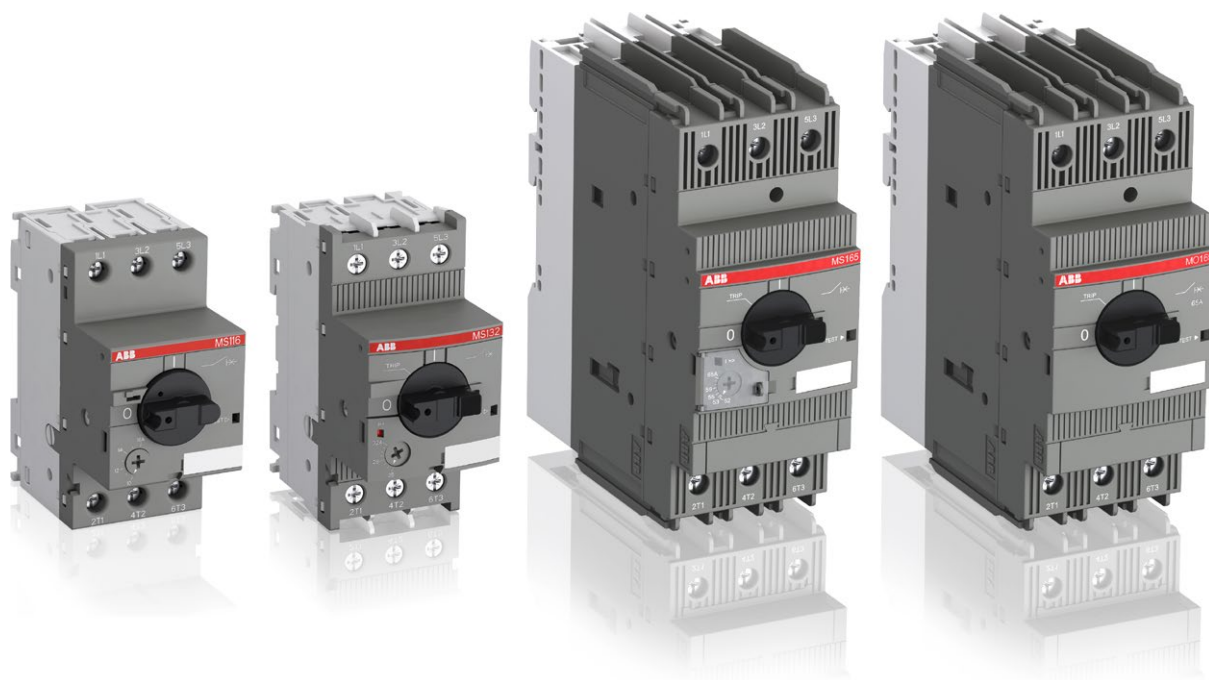


August 2015

Addendum Motor protection and control short-form catalog

New MS165 and MO165 manual motor starters



Enclosed addendum is to be used in addition to printed short-form catalog 1SBC100195C0201.

Content updates:

- Panorama
- Manual motor starter pages
- Selection tables for DOL and reversing starters protected by manual motor starter.

Download



More product information and technical data available in main catalog 1SBC100192C0203

Download
main catalog
1SBC100192C0203



3-pole contactors

Mini contactors

Contactors for motor control and



IEC (1)	AC-3 Rated operational power	$\theta \leq 60^\circ\text{C}$ (2), 400 V	kW	4	5.5
UL/CSA	3-phase motor rating	480 V	hp	3	5
AC / DC Control supply		Type	—	—	
AC Control supply		Type	B6	B7	
DC Control supply		Type	BC6	BC7	
IEC	AC-3 Rated operational current	$\theta \leq 60^\circ\text{C}$ (2), 400 V	A	8.5	11.5
	AC-1 Rated operational current	$\theta \leq 40^\circ\text{C}$, 690 V	A	20 (400 V)	20 (400 V)
UL/CSA	General use rating	600 V	A	12 (300 V)	16
NEMA	NEMA Size			—	—

4	5.5	7.5	4	5.5	7.5	11	15	18.5
5	7.5	10	5	7.5	10	15	20	25
—	—	—	AF09	AF12	AF16	AF26	AF30	AF38
AS09	AS12	AS16	AF09	AF12	AF16	AF26	AF30	AF38
ASL09	ASL12	ASL16	AF09	AF12	AF16	AF26	AF30	AF38
9	12	15.5	9	12	18	26	32	38
22	24	24	25	28	30	45	50	50
20	20	20	25	28	30	45	50	50
00	00	0	00	0	—	1	—	—

(1) 1000 V IEC ratings available for AF80, AF96 and AF146 ... AF2650 contactors.
 (2) $\theta \leq 55^\circ\text{C}$ for mini contactors and AF400 ... AF2650 contactors.

Main accessories

Auxiliary contact blocks	Front mounting	CAF6
	Side mounting	CA6
Timers	Electronic	
Interlocking units (3)	Mechanical	
	Mechanical / Electrical	
Connection sets	For reversing contactors	BSM6-30
Surge suppressors	Varistor (AC/DC)	RV-BC6
	RC type (AC)	
	Transil diode (DC)	RD7

CA3-10 (1 x N.O.)	CA4-10 (1 x N.O.)	
CA3-01 (1 x N.C.)	CA4-01 (1 x N.C.)	
	CAL4-11 (1 x N.O. + 1 x N.C.)	
TEF3-ON	TEF4-ON	
TEF3-OFF	TEF4-OFF	
VM3	VM4	
	VEM4	
BER16C-3	BER16-4	BER38-4
RV5 (24...440 V)	Built-in surge protection	
RC5-1 (24...440 V)		
RT5 (12...264 V)		

(3) See available reversing contactors VB6, VB7 and VAS09 ... VAS16.

Overload relays

Thermal relays	Class 10 (Class 10A for TF140, TA200DU)	T16 (0.10...16 A)
Electronic relays	Class 10E, 20E, 30E	E16DU (0.10...18.9 A)

T16 (0.10...16 A)	TF42 (0.10...38 A)		
	EF19 (0.10...18.9 A)	EF19 (0.10...18.9 A)	EF45 (9...45 A)

Manual motor starters

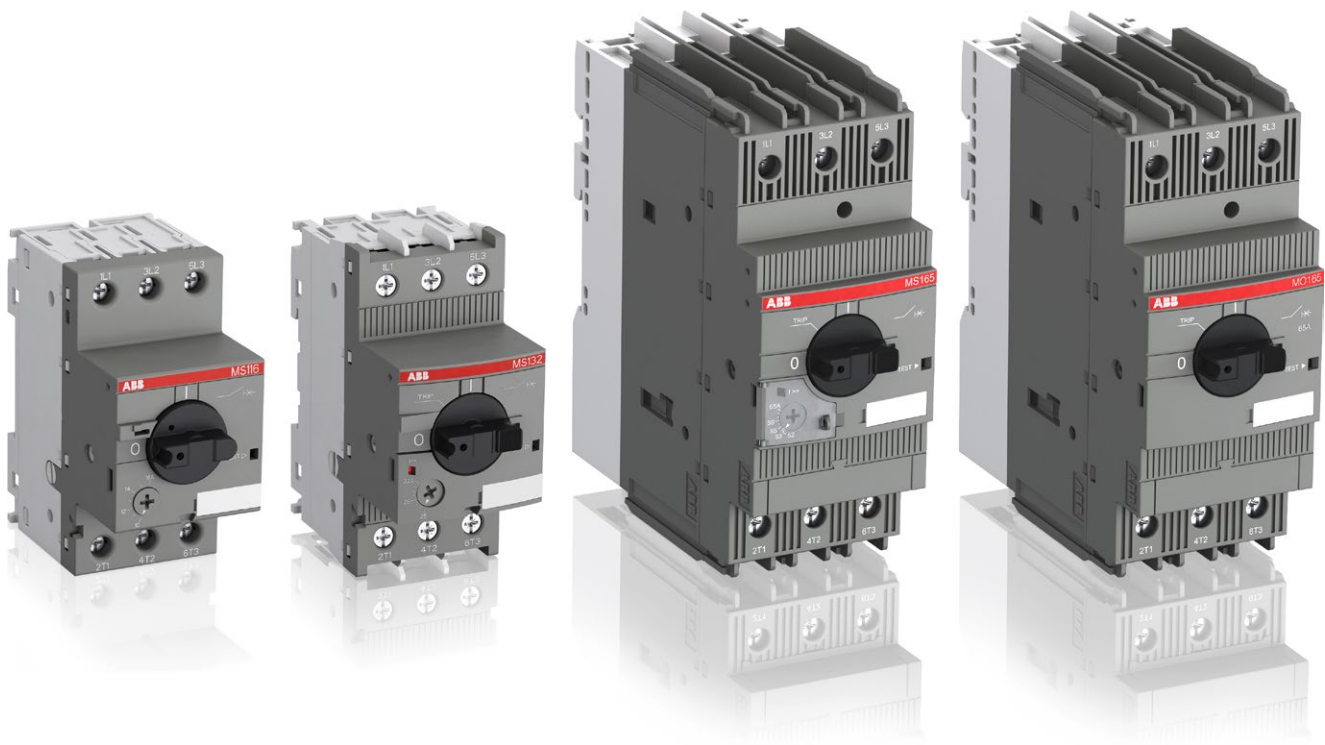
	Thermal / magnetic protection Class 10	MS116 (0.10...32 A) lcs up to 50 kA for class 10A
		MS132 (0.10...32 A) lcs up to 100 kA
	Magnetic only types	MO132 (0.16...32A)

MS116 (0.10...32 A) lcs up to 50 kA for class 10A	MS165 (4) (10...65 A) lcs up to 100 kA
MS132 (0.10...32 A) lcs up to 100 kA	MS497 (22...100 A) lcs up to 100 kA
MO132 (0.16...32 A) lcs up to 100 kA	MO165 (4) (16...65 A) lcs up to 100 kA

Accessories	For contactor mounting	BEA7/132
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BEA16-3	BEA16-4	BEA38-4
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(4) MS165/MO165 are suitable for use with AF09 ... AF30 for North american applications.
 (5) BEA65-4 suitable for MS165 and MO165 only.



Manual motor starters

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Manual motor starters

Benefits

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.

Safe, compact, and cost-saving solution

Various motor protection functions in one device

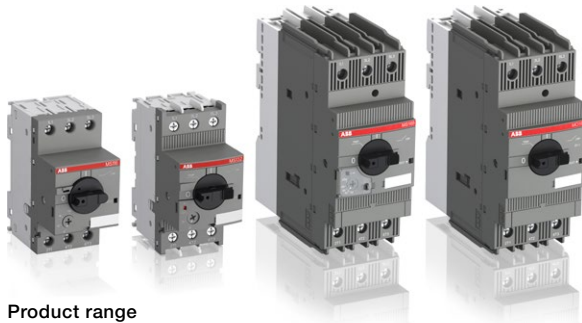
- Overload
- Short-circuit
- Phase loss sensitivity

Efficient planning and installation perfectly matching the ABB contactor family, leads to high flexibility and increased exchangeability. Simple connecting links ensure the electrical and mechanical connection.

Products range for different applications available

- Short-circuit breaking capacity up to 100 kA
- Magnetic-only devices (only short-circuit protection)
- Selected types are certified according to ATEX
- Special version for transformer protection

The manual motor starter range is compatible with all major national and international standards.



Product range

Comprehensive accessory range

Manual motor starters can be equipped with busbars, auxiliary contacts, signalling contacts, undervoltage releases and shunt trips. Moreover it is possible to order IP65 (UL/CSA Type 12) door mounting kits, IP65 (UL/CSA Type 12) enclosures and shafts for doors.

MS116, MS132, MS165, MO132, MO165 and MS132-T share almost the same accessory range. Customers can optimize administration costs and inventory costs through reduced number of order codes by benefiting from a compatible range of accessories.



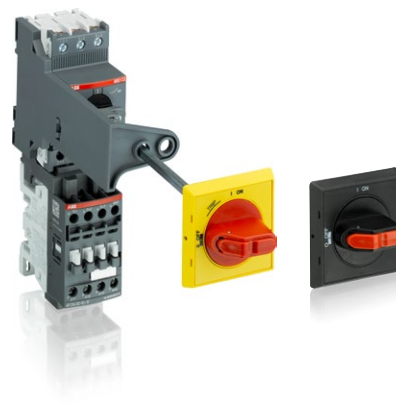
Manual motor starters with busbar connection



Accessory range



Direct-on-line starters



Door mounting kits

Manual motor starters

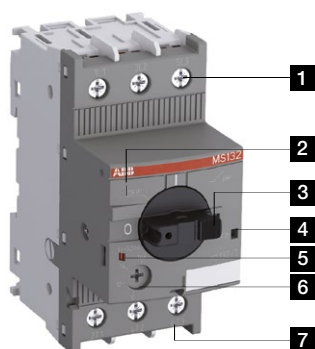
Features

Features

- Manual control
- Disconnect function
- Handle can be locked in the off position
- Remote control via undervoltage release or shunt trip
- Trip indication
- Temperature compensation
- Adjustable current setting

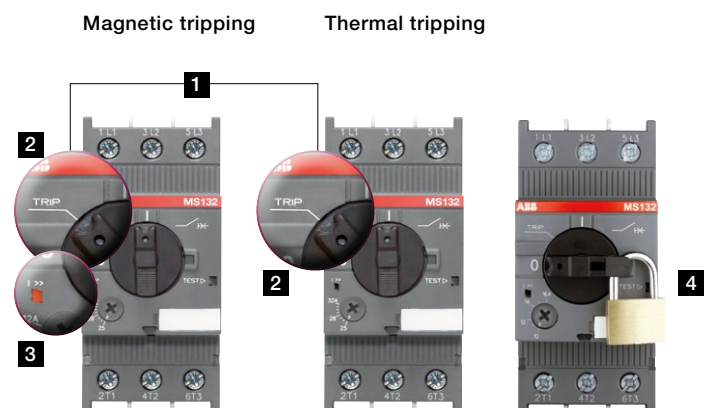
- Magnetic trip indication for several types available (MS132, MS165, and MS132-T)
- One product family in 45 mm width (MS116, MS132, MO132, and MS132-T)
- Variants from 0.1 up to 100 A available
- Short-circuit service breaking capacity I_{CS} up to 100 kA

