

Manual motor starter MS132

Manual motor starters 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, 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. Fuse less starter combinations are setup together with contactors.



Description

- Overload protection – trip class 10
- Phase loss sensitivity
- Disconnect function
- Temperature compensation from -25 ... +60 °C
- Adjustable current setting for overload protection
- Suitable for three- and single-phase application
- Trip-free mechanism
- Trip indication
- Clear switch position indication ON/OFF/TRIP
- Lockable handle

Ordering details

MS132 screw terminal



Setting range [A]	Type	Trip class	Order code	Packing unit [Pcs]	Weight [g]
0.10 ... 0.16	MS132-0.16	10A	1SAM350000R1001	1	215
0.16 ... 0.25	MS132-0.25	10	1SAM350000R1002	1	215
0.25 ... 0.40	MS132-0.4	10	1SAM350000R1003	1	215
0.40 ... 0.63	MS132-0.63	10	1SAM350000R1004	1	215
0.63 ... 1.00	MS132-1.0	10	1SAM350000R1005	1	215
1.00 ... 1.60	MS132-1.6	10	1SAM350000R1006	1	265
1.60 ... 2.50	MS132-2.5	10	1SAM350000R1007	1	265
2.50 ... 4.00	MS132-4.0	10	1SAM350000R1008	1	265
4.00 ... 6.30	MS132-6.3	10	1SAM350000R1009	1	265
6.30 ... 10.00	MS132-10	10	1SAM350000R1010	1	265
8.00 ... 12.00	MS132-12	10	1SAM350000R1012	1	310
10.00 ... 16.00	MS132-16	10	1SAM350000R1011	1	310
16.00 ... 20.00	MS132-20	10	1SAM350000R1013	1	310
20.00 ... 25.00	MS132-25	10	1SAM350000R1014	1	310
25.00 ... 32.00	MS132-32	10	1SAM350000R1015	1	310

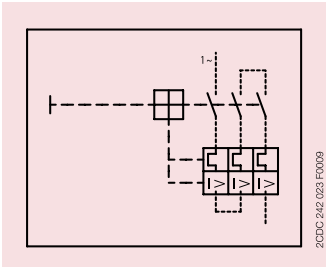
Note: MS132 with pre-assembled auxiliary contact HKF1-11, please order as follow 1SAM350005Rxxxx

Application

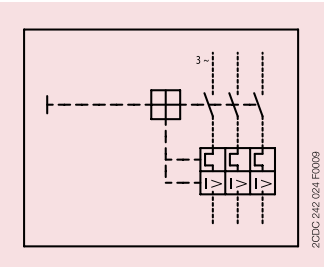
The manual motor starters protect the load and the installation against short-circuit and overload. They are three pole protection devices with thermal tripping elements for overload protection and electro-magnetic tripping elements for short-circuit protection. Furthermore, they provide a disconnect function for safely isolation of the installation and the supply and can be used for the manual switching of loads.

