DATA SHEET

Manual motor starter MS132



Manual motor starters (also known as motor protection circuit breakers or manual motor protectors) are electromechanical protection devices for the main circuit mainly used to switch motors manually ON/OFF and protect them fuseless against short-circuits, overloads and phase failures.
Fuseless 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.
Fuseless 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
- Status indication for short-circuit trip
- Clear switch position indication ON/OFF/TRIP
- Lockable handle

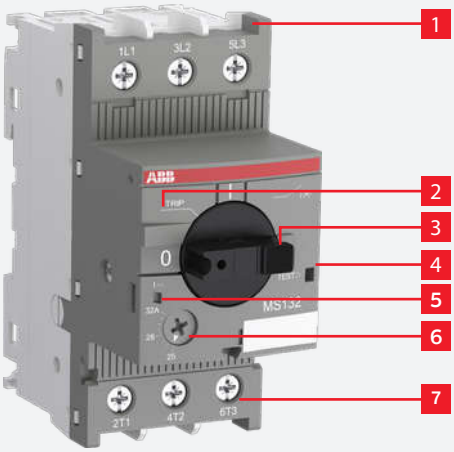


Order data

MS132 screw terminal

Setting range A	Rated operational power 400 V AC-3, AC-3e kW	Type	Order code	Weight Pkg (1 pce) kg
0.10...0.16	0.03	MS132-0.16	1SAM350000R1001	0.215
0.16...0.25	0.06	MS132-0.25	1SAM350000R1002	0.215
0.25...0.40	0.09	MS132-0.4	1SAM350000R1003	0.215
0.40...0.63	0.18	MS132-0.63	1SAM350000R1004	0.215
0.63...1.00	0.25	MS132-1.0	1SAM350000R1005	0.215
1.00...1.60	0.55	MS132-1.6	1SAM350000R1006	0.265
1.60...2.50	0.75	MS132-2.5	1SAM350000R1007	0.265
2.50...4.00	1.50	MS132-4.0	1SAM350000R1008	0.265
4.00...6.30	2.20	MS132-6.3	1SAM350000R1009	0.265
6.30...10.0	4.00	MS132-10	1SAM350000R1010	0.265
8.00...12.0	5.50	MS132-12	1SAM350000R1012	0.310
10.0...16.0	7.50	MS132-16	1SAM350000R1011	0.310
16.0...20.0	7.50	MS132-20	1SAM350000R1013	0.310
20.0...25.0	11.0	MS132-25	1SAM350000R1014	0.310
25.0...32.0	15.0	MS132-32	1SAM350000R1015	0.310

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



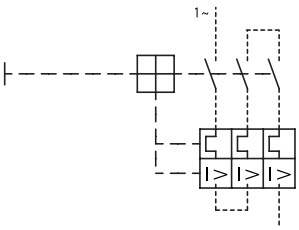
Functional description

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 / Adjustable current setting for overload protection
7. Terminals 2T1, 4T2, 6T3

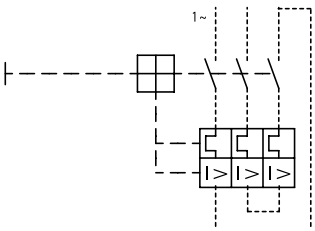
Application

Manual motor starters (also known as motor protection circuit breakers or manual motor protectors) protect the load and the installation against short-circuits and overloads. They are three pole protection devices with thermal tripping elements for overload protection and electromagnetic tripping elements for short-circuit protection. Furthermore, they provide a disconnect function for safe isolation of the installation and the supply and they can be used for manual switching of loads. Manual motor starters have a setting scale in amperes, which allows direct adjusting of the device without any additional calculation. In compliance with international and national standards, the setting current is the rated current of the motor and not the tripping current (no tripping at 1.05 x I, tripping at 1.2 x I; I = setting current).

