



Page 1-2

SM1A

- Thermal trip adjustment ranges 9-32A (5 choices)
- IEC breaking capacity Icu at 400V: – 50kA
- Suitable for mounting in consumer switchboards with minimum 58mm/2.3in depth.



Page 1-2

SM1B

- Thermal trip adjustment ranges 0.1-32A (15 choices)
- IEC breaking capacity Icu at 400V:
 - 100kA (ranges 0.1-10A)
 - 25kA (ranges 9-32A)
- Suitable for mounting in consumer switchboards with minimum 58mm/2.3in depth.



Page 1-2

SM1C

- Same characteristics per SM1B breaker
- Suitable for mounting in consumer switchboards with minimum 45mm/1.8in depth.



Page 1-3

SM2A

- Thermal trip adjustment ranges 28-50A (3 choices)
- IEC breaking capacity Icu at 400V: – 50kA.



Page 1-3

SM3A

- Thermal trip adjustment ranges 45-100A (4 choices)
- IEC breaking capacity Icu at 400V: – 50kA.



Page 1-10

LMS25

- Thermal trip adjustment ranges 0.1-25A (13 choices)
- IEC breaking capacity Icu at 400V:
 - 100kA (ranges 0.1-6.3A)
 - 6kA (ranges 6.3-10A)
 - 4kA (ranges 10-25A)
- Suitable for mounting in consumer switchboards with minimum 45mm/1.8in depth.

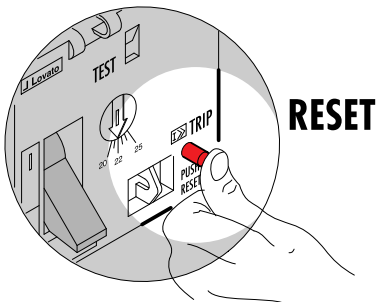


- Wide adjustment range
0.1 to 100A
- IEC breaking capacity Icu 50kA
(400V) up to 100A
- Suitable for isolation
- Comprehensive line of accessories
- Front mount contacts
- Automatic trip indicators
- High reliability and accuracy of tripping.

Motor protection circuit breakers

SEC. - PAGE

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Breakers SM2A and SM3A	1 - 3
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Short-circuit tripping indicator, standard supplied on all circuit breakers, type SM1.
Reset the indicator, as illustrated, to restore the breaker.

Motor protection circuit breakers

With thermal and magnetic trip releases

1 Motor protection circuit breakers SM1 up to 32A



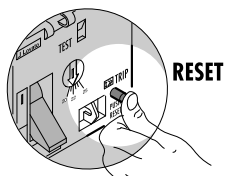
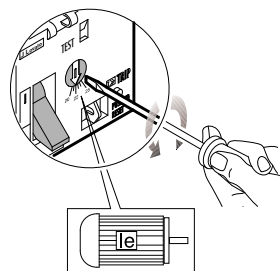
11 SM1A...



11 SM1B...



11 SM1C...



NOTE:
All data mentioned is valid for 11SM1A, 11SM1B and 11SM1C types; UL Listed in USA and Canada as "manual motor controller suitable as motor disconnect", delivering not more than 5000rms symmetrical amperes, 600VAC, and use with class J fuses only. Trip current is 120%.

- The appropriate thermal trip range of the controller should be selected on the basis of the motor nameplate full-load current since the horsepower ratings given are for indication and reference purposes only.
- Single-phase horsepower ratings are based on wiring the three poles in series; see wiring scheme on page 1-15.

Order code	Thermal trip adjustment range	Short circuit breaking capacity at 400V		Qty per pkg	Wt
		Icu	Ics		
	[A]	[kA]	[kA]	n°	[kg]

IEC breaking capacity Icu 50kA at 400V.

11 SM1A 40	9-14	50	25	5	0.352
11 SM1A 44	13-18	50	25	5	0.352
11 SM1A 48	17-23	50	25	5	0.352
11 SM1A 52	20-25	50	25	5	0.352
11 SM1A 56	24-32	50	25	5	0.352

IEC breaking capacity Icu 100kA (0.1-10A) / 25kA (9-32A) at 400V.

11 SM1B 00	0.1-0.16	100	100	5	0.278
11 SM1B 04	0.16-0.25	100	100	5	0.278
11 SM1B 08	0.25-0.4	100	100	5	0.278
11 SM1B 12	0.4-0.63	100	100	5	0.278
11 SM1B 16	0.63-1	100	100	5	0.278
11 SM1B 20	1-1.6	100	100	5	0.278
11 SM1B 24	1.6-2.5	100	100	5	0.352
11 SM1B 28	2.5-4	100	100	5	0.352
11 SM1B 32	4-6.5	100	100	5	0.352
11 SM1B 36	6.3-10	100	100	5	0.352
11 SM1B 40	9-14	25	12.5	5	0.352
11 SM1B 44	13-18	25	12.5	5	0.352
11 SM1B 48	17-23	25	12.5	5	0.352
11 SM1B 52	20-25	25	12.5	5	0.352
11 SM1B 56	24-32	25	12.5	5	0.352

IEC breaking capacity Icu 100kA (0.1-10A) / 25kA (9-32A) at 400V. Suitable for mounting in modular consumer switchboards ①.