- 1 Terminals (1L1, 3L2, 5L3)
- 2 Switch position TRIP
- 3 Lockable handle
- 4 Test function
- 5 Status indication for short-circuit
- 6 Current setting range
- 7 Terminals 2T1, 4T2, 6T3



Features of type MS132

- 1 Clear trip indication
- 2 Handle in TRIP position
- 3 Optical indication for short-circuit
- 4 Easy locking



TRIP indication

Manual motor starters

Overview



Type	MS116	MS132	MS165	MS5100
Thermal and electromagnetic protection	Yes	Yes	Yes	Yes
Electromagnetic protection	-	-	-	-
Phase loss sensitivity	Yes	Yes	Yes	-
Switch position	ON/OFF	ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP
Magnetic trip indication	-	Yes	Yes	-
Lockable handle without accessories	-	Yes	Yes	Yes
Disconnecting feature	Yes	Yes	Yes	Yes
Width	45 mm	45 mm	55 mm	90 mm
Rated operational current I_n	0.16 ... 32 A	0.16 ... 32 A	16 ... 65 A	100 A
Setting range	0.1 ... 32 A	0.1 ... 32 A	10 ... 65 A	40 ... 100 A
Ambient air temperature	-25 ... +55 °C ¹⁾	-25 ... +60 °C ¹⁾	-20 ... +60 °C ¹⁾	-25 ... +70 °C

¹⁾ Compensated

Accessories

Auxiliary contact	HKF1, HK1		AUX
Signalling contact for tripped alarm	SK1		-
Signalling contact for short-circuit alarm	-	CK1	-
Shunt trip	AA1		SOR-C
Undervoltage release	UA1		UVR-C

Table for short-circuit ratings for 400/415 V

Rated operational power	Setting range for thermal release	Type	Standard range MS116		Performance range MS132, MS165, MS5100		
			I_{CU}	I_{CS}	Type	I_{CU}	I_{CS}
0.03 kW ¹⁾	0.1 ... 0.16 A	MS116-0.16	50 kA	50 kA	MS132-0.16	100 kA	100 kA
0.06 kW	0.16 ... 0.25 A	MS116-0.25	50 kA	50 kA	MS132-0.25	100 kA	100 kA
0.09 kW	0.25 ... 0.4 A	MS116-0.4	50 kA	50 kA	MS132-0.4	100 kA	100 kA
0.18 kW	0.4 ... 0.63 A	MS116-0.63	50 kA	50 kA	MS132-0.63	100 kA	100 kA
0.25 kW	0.63 ... 1.0 A	MS116-1.0	50 kA	50 kA	MS132-1.0	100 kA	100 kA
0.55 kW	1.0...1.6 A	MS116-1.6	50 kA	50 kA	MS132-1.6	100 kA	100 kA
0.75 kW	1.6...2.5 A	MS116-2.5	50 kA	50 kA	MS132-2.5	100 kA	100 kA
1.5 kW	2.5...4.0 A	MS116-4.0	50 kA	50 kA	MS132-4.0	100 kA	100 kA
2.2 kW	4.0...6.3 A	MS116-6.3	50 kA	50 kA	MS132-6.3	100 kA	100 kA
4.0 kW	6.3...10 A	MS116-10	50 kA	50 kA	MS132-10	100 kA	100 kA
5.5 kW	8...12 A	MS116-12	25 kA	25 kA	MS132-12	100 kA	100 kA
7.5 kW	10...16 A	MS116-16	16 kA	16 kA	MS132-16 / MS165-16	100 kA	100 kA
7.5 kW	14 ... 20 A				MS165-20	100 kA	100 kA
7.5 kW	16...20 A	MS116-20	15 kA	10 kA	MS132-20	100 kA	100 kA
11 kW	18 ... 25 A				MS165-25	100 kA	100 kA
11 kW	20...25 A	MS116-25	15 kA	10 kA	MS132-25	50 kA	50 kA
15 kW	25...32 A	MS116-32	10 kA	10 kA	MS132-32	50 kA	25 kA
15 kW	23 ... 32 A				MS165-32	100 kA	75 kA
22 kW	30 ... 42 A				MS165-42	50 kA	25 kA
22 kW	40 ... 54 A				MS165-54	50 kA	25 kA
25 kW	-						
30 kW	52 ... 65 A				MS165-65	50 kA	25 kA
30 kW	-						
45 kW	40 ... 100 A				MS5100-100	70 kA	70 kA

¹⁾ 690 V



MO132	MO165	MO5100	MS132-T
-	-	-	Yes
Yes	Yes	Yes	-
-	-	-	Yes
ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP
-	-	-	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
45 mm	55 mm	76.2 mm	45 mm
0.16 ... 32 A	16 ... 65 A	70 ... 100 A	0.16 ... 32 A
-	-	-	0.1 ... 25 A
-25 ... +60 °C	-25 ... +60 °C	-25 ... +70 °C	-25 ... +60 °C ¹⁾

HKF1, HK1	AUX	HKF1
SK1	-	SK1
-	-	CK1
AA1	SOR-C	AA1
UA1	UVR-C	UA1

Standard range MO132	Performance range MO132, MO165, MO5100	Transformer protection MS132-T
-------------------------	---	-----------------------------------

Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity
	I_{cu}	I_{cs}		I_{cu}	I_{cs}		I_{cu} / I_{cs}
MO132-0.16	100 kA	100 kA	MO132-0.16	100 kA	100 kA	MS132-0.16T	100 kA
MO132-0.25	100 kA	100 kA	MO132-0.25	100 kA	100 kA	MS132-0.25T	100 kA
MO132-0.4	100 kA	100 kA	MO132-0.4	100 kA	100 kA	MS132-0.4T	100 kA
MO132-0.63	100 kA	100 kA	MO132-0.63	100 kA	100 kA	MS132-0.63T	100 kA
MO132-1.0	100 kA	100 kA	MO132-1.0	100 kA	100 kA	MS132-1.0T	100 kA
MO132-1.6	100 kA	100 kA	MO132-1.6	100 kA	100 kA	MS132-1.6T	100 kA
MO132-2.5	100 kA	100 kA	MO132-2.5	100 kA	100 kA	MS132-2.5T	100 kA
MO132-4.0	100 kA	100 kA	MO132-4.0	100 kA	100 kA	MS132-4.0T	100 kA
MO132-6.3	100 kA	100 kA	MO132-6.3	100 kA	100 kA	MS132-6.3T	100 kA
MO132-10	100 kA	100 kA	MO132-10	100 kA	100 kA	MS132-10T	100 kA
MO132-12	100 kA	100 kA	MO132-12	100 kA	100 kA	MS132-12T	100 kA
MO132-16	100 kA	100 kA	MO132-16 / MO165-16	100 kA	100 kA	MS132-16T	100 kA
			MO165-20	100 kA	100 kA		
MO132-20	100 kA	100 kA	MO132-20	100 kA	100 kA	MS132-20T	100 kA
MO132-25	50 kA	50 kA	MO132-25 / MO165-25	50 kA / 100 kA	50 kA / 100 kA	MS132-25T	50 kA
MO132-32	50 kA	25 kA	MO132-32	50 kA	25 kA	Transformer protection: The instantaneous short-circuit current setting is 20 times the rated operational current.	
			MO165-32	100 kA	50 kA		
			MO165-42	50 kA	25 kA		
			MO165-54	50 kA	25 kA		
			MO5100-70	36 kA	36 kA		
			MO165-65	50 kA	25 kA		
			MO5100-80	36 kA	36 kA		
			MO5100-100	36 kA	36 kA		

MS116 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection



2CDC241010F0011

MS116-16



2CDC241001F0011

MS116-25



2CDC241013F0011

MS116-0.16-HKF1-11



2CDC241012F0011

MS116-32-HKF1-11

Description

MS116 is a compact and economic range for motor protection up to 15 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, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Ordering details

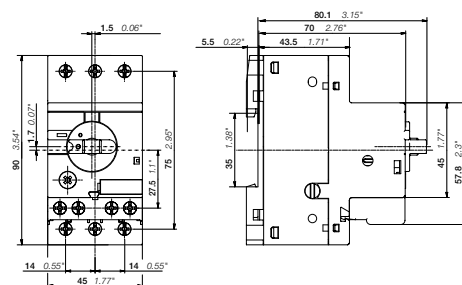
Rated operational power 400 V AC-3 kW	Setting range A	Short-circuit breaking capacity I_{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I_i A	Type	Order code	Weight (1 pc) kg
0.03 ²⁾	0.10 ... 0.16	50	2.00 ¹⁾	MS116-0.16	1SAM250000R1001	0.225
0.06	0.16 ... 0.25	50	3.10 ¹⁾	MS116-0.25	1SAM250000R1002	0.225
0.09	0.25 ... 0.40	50	5.00 ¹⁾	MS116-0.4	1SAM250000R1003	0.225
0.18	0.40 ... 0.63	50	7.90 ¹⁾	MS116-0.63	1SAM250000R1004	0.225
0.25	0.63 ... 1.00	50	12.5 ¹⁾	MS116-1.0	1SAM250000R1005	0.225
0.55	1.00 ... 1.60	50	20.0 ¹⁾	MS116-1.6	1SAM250000R1006	0.265
0.75	1.60 ... 2.50	50	31.3 ¹⁾	MS116-2.5	1SAM250000R1007	0.265
1.50	2.50 ... 4.00	50	50.0	MS116-4.0	1SAM250000R1008	0.265
2.20	4.00 ... 6.30	50	78.8	MS116-6.3	1SAM250000R1009	0.265
4.00	6.30 ... 10.0	50	150	MS116-10	1SAM250000R1010	0.265
5.50	8.00 ... 12.0	25	180	MS116-12	1SAM250000R1012	0.265
7.50	10.0 ... 16.0	16	240	MS116-16	1SAM250000R1011	0.265
7.50	16.0 ... 20.0	10	300	MS116-20	1SAM250000R1013	0.310
11.0	20.0 ... 25.0	10	375	MS116-25	1SAM250000R1014	0.310
15.0	25.0 ... 32.0	10	480	MS116-32	1SAM250000R1015	0.310
0.03 ²⁾	0.10 ... 0.16	50	2.00 ¹⁾	MS116-0.16-HKF1-11	1SAM250005R1001	0.240
0.06	0.16 ... 0.25	50	3.10 ¹⁾	MS116-0.25-HKF1-11	1SAM250005R1002	0.240
0.09	0.25 ... 0.40	50	5.00 ¹⁾	MS116-0.4-HKF1-11	1SAM250005R1003	0.240
0.18	0.40 ... 0.63	50	7.90 ¹⁾	MS116-0.63-HKF1-11	1SAM250005R1004	0.240
0.25	0.63 ... 1.00	50	12.5 ¹⁾	MS116-1.0-HKF1-11	1SAM250005R1005	0.240
0.55	1.00 ... 1.60	50	20.0 ¹⁾	MS116-1.6-HKF1-11	1SAM250005R1006	0.280
0.75	1.60 ... 2.50	50	31.3 ¹⁾	MS116-2.5-HKF1-11	1SAM250005R1007	0.280
1.50	2.50 ... 4.00	50	50.0	MS116-4.0-HKF1-11	1SAM250005R1008	0.280
2.20	4.00 ... 6.30	50	78.8	MS116-6.3-HKF1-11	1SAM250005R1009	0.280
4.00	6.30 ... 10.0	50	150	MS116-10.0-HKF1-11	1SAM250005R1010	0.280
5.50	8.00 ... 12.0	25	180	MS116-12.0-HKF1-11	1SAM250005R1012	0.280
7.50	10.0 ... 16.0	16	240	MS116-16.0-HKF1-11	1SAM250005R1011	0.280
7.50	16.0 ... 20.0	10	300	MS116-20-HKF1-11	1SAM250005R1013	0.326
11.0	20.0 ... 25.0	10	375	MS116-25-HKF1-11	1SAM250005R1014	0.326
15.0	25.0 ... 32.0	10	480	MS116-32-HKF1-11	1SAM250005R1015	0.326

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

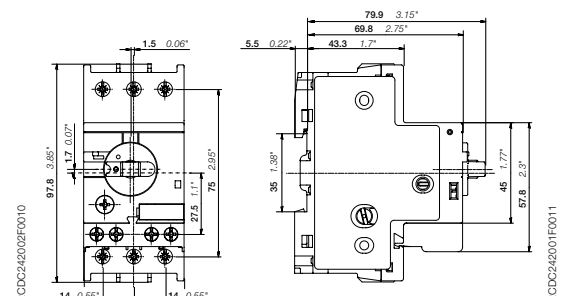
¹⁾ The data is valid for products, produced after week 34, 2014.

