 | 50 | 375 | MO325-25 | 1SAM160000R1014 | 0.340 |

¹⁾ For overload protection of motors, an appropriate thermal or electronic overload relay must be used

Main dimensions mm, inches



MO325

2CDC242010R0011

2CDC131037C0201

MO325 manual motor starters magnetic only

Technical data

2

Main circuit – Utilization characteristics according to IEC/EN

| | |
|---|---|
| Type | MO325 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_e | 690 V AC / 440 V DC |
| Rated frequency | 50/60 Hz |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_e | See ordering details |
| Rated instantaneous short-circuit current setting I_i | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 230 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | | |
|------------|----------------|----------------|-------------|----------------|----------------|-------------|---|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | |
| MO325-0.4 | | | | | | | | | | | | | | | | |
| MO325-0.63 | | | | | | | | | | | | | | | | |
| MO325-1 | | | | | | | No back-up fuse required up to $I_{cc} = 100$ kA | | | | | | | | | |
| MO325-1.6 | | | | | | | | | | | | | | | | |
| MO325-2.5 | | | | | | | | | | | | | | | | |
| MO325-4 | | | | | | | | | | | | | | | | |
| MO325-6.3 | | | | | | | | | | | | | 40 | 40 | 25 | |
| MO325-9 | | | | | | | | | | | 60 | 60 | 40 | 10 | 10 | 40 |
| MO325-12.5 | | | | | | | 70 | 70 | 50 | 40 | 40 | 50 | 7 | 7 | 40 | |
| MO325-16 | | | | | | | 50 | 50 | 80 | 30 | 30 | 80 | 5 | 5 | 50 | |
| MO325-20 | | | | 75 | 75 | 80 | 45 | 45 | 80 | 27 | 27 | 80 | 4.5 | 4.5 | 50 | |
| MO325-25 | | | | 60 | 60 | 100 | 40 | 40 | 100 | 25 | 25 | 100 | 4 | 4 | 50 | |

MO325-9: No need for back-up fuse in networks with a prospective current of up to 100 kA at 400 V.

MO325-16: No need for back-up fuse in networks with a prospective current of up to 60 kA at 400 V.

With an appropriate 100 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA



MO325 manual motor starters magnetic only

Technical data

General technical data

| | | |
|---|---|----------------|
| Type | MO325 | |
| Pollution degree | 3 | |
| Phase loss sensitive | Yes | |
| Ambient air temperature | | |
| Operation | Open - compensated without derating | -25 ... +70 °C |
| | Open | -25 ... +70 °C |
| | Enclosed (IB132) | 0 ... +40 °C |
| Storage | -50 ... +80 °C | |
| Ambient air temperature compensation | Continuous | |
| Maximum operating altitude permissible | 2000 m | |
| Resistance to shock acc. to IEC 60068-2-27 | 15 g / 1/2 sinusoidal shock for 11 ms | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 5 g / 3 ... 150 Hz | |
| Mounting position | Position 1-6 (optional for single mounting) | |
| Group mounting | | |
| Minimum distance to other units same type | Horizontal | 0 mm |
| | Vertical | 100 mm |
| Minimum distance to electrical conductive board | Horizontal, up to 400 V | > 1.5 mm |
| | Horizontal, up to 690 V | > 1.5 mm |
| | Vertical | 75 mm |
| Degree of protection | Enclosure / terminals | IP20 |

Connecting characteristics

| | | |
|--|-------------------|--------------------------------|
| Main circuit | | |
| Type | MO325 | |
| Connecting capacity | | |
|  Solid | 1 x | 1 x 1 ... 10 mm ² |
| | 2 x | 2 x 1 ... 6 mm ² |
|  Flexible | 1 x | 1 x 1 ... 6 mm ² |
| | 2 x | 2 x 0.75 ... 4 mm ² |
| | 1 or 2 x | AWG 14-8 |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 14-8 |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 14-8 |
| Stripping length | 10 mm | |
| Tightening torques | 1.4 Nm / 14 lb.in | |
| Connection screw | M3.5 (Pozidriv 2) | |

MO325 manual motor starters magnetic only

Main accessories

2



SKO108B91

SA1



SKO108B91

SA2



SKO108B91

SA3

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 63 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|
|--------------------------------|---------------|------------------------|------|------------|---------|----------------------|