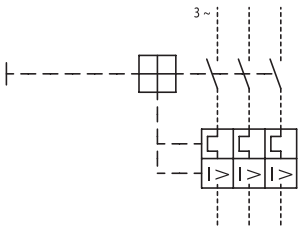
Operation mode



Single-phase operation

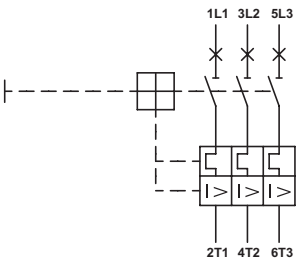


Single-phase operation



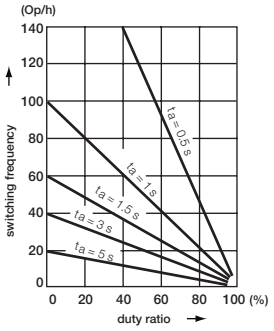
Three-phase operation

Wiring diagram



Resistance and power loss per pole

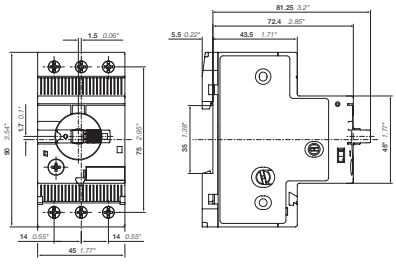
Type	Setting range		Resistance per pole	Power loss per pole	
	lower value	upper value		at lower value	at upper value
	A	A	Ω	W	W
MS132-0.16	0.10	0.16	66.00	0.7	1.7
MS132-0.25	0.16	0.25	25.50	0.7	1.6
MS132-0.4	0.25	0.40	10.38	0.6	1.7
MS132-0.63	0.40	0.63	4.36	0.7	1.7
MS132-1.0	0.63	1.00	1.605	0.6	1.6
MS132-1.6	1.00	1.60	0.648	0.6	1.7
MS132-2.5	1.60	2.50	0.292	0.7	1.8
MS132-4.0	2.50	4.00	0.114	0.7	1.8
MS132-6.3	4.00	6.30	0.046	0.7	1.8
MS132-10	6.30	10.0	0.020	0.8	2.0
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



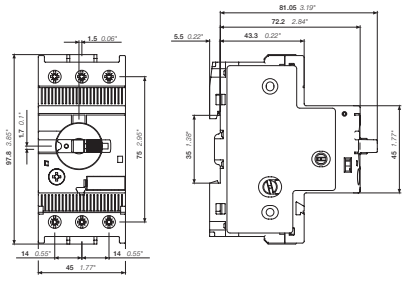
Intermittent periodic duty, t_a: Motor starting time

Main Dimensions

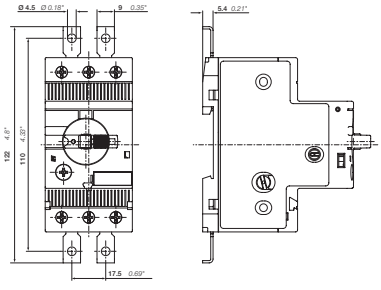
in mm / inches



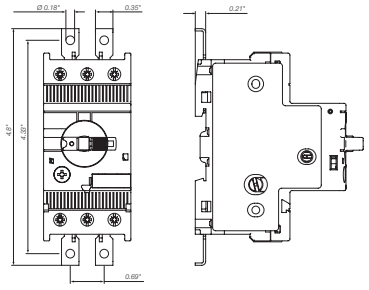
MS132 ≤ 10 A



MS132 > 10 A



MS132 ≤ 10 A with screw fixing kit FS116 (accessory)



MS132 > 10 A with screw fixing kit FS116 (accessory)