11 SM1C 00①	0.1-0.16	100	100	5	0.278
11 SM1C 04①	0.16-0.25	100	100	5	0.278
11 SM1C 08①	0.25-0.4	100	100	5	0.278
11 SM1C 12①	0.4-0.63	100	100	5	0.278
11 SM1C 16①	0.63-1	100	100	5	0.278
11 SM1C 20①	1-1.6	100	100	5	0.352
11 SM1C 24①	1.6-2.5	100	100	5	0.352
11 SM1C 28①	2.5-4	100	100	5	0.352
11 SM1C 32①	4-6.5	100	100	5	0.352
11 SM1C 36①	6.3-10	100	100	5	0.352
11 SM1C 40①	9-14	25	12.5	5	0.352
11 SM1C 44①	13-18	25	12.5	5	0.352
11 SM1C 48①	17-23	25	12.5	5	0.352
11 SM1C 52①	20-25	25	12.5	5	0.352
11 SM1C 56①	24-32	25	12.5	5	0.352

① The SM1C version permits mounting in enclosures and modular consumer switchboards with minimum depth of at least 45mm between the DIN rail and the opening. See page 1-12 for exact breaker dimensions. No front-mount auxiliary contacts 11 SMX11... can be used.

General characteristics

The SM1 is a modern series of circuit breakers with thermal and magnetic trip releases and high breaking capacity. Motor control and protection, up to 15kW at 400V/20HP 480V/30HP 600V, are possible by choosing the suitable adjustment range, 0.1 to 32A.

A magnetic trip indicator integrated on the SM1 breakers avoids dangerous closing operations during short-circuit conditions, previously disconnected by the breaker. The SM1 types are suitable for isolation according to IEC/EN 60947 standards.

Their high breaking capacity consents to exclude protection fuses on the majority of the installations.

Operational characteristics

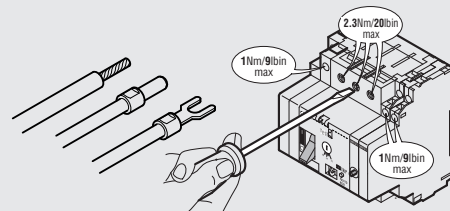
- IEC rated insulation voltage Ui: 690V
- IEC rated impulse withstand voltage: 6kV
- IEC rated frequency: 50/60Hz
- Maximum rated current: 32A
- Number of adjustment ranges: SM1A: 5 (9 to 32A) SM1B: 15 (0.1 to 32A) SM1C: 15 (0.1 to 32A)
- IEC breaking capacity: see page 1-17
- Power dissipation: 2.2-9.7W
- Magnetic tripping: 12In max
- IEC thermal tripping class: 10A
- Phase failure / Single phase sensitive
- Mechanical life: 100,000 cycles
- Electrical life: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: Any
- IEC utilisation category: A
- IEC degree of protection: IP20.

Certifications and compliance

Certifications obtained: GOST and UL Listed, for USA and Canada (File E93602); CCC for SM1B type only.

See UL/CSA details under NOTE on left bottom side.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.



NOTE: When more than one breaker are mounted, side by side, without leaving space between each to consent free air circulation on the breaker sides, and have simultaneous operation, the thermal trip adjuster must be positioned at a value 15% higher than the rated motor current.

Maximum UL/CSA horsepower rating

Type	Thermal adjustment range ②	1 Phase [HP] ③		3 Phase [HP]				General use at 600V (FLA) [A]
		120V	230V	200-208V	230V	480V	600V	
SM1...00	0.1-0.16	—	—	—	—	—	—	0.16
SM1...04	0.16-0.25	—	—	—	—	—	—	0.25
SM1...08	0.25-0.4	—	—	—	—	—	—	0.4
SM1...12	0.4-0.63	—	—	—	—	—	—	0.63
SM1...16	0.63-1	—	—	—	—	½	½	1
SM1...20	1-1.6	—	1/10	—	v	¾	1	1.6
SM1...24	1.6-2.5	—	1/6	½	½	1	1½	2.5
SM1...28	2.5-4	⅛	⅓	¾	¾	2	3	4
SM1...32	4-6.5	¼	½	1½	1½	3	5	6.5
SM1...36	6.3-10	½	1½	2	3	5	7.5	10
SM1...40	9-14	¾	2	3	3	10	10	14
SM1...44	13-18	1	3	5	5	10	15	18
SM1...48	17-23	1½	3	5	7½	15	20	23
SM1...52	20-25	2	3	5	7½	15	20	25
SM1...56	24-32	2	5	10	10	20	30	32

Motor protection circuit breakers

With thermal and magnetic trip releases

Motor protection circuit breakers

SM2A - SM3A up to 100A



11 SM2A...



11 SM3A...

Order code	Thermal trip adjustment range	Short circuit breaking capacity (IEC) at 400V		Qty per pkg	Wt
		Icu	Ics		
	[A]	[kA]	[kA]	n°	[kg]
IEC breaking capacity Icu 50kA at 400V.					
11 SM2A 68	28-40	50	25	1	1.040
11 SM2A 72	36-45	50	25	1	1.040
11 SM2A 76	40-50	50	25	1	1.040
IEC breaking capacity Icu 50kA at 400V.					
11 SM3A 84	45-63	50	25	1	2.266
11 SM3A 88	57-75	50	25	1	2.266
11 SM3A 92	70-90	50	25	1	2.266
11 SM3A 96	80-100	50	25	1	2.266

General characteristics

The SM2A and SM3A types are circuit breakers with a wide adjustment range, 28 to 100A, in only two frame sizes enabling motor control and protection up to 45kW at 400V/75HP 480V/100HP 600V.
A magnetic trip indicator and padlockable operating handle are integrated on the SM2A and SM3A breakers. Both are suitable for isolation according to IEC/EN 60947 standards.
Their high breaking capacity consents to exclude protection fuses on the majority of the installations.