Three-phase busbars

| | | | | | | |
|----|---|---|---------|-----------------|----|-------|
| 63 | 2 | 0 | PS3-2-0 | 1SAM101937R0012 | 10 | 0.038 |
| 63 | 3 | 0 | PS3-3-0 | 1SAM101937R0013 | 10 | 0.062 |
| 63 | 4 | 0 | PS3-4-0 | 1SAM101937R0014 | 10 | 0.087 |
| 63 | 5 | 0 | PS3-5-0 | 1SAM101937R0015 | 10 | 0.115 |
| 63 | 6 | 0 | PS3-6-0 | 1SAM101937R0016 | 10 | 0.137 |
| 63 | 2 | 1 | PS3-2-1 | 1SAM101937R0022 | 10 | 0.040 |
| 63 | 3 | 1 | PS3-3-1 | 1SAM101937R0023 | 10 | 0.068 |
| 63 | 4 | 1 | PS3-4-1 | 1SAM101937R0024 | 10 | 0.097 |
| 63 | 5 | 1 | PS3-5-1 | 1SAM101937R0025 | 10 | 0.126 |
| 63 | 3 | 2 | PS3-2-2 | 1SAM101937R0032 | 10 | 0.043 |
| 63 | 4 | 2 | PS3-4-2 | 1SAM101937R0034 | 10 | 0.106 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--------------------------------|--|---------------|------|------------|---------|----------------------|
|--------------------------------|--|---------------|------|------------|---------|----------------------|

Three-phase feeder terminals

| | | | | | | |
|----|----|-------------------|-------|-----------------|----|-------|
| 63 | 25 | Flat | S3-M1 | 1SAM101938R0001 | 10 | 0.041 |
| 63 | 25 | High | S3-M2 | 1SAM101938R0002 | 10 | 0.053 |
| 63 | 35 | UL type E and IEC | S3-M3 | 1SAM101938R0004 | 10 | 0.050 |

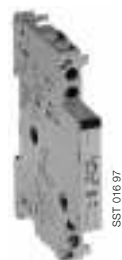
| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|------------------------------|-------|-----------------|---------|----------------------|
| Protection cover for busbars | BS3-3 | 1SAM101938R0003 | 50 | 0.001 |
| Lock handle | SA1 | GJF1101903R0001 | 10 | 0.003 |
| Padlock | SA2 | GJF1101903R0002 | 10 | 0.020 |
| Lock handle box SA1/SA2 | SA3 | GJF1101903R0003 | 10 | 0.050 |

MO325 manual motor starters magnetic only

Main accessories



HKF



HK



SK

Description

MS325 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signalling contact signals tripping regardless if it was caused by short-circuit or overload. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping

Ordering details

| Auxiliary contacts: N.O. | Auxiliary contacts: N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|--------------------------|----------------------------------|---------|-----------------|---------|----------------------|
| Auxiliary contacts – mountable on the front | | | | | | |
| 1 | 1 | | HKF-11 | 1SAM101928R0001 | 10 | 0.015 |
| 2 | 0 | | HKF-20 | 1SAM101928R0002 | 10 | 0.020 |
| Auxiliary contacts – mountable on the left | | | | | | |
| 1 | 1 | Max. 2 pieces | HK-11 | 1SAM101901R0001 | 2 | 0.030 |
| 2 | 0 | Max. 2 pieces | HK-20 | 1SAM101901R0002 | 2 | 0.030 |
| 0 | 2 | Max. 2 pieces | HK-02 | 1SAM101901R0003 | 2 | 0.030 |
| Signalling contacts – mountable on the left | | | | | | |
| 1 | 1 | For tripped alarm, max. 1 pieces | SK-11 | 1SAM101904R0003 | 10 | 0.030 |
| Signalling contacts – mountable on the right | | | | | | |
| 1 | 1 | For short-circuit alarm | CK-11 | 1SAM101943R0001 | 10 | 0.035 |
| Rated control supply voltage | | | | | | |
| V | | Frequency | Type | Order code | Pkg qty | Weight (1 pce) kg |
| | | Hz | | | | |
| Shunt trip units – mountable as slide in | | | | | | |
| 24 ... 60 | | 50/60 | AA-24 | 1SAM101909R0001 | 10 | 0.025 |
| 110 ... 240 | | 50/60 | AA-230 | 1SAM101909R0002 | 10 | 0.025 |
| 220 ... 415 | | 50/60 | AA-400 | 1SAM101909R0003 | 10 | 0.025 |
| Undervoltage releases – mountable as slide in | | | | | | |
| 24 | | 50 | UAF-24 | 1SAM101903R0024 | 10 | 0.02 |
| 48 | | 50 | UAF-48 | 1SAM101903R0048 | 10 | 0.02 |
| 60 | | 50 | UAF-60 | 1SAM101903R0060 | 10 | 0.02 |
| 110 | | 50 | UAF-110 | 1SAM101903R0110 | 10 | 0.02 |
| 230 | | 50 | UAF-230 | 1SAM101903R0230 | 10 | 0.02 |
| 400 | | 50 | UAF-400 | 1SAM101903R0400 | 10 | 0.02 |
| 415 | | 50 | UAF-415 | 1SAM101903R0415 | 10 | 0.02 |
| 500 | | 50 | UAF-500 | 1SAM101903R0500 | 10 | 0.02 |