Technical data IEC/EN

Data at Ta = 40 °C and at rated values, if nothing else indicated

Main circuit

Terminal marking	1L1-3L2-5L3 2T1-4T2-6T3
Rated operational voltage Ue	690 V AC / 250 V DC (3 poles in series)
Setting range - thermal overload protection	see table “Order data” on page 1
Rated operational current Ie	see table below
Rated operational current DC-5 Ie 3 poles in series, up to 250 V DC	see “Rated operational current Ie”
Rated instantaneous short-circuit current setting Ii	see table below
Rated service short-circuit breaking capacity Ics	see table below
Rated ultimate short-circuit breaking capacity Icu	see table “Short-circuit breaking capacity and back-up fuses” on page 6
Rated service short-circuit breaking capacity DC Ics (250 V DC) 3 poles in series	10 kA
Trip class	10
Rated frequency	DC, 50/60 Hz
Frequency range	0 ... 400 Hz
Number of poles	3
Resistance per pole	see table “Resistance and power loss per pole” on page 3
Power loss per pole	

Isolation data

Rated impulse withstand voltage Uimp	6 kV
Rated insulation voltage Ui	690 V
Pollution degree	3

Electrical connection

Type		**MS132 ≤ 10 A**	**MS132 ≥ 12 A**
	solid	1/2 x 1 ... 4 mm²	1/2 x 1 ... 2.5 mm² 1/2 x 2.5 ... 6 mm²
	stranded	1/2 x 1 ... 4 mm²	1/2 x 1 ... 6 mm² 1/2 x 2.5 ... 6 mm²
	flexible with ferrule	1/2 x 0.75 ... 2.5 mm²	1/2 x 0.75 ... 6 mm²
	flexible with ferrule insulated	1/2 x 0.75 ... 2.5 mm²	1/2 x 0.75 ... 6 mm²
	flexible without ferrule	1/2 x 0.75 ... 2.5 mm²	1/2 x 1 ... 2.5 mm² 1/2 x 2.5 ... 6 mm²
Stripping length		9 mm	10 mm
Tightening torque		0.8 ... 1.2 Nm	2 Nm
Recommended screwdriver		Pozidriv 2	Pozidriv 2

Type	**Rated instantaneous short-circuit current setting Ii** A	**Rated operational current Ie** A
MS132-0.16	2.00	0.16
MS132-0.25	3.13	0.25
MS132-0.4	5.00	0.40
MS132-0.63	7.88	0.63
MS132-1.0	12.50	1.00
MS132-1.6	20.00	1.60
MS132-2.5	31.25	2.50
MS132-4.0	50.00	4.00
MS132-6.3	78.75	6.30
MS132-10	150	10.0
MS132-12	180	12.0
MS132-16	240	16.0
MS132-20	300	20.0
MS132-25	375	25.0
MS132-32	480	32.0

General data

Mechanical durability		100 000
Electrical durability		50 000
Duty time		100 %
Operating frequency without early tripping		up to 15 operations/h or 60 operations/h with 40 % duty ratio, if the motor breaking current 6 x In and the motor starting time does not exceed 1 s
Dimensions (W x H x D)		see drawing “Dimensions” on page 3
Weight		see table “Order data” on page 1
Mounting on DIN rail		TH35-15 (35 x 15 mm Mounting Rail) acc. to IEC 60715 TH35-7.5 (35 x 7.5 mm Mounting Rail) acc. to IEC 60715
Mounting position		position 1-6 (optional for single mounting)
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	housing	IP20
	main circuit terminals	IP10
Utilization category		A
Maximum operating altitude permissible		2000 m
Maximum operating frequency		170 cycles/h

Environmental data

Ambient air temperature		
Operation	open - compensated	-25 ... +60 °C
	open	-25 ... +70 °C
	enclosed (IB132)	0 ... +40 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		acc. to IEC/EN 60947-4-1
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms

Standards / directives

Standards	IEC/EN 60947-1 IEC/EN 60947-2 IEC/EN 60947-4-1 UL 60947-1 UL 60947-4-1 CSA-C22.2 No. 60947-1 CSA-C22.2 No. 60947-4-1
Low Voltage Directive	2014/35/EU
RoHS Directive	2011/65/EU