Operational characteristics

- IEC rated insulation voltage U_i : 690V
- IEC rated impulse withstand voltage: 6kV
- IEC rated frequency: 50/60Hz
- Maximum rated current: 50A (SM2A) and 100A (SM3A)
- Number of adjustment ranges:
SM2A: 3 (28 to 50A)
SM3A: 4 (45 to 100A)
- IEC breaking capacity: See table on page 1-17
- Power dissipation:
SM2A: 7.1-20W
SM3A: 10-38W
- Magnetic tripping: $13I_n$ max
- IEC thermal tripping class: 10
- Phase failure / Single phase sensitive
- Life (cycles):

	Mechanical	Electrical (Ie AC3)
SM2A	50,000	25,000
SM3A	50,000	25,000
- Mounting:
SM2A - Screw fixing or on 35mm DIN rail (IEC/EN 60715)
SM3A - Screw fixing or on DIN rail 35mm (IEC/EN 60715) or 75mm (IEC/EN 60715)
- Mounting position: Any
- IEC utilisation category: A
- IEC degree of protection: IP00.

Certifications and compliance

Certifications obtained: GOST; UL Listed, for USA and Canada (File E155982); CSA certified (File 73212).
See UL/CSA details under NOTE below bottom table.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

NOTE: When more than one breaker are mounted, side by side, without leaving space between each to consent free air circulation on the breaker sides, and have simultaneous operation, the thermal trip adjuster must be positioned at a value 15% greater than the rated motor current.

Maximum UL/CSA horsepower rating

Type	Thermal adjustment range ①	1 Phase ② [HP] (not mentioned by UL/CSA)		3 Phase [HP]				FLA max at 600V [A]	Max Fuse / CB [A]
		120V	230V	200-208V	230V	480V	600V		
SM2A 68	28-40A	3	7.5	15	15	30	40	40	150
SM2A 72	36-45A	5	7.5	15	15	30	40	45	175
SM2A 76	40-50A	5	10	15	20	40	50	50	200
SM3A 84	45-63A	5	15	20	25	50	60	63	250
SM3A 88	57-75A	7.5	15	25	25	60	75	75	300
SM3A 92	70-90A	10	20	30	30	75	100	90	350
SM3A 96	80-100A	10	20	40	40	75	100	100	400

NOTE:

For SM2A types: UL Listed for USA and Canada and CSA certified as manual motor controller, short circuit 65kA 480V; 25kA 600V; max fuse / CB (see table). Suitable for group installation.
CSA: Maximum fuse / CB 350A. UL: SPCD according NEC; suitable as motor disconnect 600Y/347V.
Suitable as tap conductor protection in group installation 65kA 480Y/277V, 25kA 600Y/347V. Maximum fuse / CB 500A. Trip amps 125%.
For SM3A84 and SM3A88 types: UL Listed for USA and Canada and CSA certified as manual motor controller, short circuit 65kA 480V; 30kA 600V; max fuse / CB (see table). Suitable for group installation.
CSA: Maximum fuse / CB 500A. UL: SPCD according NEC; suitable as motor disconnect 600Y/347V.
Suitable as tap conductor protection in group installation 65kA 480Y/277V, 30kA 600Y/347V. Maximum fuse / CB 1200A. Trip amps 125%.
For SM3A92 and SM3A96 types: UL Listed for USA and Canada and CSA certified as manual motor controller, short circuit 65kA 480V; 10kA 600V; max fuse / CB (see table). Suitable for group installation.
CSA: Maximum fuse / CB 500A. UL: SPCD according NEC; suitable as motor disconnect 480Y/277V.
Suitable as tap conductor protection in group installation 65kA 480Y/277V. Maximum fuse / CB 1200A. Trip amps 125%.

- ① The appropriate thermal trip range of the controller should be selected on the basis of the motor nameplate full-load current since the horsepower ratings given are for indication and reference purposes only.
- ② Single-phase horsepower ratings are based on wiring the three poles in series; see wiring scheme on page 1.15.

1 Add-on blocks and accessories



11 SMX11...

11 SMX12...



11 SMX13 11

11 SMX14...



11 SMX15...

11 SMX16...



11 SMX18 10



11 SMX90 30

11 SMX90 31



11 SMX90 3...
11 SMX90 4...

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]

Add-on auxiliary contacts.			
11 SMX11 20Ⓢ	Front mount 2NO	10	0.013
11 SMX11 11Ⓢ	Front mount 1NO+1NC	10	0.013
11 SMX12 11	Side mount 1NO+1NC	10	0.045
11 SMX12 02	Side mount 2NC	10	0.045
11 SMX12 20	Side mount 2NO	10	0.045
11 SMX13 11	Side-mount indicator contacts for thermal and magnetic tripping 1NO+1NCⓈ	10	0.045

Undervoltage trip releases.			
11 SMX14 BC	110VAC 50/60Hz	5	0.125
11 SMX14 CL	230VAC 50/60Hz	5	0.125
11 SMX14 EA	400VAC 50/60Hz	5	0.125
11 SMX15 CL	230VAC 50/60Hz with early-make contacts	5	0.140
11 SMX15 EA	400VAC 50/60Hz with early-make contacts	5	0.140

Shunt trip releases.			
11 SMX16 AF	24VAC 50/60Hz	5	0.124
11 SMX16 BC	110VAC 50/60Hz	5	0.124
11 SMX16 CL	230VAC 50/60Hz	5	0.124
11 SMX16 EA	400VAC 50/60Hz	5	0.124

Padlockable attachment for operating lever.			
11 SMX18 10	3 padlocks max Ø 5mm	1	0.049

Adjuster sealing kit.			
11 SMX18 12	For all types	1	0.006

Padlockable door coupling handle.			
11 SMX18 14	3 padlocks maximum IP65. Yellow/red	1	0.720
11 SMX18 15	3 padlocks maximum IP65. Black	1	0.760

Terminal block for busbar supply.			
11 SMX90 30	For all types	10	0.048

Safety cover.			
11 SMX90 31	For unused busbar terminals	10	0.005

Three-phase connection busbars 45mm spacing.			
11 SMX90 32	For 2 breakers without side-mount contacts	10	0.027
11 SMX90 33	For 3 breakers without side-mount contacts	10	0.050
11 SMX90 34	For 4 breakers without side-mount contacts	10	0.071
11 SMX90 35	For 5 breakers without side-mount contacts	10	0.092

Three-phase connection busbars 54mm spacing.			
11 SMX90 42	For 2 breakers complete with side-mount contacts	10	0.031
11 SMX90 43	For 3 breakers complete with side-mount contacts	10	0.056
11 SMX90 44	For 4 breakers complete with side-mount contacts	10	0.081
11 SMX90 45	For 5 breakers complete with side-mount contacts	10	0.081

Ⓢ Not suitable for fixing on SM1C types.
Ⓢ Tripping is indicated by flag indicator on front.

