

# Manual motor starter magnetic only MO132

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.



## Description

- Short-circuit protection
- Disconnect function
- Suitable for three- and single-phase application
- Trip-free mechanism
- Clear switch position indication ON/OFF/TRIP
- Lockable handle

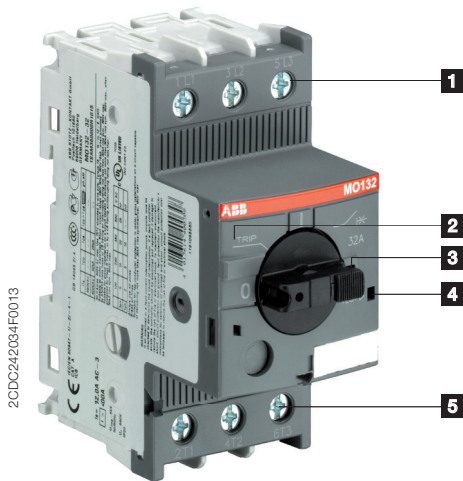
## Order data

MO132 screw terminal



Rated operational current A	Type	Trip class	Order code	Pack- ing unit PCE	Weight per PCE kg
0.16	MO132-0.16	-	1SAM360000R1001	1	0.215
0.25	MO132-0.25	-	1SAM360000R1002	1	0.215
0.40	MO132-0.4	-	1SAM360000R1003	1	0.215
0.63	MO132-0.63	-	1SAM360000R1004	1	0.215
1.00	MO132-1.0	-	1SAM360000R1005	1	0.215
1.60	MO132-1.6	-	1SAM360000R1006	1	0.265
2.50	MO132-2.5	-	1SAM360000R1007	1	0.265
4.00	MO132-4.0	-	1SAM360000R1008	1	0.265
6.30	MO132-6.3	-	1SAM360000R1009	1	0.265
10.0	MO132-10	-	1SAM360000R1010	1	0.265
12.0	MO132-12	-	1SAM360000R1012	1	0.310
16.0	MO132-16	-	1SAM360000R1011	1	0.310
20.0	MO132-20	-	1SAM360000R1013	1	0.310
25.0	MO132-25	-	1SAM360000R1014	1	0.310
32.0	MO132-32	-	1SAM360000R1015	1	0.310

## Functional description



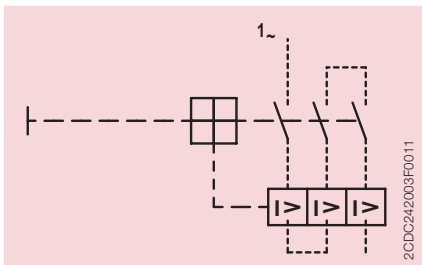
- 1** Terminals 1L1, 3L2, 5L3
- 2** Switch position TRIP
- 3** Lockable handle
- 4** Test function
- 5** Terminals 2T1, 4T2, 6T3

## Application

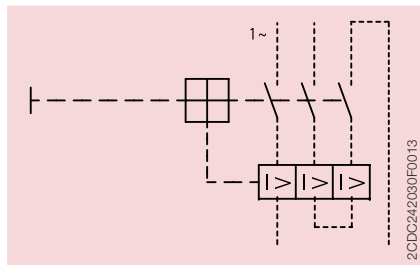
The manual motor starters magnetic only protect the load and the installation against short-circuit. They are three pole protection devices with electromagnetic tripping elements for short-circuit protection. Furthermore, they provide a disconnect function for safely isolation of the installation and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

For overload protection of the motors, an appropriate thermal or electronic overload relays must be used.