²⁾ 690 V

Main dimensions mm, inches



MS116 ≤ 16 A & MS116-HKF1-11 ≤ 16 A



MS116 ≥ 20 A & MS116-HKF1-11 ≥ 20 A

MS132 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection



1SBC101232F0010

MS132-10



2CDC241001F0011

MS132-32



2CDC241014F0011

MS132-0.16-HKF1-11



2CDC241015F0011

MS132-32-HKF1-11

Description

MS132 is a compact and powerful range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. 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, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Ordering details

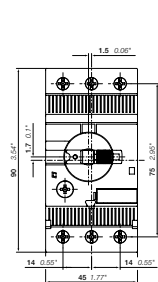
Rated operational power 400 V AC-3	Setting range	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code	Weight (1 pc)
0.03 ²⁾	0.10 ... 0.16	100	2.00 ¹⁾	MS132-0.16	1SAM350000R1001	0.215
0.06	0.16 ... 0.25	100	3.10 ¹⁾	MS132-0.25	1SAM350000R1002	0.215
0.09	0.25 ... 0.40	100	5.00 ¹⁾	MS132-0.4	1SAM350000R1003	0.215
0.18	0.40 ... 0.63	100	7.90 ¹⁾	MS132-0.63	1SAM350000R1004	0.215
0.25	0.63 ... 1.00	100	12.5 ¹⁾	MS132-1.0	1SAM350000R1005	0.215
0.55	1.00 ... 1.60	100	20.0 ¹⁾	MS132-1.6	1SAM350000R1006	0.265
0.75	1.60 ... 2.50	100	31.3 ¹⁾	MS132-2.5	1SAM350000R1007	0.265
1.50	2.50 ... 4.00	100	50.0	MS132-4.0	1SAM350000R1008	0.265
2.20	4.00 ... 6.30	100	78.8	MS132-6.3	1SAM350000R1009	0.265
4.00	6.30 ... 10.0	100	150	MS132-10	1SAM350000R1010	0.265
5.50	8.00 ... 12.0	100	180	MS132-12	1SAM350000R1012	0.310
7.50	10.0 ... 16.0	100	240	MS132-16	1SAM350000R1011	0.310
7.50	16.0 ... 20.0	100	300	MS132-20	1SAM350000R1013	0.310
11.0	20.0 ... 25.0	50	375	MS132-25	1SAM350000R1014	0.310
15.0	25.0 ... 32.0	25	480	MS132-32	1SAM350000R1015	0.310
0.03 ²⁾	0.10 ... 0.16	100	2.00 ¹⁾	MS132-0.16-HKF1-11	1SAM350005R1001	0.231
0.06	0.16 ... 0.25	100	3.10 ¹⁾	MS132-0.25-HKF1-11	1SAM350005R1002	0.231
0.09	0.25 ... 0.40	100	5.00 ¹⁾	MS132-0.4-HKF1-11	1SAM350005R1003	0.231
0.18	0.40 ... 0.63	100	7.90 ¹⁾	MS132-0.63-HKF1-11	1SAM350005R1004	0.231
0.25	0.63 ... 1.00	100	12.5 ¹⁾	MS132-1.0-HKF1-11	1SAM350005R1005	0.231
0.55	1.00 ... 1.60	100	20.0 ¹⁾	MS132-1.6-HKF1-11	1SAM350005R1006	0.281
0.75	1.60 ... 2.50	100	31.3 ¹⁾	MS132-2.5-HKF1-11	1SAM350005R1007	0.281
1.50	2.50 ... 4.00	100	50.0	MS132-4.0-HKF1-11	1SAM350005R1008	0.281
2.20	4.00 ... 6.30	100	78.8	MS132-6.3-HKF1-11	1SAM350005R1009	0.281
4.00	6.30 ... 10.0	100	150	MS132-10.0-HKF1-11	1SAM350005R1010	0.281
5.50	8.00 ... 12.0	100	180	MS132-12.0-HKF1-11	1SAM350005R1012	0.326
7.50	10.0 ... 16.0	100	240	MS132-16.0-HKF1-11	1SAM350005R1011	0.326
7.50	16.0 ... 20.0	100	300	MS132-20-HKF1-11	1SAM350005R1013	0.326
11.0	20.0 ... 25.0	50	375	MS132-25-HKF1-11	1SAM350005R1014	0.326
15.0	25.0 ... 32.0	25	480	MS132-32-HKF1-11	1SAM350005R1015	0.326

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

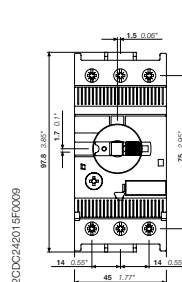
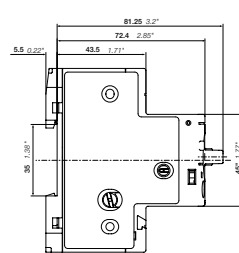
¹⁾ The data is valid for products, produced after week 34, 2014.

²⁾ 690 V

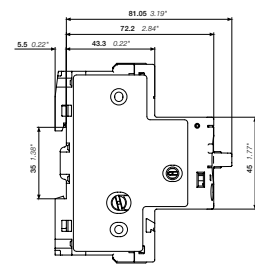
Main dimensions mm, inches



MS132 ≤ 10 A



MS132 ≥ 12 A



MS165 manual motor starters

10 to 65 A – with thermal and electromagnetic protection



MS165-65

2CDC241004V0015

Description

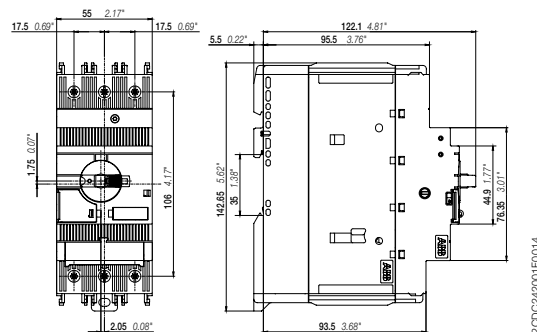
MS165 is a compact and powerful range for motor protection up to 30 kW (400 V) / 65 A in width of 55 mm. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the build-in disconnect function, temperature compensation, 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, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

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 pc)
kW	A	kA	A			kg
7.5	10 ... 16	100	240	MS165-16	1SAM451000R1011	0.950
7.5	14 ... 20	100	300	MS165-20	1SAM451000R1012	0.950
11	18 ... 25	100	375	MS165-25	1SAM451000R1013	0.960
15	23 ... 32	75	480	MS165-32	1SAM451000R1014	0.970
22	30 ... 42	25	630	MS165-42	1SAM451000R1015	0.970
22	40 ... 54	25	810	MS165-54	1SAM451000R1016	0.970
30	52 ... 65	25	975	MS165-65	1SAM451000R1017	0.980

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

Main dimensions mm, inches



MS165

2CDC242001F0014

2CDC131062C0201_6s16

MO132 manual motor starters magnetic only 0.16 to 32 A – with electromagnetic protection



MO132-6.3

2CDC241008F0011



MO132-32

2CDC241008F0011

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

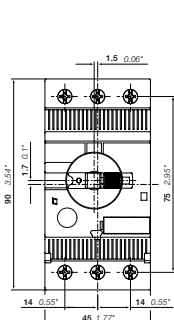
Rated operational power 400 V AC-3 ¹⁾	Rated operational current	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code	Weight (1 pc)
kW	A	kA	A			kg
0.03 ³⁾	0.16	100	2.00 ²⁾	MO132-0.16	1SAM360000R1001	0.215
0.06	0.25	100	3.10 ²⁾	MO132-0.25	1SAM360000R1002	0.215
0.09	0.40	100	5.00 ²⁾	MO132-0.4	1SAM360000R1003	0.215
0.12	0.63	100	7.90 ²⁾	MO132-0.63	1SAM360000R1004	0.215
0.25	1.0	100	12.5 ²⁾	MO132-1.0	1SAM360000R1005	0.215
0.55	1.6	100	20.0 ²⁾	MO132-1.6	1SAM360000R1006	0.265
0.75	2.5	100	31.3 ²⁾	MO132-2.5	1SAM360000R1007	0.265
1.5	4.0	100	50.0	MO132-4.0	1SAM360000R1008	0.265
2.2	6.3	100	78.8	MO132-6.3	1SAM360000R1009	0.265
4.0	10	100	125	MO132-10	1SAM360000R1010	0.265
5.5	12	100	150	MO132-12	1SAM360000R1012	0.310
7.5	16	100	200	MO132-16	1SAM360000R1011	0.310
7.5	20	100	250	MO132-20	1SAM360000R1013	0.310
11	25	50	313	MO132-25	1SAM360000R1014	0.310
15	32	25	400	MO132-32	1SAM360000R1015	0.310

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

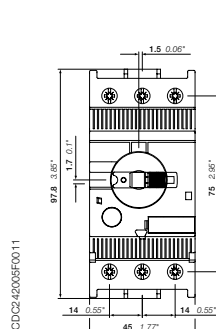
²⁾ The data is valid for products, produced after week 34, 2014.

³⁾ 690 V

Main dimensions mm, inches



MO132 ≤ 10 A



MO132 ≥ 12 A

MO165 manual motor starters magnetic only 16 to 65 A – with electromagnetic protection



MO165-65

2CDC241005V0015

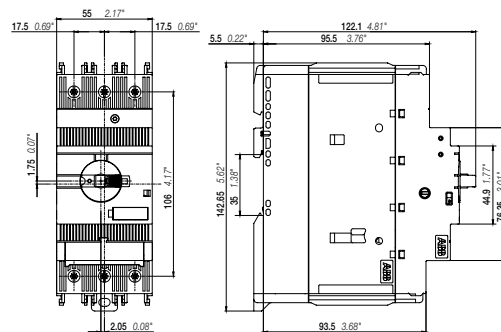
Description

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 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 pc) kg
7.5	16	100	240	MO165-16	1SAM461000R1011	0.950
7.5	20	100	300	MO165-20	1SAM461000R1012	0.950
11	25	100	375	MO165-25	1SAM461000R1013	0.960
15	32	50	480	MO165-32	1SAM461000R1014	0.970
22	42	25	630	MO165-42	1SAM461000R1015	0.970
22	54	25	810	MO165-54	1SAM461000R1016	0.970
30	65	25	975	MO165-65	1SAM461000R1017	0.980

Main dimensions mm, inches



MO165

2CDC24002F0014

2CDC131062C0201_6s16

MS132-T circuit breakers for transformer protection

0.10 to 25 A – with thermal and electromagnetic protection



2CDC241001F0014

MS132-10T



2CDC241002F0014

MS132-25T

Description

Circuit breakers for transformer protection are electro mechanical protection devices specially designed to protect control transformers on the primary side. They allow fuse-less protection against overload and short-circuit, saving space and cost and ensuring a quick reaction under short-circuit condition by switching off the transformer within milliseconds. The short-circuit current setting is fixed to 20 times the operating current to handle the high inrush current generated by transformers. The device allows manual connection and disconnection of the transformer from the mains.

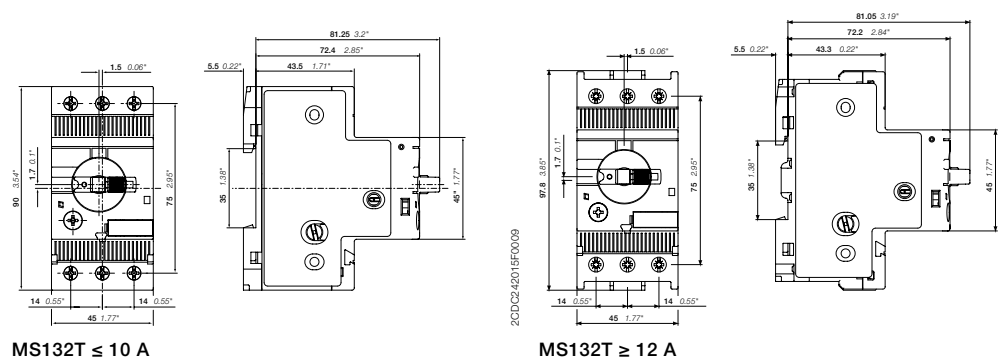
MS132-T is a 45 mm (width) compact and powerful range for transformer protection up to 12.5 kW (400 V) / 25 A. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range. Moreover ABB offers special accessories for fast single-phase setup.

Ordering details

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 pc)
A	kA	A			kg
0.10 ... 0.16	100	3.2	MS132-0.16T	1SAM340000R1001	0.215
0.16 ... 0.25	100	5	MS132-0.25T	1SAM340000R1002	0.215
0.25 ... 0.40	100	8	MS132-0.4T	1SAM340000R1003	0.215
0.40 ... 0.63	100	12.6	MS132-0.63T	1SAM340000R1004	0.215
0.63 ... 1.00	100	20	MS132-1.0T	1SAM340000R1005	0.215
1.00 ... 1.60	100	32	MS132-1.6T	1SAM340000R1006	0.265
1.60 ... 2.50	100	50	MS132-2.5T	1SAM340000R1007	0.265
2.50 ... 4.00	100	80	MS132-4.0T	1SAM340000R1008	0.265
4.00 ... 6.30	100	126	MS132-6.3T	1SAM340000R1009	0.265
6.30 ... 10.0	100	200	MS132-10T	1SAM340000R1010	0.265
8.00 ... 12.0	100	240	MS132-12T	1SAM340000R1012	0.310
10.0 ... 16.0	100	320	MS132-16T	1SAM340000R1011	0.310
16.0 ... 20.0	100	400	MS132-20T	1SAM340000R1013	0.310
20.0 ... 25.0	50	500	MS132-25T	1SAM340000R1014	0.310

Please check for single-phase equipment chapter Main accessories.