General and operational characteristics

ADD-ON AUXILIARY BLOCKS

- Snap on to the front or the right side of the breaker
- Maximum combination: 3 SMX... blocks with 6 auxiliary contacts in total of which 2 on front (SM1C excluded) and 4 on the side (2 normal contacts and 2 indicators)
- IEC conventional free air thermal current I_{th}: 6A (2.5A for SMX11...)
- IEC rated insulation voltage U_i: 690V (250V for SMX11...)
- UL/CSA and IEC/EN 60947-5-1 designation: C600 Q600 (C300 R300 for SMX11...)
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5 mm² or 18/14AWG
- Width of side-mount auxiliary contacts equal to 0.5 standard DIN 46880 module.

UNDERVOLTAGE TRIP RELEASE

- Connectable to the left side of the breaker
- Consumption in-rush/holding: 12/3.5VA
- Drop-out voltage: 0.35-0.7Us
- Pick-up voltage: 0.85-1.1Us
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm² or 18/14AWG.

SHUNT TRIP RELEASE

- Connectable to the left side of the breaker
- In-rush consumption: 20VA
- Operating limits: 0.7-1.1Us
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm² or 18/14AWG.

THREE-PHASE CONNECTION BUSBAR

- I_{max} 63A
- SMX90 3... 45mm/1.77" spacing to reduce the width to the minimum
- SMX90 4... 54mm/2.13" spacing to consent to fit one side-mount auxiliary contact block on the breaker.

TERMINAL BLOCK FOR BUSBAR SUPPLY

- I_{max} 63A
- Maximum tightening torque: 2.3Nm/20lbin
- Conductor cross section minimum-maximum: 4-25mm² or 10/4AWG.

Certifications and compliance

Certifications obtained: GOST; UL Listed, for USA and Canada (File E93602), under motor controllers, for auxiliary contacts, releases and padlockable attachment for operating lever; CCC for SMX12... and SMX13 11 auxiliary contacts.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.


11 SMX90 03

**SMX31 41
SMX31 42
SMX32 41**

11 SMX90 10

11 SMX90 12

11 SMX90 14

**11 SMX17 10
11 SMX17 11**

11 SMX17 20

11 SMX17 35

11 SMX17 40

11 SMX17 45

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]

Rigid SM1 breaker-contactor connections.

11 SMX90 03	For SM1 breaker with BG mini-contactor.	10	0.025
SMX31 41	For SM1 breaker with BF09A-BF25A contactor. Complete with cover	10	0.044
SMX31 42	For SM1 breaker with BF09D-BF25D and BF09L-BF25L contactor. Complete with cover	10	0.046
SMX32 41	For SM1 breaker with BF26A-BF38A contactor. Complete with cover	10	0.050

Adapter plates.

11 SMX90 10	Adapter plate for direct-on-line starter (SM1 breaker and BG or BF09A-BF38A contactors)	1	0.058
11 SMX90 12	Adapter plate for reversing contactor assembly (SM1 breaker and BG or BF09A-BF38A contactors)	1	0.095
11 SMX90 14	Adapter plate for star-delta starter (SM1 breaker and 45mm/1.77" wide contactors BF09A-BF38A)	1	0.118
11 SMX90 18	35mm DIN rail (IEC/EN 60715) for cable bypass of contactor used with SMX90 14 plate	1	0.025
11 SMX90 19	35mm DIN rail extension	1	0.025

Surface mount enclosures.

11 SMX17 10	IP40. 100mm/4in wide	1	0.404
11 SMX17 11	IP40. 85mm/3.3in wide	1	0.358

Flush mount enclosure.

11 SMX17 20	IP40. 122mm/4.8in wide, 103x144mm/4.05x5.67" cutout	1	0.341
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ACCESSORIES FOR ENCLOSURES.

Padlockable rotary actuator.

11 SMX17 30	IP65. Grey-black. For SMX17 10 and SMX17 20 enclosures	1	0.110
11 SMX17 35	IP65. Red-yellow. For SMX17 10 and SMX17 20 enclosures	1	0.142

Actuator with emergency stop button.

11 SMX17 40	IP65. For SMX17 11 enclosure	10	0.174
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IP65 membrane complete with rim.

11 SMX17 45	For SMX17 11 enclosure	10	0.035
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Neutral connection.

11 SMX17 50	For SMX17 10 and SMX17 20 enclosures only	10	0.026
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Pilot light.

23 NEONV	Green	10	0.006
23 NEONR	Red	10	0.006

Marking elements.

BFX30	Blank label for writing	50	0.002
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① To obtain IP65 degree of protection, mount the 11 SMX17 45 membrane.

② The device obtained with this actuator is not suitable for isolation per IEC/EN 60947-2 standards.

③ Complete with required voltage.

Available voltages:

– AC 50/60Hz 24/110/220-240 (indicate 220)/380-415 (indicate 380).