MO325 manual motor starters magnetic only



Main accessories

General technical data

| Type | PS3 | S3-M1/S3-M2 | S3-M3 |
|--|--|--------------------|-------|
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 | | |
| Rated operational voltage U_o | 690 V AC | | |
| Rated operational current I_o | 63 A | | |
| Rated frequency | 50/60 Hz | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | |
| Rated insulation voltage U_i | 690 V AC | | |
| Pollution degree | 3 | | |
| Cross-section | 10 mm ² | 25 mm ² | |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |
| Resistance to shock acc. to IEC 60068-2-27 | 15 g / 11 ms | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 3 g / 3 ... 150 Hz | | |

Electrical connection

Main circuit

| Type | PS3, S3-Mx |
|--|--------------------------------|
| Connecting capacity | |
|  Solid | 1 x : 6 ... 25 mm ² |
|  Flexible | 1 x : 6 ... 16 mm ² |
| Stranded acc. to UL/CSA | 1 x : AWG 10-4 |
| Flexible acc. to UL/CSA | 1 x : AWG 10-6 |
| Stripping length | 10 mm |
| Tightening torques | 2.5 Nm / 22 lb.in |
| Connection screw | PZ2 (6 mm) |

MO325 manual motor starters magnetic only

Main accessories



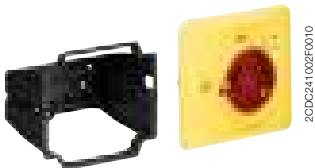
IB325-Y

2CDC241004F0010



IB325-G

2CDC241003F0010



DMS325-Y

2CDC241002F0010



DMS325-G

2CDC241001F0010

Description

IB325 are IP65 enclosures for single MMS installation. Additional mounting of auxiliary and signalling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

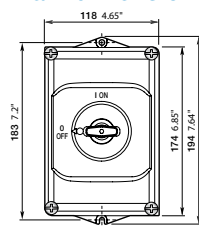
DMS325 are IP65 door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signalling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Ordering details

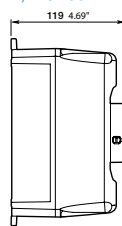
| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|------------|----------|-----------------|---------|-------------------|
| Enclosures IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | IB325-G | 1SAM101940R1000 | 1 | 0.370 |
| | Grey/black | IB325-Y | 1SAM101940R1001 | 1 | 0.370 |
| Door mounting kit IP65 | | | | | |
| Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm | Yellow/red | DMS325-G | 1SAM101941R1000 | 1 | 0.170 |
| | Grey/black | DMS325-Y | 1SAM101941R1001 | 1 | 0.170 |

Indication I-O and ON-OFF

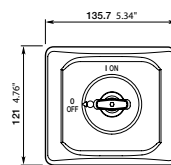
Main dimensions mm, inches



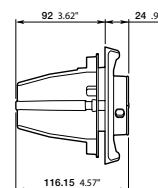
IB325



2CDC242011F0011



DMS325



2CDC242012F0011

MO325 manual motor starters magnetic only

Main accessories

2



2CDC241003F0011

MSHD-LB



2CDC241002S0011

MSHD-LY



2CDC241004S0011

MSMN



2CDC241003S0011

MSOX-30



2CDC241001S0012

MSH-AR

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------|------|------------|------------|-------------------------|
|-------------|-------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|-----------------------|-----------------|---|-------|
| Black | MSHD-LB ¹⁾ | 1SAM201920R1001 | 1 | 0.065 |
| Yellow | MSHD-LY ²⁾ | 1SAM201920R1002 | 1 | 0.065 |

¹⁾ Indication I-O and ON-OFF

²⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Driver shafts

Driver shaft - combination driver & shaft. Shaft diameter 6 mm.

| | | | | |
|----|-----------------------|-----------------|---|-------|
| 32 | MSOX-32 ¹⁾ | 1SAM101924R0003 | 1 | 0.010 |
| 30 | MSOX-30 ²⁾ | 1SAM101924R0013 | 1 | 0.010 |

¹⁾ MSOX-32 is for normal vertical use

²⁾ MSOX-30 is for horizontal use

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Shaft alignment ring

The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy.

| | | | |
|--------|-----------------|---|-------|
| MSH-AR | 1SAM201920R1000 | 1 | 0.010 |
|--------|-----------------|---|-------|