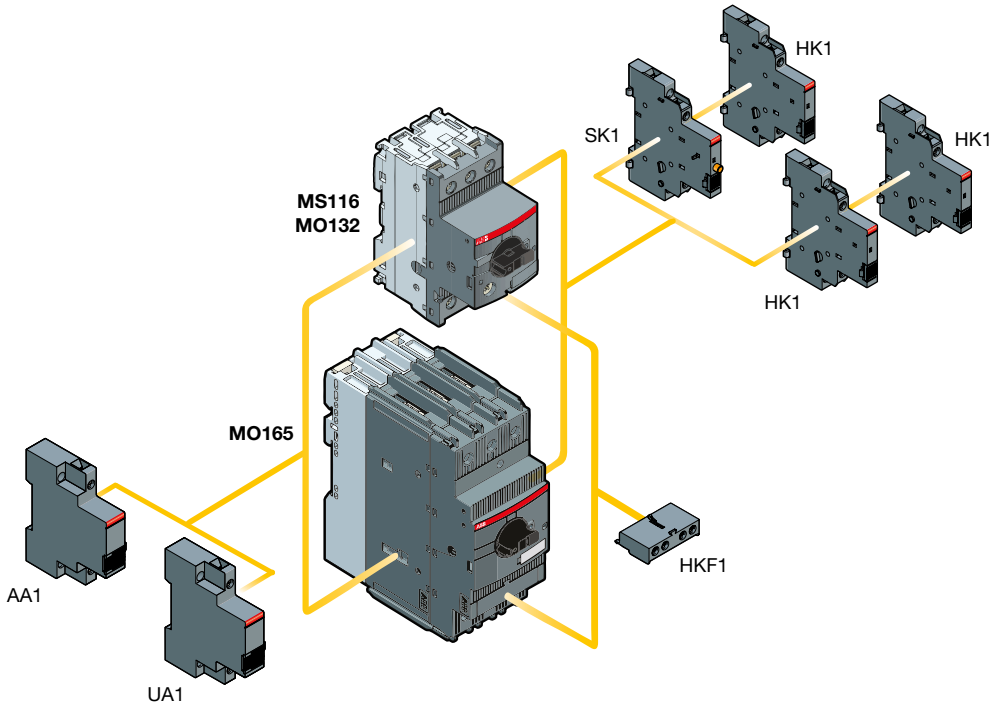
Main dimensions mm, inches



Main accessories

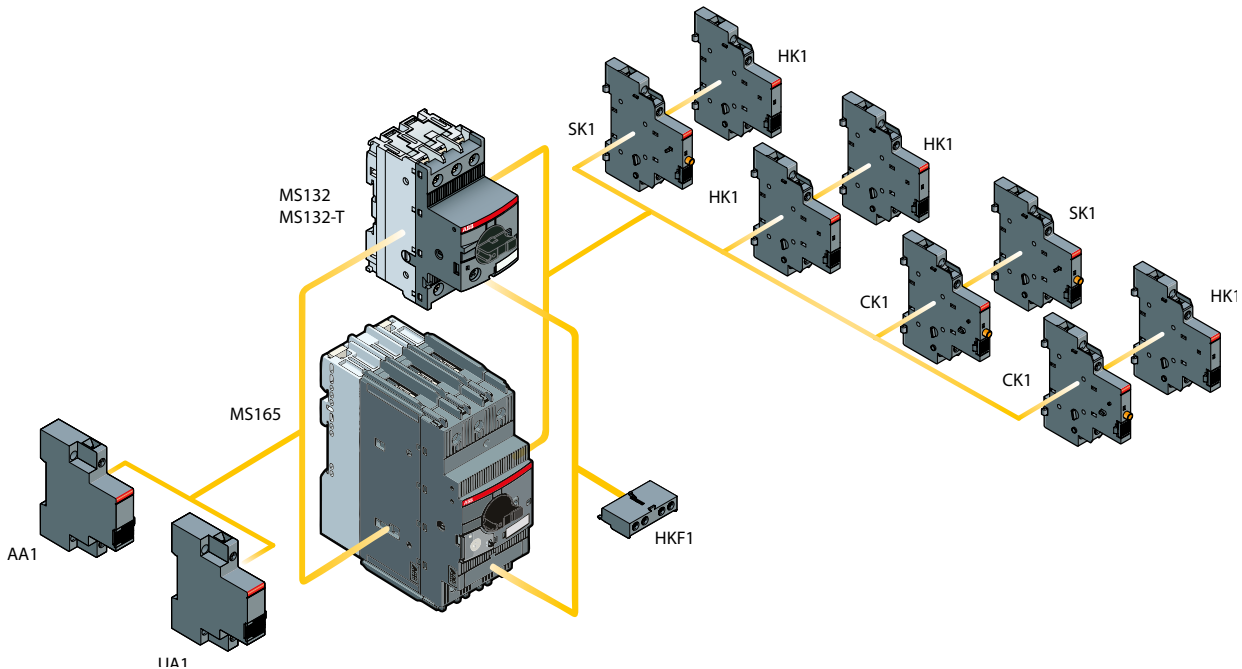
MS116, MS132, MS165, MO132, MO165, MS132-T

Manual motor starters with accessories (MS116, MO132, MO165)



2CDC242001F0015

Manual motor starters with accessories (MS132, MS165) and circuit breaker for transformer protection (MS132-T)



2CDC242001F0015

2CDC131050C0201_7s10

Main accessories

MS116, MS132, MS165, MO132, MO165, MS132-T



HKF1-11

1SBC101208F0014



HK1-11

1SBC101208F0014



SK1-11

1SBC101210F0014



CK1-11

1SBC101288F0014

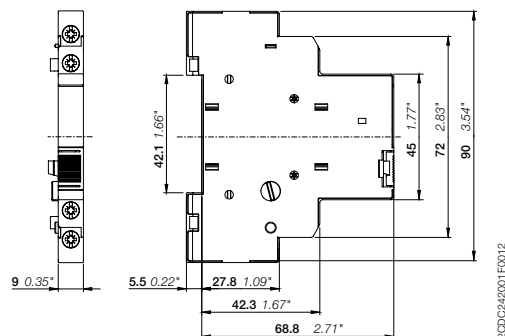
Description

MMS and MS132-T can be equipped with auxiliary contacts for lateral/front mounting, signaling contacts for lateral mounting, undervoltage releases and shunt trips. Two different signaling 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 signaling contact SK signals tripping regardless if it was caused by short-circuit or overload. The signaling contact CK signals tripping in case it was caused by short-circuit. Undervoltage releases are used for remote tripping of the manual motor starters especially for emergency stop circuits. Shunt trips release the MMS used for remote tripping. These main accessories are suitable throughout the MS116/MS132/MS165-range.

Ordering details

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code	Pkg qty	Weight (1 pc)
						pcs	kg
Auxiliary contacts – mountable on the front							
MS116,	1	1		HKF1-11	1SAM201901R1001	10	0.015
MS132, MS165	1	0		HKF1-10	1SAM201901R1003	10	0.013
MO132, MO165	0	1		HKF1-01	1SAM201901R1004	10	0.013
MS132-T	2	0		HKF1-20	1SAM201901R1002	10	0.015
Auxiliary contacts – mountable on the right							
MS116,	1	1	max. 2 pieces	HK1-11	1SAM201902R1001	2	0.035
MS132, MS165	2	0	max. 2 pieces	HK1-20	1SAM201902R1002	2	0.035
MO132, MO165	0	2	max. 2 pieces	HK1-02	1SAM201902R1003	2	0.035
MS132-T	2	0	with lead contacts	HK1-20L	1SAM201902R1004	2	0.035
Signaling contacts – mountable on the right							
MS116,	1	1	for tripped alarm, max. 2 pieces	SK1-11	1SAM201903R1001	2	0.035
MS132, MS165	2	0	for tripped alarm, max. 2 pieces	SK1-20	1SAM201903R1002	2	0.035
MO132, MO165	0	2	for tripped alarm, max. 2 pieces	SK1-02	1SAM201903R1003	2	0.035
MS132-T	2	0	for tripped alarm, max. 2 pieces	SK1-20L	1SAM201903R1004	2	0.035
MS132, MS165,	1	1	for short-circuit alarm, max. 2 pieces	CK1-11	1SAM301901R1001	2	0.035
MS132-T	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

Main dimensions mm, inches



HK1

Main accessories

MS116, MS132, MS165, MO132, MO165, MS132-T



AA1-24

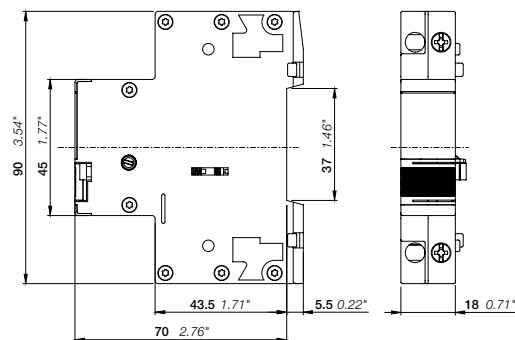


UA1-24

Ordering details

Suitable for	Rated control supply voltage		Type	Order code	Pkg qty	Weight (1 pc)
	50 Hz V AC	60 Hz V AC				
Shunt trips – mountable on the left						
MS116, MS132, MS165, MO132, MO165, MS132-T	20 ... 24	20 ... 24	AA1-24	1SAM201910R1001	1	0.100
	110	110	AA1-110	1SAM201910R1002	1	0.100
	200 ... 240	200 ... 240	AA1-230	1SAM201910R1003	1	0.100
	350 ... 415	350 ... 415	AA1-400	1SAM201910R1004	1	0.100
Undervoltage releases – mountable on the left						
MS116, MS132, MS165, MO132, MO165, MS132-T	20	24	UA1-20	1SAM201904R1010	1	0.100
	24	-	UA1-24	1SAM201904R1001	1	0.100
	48	-	UA1-48	1SAM201904R1002	1	0.100
	60	-	UA1-60	1SAM201904R1003	1	0.100
	110	120	UA1-110	1SAM201904R1004	1	0.100
	-	208	UA1-208	1SAM201904R1008	1	0.100
	230	240	UA1-230	1SAM201904R1005	1	0.100
	400	-	UA1-400	1SAM201904R1006	1	0.100
	415	480	UA1-415	1SAM201904R1007	1	0.100
	-	575	UA1-575	1SAM201904R1009	1	0.100

Main dimensions mm, inches



AA1, UA1

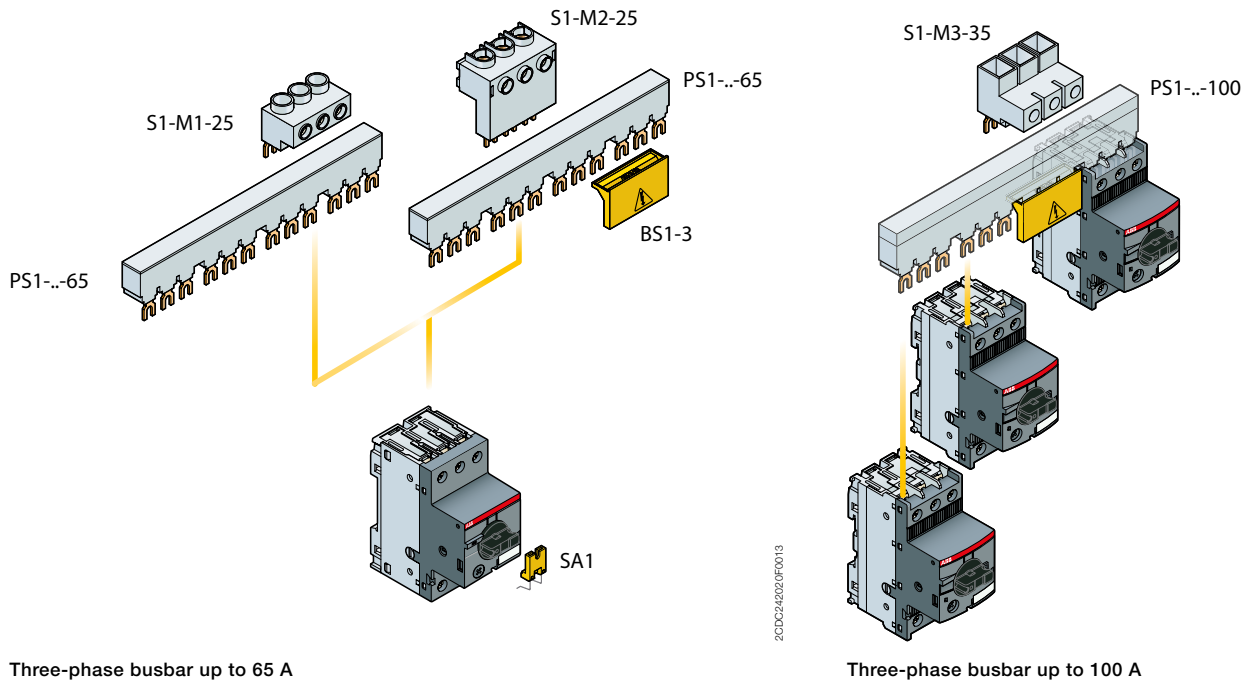
20DC24202F0012

20DC131050C0201_7s10

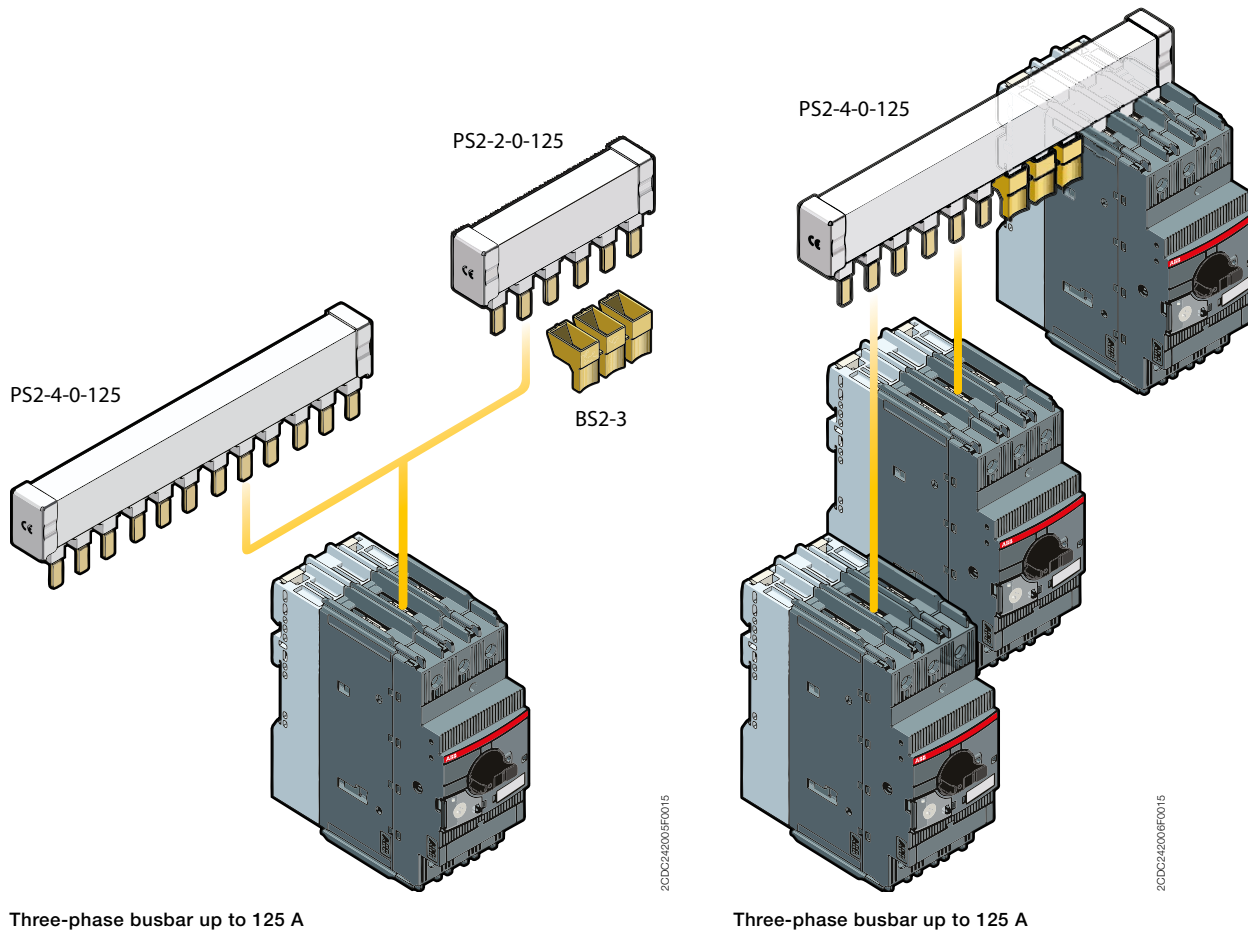
Main accessories

MS116, MS132, MS165, MO132, MO165

Manual motor starter with three-phase busbar systems (MS116, MS132, MO132)

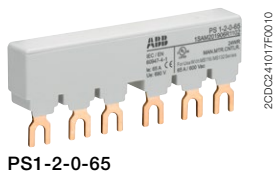


Manual motor starter with three-phase busbar systems (MS165, MO165)



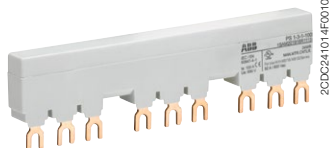
Main accessories

MS116, MS132, MO132, MS132-T



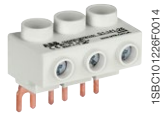
PS1-2-0-65

2CDC241017FD010



PS1-3-1-100

2CDC241014FD010



S1-M1-25

1SBC101226FD014



S1-M2-25

1SBC101266FD014



SA2

2CDC241023FD013



SA1

SK0108B91



PB1-1-32

2CDC241004FD014



S1-PB1-25

2CDC241005S0014

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.