General and operational characteristics

SM1 - CONTACTOR CONNECTION

The SMX90 03, SMX31... and SMX32 41 rigid connections electrically and mechanically fasten the breaker together with the contactor forming a single-unit starter for quick installation on 35mm DIN rail (IEC/EN 60715).

STARTER ASSEMBLY ADAPTER PLATES

The elements consent to preassemble starters and to form trim and compact single-unit equipment for quick and easy installation.

The starter adapter plates install on 35mm DIN rail (IEC/EN 60715).

SURFACE MOUNT ENCLOSURE

– Top or bottom entry:

- PG16 threaded knockouts for SMX17 10
- 22.5mm/0.88" knockouts for SMX17 11

– Rear entry:

- 22.5mm/0.88" knockouts

– Holds a SM1 breaker equipped with one side-mount contact block, one front-mount block (except for SM1C) and either one shunt or undervoltage release

– Earth/ground terminal included

– Operating temperature: -5...+40°C

– Storage temperature: -50...+80°C.

FLUSH MOUNT ENCLOSURE

– Use with breaker, complete with 1 front-mount (except for SM1C) and 1 side-mount blocks and one shunt or undervoltage release

– Earth/ground terminal included

– 103x144mm/4.05x5.67" cutout

– Operating temperature: -5...+40°C

– Storage temperature: -50...+80°C.

ENCLOSURE ACCESSORIES

PADLOCKABLE ROTARY ACTUATOR:

- Suitable for SMX17 10 or SMX17 20 type only
- Raises the degree of protection of the enclosure to IEC IP65
- 3 padlocks maximum.

ACTUATOR WITH EMERGENCY PUSH-BUTTON:

- Suitable for SMX17 11 only
- Raises the degree of protection of the enclosure to IEC IP65.

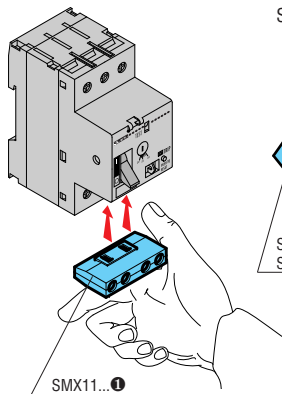
Certifications and compliance

Certifications obtained: GOST for all SMX... types and pilot lights; UL Listed for USA and Canada (File E93602), under motor controllers, for SMX90 03, SMX31 41 and SMX32 41 connections.

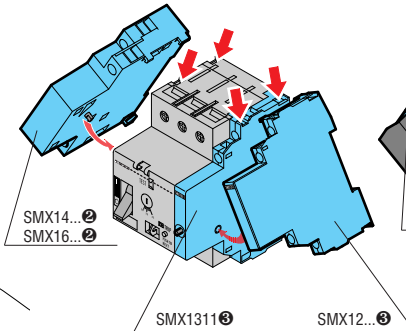
Compliant with standards: IEC/EN 60947-1, UL508, CSA C22.2 n° 14.

Combinations

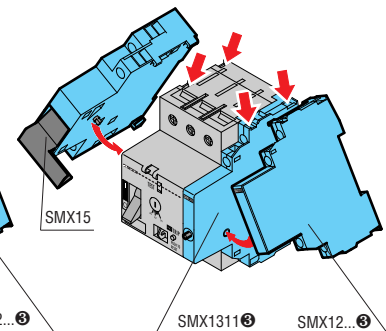
Front-mount contacts



Side-mount contacts
Undervoltage trip release
Shunt trip release

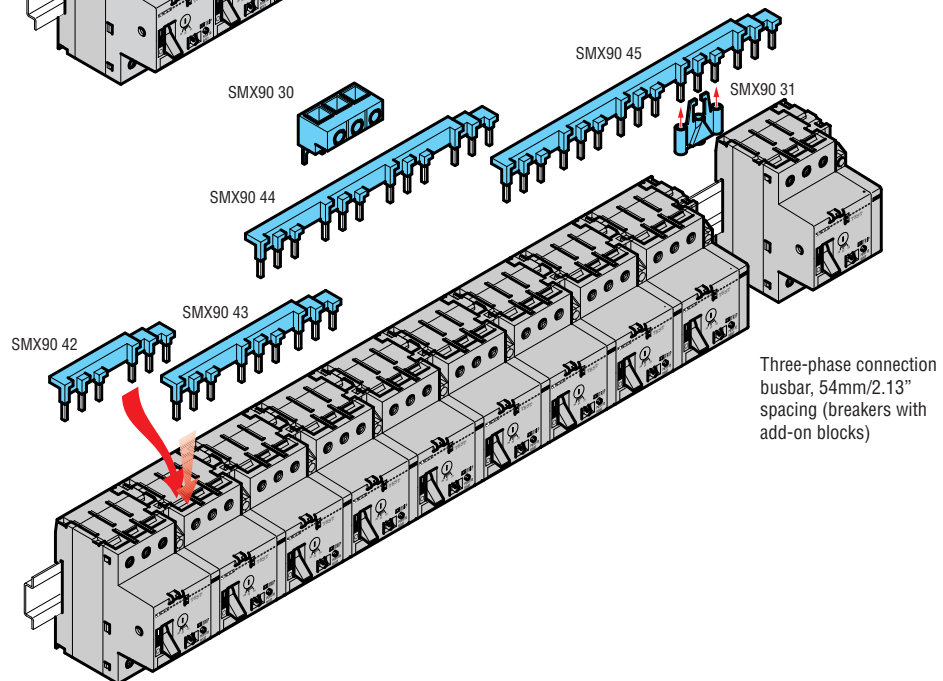
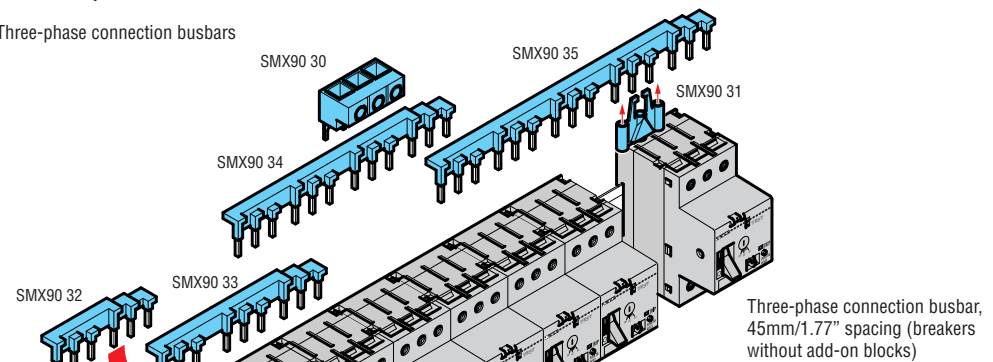