MS451, MS496 manual motor starters

11 to 100 A – with thermal and electromagnetic protection



2DC241018F0011

MS451-50



2DC241017F0011

MS496-100

Description

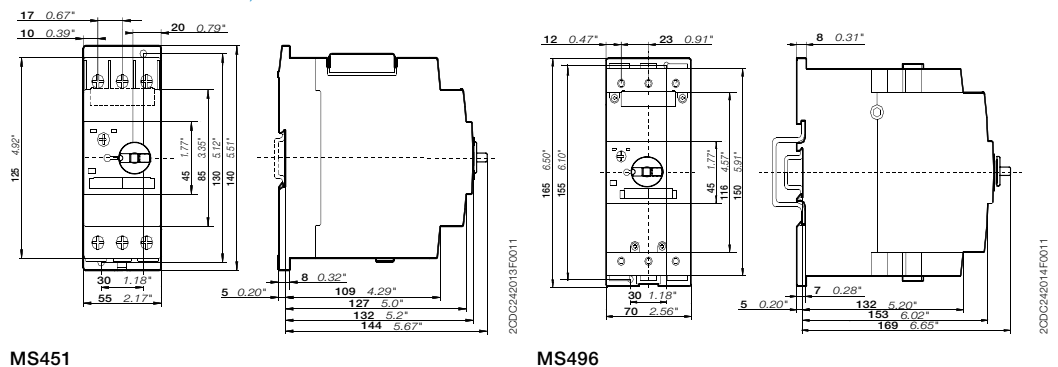
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase busbars, power in-feed blocks are available as accessory.

Ordering details

| Rated operational power 400 V AC-3 kW | Setting range A | Short-circuit breaking capacity I_{cs} at 400 V AC kA | Rated instantaneous short-circuit current setting I_i A | Type | Order code | Weight (1 pce) kg |
|--|--------------------|--|--|-----------|-----------------|----------------------|
| MS451 manual motor starter | | | | | | |
| 7.5 | 11.0 ... 16.0 | 25 | 208.00 | MS451-16 | 1SAM470000R1001 | 1.067 |
| 9 | 14.0 ... 20.0 | 25 | 260.00 | MS451-20 | 1SAM470000R1002 | 1.071 |
| 11 | 18.0 ... 25.0 | 25 | 325.00 | MS451-25 | 1SAM470000R1003 | 1.054 |
| 15 | 22.0 ... 32.0 | 25 | 416.00 | MS451-32 | 1SAM470000R1004 | 1.067 |
| 18.5 | 28.0 ... 40.0 | 25 | 520.00 | MS451-40 | 1SAM470000R1005 | 1.076 |
| 22 | 36.0 ... 45.0 | 25 | 585.00 | MS451-45 | 1SAM470000R1006 | 1.073 |
| 22 | 40.0 ... 50.0 | 25 | 650.00 | MS451-50 | 1SAM470000R1007 | 1.071 |
| MS496 manual motor starter | | | | | | |
| 18.5 | 28.0 ... 40.0 | 50 | 520.00 | MS496-40 | 1SAM570000R1005 | 2.222 |
| 22 | 36.0 ... 50.0 | 50 | 650.00 | MS496-50 | 1SAM570000R1006 | 2.265 |
| 30 | 45.0 ... 63.0 | 50 | 819.00 | MS496-63 | 1SAM570000R1007 | 2.278 |
| 37 | 57.0 ... 75.0 | 50 | 975.00 | MS496-75 | 1SAM570000R1008 | 2.268 |
| 45 | 70.0 ... 90.0 | 50 | 1170.00 | MS496-90 | 1SAM570000R1009 | 2.313 |
| 55 | 80.0 ... 100.0 | 50 | 1300.00 | MS496-100 | 1SAM570000R1010 | 2.322 |

Main dimensions mm, inches



MS451

MS496

MS451, MS496 manual motor starters

Technical data

2

Main circuit – Utilization characteristics according to IEC/EN

| | |
|--|---|
| Type | MS451, MS496 |
| Standards | IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1 |
| Rated operational voltage U_n | 690 V AC / 440 V DC |
| Rated frequency | 50/60 Hz |
| Trip class | 20 |
| Number of poles | 3 |
| Duty time | 100 % |
| Rated impulse withstand voltage U_{imp} | 6 kV |
| Rated insulation voltage U_i | 690 V AC |
| Rated operational current I_n | See ordering details |
| Rated instantaneous short-circuit current setting I_{sc} | See ordering details |
| Rated service short-circuit breaking capacity I_{cs} | See table "Short-circuit breaking capacity and back-up fuses" |
| Rated ultimate short-circuit breaking capacity I_{cu} | See table "Short-circuit breaking capacity and back-up fuses" |