Operation mode

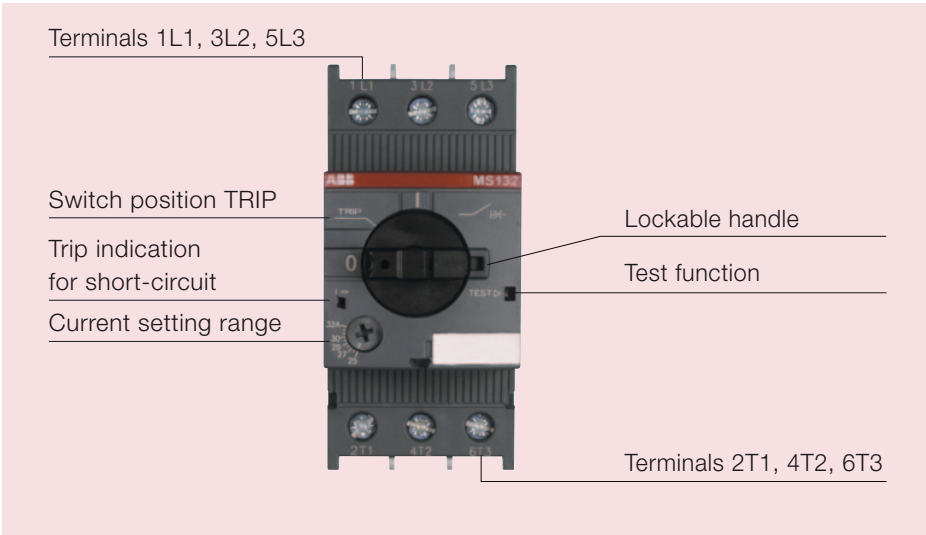
Single-phase operation



Three-phase operation



Connections

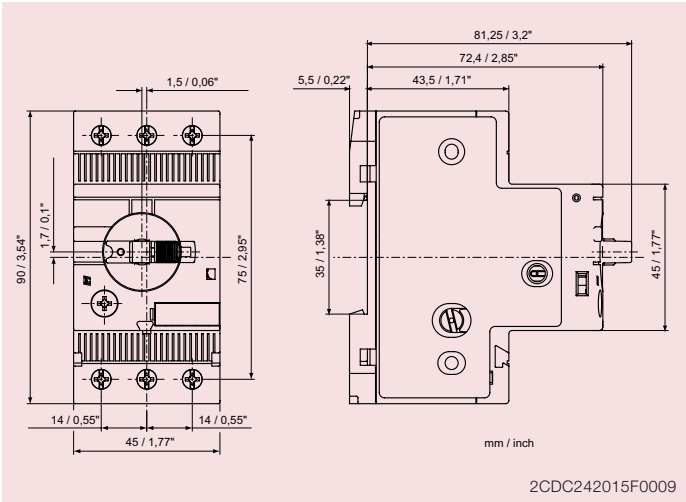


Resistance and power losses per phase

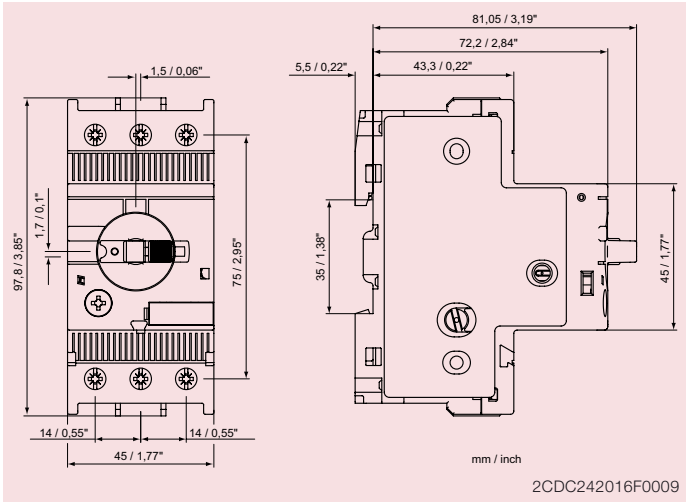
Type	Lower value setting range [A]	Upper value setting range [A]	Resistance per phase [Ω]	Power loss per Phase [W] at	
				Lower value of setting range	Upper value of setting range
MS132-0.16	0.10	0.16	66.00	0.7	1.7
MS132-0.25	0.16	0.25	25.50	0.7	1.7
MS132-0.4	0.25	0.40	10.38	0.7	1.7
MS132-0.63	0.40	0.63	4.36	0.7	1.7
MS132-1.0	0.63	1.00	1.605	0.7	1.7
MS132-1.6	1.00	1.60	0.648	0.7	1.7
MS132-2.5	1.60	2.50	0.272	0.7	1.7
MS132-4.0	2.50	4.00	0.106	0.7	1.7
MS132-6.3	4.00	6.30	0.046	0.7	1.7
MS132-10	6.30	10.0	0.024	0.9	2.4
MS132-12	8.00	12.0	0.016	1.0	2.3
MS132-16	10.0	16.0	0.011	1.1	2.8
MS132-20	16.0	20.0	0.0057	1.5	2.3
MS132-25	20.0	25.0	0.0045	1.8	2.8
MS132-32	25.0	32.0	0.0030	1.9	3.1