Side-mount contacts
Undervoltage trip release with auxiliary contacts



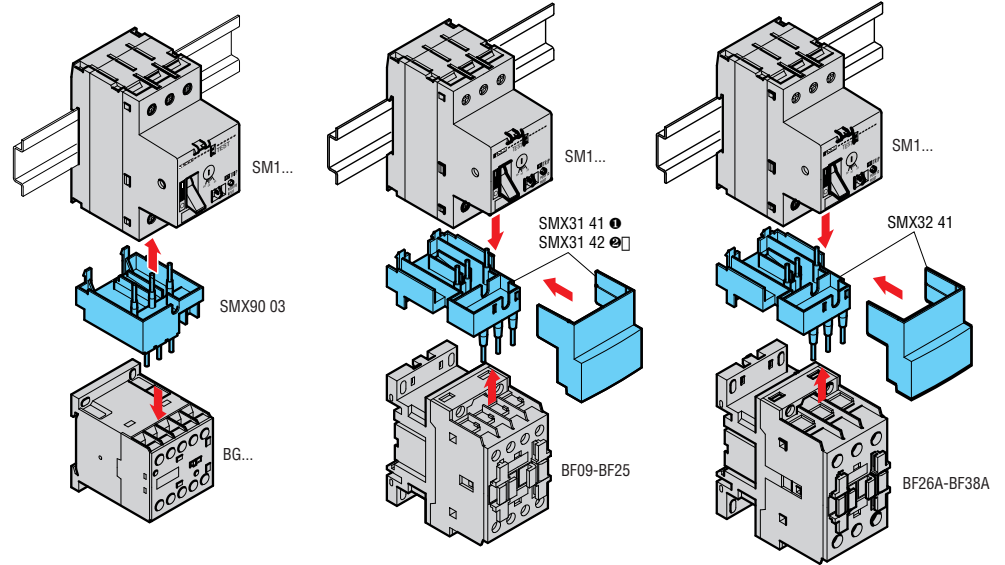
- ❶ Not suitable for use with SM1C type.
- ❷ Only one add-on block can be fixed on the left side of the breaker.
- ❸ One of the following combinations can be mounted on the right side of the breaker:
 - One each of SMX13 11 and SMX12...
 - or one only SMX13 11
 - or one only SMX12 ...

Three-phase connection busbars

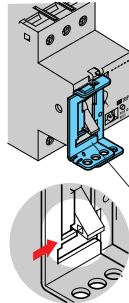


Combinations

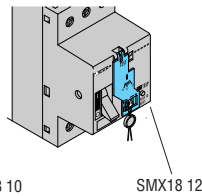
Rigid breaker-connector connection and protection cover



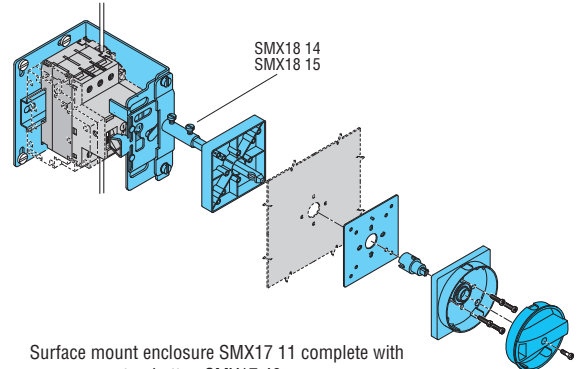
Padlockable attachment for operating lever



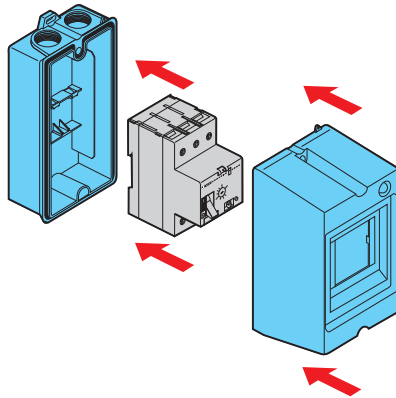
Adjuster sealing kit



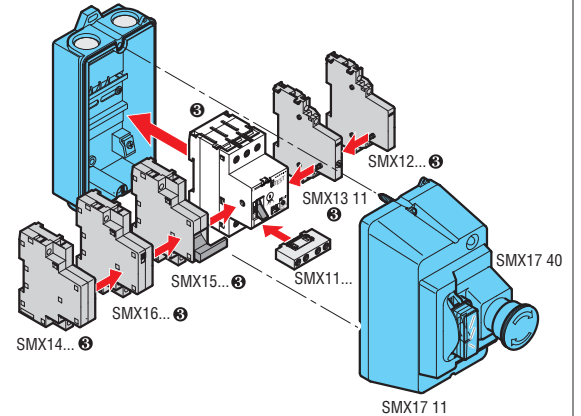
Padlockable door coupling handle



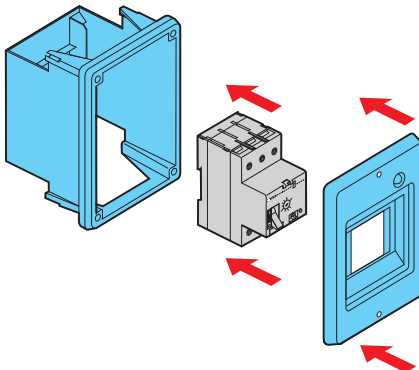
Surface mount enclosure SMX17 10 or SMX17 11



Surface mount enclosure SMX17 11 complete with emergency stop button SMX17 40.