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

| Type | 240 V AC | | | 400 V AC | | | 440 V AC | | | 500 V AC | | | 690 V AC | | |
|---------------------------------------|--|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A | I_{cs} kA | I_{cu} kA | gG, aM A |
| Short-circuit protection MS451 | | | | | | | | | | | | | | | |
| MS451-16 | | | | 25 | 50 | 100 | 25 | 50 | 100 | 6 | 12 | 63 | 3 | 5 | 63 |
| MS451-20 | | | | 25 | 50 | 100 | 25 | 50 | 100 | 6 | 12 | 80 | 3 | 5 | 63 |
| MS451-25 | No back-up fuse required up to $I_{cc} = 100$ kA | | | 25 | 50 | 100 | 15 | 50 | 100 | 6 | 12 | 80 | 3 | 5 | 63 |
| MS451-32 | | | | 25 | 50 | 125 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MS451-40 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MS451-45 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 63 |
| MS451-50 | | | | 25 | 50 | 160 | 15 | 50 | 125 | 5 | 10 | 100 | 2 | 4 | 80 |

MS451: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
With an appropriate 160 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.

Short-circuit protection MS496

| | | | | | | | | | | | | | |
|-----------|--|----|-----|--|----|-----|--|-----|----|-----|---|-----|-----|
| MS496-40 | No back-up fuse required up to $I_{cc} = 100$ kA | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 50 | 100 | No back-up fuse required up to $I_{cc} = 100$ kA | 9 | 18 | 160 | 6 | 12 | 80 |
| MS496-50 | | 50 | 100 | | 50 | 100 | | 7.5 | 15 | 160 | 5 | 10 | 100 |
| MS496-63 | | 50 | 100 | | 50 | 70 | 200 | 7.5 | 15 | 160 | 4 | 7.5 | 100 |
| MS496-75 | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 125 |
| MS496-90 | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 160 |
| MS496-100 | | 50 | 100 | | 50 | 70 | 200 | 5 | 10 | 160 | 3 | 6 | 160 |

MS496-40: No need for back-up fuse in networks with a prospective current of up to 100 kA at 440 V.

MS496-90: No need for back-up fuse in networks with a prospective current of up to 70 kA at 440 V.

With an appropriate 200 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.



MS451, MS496 manual motor starters

Technical data

General technical data

| | | MS451 | MS496 |
|--|-------------------------------------|---|--------|
| Type | | | |
| Pollution degree | | 3 | |
| Phase loss sensitive | | Yes | |
| Ambient air temperature | | | |
| Operation | Open - compensated without derating | -25 ... +60 °C | |
| | Open | -25 ... +70 °C | |
| | Enclosed (IB132) | -25 ... +35 °C | |
| Storage | | -50 ... +80 °C | |
| Ambient air temperature compensation | | Continuous | |
| Maximum operating altitude permissible | | 2000 m | |
| Resistance to shock acc. to IEC 60068-2-27 | | 25 g / 11 ms | |
| Resistance to vibrations acc. to IEC 60068-2-6 | | 2 g / 5-150 Hz | |
| Mounting position | | Position 1-6 (optional for single mounting) | |
| Mounting | | | |
| Group mounting | | | |
| Minimum distance to other units same type | Horizontal | 0 mm | 0 mm |
| | Vertical - up to 240 V | - | 50 mm |
| | Vertical - up to 440 V | - | 70 mm |
| | Vertical - up to 500 V | - | 110 mm |
| | Vertical - up to 690 V | - | 150 mm |
| | Vertical | 50 mm | - |
| Minimum distance to electrical conductive board | Horizontal | 10 mm | - |
| | Horizontal - up to 500 V | - | 10 mm |
| | Horizontal - up to 690 V | - | 30 mm |
| | Vertical - up to 240 V | - | 50 mm |
| | Vertical - up to 440 V | - | 70 mm |
| | Vertical - up to 500 V | - | 110 mm |
| | Vertical - up to 690 V | - | 150 mm |
| | Vertical | 50 mm | - |
| Degree of protection | Enclosure / terminals | IP20 | |

Connecting characteristics

| Main circuit | | | |
|---|-------------------------|------------------------------|-----------------------------|
| Type | | MS451 | MS496 |
| Connecting capacity | | | |
|  | Solid | 1 or 2 x | 0.75 ... 16 mm ² |
| | | | 2.5 ... 16 mm ² |
|  | Flexible | 1 x | 0.75 ... 35 mm ² |
| | | 2 x | 0.75 ... 25 mm ² |
| | Stranded acc. to UL/CSA | 1 x | AWG 18-2 |
| | | 2 x | AWG 18-2 |
| | Flexible acc. to UL/CSA | 1 x | AWG 18-2 |
| | | 2 x | AWG 18-2 |
| Stripping length | | 13 mm | |
| Tightening torques | | 3 - 4.5 Nm / 27 ... 40 lb.in | |
| Connection screw | | Pozidriv 2 | |
| | | Hexagon 4 | |

MS451, MS496 manual motor starters

Main accessories

2



SKO109B81

SA2

Description

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 108 A are in the assortment. Between 2 and 4 manual motor starter with none or two lateral auxiliary contacts can be connected.