Dimensions

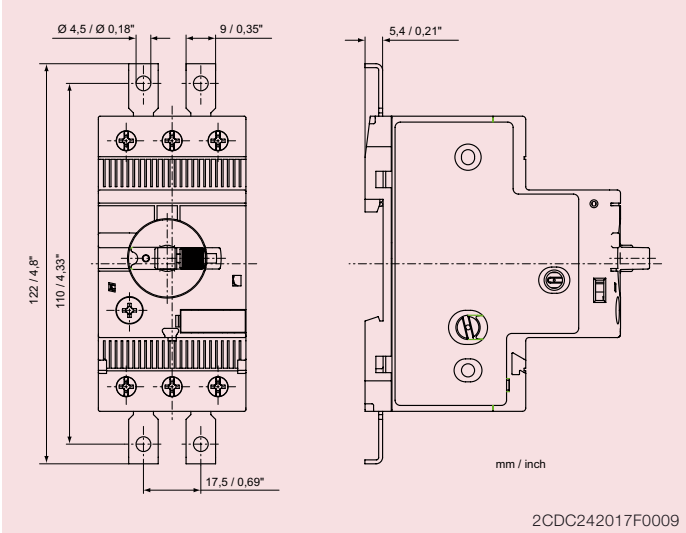
MS132 ≤ 10 A



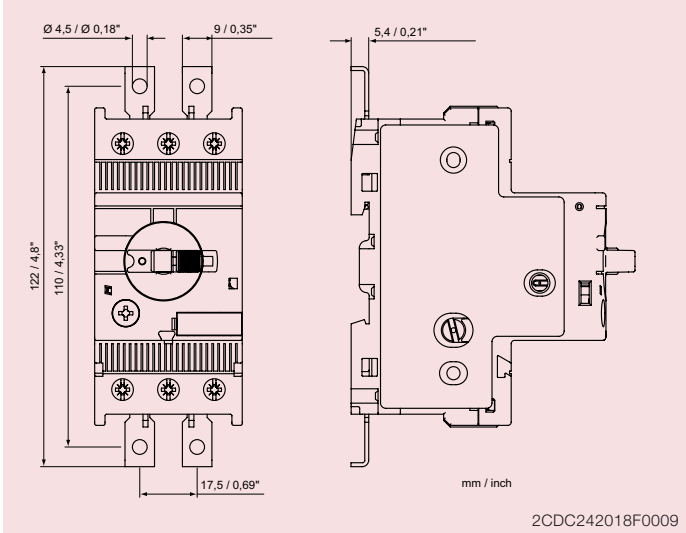
MS132 > 10 A



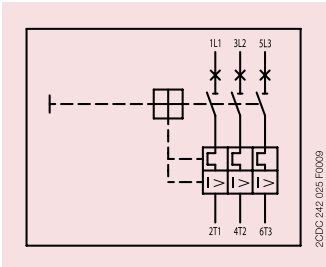
MS132 ≤ 10 A + screw fixing kit



MS132 > 10 A + screw fixing kit



Wiring diagram



Approvals



Markings



Data at $T_A = 40\text{ °C}$ and at rated values, if nothing else indicated

Type			MS132
Technical data		Terminals	
Main circuit		1L1-3L3-5L5 2T1-4T2-6T3	
Rated operational voltage U_e acc. to IEC/EN 60947-1	a.c. d.c.		690 V -
Rated operational current I_e			see separate table
Rated current I_n /			see „Rated Operational Current“
Conventional free-air thermal current I_{th}			
Setting range - thermal overload protection			see ordering data
Rated instantaneous short-circuit current setting I_{cs}			see separate table
Rated service short-circuit breaking capacity I_{cs}			see separate table
Rated ultimate short-circuit breaking capacity I_{cu}			see separate table
Trip class acc. to IEC/EN 60947-4-1			see ordering data
Rated frequency acc. to IEC/EN 60947-1			50 / 60 Hz
Number of poles			3
Resistance per phase			see separate table
Power loss per phase	lower value of setting range upper value of setting range		see separate table see separate table
Isolation data			
Rated impulse withstand voltage U_{imp} acc. to IEC/EN 60947-1			6 kV
Rated insulation voltage U_i acc. to IEC/EN 60947-1			690 V
Pollution degree acc. to IEC/EN 60664			3
Electrical connection			
MS132 ≤ 10A			
Connecting capacity	solid flexible with ferrule flexible with ferrule isolated flexible without ferrule		1/2 x 1 ... 4 mm ² 1/2 x 0.75 ... 2.5 mm ² 1/2 x 0.75 ... 2.5 mm ² 1/2 x 0.75 ... 2.5 mm ²
Stripping length			9 mm
Tightening torque			0.8 ... 1.2 Nm
Connection screw			M3.5 (Pozidrive 2)
MS132-12, -16			
Connecting capacity	solid flexible with ferrule flexible with ferrule isolated flexible without ferrule		1/2 x 1 ... 4 mm ² 1/2 x 0.75 ... 2.5 mm ² 1/2 x 0.75 ... 2.5 mm ² 1/2 x 0.75 ... 2.5 mm ²
Stripping length			10 mm
Tightening torque			1.5 Nm
Connection screw			M4 (Pozidrive 2)
MS132-20, -25, -32			
Connecting capacity	solid flexible with ferrule flexible with ferrule isolated flexible without ferrule		1/2 x 2.5 ... 6 mm ² 1/2 x 1 ... 6 mm ² 1/2 x 1 ... 6 mm ² 1/2 x 2.5 ... 6 mm ²
Stripping length			10 mm
Tightening torque			2 Nm
Connection screw			M4 (Pozidrive 2)