Flush mount enclosure SMX17 20



- ❶ For BF09A-BF25A contactors.
- ❷ For BF09D-BF25D and BF09L-BF25L contactors.
- ❸ One only add-on block can be mounted on each side of the breaker.

1 Add-on blocks and accessories



11 SMX20 11
11 SMX21 11



11 SMX22...



11 SMX23 11



11 SMX24...
11 SMX25...
11 SMX26...

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]
Add-on auxiliary contacts.			
11 SMX20 11	Front mount 1 changeover (SPDT)	10	0.016
11 SMX21 11	Front mount 1NO+1NC	10	0.018
11 SMX22 02	Side mount 2NC	2	0.046
11 SMX22 11	Side mount 1NO+1NC	2	0.046
11 SMX22 20	Side mount 2NO	2	0.046
11 SMX23 11	Side-mount indicator contacts (1NO+1NC) for thermal trip and (1NO+1NC) for magnetic trip	1	0.092
Undervoltage trip releases.			
11 SMX24 BC	110VAC 50/60Hz	1	0.136
11 SMX24 CL	230VAC 50/60Hz	1	0.136
11 SMX24 EA	400VAC 50/60Hz	1	0.136
11 SMX25 CL	230VAC (50/60Hz) with early-make contacts	1	0.136
11 SMX25 EA	400VAC (50/60Hz) with early-make contacts	1	0.136
Shunt trip releases.			
11 SMX26 AF	24VAC 50/60Hz	1	0.132
11 SMX26 BC	110VAC 50/60Hz	1	0.132
11 SMX26 CL	230VAC 50/60Hz	1	0.132
11 SMX26 EA	400VAC 50/60Hz	1	0.132
Padlockable door coupling rotary actuator.			
11 SMX28 05	IP65. 3 padlocks maximum. Black colour	1	0.102
11 SMX28 10	IP65. 3 padlocks maximum. Red/yellow colour	1	0.110

See diagram on p. 1-15 for the exact operation.

General and operational characteristics

ADD-ON AUXILIARY BLOCKS

- Insert on the top front or snap on the left side of the breaker
- Maximum combination: 4 SMX... blocks with 8 auxiliary contacts in total of which 2 on front and 6 on the sides (2 normal contacts and 4 indicators)
- IEC conventional free air thermal current I_{th}: 10A (2.5A for SMX21 11)
- IEC rated insulation voltage U_i: 690V (250V for SMX20... and SMX21...)
- UL/CSA and IEC/EN 60947-5-1 designation: A600 Q300 (C300 R300 for SMX20... and SMX21...)
- Maximum tightening torque: 1-2Nm/10.3lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.5-2.5mm² or 18/14 AWG.

UNDERVOLTAGE TRIP RELEASE

- Snap on to the right side of the breaker
- Consumption inrush/holding: 20.2/7.2 VA; 13/2.4 W
- Drop-out voltage: 0.35-0.7U_s
- Pick-up voltage: 0.85-1.1U_s
- Maximum tightening torque: 1-2Nm/10.3lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.5-2.5mm² or 18/14 AWG.

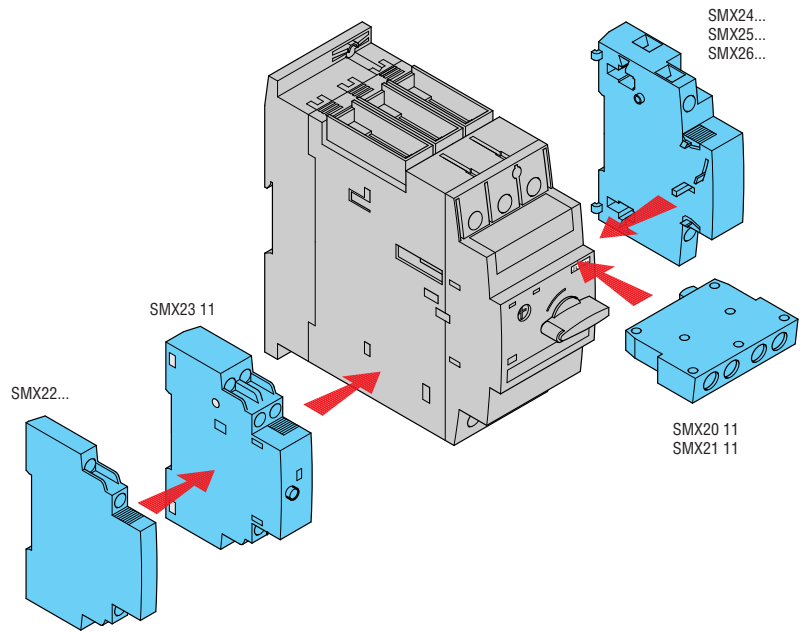
SHUNT TRIP RELEASE

- Snap on to the right side of the breaker
- In-rush consumption: 20.2VA; 13W
- Operating voltage: 0.7-1.1U_s
- Maximum tightening torque: 1-2Nm/10.3lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.5-2.5mm² or 18/14 AWG.