Ordering details

| Rated operational current A | Number of MMS | Number of lateral aux. | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|---------------|------------------------|---------|-----------------|---------|----------------------|
| Three-phase busbars for MS450 only | | | | | | |
| 108 A | 2 | 0 | PS4-2-0 | 1SAM401911R1001 | 5 | 0.134 |
| 108 A | 3 | 0 | PS4-3-0 | 1SAM401911R1002 | 5 | 0.206 |
| 108 A | 4 | 0 | PS4-4-0 | 1SAM401911R1003 | 5 | 0.280 |
| 108 A | 2 | 1 | PS4-2-2 | 1SAM401911R1004 | 5 | 0.148 |
| 108 A | 3 | 1 | PS4-3-2 | 1SAM401911R1005 | 5 | 0.250 |
| 108 A | 4 | 1 | PS4-4-2 | 1SAM401911R1006 | 5 | 0.362 |

| Rated operational current A | Rated cross section mm ² | Mounting form | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|--|---------------|-------|-----------------|---------|----------------------|
| Three-phase feeder terminals for MS450 only | | | | | | |
| 108 A | 25 | Flat | S4-M1 | 1SAM401911R1007 | 2 | 0.106 |

| Description | For MMS | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|--------------|----------------------|-----------------|---------|----------------------|
| Protection cover for busbar | PS4 | BS4-3 | 1SAM401911R1008 | 10 | 0.001 |
| Disconnecter module | MS451 | TB450 | 1SAM401910R1001 | 1 | 0.315 |
| Terminal shroud | MS451 | KA450 | 1SAM401908R1001 | 1 | 0.154 |
| Terminal shroud | MS496 | KA495 | 1SAM501901R1001 | 10 | 0.018 |
| Terminal shroud | MS496 | KA495C ¹⁾ | 1SAM501902R1001 | 10 | 0.038 |
| Terminal insulation barrier for UL508E | MS496 | DX495 | 1SAM401912R1001 | 1 | 0.154 |
| Padlock + 2 keys | MS451, MS496 | SA2 | GJF1101903R0002 | 10 | 0.020 |

¹⁾ Is plugged onto the housing after removing the box terminals, if using cable lugs.

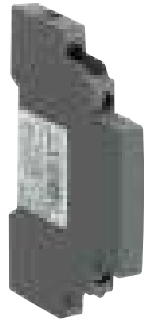
MS451, MS496 manual motor starters

Main accessories



2CDC241022F0011

HK4-11



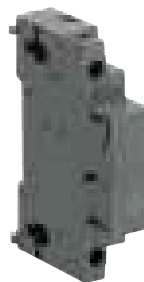
2CDC241022F0011

HKS4-20



2CDC241024F0011

SK4-11



2CDC241023F0011

AA4-24

Description

MS450, MS495, MS497 manual motor starters can be equipped with auxiliary contacts for lateral/front mounting, signalling contact for lateral mounting, undervoltage release and shunt trips. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. Undervoltage release are used for remote tripping of the manual motor starter especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping.

Ordering details

| Auxiliary contacts: N.O. | Auxiliary contacts: N.C. | Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|---|--------------------------|--|---------|-----------------|---------|----------------------|
| Auxiliary contacts – mountable on the front | | | | | | |
| 1 | 1 | | HK4-11 | 1SAM401901R1001 | 10 | 0.017 |
| | | Changeover | HK4-W | 1SAM401901R1002 | 10 | 0.015 |
| Auxiliary contacts – mountable on the left | | | | | | |
| 1 | 1 | Max. 1 pieces | HKS4-11 | 1SAM401902R1001 | 2 | 0.045 |
| 2 | 0 | Max. 1 pieces | HKS4-20 | 1SAM401902R1002 | 2 | 0.045 |
| 0 | 2 | Max. 1 pieces | HKS4-02 | 1SAM401902R1003 | 2 | 0.045 |
| Signalling contacts – mountable on the right | | | | | | |
| 2 | 2 | Separate signalling acc. UL508E 1 N.O. + 1 N.C. for short circuit and 1NO+NC for general tripping , max. 2 pieces | SK4-11 | 1SAM401904R1001 | 1 | 0.093 |

