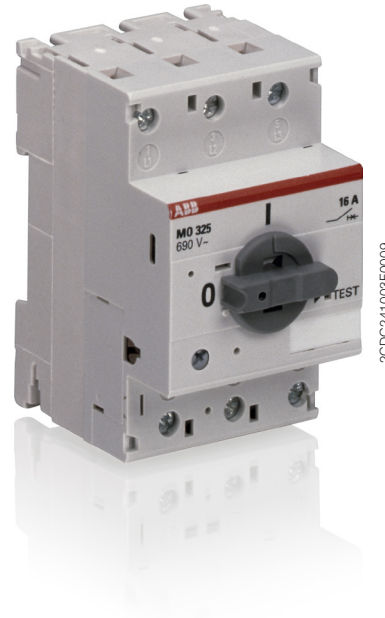


Manual motor starter magnetic only MO325

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

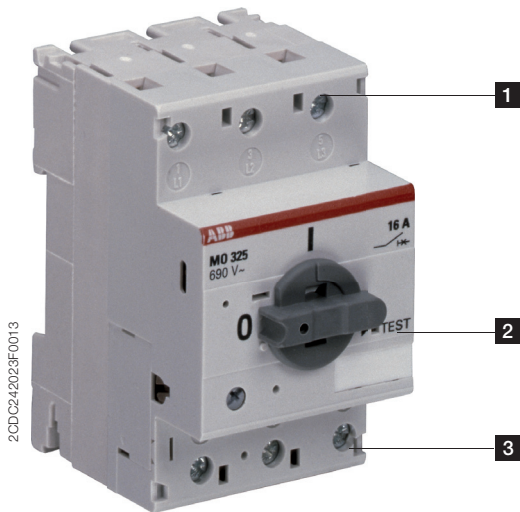
Order data

MO325 screw terminal



Rated operational current	Type	Trip class	Order code	Pack- ing unit	Weight per PCE
A				PCE	kg
0.40	MO325-0.4	-	1SAM160000R1003	1	0.310
0.63	MO325-0.63	-	1SAM160000R1004	1	0.310
1.00	MO325-1	-	1SAM160000R1005	1	0.340
1.60	MO325-1.6	-	1SAM160000R1006	1	0.370
2.50	MO325-2.5	-	1SAM160000R1007	1	0.370
4.00	MO325-4	-	1SAM160000R1008	1	0.370
6.30	MO325-6.3	-	1SAM160000R1009	1	0.370
9.00	MO325-9	-	1SAM160000R1010	1	0.370
12.50	MO325-12.5	-	1SAM160000R1011	1	0.370
16.0	MO325-16	-	1SAM160000R1012	1	0.370
20.0	MO325-20	-	1SAM160000R1013	1	0.370
25.0	MO325-25	-	1SAM160000R1014	1	0.370

Functional description



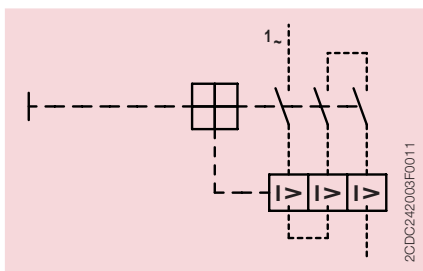
- 1** Terminals 1L1, 3L2, 5L3
- 2** Test function
- 3** Terminals 2T1, 4T2, 6T3

Application

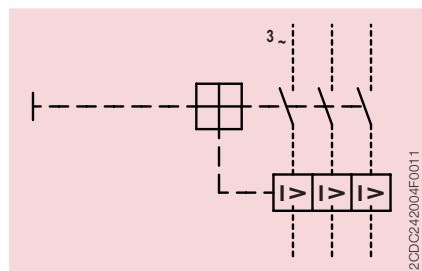
The manual motor starters magnetic only protect the load and the installation against short-circuit. They are three pole protection devices with electromagnetic tripping elements for short-circuit protection. Furthermore, they provide a disconnect function for safely isolation of the installation and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

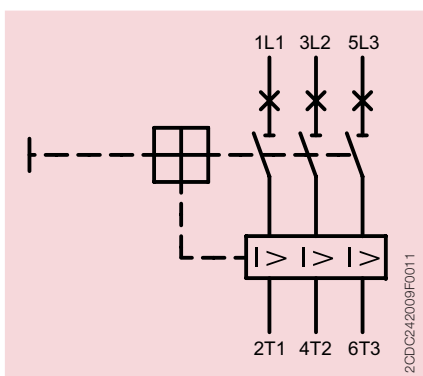


Single-phase operation



Three-phase operation

Wiring diagram

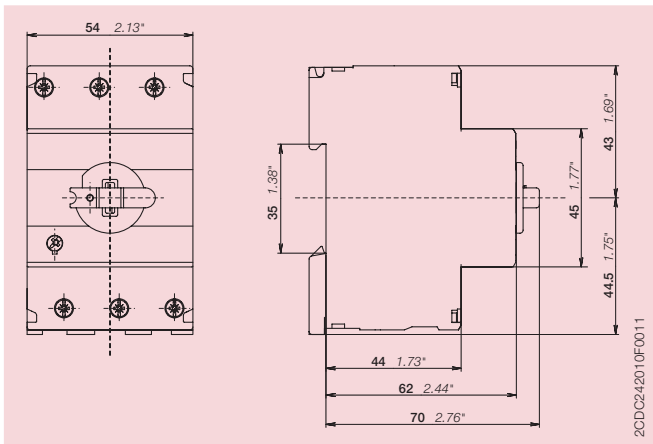


Power loss per pole

Type	Power loss per pole W
MO325-0.4	1.0
MO325-0.63	2.1
MO325-1	2.1
MO325-1.6	1.1
MO325-2.5	2.1
MO325-4	2.3
MO325-6.3	2.0
MO325-9	1.8
MO325-12.5	1.8
MO325-16	1.7
MO325-20	1.6
MO325-25	1.7