Type		MS132
General Data		
Mechanical durability		10 ⁵
Electrical durability		5 x 10 ⁴
Duty time		100%
Dimensions (W x H x D)		see dimension drawing
Weight		see ordering data
Mounting		DIN-rail (EN 60715)
Mounting positions		optional for single mounting (position 1-6)
Group Mounting		on request
Minimum distance to other units same type	horizontal	0 mm
	vertical	150 mm
Minimum distance to electrical conductive wall (earthed)	horizontal - up to 400 V	0 mm
	horizontal - up to 690 V	> 1.5 mm
	vertical	75 mm
Degree of protection acc. to IEC/EN 60947-1	enclosure / terminals	IP20
Utilization Category acc. to IEC/EN 60947-2		A
Altitude		up to 2000 m
Environmental data		
Ambient air temperature range		
Operation	open - compensated without derating	-25 °C ... +60 °C
	open	-25 °C ... +70 °C
Storage		-50 °C ... +80 °C
Temperature compensation		continuous
Vibration (sinusoidal) acc. to IEC/EN 60068-2-6 (Fc)		5 g / 3 - 150 Hz
Shock (half-sine) acc. to IEC/EN 60068-2-27 (Ea)		25 g / 11 ms
Standards / Directives		
Standard		IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1, UL 508; CSA 22.2 No. 14
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
RoHS Directive		2002/95/EC
Electromagnetic compatibility		
		not applicable
Approvals, markings		
Approvals		see page 3
Markings		see page 3
UL/CSA		
Max. operational voltage		600 V
Manual Motor Controller ratings		see separate table
Motor ratings		
Horse power		see separate table
Full load amps (FLA)		see separate table
Locked rotor amps (LRA)		see separate table
Short-Circuit Protective devices		see separate table

Type			MS132
Technical data			
Electrical connection			
MS132 ≤ 10A			
Connecting capacity	solid		1/2 x AWG16 ... AWG12
	stranded		1/2 x AWG16 ... AWG12
	flexible without ferrule		1/2 x AWG16 ... AWG12
Stripping length			9 mm
Tightening torque			10 - 12 lb-in
Connection screw			M3.5 (Pozidrive 2)
MS132-12, -16			
Connecting capacity	solid		1/2 x AWG16 ... AWG12
	stranded		1/2 x AWG16 ... AWG12
	flexible without ferrule		1/2 x AWG16 ... AWG12
Stripping length			10 mm
Tightening torque			14 lb-in
Connection screw			M4 (Pozidrive 2 / 6.5 mm)
MS132-20, -25, -32			
Connecting capacity	stranded		1/2 x AWG12 ... AWG8
	flexible without ferrule		1/2 x AWG12 ... AWG8
Stripping length			10 mm
Tightening torque			18 lb-In
Connection screw			M4 (Pozidrive 2)

Type	Rated instantaneous short-circuit current setting I _i [A]	Rated current I _n / Conventional free-air thermal current I _{th} [A]
MS132-0.16	1.25 ... 1.87	0.16
MS132-0.25	1.95 ... 2.92	0.25
MS132-0.4	3.12 ... 4.68	0.40
MS132-0.63	4.91 ... 7.37	0.63
MS132-1.0	9.20 ... 13.8	1.00
MS132-1.6	14.7 ... 22.1	1.60
MS132-2.5	23.0 ... 34.5	2.50
MS132-4.0	40.0 ... 60.0	4.00
MS132-6.3	63.0 ... 94.5	6.30
MS132-10	120 ... 180	10.0
MS132-12	144 ... 216	12.0
MS132-16	192 ... 288	16.0
MS132-20	240 ... 360	20.0
MS132-25	300 ... 450	25.0
MS132-32	384 ... 576	32.0