| Rated control supply voltage | Frequency | Type | Order code | Pkg qty | Weight (1 pce) kg |
|--|-----------|------------|-----------------|---------|----------------------|
| V | Hz | | | | |
| Shunt trip units – mountable on the left | | | | | |
| 20 ... 24 | 50/60 | AA4-24 | 1SAM401907R1001 | 1 | 0.135 |
| 90 ... 110 | 50/60 | AA4-110 | 1SAM401907R1002 | 1 | 0.135 |
| 200 ... 240 | 50/60 | AA4-230 | 1SAM401907R1003 | 1 | 0.128 |
| 350 ... 415 | 50/60 | AA4-400 | 1SAM401907R1004 | 1 | 0.125 |
| Undervoltage releases – mountable on the left | | | | | |
| 24 | 50/60 | UA4-24 | 1SAM401905R1004 | 1 | 0.134 |
| 110/120 | 50/60 | UA4-110 | 1SAM401905R1001 | 1 | 0.134 |
| 230/240 | 50/60 | UA4-230 | 1SAM401905R1002 | 1 | 0.131 |
| 400/440 | 50/60 | UA4-400 | 1SAM401905R1003 | 1 | 0.129 |
| 230/240 | 50/60 | UA4-HK-230 | 1SAM401906R1001 | 1 | 0.140 |
| 400/440 | 50/60 | UA4-HK-400 | 1SAM401906R1002 | 1 | 0.137 |

MS451, MS496 manual motor starters



Main accessories

General technical data

| | | | |
|---|-----------|--------------------|--------------------|
| Type | | PS4-xxx | S4-M1 |
| Standards | | IEC/EN 60947-1 | |
| Rated operational voltage U_e | | 690 V AC | |
| Rated operational current I_e | | 108 A | |
| Rated frequency | | 50/60 Hz | |
| Rated impulse withstand voltage U_{imp} | | 6 kV | |
| Rated insulation voltage U_i | | 690 V AC | |
| Pollution degree | | 3 | |
| Cross-section | | 10 mm ² | 25 mm ² |
| Ambient air temperature | Operation | -25 ... +70 °C | |
| | Storage | -50 ... +80 °C | |

Electrical connection

Main circuit

| | | |
|--|-----|----------------------------|
| Type | | S4-M1 |
| Connecting capacity | | |
|  Solid | 1 x | 2.5 ... 50 mm ² |
|  Flexible | 1 x | 4 ... 16 mm ² |
| Stranded acc. to UL/CSA | 1 x | AWG 14-4 |
| Flexible acc. to UL/CSA | 1 x | AWG 14-4 |
| Tightening torques | | 4 Nm |
| Connection screw | | Pozidriv 2 |

MS451, MS496 manual motor starters



Main accessories

General technical data

| Type | HK4-11 | HK4-W | HKS4 | SK4 |
|--|--|---------------------|-----------------------------------|------------------|
| Standards | IEC/EN 60947-1, IEC/EN 60947-5-1, UL 508, CSA22.2 No. 14 | | | |
| Rated operational voltage U_e | 230 V AC / 220 V DC | 690 V AC / 220 V DC | 690 V AC | 690 V AC |
| Conventional free-air thermal current I_{th} | 2.5 A | 5 A | 10 A | 10 A |
| Rated frequency | DC, 50/60 Hz | | | |
| Rated impulse withstand voltage U_{imp} | 6 kV | | | |
| Rated insulation voltage U_i | 300 V | 300 V | 690 V | 690 V |
| Pollution degree | 3 | | | |
| Ambient air temperature | Operation | -20 ... +70 °C | | |
| | Storage | -50 ... +80 °C | | |
| Resistance to shock acc. to IEC 60068-2-27 | 25 g / 11 ms | | | |
| Resistance to vibrations acc. to IEC 60068-2-6 | 2 g / 5 ... 150Hz | | | |
| Number of poles | 1 N.C. + 1 N.O. | Changeover | 1 N.C. + 1 N.O. / 2 N.O. / 2 N.C. | 2 N.C. + 2 N.O. |
| I_e / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category | | | | |
| | 24 V, 50/60 Hz | 2 A | 4 A | 6 A |
| | 230 V, 50/60 Hz | 0.5 A | 3 A | 4 A |
| | 400 V, 50/60 Hz | - | 1.5 A | 3 A |
| | 690 V, 50/60 Hz | - | 0.5 A | 1 A |
| I_e / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category | | | | |
| | 24 V | 1 A | 1 A | 2 A |
| | 48 V | 0.3 A | - | - |
| | 60 V | 0.15 A | - | - |
| | 110 V | - | 0.22 A | 0.5 A |
| | 230 V | - | 0.1 A | 0.25 A |
| Minimum switching capacity | 17 V / 1 mA | | | |
| Short-circuit protective device | 10 A Type gG | | | |
| Duty time | 100 % | | | |
| Mounting | Front of MMS | Front of MMS | Left side of MMS | Left side of MMS |
| Mounting positions | 1-6 | | | |
| Mechanical durability | 100000 cycles | | | |
| Electrical durability | 100000 cycles | | | |