Short-circuit breaking capacity and back-up fuses

Ics Rated service short-circuit breaking capacity

Icu Rated ultimate short-circuit breaking capacity

\- No back-up fuse required, because short-circuit proof up to 100 kA

Type	250 V DC**			230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Icu kA	Ics kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A
MS132-0.16	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-0.25	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-0.4	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-0.63	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-1.0	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-1.6	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-2.5	10	10	-	100	100	-	100	100	-	100	100	-	100	100	-	100	100	-
MS132-4.0	10	10	-	100	100	-	100	100	-	30	30	35*	20	20	35*	3	3	32*
MS132-6.3	10	10	-	100	100	-	100	100	-	30	30	63*	20	20	63*	3	3	50*
MS132-10	10	10	-	100	100	-	100	100	-	30	30	100*	20	20	100*	3	3	50*
MS132-12	10	10	-	100	100	-	100	100	-	30	30	100*	20	20	100*	3	3	63*
MS132-16	10	10	-	100	100	-	100	100	-	30	30	125*	20	20	125*	3	3	63*
MS132-20	10	10	-	100	100	-	100	100	-	30	30	125*	20	20	125*	3	3	80*
MS132-25	10	10	-	50	50	125*	50	50	125*	30	30	125*	10	10	125*	3	3	100*
MS132-32	10	10	-	30	50	125*	30	50	125*	30	30	125*	10	10	125*	3	3	100*

*) Rated back-up fuse for short-circuit up to 100kA

**) 3 poles in series

Technical data UL/CSA

Main circuit

Maximum operational voltage		600 V
Manual Motor Controller ratings		see table below
Motor ratings	Horsepower	see table below
	Full Load Amps (FLA)	see table below
	Locked Rotor Amps (LRA)	see table below

Electrical connection

Type		MS132 ≤ 10 A	MS132 ≥ 12 A
	stranded	1/2 x AWG 16 ... 12	1/2 x AWG 16 ... 8
	flexible without ferrule	1/2 x AWG 16 ... 12	1/2 x AWG 16 ... 8
Stripping length		9 mm	10 mm
Tightening torque		10 ... 12 lb-in	18 lb-In
Recommended screwdriver		Pozidriv 2	

Motor ratings, single phase

hp Horse power
FLA Full load amps
LRA Locked rotor amps

Type	120 V AC			220 ... 240 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	-	1.6	9.6	1/10	1.6	9.6
MS132-2.5	-	2.5	15	1/6	2.5	15
MS132-4.0	1/8	4	24	1/3	4	24
MS132-6.3	1/4	6.3	37.8	1/2	6.3	37.8
MS132-10	1/2	9.8	58.8	1-1/2	10	60
MS132-12	1/2	9.8	58.8	2	12	72
MS132-16	1	16	96	2	12	72
MS132-20	1-1/2	20	120	3	17	102
MS132-25	2	24	144	3	17	102
MS132-32	2	24	144	5	28	168

Motor ratings, three phase

Type	220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16	-	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
MS132-0.4	-	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
MS132-1.0	-	1	6	-	1	6	1/2	1	6
MS132-1.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS132-2.5	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MS132-4.0	1	4	24	2	4	24	3	3.9	25.6
MS132-6.3	1-1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS132-10	3	9.6	64	5	7.6	46	7-1/2	9	50.8
MS132-12	3	9.6	64	7-1/2	11	64	10	11	64.8
MS132-16	5	15.2	92	10	14	81	10	11	64.8
MS132-20	5	15.2	92	10	14	81	15	17	93
MS132-25	7-1/2	22	127	15	21	116	20	22	116
MS132-32	10	28	162	20	27	145	25	27	146

Note : Manual motor starters should always be selected so that the actual motor current is within the setting range; see ordering detail page 1.
Horse power (hp) ratings are for reference only