Phase connecting links and phase power infeed blocks are also available for single-phase applications.

Ordering details

Suitable for	Rated operational current	Number of MMS	Number of lateral aux.	Type	Order code	Pkg qty	Weight (1 pc)
	A					pcs	kg
Three-phase busbars							
MS116, MS132, MO132	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
MS116, MS132, MO132	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

Suitable for	Rated operational current	Rated cross section	Mounting form	Type	Order code	Pkg qty	Weight (1 pc)
	A	mm ²				pcs	kg
Three-phase feeder terminals							
MS116, MS132, MO132	65	25	Flat	S1-M1-25	1SAM201907R1101	10	0.038
	65	25	High	S1-M2-25	1SAM201907R1102	10	0.051
	65	25	UL/CSA Type E/F and IEC	S1-M3-25	1SAM201907R1103	10	0.042
	100	35	UL/CSA Type E/F and IEC	S1-M3-35	1SAM201913R1103	10	0.060

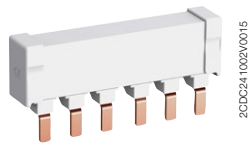
Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pc)
				pcs	kg
MS116, MS132, MO132	Protection cover for busbars	BS1-3	1SAM201908R1001	50	0.003
MS116, MS132, MO132, MS132-T	Screw fixing kit	FS116	1SAM201909R1001	1	0.020
	Padlock + two keys	SA2	GJF1101903R0002	10	0.020
MS116	Lock handle	SA1	GJF1101903R0001	10	0.003
	Lock handle box SA1/SA2	SA3	GJF1101903R0003	10	0.050

Accessories for single-phase connection (IEC only)

MS116, MS132, MO132, MS132-T	Phase connecting link	PB1-1-32	1SAM201914R1001	1	0.009
	Phase power infeed block	S1-PB1-25	1SAM201914R1002	1	0.013

Main accessories

MS165, MO165



PS2-2-0-125

2CDC241002V0015



PS2-3-0-125

2CDC241003V0015



KA165

2CDC241010V0014



BS2-3

2CDC241001V0015



SA2

2CDC241023F0013

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 125 A are in the assortment. Between 2 and 5 manual motor starters with none, one or two lateral auxiliary contacts can be connected.

Ordering details

Suitable for	Rated operational current A	Number of MMS	Number of lateral aux.	Type	Order code	Pkg qty pcs	Weight (1 pc) kg
Three-phase busbars							
MS165, MO165	125	2	0	PS2-2-0-125	1SAM401920R1002	10	0.100
	125	3	0	PS2-3-0-125	1SAM401920R1003	10	0.162
	125	4	0	PS2-4-0-125	1SAM401920R1004	10	0.226
	125	2	2	PS2-2-2-125	1SAM401920R1022	10	0.117
	125	3	2	PS2-3-2-125	1SAM401920R1023	10	0.197
	125	4	2	PS2-4-2-125	1SAM401920R1024	10	0.277

Other busbar types on request.

Suitable for	Description	Type	Order code	Pkg qty pcs	Weight (1 pc) kg
MS165, MO165	Terminal shroud	KA165	1SAM401922R1001	10	0.025
	Protection cover for busbars	BS2-3	1SAM401921R1001	50	0.005
	Padlock + two keys	SA2	GJF1101903R0002	10	0.020

Main accessories

MS116, MS132, MO132



2CDC241004F0010

IB132-Y



2CDC241003F0010

IB132-G



2CDC241002F0010

DMS132-Y



2CDC241001F0010

DMS132-G

Description

IB132 are IP65 (UL/CSA Type 12) enclosures for single MMS installation. Additional mounting of auxiliary and signaling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

DMS132 are IP65 (UL/CSA Type 12) door mounting kits for MMS installation in any enclosure. Additional mounting of auxiliary, signaling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

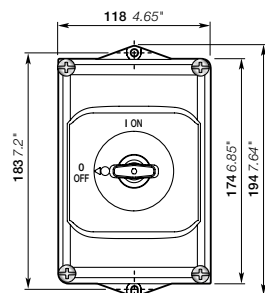
Ordering details

Suitable for	Description	Color	Type	Order code	Pkg qty pcs	Weight (1 pc) kg
IP65 enclosures (UL/CSA Type 12)						
MS116, MS132, MO132	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
IP65 door mounting kits (UL/CSA Type 12)						
MS116, MS132, MO132	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

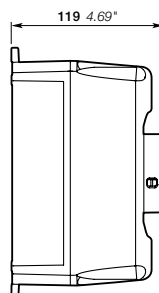
Indication I-O-T and ON-OFF-T

Please check for further equipment chapter General accessories.

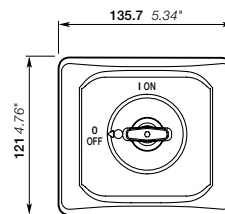
Main dimensions mm, inches



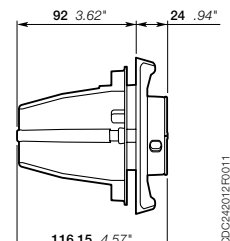
IB132



2CDC242011F0011

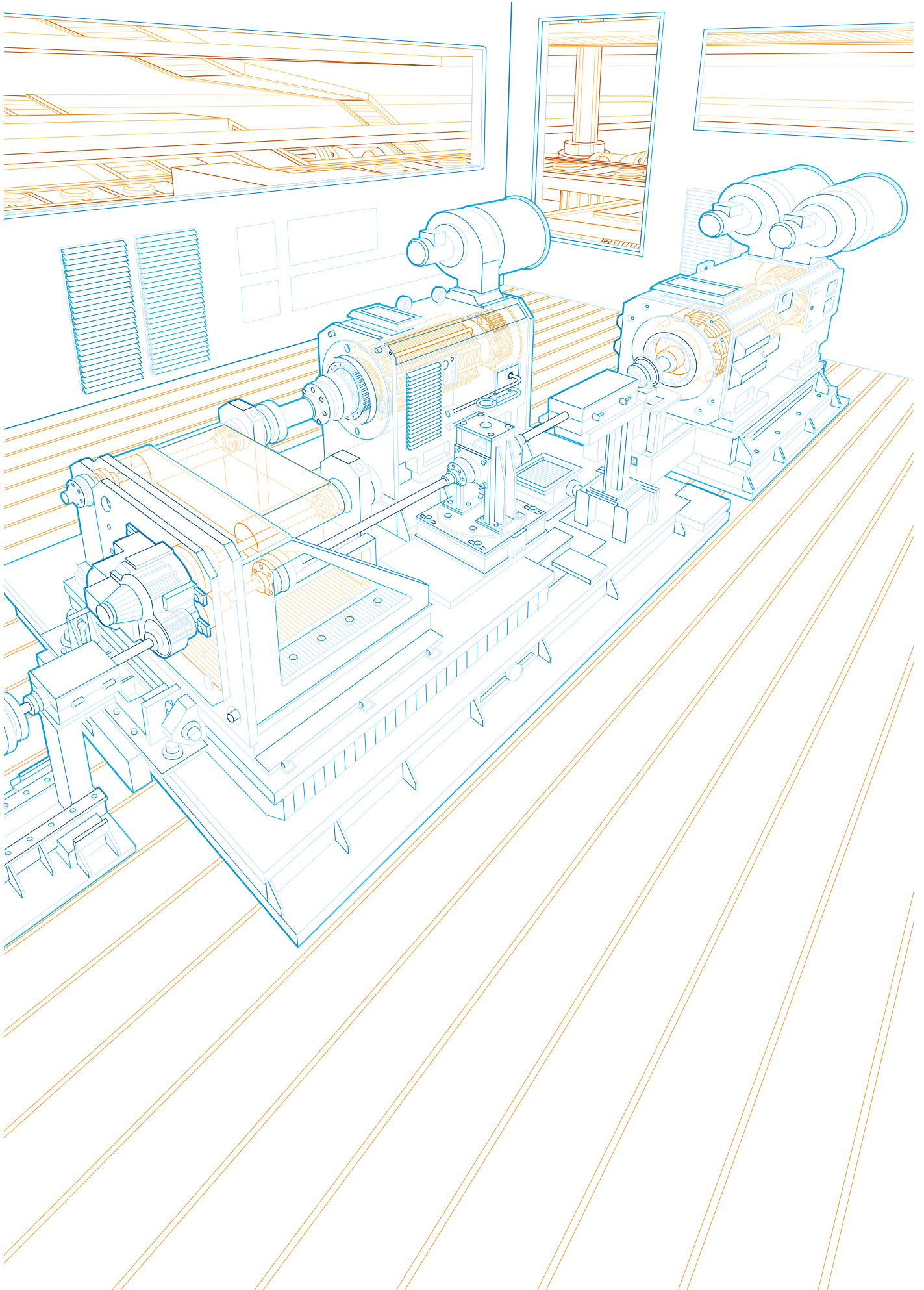


DMS132



2CDC242012F0011

2CDC131050C0201_7s10



MS5100, MS495, MS497 manual motor starters

22 to 100 A – with thermal and electromagnetic protection



MS5100-100 no mirror

MS5100-100



1SBC1011B4F0014

MS495-40



2CDC241020F0011

MS497-100

Description

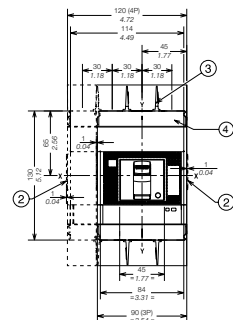
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse-less against short-circuit, overload and phase failures ¹⁾. Fuse-less 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.

Ordering details

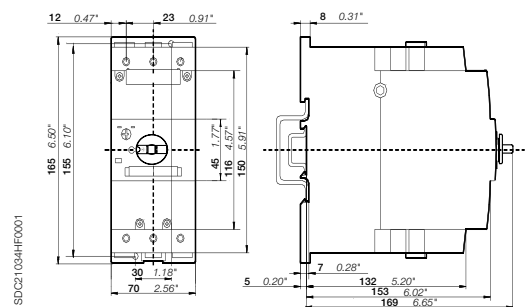
Rated operational power 400 V AC-3 kW	Setting range A	Short-circuit breaking capacity I_{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I_i A	Type	Order code	Weight (1 pc) kg
MS5100 manual motor starters						
45	40 ... 100	70	600 ... 1300	MS5100-100	1SDA082034R1	1.200
MS495 manual motor starters						
30	45 ... 63	25	819	MS495-63	1SAM550000R1007	2.247
37	57 ... 75	25	975	MS495-75	1SAM550000R1008	2.253
45	70 ... 90	25	1170	MS495-90	1SAM550000R1009	2.280
55	80 ... 100	25	1235	MS495-100	1SAM550000R1010	2.295
MS497 manual motor starters						
15	22 ... 32	50	416	MS497-32	1SAM580000R1004	2.222
18.5	28 ... 40	50	520	MS497-40	1SAM580000R1005	2.203
22	36 ... 50	50	650	MS497-50	1SAM580000R1006	2.230
30	45 ... 63	50	819	MS497-63	1SAM580000R1007	2.255
37	57 ... 75	50	975	MS497-75	1SAM580000R1008	2.266
45	70 ... 90	50	1170	MS497-90	1SAM580000R1009	2.268
55	80 ... 100	50	1235	MS497-100	1SAM580000R1010	2.275

¹⁾ The MS49x range offers phase loss sensitivity

Main dimensions mm, inches



MS5100



MS495, MS497

MO5100, MO495, MO496 manual motor starters magnetic only 32 to 100 A – with electromagnetic protection



MO5100-100 no meter

MO5100-100



S102801

MO495-75



2CDC241021F0011

MO496-100

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.