Dimensions

in mm / inches



MO325

Technical data IEC/EN

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

Main circuit

	1L1-3L2-5L3 2T1-4T2-6T3
Rated operational voltage U_e	690 V AC 440 V DC
Rated operational current I_e	see table below
Rated operational current DC-5 I_e 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

		MO325
Connecting capacity	solid	1/2 x 1 ... 6 mm ²
	stranded	1/2 x 1 ... 6 mm ²
	flexible with ferrule	1/2 x 0.75 ... 4 mm ²
	flexible with insulated ferrule	1/2 x 0.75 ... 4 mm ²
	flexible without ferrule	1/2 x 1 ... 6 mm ²
Stripping length		10 mm
Tightening torques		1.4 Nm
Connection screw		M3.5 (Pozidriv 2)

Type	Rated instantaneous short-circuit current setting I_i A	Rated operational current I_e A
MO325-0.4	3.90	0.40
MO325-0.63	6.14	0.63
MO325-1	11.50	1.00
MO325-1.6	16.00	1.60
MO325-2.5	27.50	2.50
MO325-4	40.00	4.00
MO325-6.3	67.73	6.30
MO325-9	135	9.00
MO325-12.5	180	12.50
MO325-16	240	16.0
MO325-20	300	20.0
MO325-25	375	25.0

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	100 mm
Minimum distance to electrical conductive board	horizontal, up to 400 V	> 1.5 mm
	horizontal, up to 690 V	> 1.5 mm
	vertical	75 mm
Degree of protection	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 ... +50 °C
	enclosed (IB325)	0 ... +40 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		-
Vibration (sinusoidal) acc. to IEC/EN 60068-2-6 (Fc)		5g / 10 ... 150 Hz
Shock (half-sine) acc. to IEC/EN 60068-2-27 (Ea)		15g / 11 ms

Standards / directives

Product 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

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
MO325-0.4	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO325-0.63	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO325-1	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO325-1.6	100	100	°	100	100	°	100	100	°	100	100	°	100	100	°
MO325-2.5	100	100	°	100	100	°	100	100	°	100	100	°	40	40	25
MO325-4	100	100	°	100	100	°	100	100	°	60	60	40	10	10	40
MO325-6.3	100	100	°	100	100	°	70	70	50	40	40	50	7	7	40
MO325-9	100	100	°	100	100	°	50	50	80	30	30	80	5	5	50
MO325-12.5	100	100	°	75	75	80	45	45	80	27	27	80	4.5	4.5	50
MO325-16	100	100	°	60	60	100	40	40	100	25	25	100	4	4	50
MO325-20	100	100	°	55	55	100	35	35	100	22	22	100	3.5	3.5	50
MO325-25	100	100	°	50	50	125	30	30	125	20	20	125	3	3	50

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	MO325	
Connecting capacity	stranded	1/2 x AWG 14 ... 8
	flexible without ferrule	1/2 x AWG 14 ... 8
Stripping length	10 mm	
Tightening torque	14 lb-In	
Connection screw	M3.5 (Pozidriv 2)	

Motor rating, single phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

Type	110 ... 120 V AC			220 ... 240 V AC		
	hp	FLA	LRA	hp	FLA	LRA
MO325-0.4	-			-	0.4	2.4
MO325-0.63	-			-	0.63	3.78
MO325-1	-			-	1	6
MO325-1.6	-			1/10	1.5	
MO325-2.5	-			1/6	2.2	
MO325-4	1/8	3.8		1/3	3.6	
MO325-6.3	1/4	5.8		1/2	4.9	
MO325-9	1/3	7.2		1	8	
MO325-12.5	1/2	9.8		2	12	
MO325-16	1	16		2-1/2		
MO325-20	1-1/2	20		3	17.0	
MO325-25	2	24		3	17.0	

Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

Type	220 ... 240 V AC			440 ... 480 V AC			500 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO325-0.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MO325-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MO325-1	-	1	6	1/2	1.1	10	1/2	0.9	8
MO325-1.6	-	1.6	9.6	3/4	1.6	12.5	3/4	1.3	10
MO325-2.5	1/2	2.2	20	1	2.1	15	1-1/2	2.4	16
MO325-4	1	4.2	30	2	3.4	25	3	3.9	25.6
MO325-6.3	1-1/2	6	40	3	4.8	32	5	6.1	36.8
MO325-9	2-1/2			5	7.6	46	7-1/2	9.0	50.8
MO325-12.5	3	9.6	64	7-1/2	11.0	63.5	10	11.0	64.8
MO325-16	5	15.2	92	10	14.0	81	10	11.0	64.8
MO325-20	5	15.2	92	10	14.0	81	15	27.0	93
MO325-25	7-1/2	22.0	127	15	21.0	116	20	35.0	116

Manual motor controller for motor disconnect

Type	Maximum short-circuit current rating	
	480 V	600 V
	kA	kA
MO325-0.4	85	50
MO325-0.63	85	50
MO325-1	85	50
MO325-1.6	85	50
MO325-2.5	85	50
MO325-4	85	50
MO325-6.3	50	50
MO325-9	50	50
MO325-12.5	50	30
MO325-16	50	30
MO325-20	50	30
MO325-25	50	30

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