UL/CSA Maximum short-circuit current ratings – MS132

Type	Manual Motor Controllers Branch circuit protection, max. size per NEC/CEC (1)		for motor disconnect		for group installations		for tap conductor protection in group installations		Manual self-protected Combination Motor Controllers (Type E) (2)	
	Fuses	Circuit breaker	480 V	600 V	480 V	600 V	480Y / 277 V	600Y / 347 V	480Y / 277 V	600Y / 347 V
	A	A	kA	kA	kA	kA	kA	kA	kA	kA
MS132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	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	47	65	47	65	47	65	47
MS132-6.3			65	18	65	18	65	18	65	18
MS132-10			65	18	65	18	65	18	65	18
MS132-12			30	18	30	18	30	18	30	-
MS132-16			30	18	30	18	30	18	30	-
MS132-20			30	18	30	18	30	18	30	-
MS132-25			30	18	30	18	30	18	30	-
MS132-32			30	18	30	18	30	18	30	-

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.
(2) In combination with feeder block S1-M3-xx or terminal spacer TS1-M3-S1 (for 0.16…10 A) / TS1-M3-S2 (for 12…32 A).

UL/CSA Maximum short-circuit current ratings – MS132 with AF contactors

Type	**Combination Motor Controllers (Type F) (1)** **Coordination type 1** **Minimum contactor size**	**480Y / 277 V** kA	**600Y / 347 V** kA
MS132-0.16	AF09 ... AF38	100	50
MS132-0.25	AF09 ... AF38	100	50
MS132-0.40	AF09 ... AF38	100	50
MS132-0.63	AF09 ... AF38	100	50
MS132-1.0	AF09 ... AF38	100	50
MS132-1.6	AF09 ... AF38	100	50
MS132-2.5	AF09 ... AF38	100	50
MS132-4.0	AF09 ... AF38	100	50
MS132-6.3	AF09 ... AF38	100	47
MS132-10	AF09 ... AF38	100	30
MS132-12	AF09 ... AF38	65	30
MS132-16	AF12 ... AF38	65	30
MS132-20	AF26 ... AF38	65	-
MS132-25	AF26 ... AF38	50	-
MS132-32	AF38	50	-
	Coordination type 2		
MS132-0.16	AF26 ... AF38	65	47
MS132-0.25	AF26 ... AF38	65	47
MS132-0.40	AF26 ... AF38	65	47
MS132-0.63	AF26 ... AF38	65	47
MS132-1.0	AF26 ... AF38	65	47
MS132-1.6	AF26 ... AF38	65	47
MS132-2.5	AF26 ... AF38	65	47
MS132-4.0	AF26 ... AF38	65	47
MS132-6.3	AF26 ... AF38	65	47
MS132-10	AF26 ... AF38	65	47
MS132-12	AF26 ... AF38	30	-
MS132-16	AF26 ... AF38	30	-
MS132-20	AF26 ... AF38	30	-
MS132-25	AF26 ... AF38	30	-
MS132-32	AF26 ... AF38	30	-

Self-Protected Combination Motor Controller (Type E) and Combination Motor Controller (Type F) in combination with current limitor S803W-SCLxxx-SR

Type	**Self-Protected Combination Motor Controller (Type E) in combination with current limitor S803W-SCLxxx-SR (1)**	**Combination Motor Controller (Type F) in combination with current limitor S803W-SCLxxx-SR (1)**	
	Maximum short-circuit current rating **480Y / 277 V** kA	**Maximum short-circuit current rating** **480Y / 277 V** kA	**Minimum contactor size**
MS132-0.16	65	65	AF26...AF38
MS132-0.25	65	65	AF26...AF38
MS132-0.4	65	65	AF26...AF38
MS132-0.63	65	65	AF26...AF38
MS132-1.0	65	65	AF26...AF38
MS132-1.6	65	65	AF26...AF38
MS132-2.5	65	65	AF26...AF38
MS132-4.0	65	65	AF26...AF38
MS132-6.3	65	65	AF26...AF38
MS132-10	65	65	AF26...AF38
MS132-12	65	-	-
MS132-16	65	-	-
MS132-20	65	-	-
MS132-25	65	-	-
MS132-32	65	-	-

(1) In combination with feeder block S1-M3-xx or terminal spacer TS1-M3-S1 (for 0.16 … 10 A) / TS1-M3-S2 (for 12 … 32 A).

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