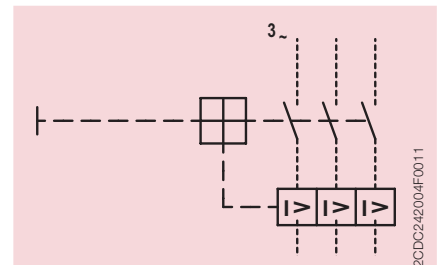
## Operation mode



Single-phase operation

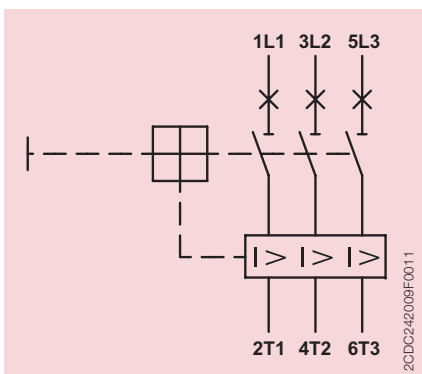


Single-phase operation



Three-phase operation

## Wiring diagram

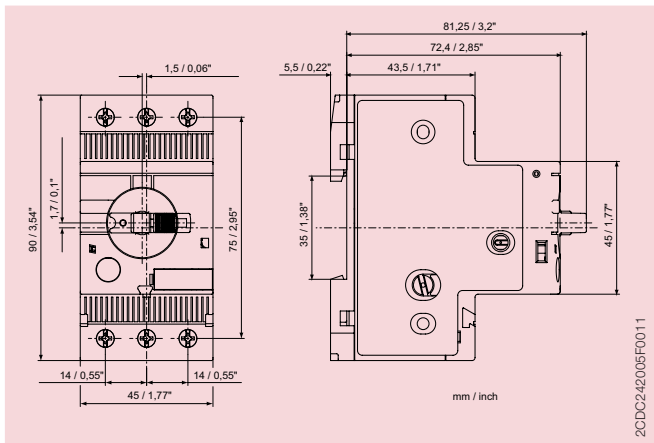


## Power loss per pole

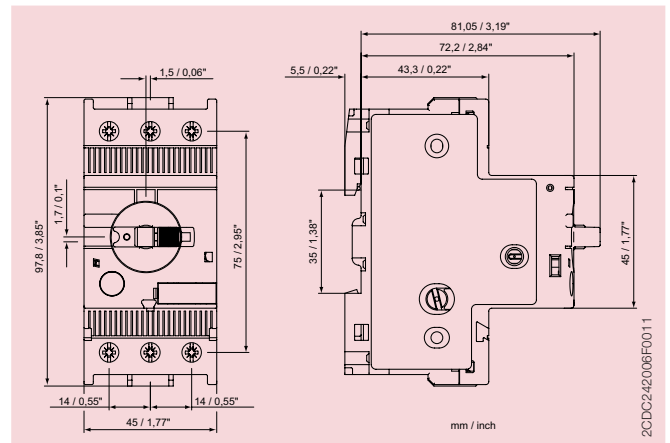
Type	Power loss per pole W
MO132-0.16	1.7
MO132-0.25	1.7
MO132-0.4	1.7
MO132-0.63	1.7
MO132-1.0	1.7
MO132-1.6	1.7
MO132-2.5	1.7
MO132-4.0	0.7
MO132-6.3	1.1
MO132-10	2.2
MO132-12	1.7
MO132-16	1.9
MO132-20	2.1
MO132-25	2.2
MO132-32	3.1

## Dimensions

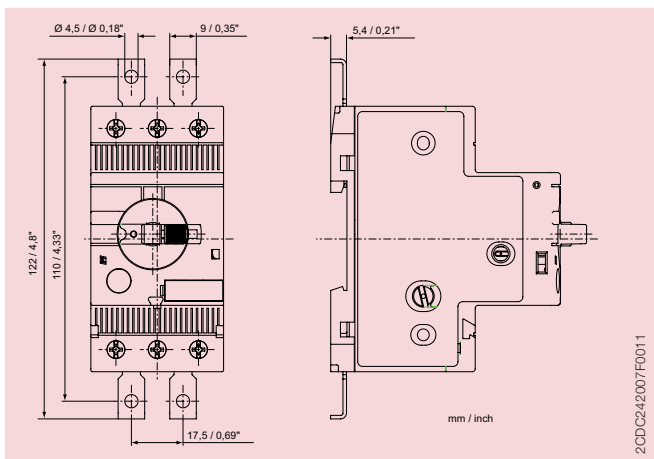
in mm / inches



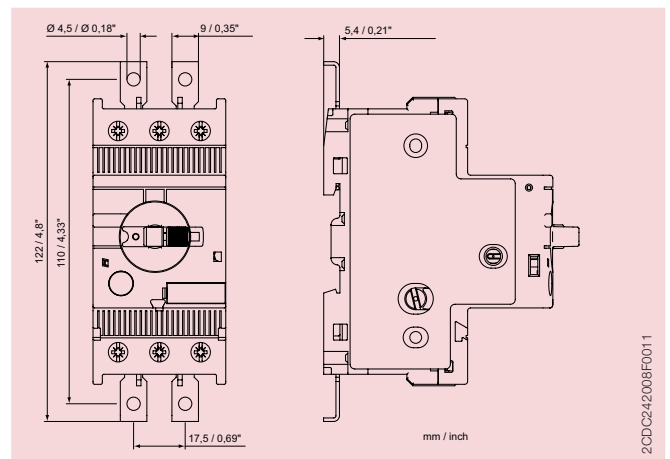
MO132 ≤ 10 A



MO132 > 10 A



MO132 ≤ 10 A with screw fixing kit FS116 (accessory)