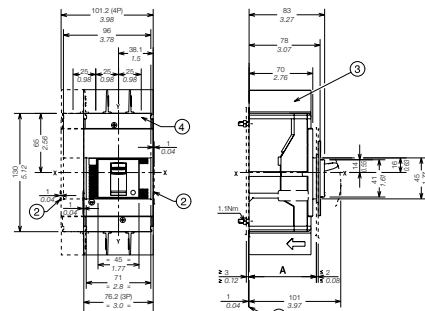
Ordering details

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 pc) kg
MO5100 manual motor starter magnetic only						
25	70	36 ²⁾	210 ... 770	MO5100-70	1SDA082031R1	1.100
30	80	36 ²⁾	240 ... 880	MO5100-80	1SDA082032R1	1.100
45	100	36 ²⁾	300 ... 1100	MO5100-100	1SDA082033R1	1.100
MO495 manual motor starter magnetic only						
30	63	25	819	MO495-63	1SAM560000R1007	2.244
37	75	25	975	MO495-75	1SAM560000R1008	2.247
45	90	25	1170	MO495-90	1SAM560000R1009	2.269
55	100	25	1235	MO495-100	1SAM560000R1010	2.292
MO496 manual motor starter magnetic only						
15	32	50	416	MO496-32	1SAM590000R1004	2.208
18.5	40	50	520	MO496-40	1SAM590000R1005	2.218
22	50	50	650	MO496-50	1SAM590000R1006	2.218
30	63	50	819	MO496-63	1SAM590000R1007	2.248
37	75	50	975	MO496-75	1SAM590000R1008	2.278
45	90	50	1170	MO496-90	1SAM590000R1009	2.266
55	100	50	1235	MO496-100	1SAM590000R1010	2.293

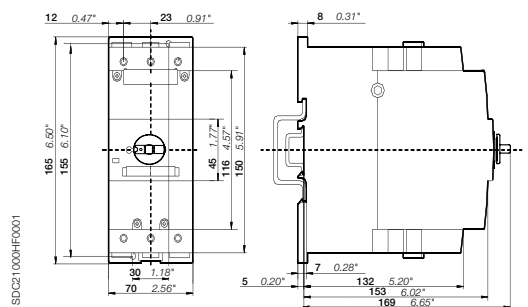
¹⁾ For overload protection of motors, an appropriate thermal or electronic overload relay must be used

²⁾ I_{cs} at 415 V AC

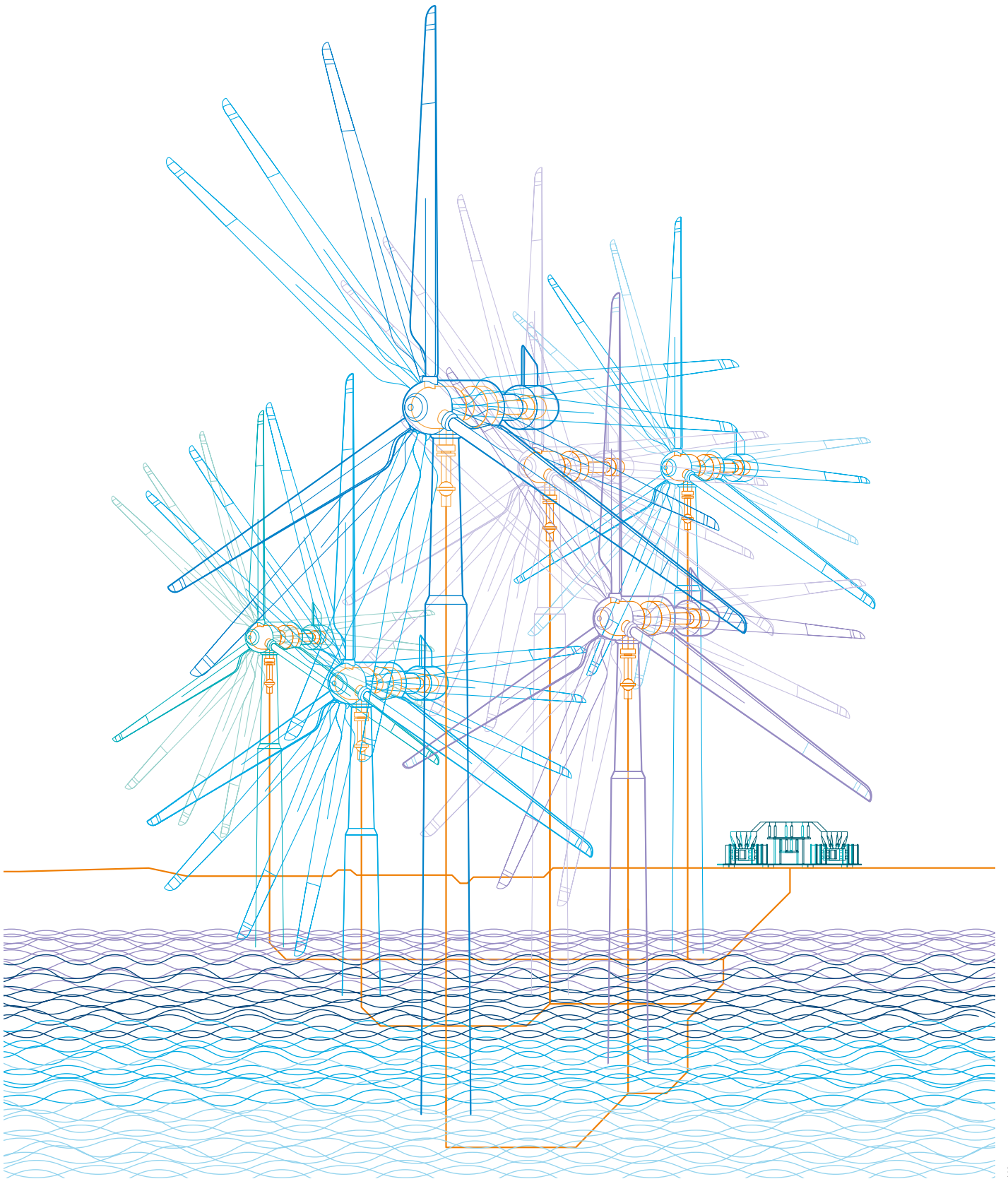
Main dimensions mm, inches



MO5100



MO495, MO496



Main accessories

MS5100, MO5100 manual motor starters



AUX-C

XT AUX-Con cable/01



SOR-C

XT SOR-Con cable/01



KLC Ronis

1SDC11026E0001

Description

Manual motor starters can be equipped with auxiliary contacts, undervoltage release and shunt trips. 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. For this manual motor starter range we also offer key lock solutions for customer applications.

Ordering details

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code	Pkg qty	Weight (1 pc)
						pcs	kg

Auxiliary contacts - mountable inside the breaker on the left slot (cabled version)

MS5100			Changeover	AUX-C 1Q+1SY 250V AC	1SDA066431R1	2	0.06
MO5100			Changeover	AUX-C 2Q+1SY 250V AC	1SDA066433R1	3	0.09
MS5100			Changeover	AUX-C 2Q+2SY+1SA 250V AC	1SDA066438R1	5	0.15
			Changeover	AUX-C 3Q+1SY 250V AC	1SDA066434R1	4	0.12
MO5100			Changeover	AUX-C 3Q+2SY 250V AC	1SDA066436R1	5	0.15
			Changeover	AUX-C 1Q+1SY 24V DC	1SDA066446R1	2	0.06

Suitable for	Rated control supply voltage V	Description	Type	Order code	Pkg qty	Weight (1 pc)
					pcs	kg

Shunt trips units - mountable inside the breaker on the left slot (cabled version)

MS5100		Normally NON energized	SOR-C 12V DC	1SDA066321R1	1	0.14
MO5100		Normally NON energized	SOR-C 24-30V AC/DC	1SDA066322R1	1	0.14
		Normally NON energized	SOR-C 48-60V AC/DC	1SDA066323R1	1	0.14
		Normally NON energized	SOR-C 110-127V AC / 110-125V DC	1SDA066324R1	1	0.14
		Normally NON energized	SOR-C 220-240V AC / 220-250V DC	1SDA066325R1	1	0.14
		Normally NON energized	SOR-C 380-440V AC	1SDA066326R1	1	0.14
		Normally NON energized	SOR-C 480-525V AC	1SDA066327R1	1	0.14

Undervoltages releases - mountable inside the breaker on the left slot (cabled version)

MS5100		Normally energized	UVR-C 24-30V AC/DC	1SDA066396R1	1	0.14
MO5100		Normally energized	UVR-C 48V AC/DC	1SDA060965R1	1	0.14
		Normally energized	UVR-C 60V AC/DC	1SDA066397R1	1	0.14
		Normally energized	UVR-C 110-127V AC / 110-125V DC	1SDA066398R1	1	0.14
		Normally energized	UVR-C 220-240V AC / 220-250V DC	1SDA066399R1	1	0.14
		Normally energized	UVR-C 380-440V AC	1SDA066400R1	1	0.14
		Normally energized	UVR-C 480-525V AC	1SDA066401R1	1	0.14

Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pc)
				pcs	kg

Key locks

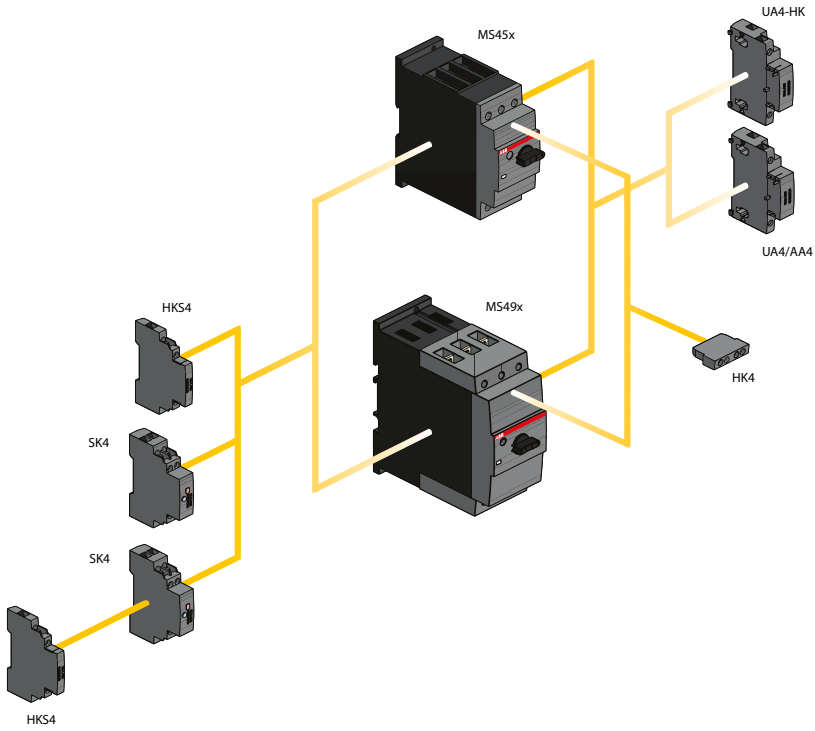
MS5100	Key lock on the circuit breaker, different keys, removable in open position	KLC Ronis ¹⁾	1SDA066599R1	1	NA
MO5100	Key lock on the circuit breaker, different keys, removable in open position	KLC Ronis ¹⁾	1SDA066593R1	1	NA

¹⁾ UL Listed

Main accessories

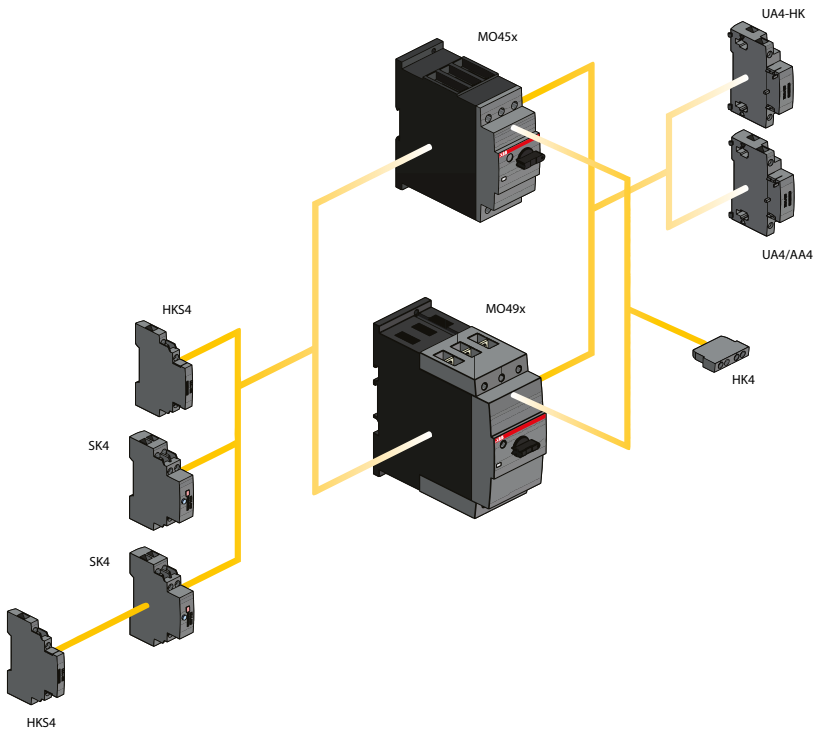
MS49x, MO49x manual motor starters

Manual motor starter MS49x with accessories



2CDC240225F0011

Manual motor starter MO49x with accessories



2CDC240207F0013

Main accessories

MS49x, MO49x manual motor starters



2CDC241022F0011

HK4-11



2CDC241022F0011

HKS4-20



2CDC241022F0011

SK4-11



2CDC241022F0011

AA4-24



2CDC241022F0011

UA4-110



2CDC241022F0013

SA2

Description

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. For this manual motor starter range we offer terminal shrouds, terminal insulation barriers and different lock/key solutions for customer solutions.

Ordering details

Suitable for	Auxiliary con- tacts N.O.	Auxiliary con- tacts N.C.	Description	Type	Order code	Pkg qty	Weight (1 pc)
						pcs	kg

Auxiliary contacts – mountable on the front

MS49x, MO49x	1	1		HK4-11	1SAM401901R1001	10	0.017
			Changeover	HK4-W	1SAM401901R1002	10	0.015

Auxiliary contacts – mountable on the left

MS49x, MO49x	1	1	Max. 1 piece	HKS4-11	1SAM401902R1001	2	0.045
	2	0	Max. 1 piece	HKS4-20	1SAM401902R1002	2	0.045
	0	2	Max. 1 piece	HKS4-02	1SAM401902R1003	2	0.045

Signalling contacts – mountable on the left

MS49x, MO49x	2	2	Separate signalling acc. UL508E 1 N.O. + 1 N.C. for short circuit alarm and 1 N.O. + 1 N.C. for tripped alarm, max. 1x SK4-11 + 1 x HKS4-xx	SK4-11	1SAM401904R1001	1	0.093
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Suitable for	Rated control supply voltage	Frequency	Type	Order code	Pkg qty	Weight (1 pc)
	V	Hz			pcs	kg

Shunt trip units – mountable on the right

MS49x, MO49x	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 right

MS49x, MO49x	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

Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pc)
				pcs	kg
MS495, MS497, MO495, MO496	Terminal shroud	KA495	1SAM501901R1001	10	0.018
	Terminal shroud	KA495C ¹⁾	1SAM501902R1001	10	0.038
	Terminal insulation barrier for UL508E	DX495	1SAM401912R1001	1	0.154
MS495, MS497, MO495, MO496	Padlock + two keys	SA2	GJF1101903R0002	10	0.020

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

General accessories

MS116, MS132, MO132, MS5100, MO5100, MS49x, MO49x



MSHD-LB

2CDC241003F0011



MSHD-LY

2CDC241002S0011



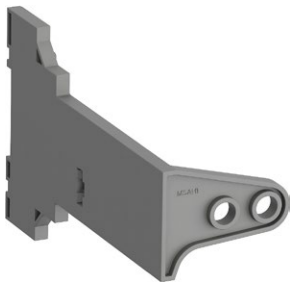
MSMN

2CDC241004F0011



MSH-AR

2CDC241001F0012



MSAH1

2CDC241017V0013



RHD Normal Direct Handle

RHD-01

Description

With this solution of door coupling rotary mechanism it is possible to operate a manual motor starter in the back of a switch cabinet from outside. The door coupling mechanism prevents opening of the door of a switch cabinet with the manual motor starter in ON position.