Short-Circuit protection

Type	230 V AC			400 V AC			690 V AC		
	I _{CS} [kA]	I _{CU} [kA]	gG [A]	I _{CS} [kA]	I _{CU} [kA]	gG [A]	I _{CS} [kA]	I _{CU} [kA]	gG [A]
MS132-0.16	100	100	°	100	100	°	100	100	°
MS132-0.25	100	100	°	100	100	°	100	100	°
MS132-0.4	100	100	°	100	100	°	100	100	°
MS132-0.63	100	100	°	100	100	°	100	100	°
MS132-1.0	100	100	°	100	100	°	100	100	°
MS132-1.6	100	100	°	100	100	°	100	100	°
MS132-2.5	100	100	°	100	100	°	100	100	°
MS132-4.0	100	100	°	100	100	°	3	3	on request
MS132-6.3	100	100	°	100	100	°	3	3	on request
MS132-10	100	100	°	100	100	°	3	3	on request
MS132-12	100	100	°	100	100	°	3	3	on request
MS132-16	100	100	°	100	100	°	3	3	on request
MS132-20	100	100	°	100	100	°	3	3	on request
MS132-25	50	50	100	50	50	100	3	3	on request
MS132-32	25	50	125	25	50	125	3	3	on request

I_{CS} = Rated service short-circuit breaking capacity
 I_{CU} = Rated ultimate short-circuit breaking capacity
 ° = No back-up fuse required, because short-circuit proof up to 100 kA

UL / CSA ratings

Type	Motor rating, single phase					
	220 - 240 V AC			440 - 480 V AC		
	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16	-	0.16	0.96	-	0.16	0.96
MS132-0.25	-	0.25	1.5	-	0.25	1.5
MS132-0.4	-	0.4	2.4	-	0.4	2.4
MS132-0.63	-	0.63	3.78	-	0.63	3.78
MS132-1.0	-	1	6	-	1	6
MS132-1.6	1/10	1.6	9.6	-	1.6	9.6
MS132-2.5	1/6	2.5	15	1/2	2.5	15
MS132-4.0	1/3	4	24	1/2	4	24
MS132-6.3	1/2	6.3	37.8	1	6.3	37.8
MS132-10	1-1/2	10	60	3	8.5	46
MS132-12	2	12	72	3	8.5	64
MS132-16	2	12	72	5	14	81
MS132-20	3	17	92	5	14	81
MS132-25	3	17	127	7-1/2	21	116
MS132-32	5	28	162	10	26	145

Type	Motor rating, three phase											
	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	6	-	1	6	-	1	6	1/2	1	6
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	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MS132-4.0	-	4	24	1	4	24	2	4	24	3	3.9	26
MS132-6.3	1/2	6.3	37.8	1-1/2	6.3	37.8	3	4.8	32	5	6.1	37
MS132-10	3/4	10	60	3	9.6	64	5	7.6	46	7-1/2	9	51
MS132-12	1-1/2	12	72	3	9.6	64	7-1/2	11	64	10	11	65
MS132-16	2	16	84	5	15.2	92	10	14	81	10	11	65
MS132-20	3	19.2	128	5	15.2	92	10	14	81	15	17	93
MS132-25	3	19.2	128	7-1/2	22	127	15	21	116	20	22	116
MS132-32	5	30.4	184	10	28	162	20	27	145	25	27	146

Type	UL 508 — Manual Motor Controller							
	Max. Circuit Breaker per UL/NEC	Max. Fuse type K5 o. RK5 per UL/NEC	for Motor Disconnect		for Group Installation		for Tap Conductor	
			Max. Short Circuit Current [kA]		Max. Short Circuit Current [kA]		Max. Short Circuit Current [kA]	
			480 V	600 V	480 V	600 V	480 V	600 V
MS132-0.16	250	250	30	18	30	-	30	-
MS132-0.25	250	250	30	18	30	-	30	-
MS132-0.4	250	250	30	18	30	-	30	-
MS132-0.63	250	250	30	18	30	-	30	-
MS132-1.0	250	250	30	18	30	-	30	-
MS132-1.6	250	250	30	18	30	-	30	-
MS132-2.5	250	250	30	18	30	-	30	-
MS132-4.0	250	250	30	18	30	-	30	-
MS132-6.3	250	250	30	18	30	-	30	-
MS132-10	250	250	30	18	30	-	30	-
MS132-12	250	250	30	18	30	-	30	-
MS132-16	250	250	30	18	30	-	30	-
MS132-20	250	250	30	18	30	-	30	-
MS132-25	250	250	30	18	30	-	30	-
MS132-32	250	250	30	18	30	-	30	-

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