MO132 > 10 A + with screw fixing kit FS116 (accessory)

## Technical data IEC/EN

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

### Main circuit

	<b>1L1-3L2-5L3</b> <b>2T1-4T2-6T3</b>
Rated operational voltage $U_e$	690 V AC
Rated operational current $I_e$	-
Rated operational current DC-5	see table below
3 conducting paths in series up to 250 V	-
Rated instantaneous short-circuit current setting $I_i$	see table below
Rated service short-circuit breaking capacity $I_{cs}$	see table "Short-circuit breaking capacity and back-up fuses" on page 6
Rated ultimate short-circuit breaking capacity $I_{cu}$	see table "Short-circuit breaking capacity and back-up fuses" on page 6
Rated frequency	50/60 Hz
Number of poles	3
Power loss per pole	see table "Power loss per pole" on page 3

### Isolation data

Rated impulse withstand voltage $U_{imp}$	6 kV
Rated insulation voltage $U_i$	690 V
Pollution degree	3

### Electrical connection

		<b>MO132 ≤ 10 A</b>	<b>MO132 ≥ 12 A</b>
Connecting capacity	solid	1/2 x 1 ... 4 mm <sup>2</sup>	1/2 x 1 ... 2.5 mm <sup>2</sup> 1/2 x 2.5 ... 6 mm <sup>2</sup>
	stranded	1/2 x 1 ... 4 mm <sup>2</sup>	1/2 x 1 ... 6 mm <sup>2</sup> 1/2 x 2.5 ... 6 mm <sup>2</sup>
	flexible with ferrule	1/2 x 0.75 ... 2.5 mm <sup>2</sup>	1/2 x 0.75 ... 6 mm <sup>2</sup>
	flexible with insulated ferrule	1/2 x 0.75 ... 2.5 mm <sup>2</sup>	1/2 x 0.75 ... 6 mm <sup>2</sup>
	flexible without ferrule	1/2 x 0.75 ... 2.5 mm <sup>2</sup>	1/2 x 1 ... 2.5 mm <sup>2</sup> 1/2 x 2.5 ... 6 mm <sup>2</sup>
	Stripping length		9 mm
Tightening torques		0.8 ... 1.2 Nm	2 Nm
Connection screw		M3.5 (Pozidriv 2)	M4 (Pozidriv 2)

Type	Rated instantaneous short-circuit current setting $I_i$	Rated operational current $I_e$
	A	A
MO132-0.16	1.56	0.16
MO132-0.25	2.44	0.25
MO132-0.4	3.90	0.40
MO132-0.63	6.14	0.63
MO132-1.0	11.50	1.00
MO132-1.6	18.40	1.60
MO132-2.5	28.75	2.50
MO132-4.0	50.00	4.00
MO132-6.3	78.75	6.30
MO132-10	125	10.0
MO132-12	150	12.0
MO132-16	200	16.0
MO132-20	250	20.0
MO132-25	313	25.0
MO132-32	400	32.0

## General data

Mechanical durability		100000
Electrical durability		50000
Duty time		100 %
Dimensions (W x H x D)		see drawing "Dimensions" on page 3
Weight		see table "Order data" on page 1
Mounting		DIN-rail (EN 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 / main circuit terminals	IP20
Utilization category		A
Maximum operating altitude		up to 2000 m
Maximum operating frequency		170 cycles/h

## Electromagnetic compatibility

Electromagnetic compatibility		not applicable
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## Environmental data

Ambient air temperature		
Operation	open - compensated	-
	open	-25 ... +60 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		-
Vibration (sinusoidal) acc. to IEC/EN 60068-2-6 (Fc)		5g / 3 ... 150 Hz
Shock (half-sine) acc. to IEC/EN 60068-2-27 (Ea)		25g / 11 ms