Electrical connection

Main circuit

| Type | HK4-11 | HK4-W | HKS4 | SK4 |
|--|-----------------------------------|--|------|-----|
| Connecting capacity | | | | |
|  Solid | 1 x | 0.5... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
|  Flexible | 1 x | 0.5 ... 2.5 mm ² | | |
| | 2 x | 0.5 ... 1.5 mm ² or 0.75 ... 2.5 mm | | |
| Stranded acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Flexible acc. to UL/CSA | 1 or 2 x | AWG 18-14 | | |
| Stripping length | 10 mm | | | |
| Tightening torques | 0.8 ... 1.2 Nm / 7 ... 10.3 lb.in | | | |
| Connection screw | Pozidriv 2 | | | |

MS451, MS496 manual motor starters

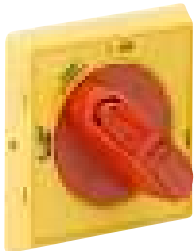
Main accessories

2



2CDC241007F0011

MSHD-LTB



2CDC241008F0011

MSHD-LTY



2CDC241004F0011

MSMN



2CDC241001S0012

MSH-AR

Description

The complete set includes handle, shaft and driver. All accessories fit 6 mm shafts of maximum 180 mm length. The degree of protection for handles MSHD is IP64.

Ordering details

| Description | Shaft length mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|--------------------|------|------------|------------|-------------------------|
|-------------|--------------------|------|------------|------------|-------------------------|

Shafts

For selector type handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.

| | | | | |
|-----|----------|-----------------|---|-------|
| 85 | OXS6X85 | 1SCA101647R1001 | 1 | 0.020 |
| 105 | OXS6X105 | 1SCA108043R1001 | 1 | 0.020 |
| 130 | OXS6X130 | 1SCA101655R1001 | 1 | 0.030 |
| 180 | OXS6X180 | 1SCA101659R1001 | 1 | 0.040 |

| Description | Color mm | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|-------------|------|------------|------------|-------------------------|
|-------------|-------------|------|------------|------------|-------------------------|

Selector type handles IP64

Padlockable max. 3 padlocks with bail diameter 5 ... 8 mm, door interlock in ON position defeatable, for use with 6 mm OXS6...types up to 180 mm or driver shafts MSOX.

| | | | | |
|--------|------------------------|-----------------|---|-------|
| Black | MSHD-LTB ¹⁾ | 1SAM201920R1011 | 1 | 0.065 |
| Yellow | MSHD-LTY ¹⁾ | 1SAM201920R1012 | 1 | 0.065 |

¹⁾ Indication I-O-T and ON-OFF-T

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Driver

Coupling driver for use with 6 mm OXS6... types up to 180 mm.

| | | | |
|---------------------|-----------------|---|-------|
| MSMN ¹⁾ | 1SAM101923R0002 | 1 | 0.002 |
| MSMNO ²⁾ | 1SAM101923R0012 | 1 | 0.002 |

¹⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MS

²⁾ Uncoded - Positioning of ON indication independent from mounting orientation of the MS

| Description | Type | Order code | Pkg qty | Weight (1 pce) kg |
|-------------|------|------------|------------|-------------------------|
|-------------|------|------------|------------|-------------------------|

Shaft alignment ring

The MSH-AR support the long axis for alignment to the handle inlet. It makes closing panel doors more easy.

| | | | |
|--------|-----------------|---|-------|
| MSH-AR | 1SAM201920R1000 | 1 | 0.010 |
|--------|-----------------|---|-------|

Notes

A series of horizontal dotted lines for writing notes, spanning most of the page width.

Contact us

ABB France

Low Voltage Products Division

10, rue Ampère Z.I. - B.P. 114
F-69685 Chassieu cedex / France

ABB STOTZ-KONTAKT GmbH

Eppelheimer Straße 82
D-69123 Heidelberg / Germany

ABB AB/ Cewe-Control

Motorgränd 20
S-721 61 Västerås / Sweden

You can find the address of your local sales organisation
on the ABB home page

<http://www.abb.com/contacts> -> Low Voltage products

Note

We reserve the right to make technical changes or modify the contents of this document without prior notice.

ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

Copyright© 2012 ABB - All rights reserved