The complete mechanism includes handle, shaft, driver, shaft alignment ring and shaft supporter.

Most accessories fit for 6 mm shafts with a maximum length of 180 mm. The degree of protection for handles MSHD is IP64 (UL/CSA Type 1, 3R, 12).

Ordering details

Suitable for	Description	Shaft length mm	Color	Type	Order code	Pkg qty pcs	Weight (1 pc) kg
Shafts							
MS116, MS132, MO132, MS4xx, MO4xx	For MSHD handles. Shaft diameter 6 mm. Shaft extension for door coupling driver.	85 105 130 180		OXS6X85 OXS6X105 OXS6X130 OXS6X180	1SCA101647R1001 1SCA108043R1001 1SCA101655R1001 1SCA101659R1001	1 1 1 1	0.020 0.020 0.030 0.040
IP64 handles (UL/CSA Type 1, 3R, 12)							
MS116, MS132, MO132, MS4xx, MO4xx	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 Yellow Black Yellow	MSHD-LB ¹⁾ MSHD-LY ¹⁾ MSHD-LTB ²⁾ MSHD-LTY ²⁾	1SAM201920R1001 1SAM201920R1002 1SAM201920R1011 1SAM201920R1012	1 1 1 1	0.065 0.065 0.065 0.065
Driver							
MS116, MS132, MO132, MS4xx, MO4xx	Coupling driver for use with 6 mm OXS6... types up to 180 mm.			MSMN ³⁾ MSMNO ⁴⁾	1SAM101923R0002 1SAM101923R0012	1 1	0.002 0.002
Shaft alignment ring							
MS116, MS132, MO132, MS4xx, MO4xx	The MSH-AR supports the long shafts for alignment to the handle inlet. It makes closing panel doors more easy. Use for OXS6X > 105 mm.			MSH-AR	1SAM201920R1000	1	0.010
Shaft supporter							
MS116, MS132, MO132	With the MSAH1 it is possible to support the shaft in the extension of handle (MSHD). It is mandatory for the usage of shafts >130 mm.			MSAH1	1SAM201909R1021	1	0.035
Rotary handle operating mechanism							
MS5100	Rotary handle operating mechanism			RHD Normal Direct Handle ⁵⁾	1SDA069053R1	1	0.4
MO5100	Rotary handle operating mechanism			RHD Normal Direct Handle ⁵⁾	1SDA066475R1	1	0.4

¹⁾ Indication I-O and ON-OFF (recommended for MS116, MS4xx, MO4xx)

²⁾ Indication I-O and ON-OFF + Trip indication

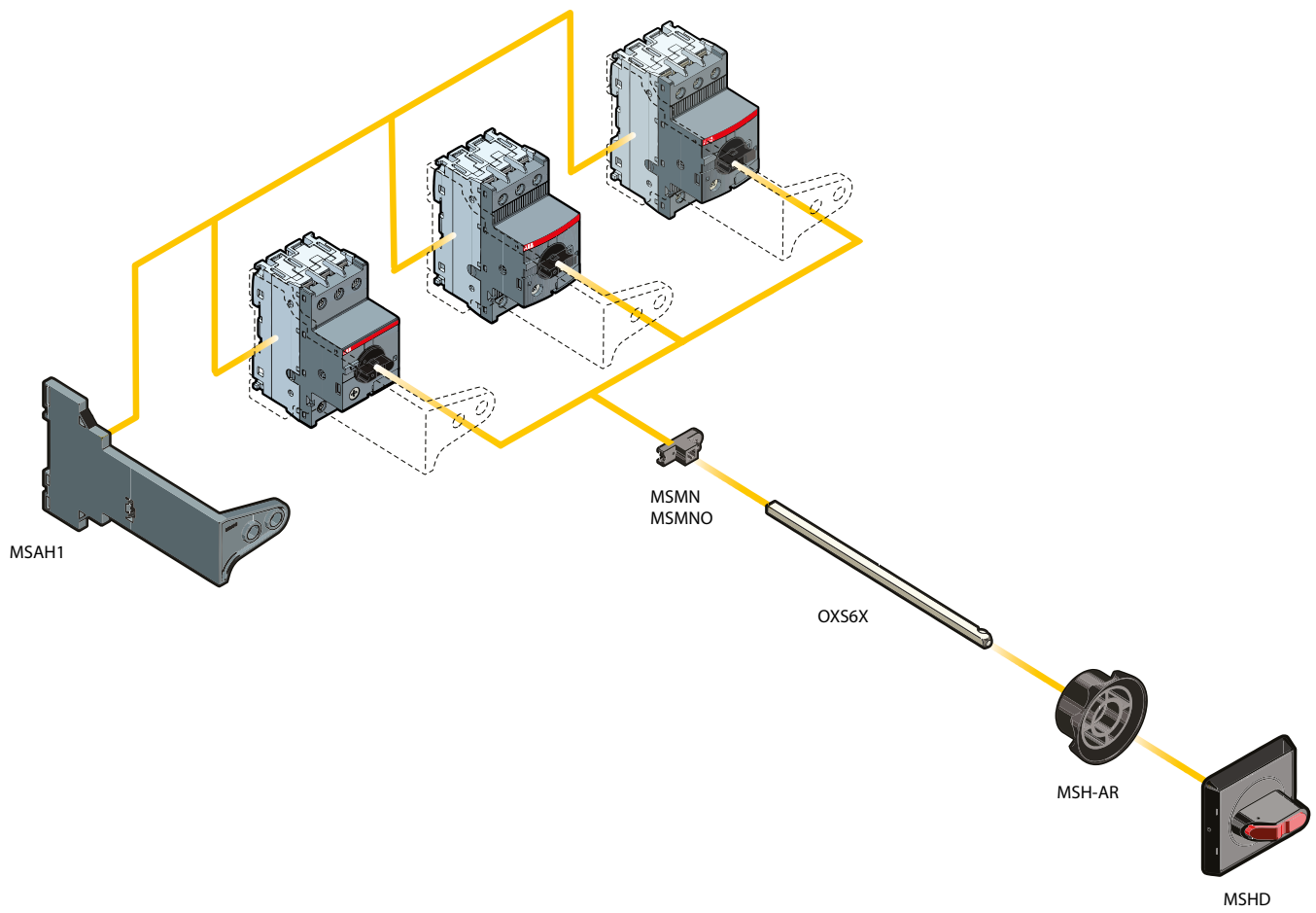
³⁾ Coded - Positioning of ON indication dependent from mounting orientation of the MMS

⁴⁾ Uncoded - Positioning of ON indication dependent from mounting orientation of the MMS

⁵⁾ UL Listed

General accessories

MS116, MS132, MO132, MS4xx, MO4xx



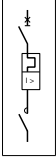
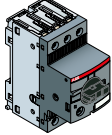
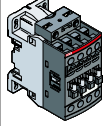


2CDC024022 F0013

2CDC131053C0201

DOL starters protected by MS manual motor starters

Coordination type 1

Coordination type 1, AC-3, 16 kA or 50 kA, 400 V, 50/60 Hz

		Manual motor starters					Contactors					Accessories	
												 	
IEC AC-3, 400 V Rated operational power kW	Type (1) current A	Order code	Current setting range A	Magnetic tripping current A	Rated control circuit voltage Uc min. ... Uc max. (2)	Type (3)		Order code	Allowed setting current A	Type	Order code		
						V 50/60 Hz	V DC						
0.06	0.2	MS132-0.25 1SAM350000R1002	0.16...0.25	2.44	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.25	BEA16-4	1SBN081306T1000		
0.09	0.3	MS132-0.4 1SAM350000R1003	0.25...0.40	3.9	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.4				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.12	0.44	MS132-0.63 1SAM350000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.18	0.6	MS132-0.63 1SAM350000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.25	0.85	MS132-1.0 1SAM350000R1005	0.63...1.00	11.5	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.37	1.1	MS132-1.6 1SAM350000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.55	1.5	MS132-1.6 1SAM350000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.75	1.9	MS132-2.5 1SAM350000R1007	1.60...2.50	28.75	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	2.5				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
1.1	2.7	MS132-4.0 1SAM350000R1008	2.50...4.00	50	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	4				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
1.5	3.6	MS132-4.0 1SAM350000R1008	2.50...4.00	50	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	4				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
2.2	4.9	MS132-6.3 1SAM350000R1009	4.00...6.30	78.75	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	6.3				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
3	6.5	MS132-10 1SAM350000R1010	6.30...10.0	150	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	9				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
4	8.5	MS132-10 1SAM350000R1010	6.30...10.0	150	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	9				
					100...250	100...250	AF09-30-10-13	1SBL137001R1310					
5.5	11.5	MS132-12 1SAM350000R1012	8.00...12.0	180	24...60	20...60	AF12Z-30-10-21	1SBL156001R2110	12				
					100...250	100...250	AF12-30-10-13	1SBL157001R1310					
7.5	15.5	MS132-16 1SAM350000R1011	10.0...16.0	240	24...60	20...60	AF16Z-30-10-21	1SBL176001R2110	16				
					100...250	100...250	AF16-30-10-13	1SBL177001R1310					
11	22	MS132-25 1SAM350000R1014	20.0...25.0	375	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	25	+	1SBN082306T2000		
					100...250	100...250	AF26-30-00-13	1SBL237001R1300					
15	29	MS132-32 1SAM350000R1015	25.0...32.0	480	24...60	20...60	AF30Z-30-00-21	1SBL276001R2100	32	+	1SBN010110R1010		
					100...250	100...250	AF30-30-00-13	1SBL277001R1300					
18.5	35	MS165-42 1SAM451000R1015	30.0...42.0	630	24...60	20...60	AF40-30-00-11	1SBL347001R1100	40	+	1SBN083406R1000		
					100...250	100...250	AF40-30-00-13	1SBL347001R1300					
22	41	MS165-54 1SAM451000R1016	40.0...54.0	810	24...60	20...60	AF52-30-00-11	1SBL367001R1100	53	+	1SBN010110R1010		
					100...250	100...250	AF52-30-00-13	1SBL367001R1300					
30	55	MS165-65 1SAM451000R1017	52.0...65.0	975	24...60	20...60	AF65-30-00-11	1SBL387001R1100	65	+	1SBN010110R1010		
					100...250	100...250	AF65-30-00-13	1SBL387001R1300					
37	66	MS495-75 1SAM550000R1008	57.0...75.0	975	24...60	20...60	AF80-30-00-11	1SBL397001R1100	75	+	1SBN010110R1010		
					100...250	100...250	AF80-30-00-13	1SBL397001R1300					
45	80	MS495-90 1SAM550000R1009	70.0...90.0	1170	24...60	20...60	AF96-30-00-11	1SBL407001R1100	90	+	1SBN010110R1010		
					100...250	100...250	AF96-30-00-13	1SBL407001R1300					

(1) MS116 manual motor starter can be selected according to the current setting range indicated on the coordination line, up to:

- 15 kW, 400 V - AC-3 at 16 kA
- 4 kW, 400 V - AC-3 at 50 kA.

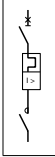
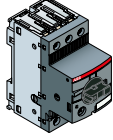
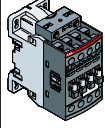


(2) For other control voltages, see "Voltage code table".

(3) AF38 3-pole contactor can be selected for coordination type 1, 16 kA and 50 kA, 18.5 kW, 400 V - AC-3 (BEA65-4 available for AF40 ... AF65 only).