## Standards / directives

Product standard		IEC/EN 60947-2
		IEC/EN 60947-4-1
		IEC/EN 60947-1
		UL 60947-1
		UL 60947-4-1
Low voltage directive		2006/95/EC
EMC directive		2004/108/EC
RoHS directive		2002/95/EC

## Short-circuit breaking capacity and back-up fuses

$I_{cs}$  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

Type	230 V AC			400 V AC			440 V AC			500 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	$I_{cs}$ kA	$I_{cu}$ kA	gG A	$I_{cs}$ kA	$I_{cu}$ kA	gG A
MO132-0.16	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-0.25	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-0.4	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-0.63	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-1.0	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-1.6	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-2.5	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO132-4.0	100	100	°	100	100	°	20	20	35	20	20	35	3	3	32
MO132-6.3	100	100	°	100	100	°	20	20	63	20	20	63	3	3	50
MO132-10	100	100	°	100	100	°	20	20	100	20	20	100	3	3	50
MO132-12	100	100	°	100	100	°	20	20	100	20	20	100	3	3	63
MO132-16	100	100	°	100	100	°	20	20	125	20	20	125	3	3	63
MO132-20	100	100	°	100	100	°	20	20	125	20	20	125	3	3	80
MO132-25	50	50	125	50	50	125	10	10	125	10	10	125	3	3	100
MO132-32	25	50	125	25	50	125	10	10	125	10	10	125	3	3	100

## Technical data UL/CSA

### Main circuit

Maximum operational voltage	600 V	
Manual motor controller ratings	see table "Manual motor controller for motor disconnect" on page 8	
Motor ratings	Horse power	see table below
	Full load amps (FLA)	see table below
	Locked rotor amps (LRA)	see table below

Electrical connection		MO132 ≤ 10 A	MO132 ≥ 12 A
Connecting capacity	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
Connection screw		M3.5 (Pozidriv 2)	M4 (Pozidriv 2)

### Motor rating, 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
MO132-0.16	-	0.16	0.96	-	0.16	0.96
MO132-0.25	-	0.25	1.5	-	0.25	1.5
MO132-0.4	-	0.4	2.4	-	0.4	2.4
MO132-0.63	-	0.63	3.78	-	0.63	3.78
MO132-1.0	-	1	6	-	1	6
MO132-1.6	-	1.6	9.6	1/10	1.6	9.6
MO132-2.5	-	2.5	15	1/6	2.5	15
MO132-4.0	1/8	4	24	1/3	4	24
MO132-6.3	1/4	6.3	37.8	1/2	6.3	37.8
MO132-10	1/2	9.8	58.8	1-1/2	10	60
MO132-12	1/2	9.8	58.8	2	12	72
MO132-16	1	16	96	2	12	72
MO132-20	1-1/2	20	120	3	17	92
MO132-25	2	24	144	3	17	127
MO132-32	2	24	144	5	28	162

## Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

Type	220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MO132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MO132-0.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MO132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MO132-1.0	-	1	6	-	1	6	1/2	1	6
MO132-1.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MO132-2.5	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MO132-4.0	1	4	24	2	4	24	3	3.9	26
MO132-6.3	1-1/2	6.3	37.8	3	4.8	32	5	6.1	37
MO132-10	3	9.6	64	5	7.6	46	7-1/2	9	51
MO132-12	3	9.6	64	7-1/2	11	64	10	11	65
MO132-16	5	15.2	92	10	14	81	10	11	65
MO132-20	5	15.2	92	10	14	81	15	17	93
MO132-25	7-1/2	22	127	15	21	116	20	22	116
MO132-32	10	28	162	20	27	145	25	27	146

## Manual motor controller for motor disconnect

Type	Circuit breaker or class R fuse per UL/NEC 480 V / 600 V	Maximum short-circuit current rating	
		480 V kA	600 V kA
MO132-0.16	with minimum interrupting rating of 35,000 rms symmetrical amperes	30	18
MO132-0.25		30	18
MO132-0.4		30	18
MO132-0.63		30	18
MO132-1.0		30	18
MO132-1.6		30	18
MO132-2.5		30	18
MO132-4.0		30	18
MO132-6.3		30	18
MO132-10		30	18
MO132-12		30	18
MO132-16		30	18
MO132-20		30	18
MO132-25		30	18
MO132-32		30	18



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