DOL starters protected by MS manual motor starters

Coordination type 2

Coordination type 2, AC-3, 16 kA or 50 kA, 400 V, 50/60 Hz

		Manual motor starters					Contactors					Accessories			
												 			
IEC AC-3, 400 V Rated operational power kW	Type (1) current A	Order code	Current setting range A	Magnetic tripping current A	Rated control circuit voltage Uc min. ... Uc max. (2)	Type (3)	Order code	Allowed setting current A	Type (4)	Order code					
											V 50/60 Hz	V DC			
0.06	0.2	MS132-0.25 1SAM350000R1002	0.16...0.25	2.44	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	0.25	BEA16-4	1SBN081306T1000					
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.09	0.3	MS132-0.4 1SAM350000R1003	0.25...0.40	3.9	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	0.4							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.12	0.44	MS132-0.63 1SAM350000R1004	0.40...0.63	6.14	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	0.63							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.18	0.6	MS132-0.63 1SAM350000R1004	0.40...0.63	6.14	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	0.63							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.25	0.85	MS132-1.0 1SAM350000R1005	0.63...1.00	11.5	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	1							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.37	1.1	MS132-1.6 1SAM350000R1006	1.00...1.60	18.4	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	1.6							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.55	1.5	MS132-1.6 1SAM350000R1006	1.00...1.60	18.4	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	1.6							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
0.75	1.9	MS132-2.5 1SAM350000R1007	1.60...2.50	28.75	24...60 20...60	AF09Z-30-10-21	1SBL136001R2110	2.5							
					100...250 100...250	AF09-30-10-13	1SBL137001R1310								
1.1	2.7	MS132-4.0 1SAM350000R1008	2.50...4.00	50	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	4	+	BEA26-4 CA4-10	1SBN082306T1000 1SBN010110R1010				
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
1.5	3.6	MS132-4.0 1SAM350000R1008	2.50...4.00	50	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	4							
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
2.2	4.9	MS132-6.3 1SAM350000R1009	4.00...6.30	78.75	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	6.3							
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
3	6.5	MS132-10 1SAM350000R1010	6.30...10.0	150	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	10							
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
4	8.5	MS132-10 1SAM350000R1010	6.30...10.0	150	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	10							
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
5.5	11.5	MS132-12 1SAM350000R1012	8.00...12.0	180	24...60 20...60	AF26Z-30-00-21	1SBL236001R2100	12	+	BEA38-4 CA4-10	1SBN082306T2000 1SBN010110R1010				
					100...250 100...250	AF26-30-00-13	1SBL237001R1300								
7.5	15.5	MS132-16 1SAM350000R1011	10.0...16.0	240	24...60 20...60	AF30Z-30-00-21	1SBL276001R2100	16							
					100...250 100...250	AF30-30-00-13	1SBL277001R1300								
11	22	MS132-25 1SAM350000R1014	20.0...25.0	375	24...60 20...60	AF30Z-30-00-21	1SBL276001R2100	25							
					100...250 100...250	AF30-30-00-13	1SBL277001R1300								
15	29	MS132-32 1SAM350000R1015	25.0...32.0	480	24...60 20...60	AF30Z-30-00-21	1SBL276001R2100	32							
					100...250 100...250	AF30-30-00-13	1SBL277001R1300								
18.5	35	MS165-42 1SAM451000R1015	30.0...42.0	630	24...60 20...60	AF40-30-00-11	1SBL347001R1100	40	BEA65-4 CA4-10	1SBN083406R1000 1SBN010110R1010					
					100...250 100...250	AF40-30-00-13	1SBL347001R1300								
22	41	MS165-54 1SAM451000R1016	40.0...54.0	810	24...60 20...60	AF52-30-00-11	1SBL367001R1100	53							
					100...250 100...250	AF52-30-00-13	1SBL367001R1300								
30	55	MS165-65 1SAM451000R1017	52.0...65.0	975	24...60 20...60	AF65-30-00-11	1SBL387001R1100	65							
					100...250 100...250	AF65-30-00-13	1SBL387001R1300								
37	66	MS495-75 1SAM550000R1008	57.0...75.0	975	24...60 20...60	AF80-30-00-11	1SBL397001R1100	75							
					100...250 100...250	AF80-30-00-13	1SBL397001R1300								
45	80	MS495-90 1SAM550000R1009	70.0...90.0	1170	24...60 20...60	AF96-30-00-11	1SBL407001R1100	90							
					100...250 100...250	AF96-30-00-13	1SBL407001R1300								

(1) MS116 manual motor starter can be selected according to the current setting range indicated on the coordination line, up to

- 15 kW 400V - AC-3 at 16 kA
- 4 kW, 400 V - AC-3 at 50 kA.

(2) For other control voltages, see "Voltage code table".

(3) AF26 3-pole contactor can be selected for coordination type 2, 16 kA, 7.5 kW, 400 V - AC-3.

AF38 3-pole contactor can be selected for coordination type 2, 16 kA and 50 kA, 18.5 kW, 400 V - AC-3 (BEA65-4 available for AF40 ... AF65 only).

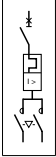
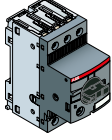
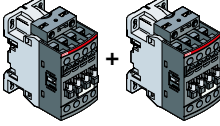
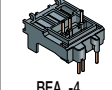
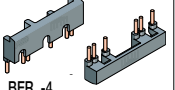


(4) BEA26-4 should be selected with MS116-12 ... MS116-16 and AF26 ... AF38.

BEA38-4 can only be selected with MS116-20 ... MS116-32.

Reversing starters protected by MS manual motor starters

Coordination type 1

Coordination type 1, AC-3, 16 kA or 50 kA, 400 V, 50/60 Hz

		Manual motor starters					Contactors					Accessories		
												   		
IEC	Type	Order code	Current setting range	Magnetic tripping current	Rated control circuit voltage	Type	Order code	Allowed setting current	Type	Order code				
AC-3, 400 V	(1)				Uc min. ... Uc max.	(3)		A						
Rated operational power					(2)									
kW	A		A	A	V 50/60 Hz : V DC			A						
0.06	0.2	MS132-0.25	1SAM35000R1002	0.16...0.25	2.44	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.25				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310		+	BEA16-4	1SBN081306T1000	
0.09	0.3	MS132-0.4	1SAM35000R1003	0.25...0.40	3.9	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.4	+	BER16-4	1SBN081311R1000	
						100...250	100...250	AF09-30-10-13	1SBL137001R1310			VEM4	1SBN030111R1000	
0.12	0.44	MS132-0.63	1SAM35000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.18	0.6	MS132-0.63	1SAM35000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.25	0.85	MS132-1.0	1SAM35000R1005	0.63...1.00	11.5	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.37	1.1	MS132-1.6	1SAM35000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.55	1.5	MS132-1.6	1SAM35000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
0.75	1.9	MS132-2.5	1SAM35000R1007	1.60...2.50	28.75	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	2.5				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
1.1	2.7	MS132-4.0	1SAM35000R1008	2.50...4.00	50	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	4				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
1.5	3.6	MS132-4.0	1SAM35000R1008	2.50...4.00	50	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	4				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
2.2	4.9	MS132-6.3	1SAM35000R1009	4.00...6.30	78.75	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	6.3				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
3	6.5	MS132-10	1SAM35000R1010	6.30...10.0	150	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	9				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
4	8.5	MS132-10	1SAM35000R1010	6.30...10.0	150	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	9				
						100...250	100...250	AF09-30-10-13	1SBL137001R1310					
5.5	11.5	MS132-12	1SAM35000R1012	8.00...12.0	180	24...60	20...60	AF12Z-30-10-21	1SBL156001R2110	12				
						100...250	100...250	AF12-30-10-13	1SBL157001R1310					
7.5	15.5	MS132-16	1SAM35000R1011	10.0...16.0	240	24...60	20...60	AF16Z-30-10-21	1SBL176001R2110	16				
						100...250	100...250	AF16-30-10-13	1SBL177001R1310					
11	22	MS132-25	1SAM35000R1014	20.0...25.0	375	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	25				
						100...250	100...250	AF26-30-00-13	1SBL237001R1300		+	BEA38-4	1SBN082306T2000	
15	29	MS132-32	1SAM35000R1015	25.0...32.0	480	24...60	20...60	AF30Z-30-00-21	1SBL276001R2100	32	+	BER38-4	1SBN082311R1000	
						100...250	100...250	AF30-30-00-13	1SBL277001R1300		+	VEM4	1SBN030111R1000	
18.5	35	MS165-42	1SAM451000R1015	30.0...42.0	630	24...60	20...60	AF40-30-00-11	1SBL347001R1100	40	+2x	CA4-10	1SBN010110R1010	
						100...250	100...250	AF40-30-00-13	1SBL347001R1300					
22	41	MS165-54	1SAM451000R1016	40.0...54.0	810	24...60	20...60	AF52-30-00-11	1SBL367001R1100	53	+	BEA65-4	1SBN083406R1000	
						100...250	100...250	AF52-30-00-13	1SBL367001R1300		+	BER65-4	1SBN083411R1000	
30	55	MS165-65	1SAM451000R1017	52.0...65.0	975	24...60	20...60	AF65-30-00-11	1SBL387001R1100	65	+2x	VM96-4	1SBN033405T1000	
						100...250	100...250	AF65-30-00-13	1SBL387001R1300		+2x	CA4-10	1SBN010110R1010	
37	66	MS495-75	1SAM55000R1008	57.0...75.0	975	24...60	20...60	AF80-30-00-11	1SBL397001R1100	75		BEA4-10	1SBN010110R1000	
						100...250	100...250	AF80-30-00-13	1SBL397001R1300		+	VM96-4	1SBN033405T1000	
45	80	MS495-90	1SAM55000R1009	70.0...90.0	1170	24...60	20...60	AF96-30-00-11	1SBL407001R1100	90	+2x	CA4-10	1SBN010110R1010	
						100...250	100...250	AF96-30-00-13	1SBL407001R1300		+2x	CA4-01	1SBN010110R1001	

(1) MS116 manual motor starter can be selected according to the current setting range indicated on the coordination line, up to:
 - 15 kW, 400 V - AC-3 at 16 kA
 - 4 kW, 400 V - AC-3 at 50 kA.

(2) For other control voltages, see "Voltage code table".

(3) AF38 3-pole contactor can be selected for coordination type 1, 16 kA and 50 kA, 18.5 kW, 400 V - AC-3 (BEA65-4 available for AF40 ... AF65 only).

Reversing starters protected by MS manual motor starters

Coordination type 2

Coordination type 2, AC-3, 16 kA or 50 kA, 400 V, 50/60 Hz

		Manual motor starters					Contactors					Accessories			
IEC	Type	Order code	Current setting range	Magnetic tripping current	Rated control circuit voltage	Type	Order code	Allowed setting current	Type	Order code					
AC-3, 400 V Rated operational power current kW	(1)		A	A	Uc min. ... Uc max. (2)	(3)		A	(4)						
					V 50/60 Hz V DC										
0.06	0.2	MS132-0.25	1SAM350000R1002	0.16...0.25	2.44	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.25					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310		+	BEA16-4	1SBN081306T1000		
0.09	0.3	MS132-0.4	1SAM350000R1003	0.25...0.40	3.9	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.4	+	BER16-4	1SBN081311R1000		
						100...250	100...250	AF09-30-10-13	1SBL137001R1310		+	VEM4	1SBN030111R1000		
0.12	0.44	MS132-0.63	1SAM350000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
0.18	0.6	MS132-0.63	1SAM350000R1004	0.40...0.63	6.14	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	0.63					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
0.25	0.85	MS132-1.0	1SAM350000R1005	0.63...1.00	11.5	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
0.37	1.1	MS132-1.6	1SAM350000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
0.55	1.5	MS132-1.6	1SAM350000R1006	1.00...1.60	18.4	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	1.6					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
0.75	1.9	MS132-2.5	1SAM350000R1007	1.60...2.50	28.75	24...60	20...60	AF09Z-30-10-21	1SBL136001R2110	2.5					
						100...250	100...250	AF09-30-10-13	1SBL137001R1310						
1.1	2.7	MS132-4.0	1SAM350000R1008	2.50...4.00	50	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	4	+	BEA26-4	1SBN082306T1000		
						100...250	100...250	AF26-30-00-13	1SBL237001R1300		+	BER38-4	1SBN082311R1000		
1.5	3.6	MS132-4.0	1SAM350000R1008	2.50...4.00	50	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	4	+	VEM4	1SBN030111R1000		
						100...250	100...250	AF26-30-00-13	1SBL237001R1300		+ 2x	CA4-10	1SBN010110R1010		
2.2	4.9	MS132-6.3	1SAM350000R1009	4.00...6.30	78.75	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	6.3					
						100...250	100...250	AF26-30-00-13	1SBL237001R1300						
3	6.5	MS132-10	1SAM350000R1010	6.30...10.0	150	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	10					
						100...250	100...250	AF26-30-00-13	1SBL237001R1300						
4	8.5	MS132-10	1SAM350000R1010	6.30...10.0	150	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	10					
						100...250	100...250	AF26-30-00-13	1SBL237001R1300						
5.5	11.5	MS132-12	1SAM350000R1012	8.00...12.0	180	24...60	20...60	AF26Z-30-00-21	1SBL236001R2100	12	+	BEA38-4	1SBN082306T2000		
						100...250	100...250	AF26-30-00-13	1SBL237001R1300		+	BER38-4	1SBN082311R1000		
7.5	15.5	MS132-16	1SAM350000R1011	10.0...16.0	240	24...60	20...60	AF30Z-30-00-21	1SBL276001R2100	16	+	VEM4	1SBN030111R1000		
						100...250	100...250	AF30-30-00-13	1SBL277001R1300		+ 2x	CA4-10	1SBN010110R1010		
11	22	MS132-25	1SAM350000R1014	20.0...25.0	375	24...60	20...60	AF30Z-30-00-21	1SBL276001R2100	25					
						100...250	100...250	AF30-30-00-13	1SBL277001R1300						
15	29	MS132-32	1SAM350000R1015	25.0...32.0	480	24...60	20...60	AF30Z-30-00-21	1SBL276001R2100	32					
						100...250	100...250	AF30-30-00-13	1SBL277001R1300						
18.5	35	MS165-42	1SAM451000R1015	30.0...42.0	630	24...60	20...60	AF40-30-00-11	1SBL347001R1100	40	+	BEA65-4	1SBN083406R1000		
						100...250	100...250	AF40-30-00-13	1SBL347001R1300		+	BER65-4	1SBN083411R1000		
22	41	MS165-54	1SAM451000R1016	40.0...54.0	810	24...60	20...60	AF52-30-00-11	1SBL367001R1100	53	+	VM96-4	1SBN033405T1000		
						100...250	100...250	AF52-30-00-13	1SBL367001R1300		+ 2x	CA4-10	1SBN010110R1010		
30	55	MS165-65	1SAM451000R1017	52.0...65.0	975	24...60	20...60	AF65-30-00-11	1SBL387001R1100	65	+ 2x	CA4-01	1SBN010110R1001		
						100...250	100...250	AF65-30-00-13	1SBL387001R1300						
37	66	MS495-75	1SAM550000R1008	57.0...75.0	975	24...60	20...60	AF80-30-00-11	1SBL397001R1100	75	+	BER96-4	1SBN083911R1000		
						100...250	100...250	AF80-30-00-13	1SBL397001R1300		+	VM96-4	1SBN033405T1000		
45	80	MS495-90	1SAM550000R1009	70.0...90.0	1170	24...60	20...60	AF96-30-00-11	1SBL407001R1100	90	+ 2x	CA4-10	1SBN010110R1010		
						100...250	100...250	AF96-30-00-13	1SBL407001R1300		+ 2x	CA4-01	1SBN010110R1001		

(1) MS116 manual motor starter can be selected according to the current setting range indicated on the coordination line, up to

- 15 kW 400V - AC-3 at 16 kA

- 4 kW, 400 V - AC-3 at 50 kA.

(2) For other control voltages, see "Voltage code table".

(3) AF26 3-pole contactor can be selected for coordination type 2, 16 kA, 7.5 kW, 400 V - AC-3.

AF38 3-pole contactor can be selected for coordination type 2, 16 kA and 50 kA, 18.5 kW, 400 V - AC-3 (BEA65-4 available for AF40 ... AF65 only).

(4) BEA26-4 should be selected with MS116-12 ... MS116-16 and AF26 ... AF38.

BEA38-4 can only be selected with MS116-20 ... MS116-32.

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