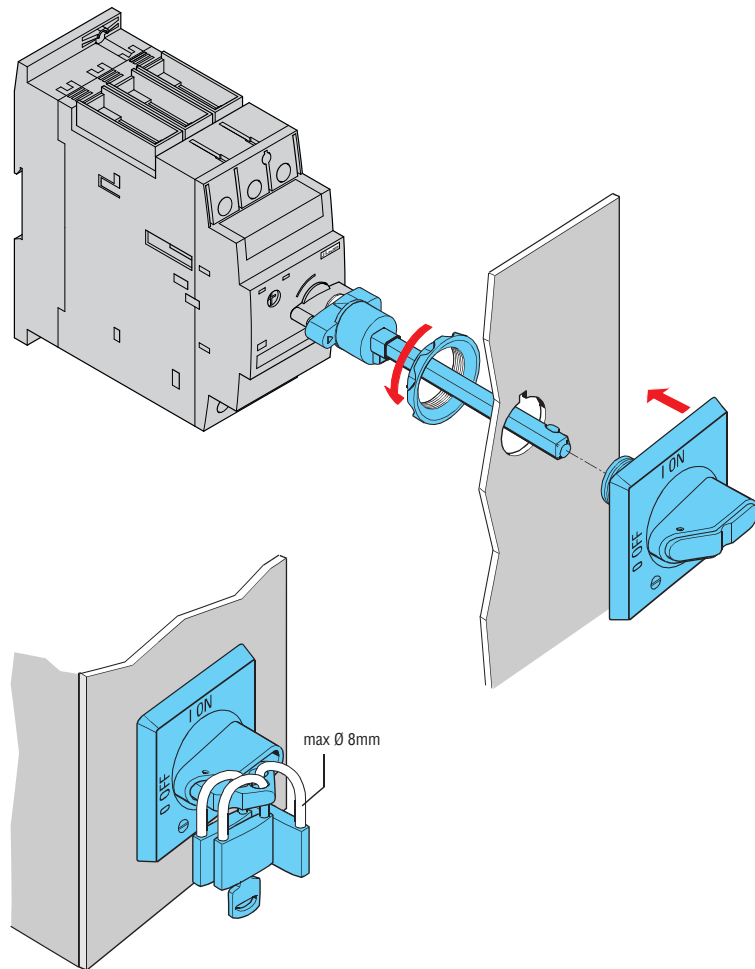
Certifications and compliance

Certifications obtained: GOST; UL Listed, for USA and Canada (File E93601), and CSA Certified (File 703212), as Auxiliary Devices, for auxiliary contacts and releases. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

Combinations



Padlockable door coupling rotary actuator SMX28 05 - SMX28 10



1 Manual motor starter LMS25 up to 25A



11 LMS 25...

Order code	Thermal trip adjustment range	Short circuit breaking capacity (IEC) at 400V		Qty per pkg	Wt
		Icu	Ics		
	[A]	[kA]	[kA]	n°	[kg]

IEC breaking capacity Icu at 400V: 100kA (0.1-6.3A) / 4kA (10-25A) at 400V / 6kA (6.3-10A).

11 LMS25 016T	0.1 - 0.16	100	100	5	0.193
11 LMS25 025T	0.16 - 0.25	100	100	5	0.193
11 LMS25 04T	0.25 - 0.4	100	100	5	0.193
11 LMS25 063T	0.4 - 0.63	100	100	5	0.193
11 LMS25 1T	0.63 - 1	100	100	5	0.193
11 LMS25 1V6T	1 - 1.6	100	100	5	0.193
11 LMS25 2V5T	1.6 - 2.5	100	100	5	0.266
11 LMS25 4T	2.5 - 4	100	100	5	0.266
11 LMS25 6V3T	4 - 6.3	100	100	5	0.266
11 LMS25 10T	6.3 - 10	6	3	5	0.266
11 LMS25 16T	10 - 16	4	2	5	0.266
11 LMS25 20T	16 - 20	4	2	5	0.266
11 LMS25 25T	20 - 25	4	2	5	0.266

General characteristics

The LMS25 manual motor starter is particularly suitable for controlling small operating machines. Releases and auxiliary contacts make it also suitable for more complex uses. Wall and flush-mount enclosures allow to install the LMS25 starter in the most disparate environmental conditions (dust, humidity, aggressive environmental agents, etc.).

Operational characteristics

- IEC rated insulation voltage Ui: 690V
- IEC rated impulse withstand voltage: 6kV
- IEC rated frequency: 50/60Hz
- Maximum rated current: 25A
- 13 adjustment ranges 0.1 to 25A
- IEC breaking capacity: see table on page 1-17
- Power dissipation: 2-15W
- Magnetic tripping: 12In max
- IEC thermal tripping class: 10
- Phase failure / Single phase sensitive
- Mechanical life: 100,000 cycles
- Electrical life 25A (IEC AC3): 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715) or screw fixing
- Mounting position: Any
- IEC utilisation category: A
- IEC degree of protection: IP20.

Certifications and compliance

Certifications obtained: GOST; UL Listed for USA and Canada (File E155982). See UL/CSA details under NOTE below bottom table.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

NOTE: When more than one breaker are mounted, side by side, without leaving space between each to consent free air circulation on the breaker sides, and have simultaneous operation, the thermal trip adjuster must be positioned at a value 15% greater than the rated motor current.

Maximum UL/CSA horsepower rating

Type	Thermal adjustment range ① [A]	1 Phase [HP] ②		3 Phase [HP]				FLA max at 600V [A]
		120V	230V	200-208V	230V	480V	600V	
LMS25 016T	0.1-0.16	-	-	-	-	-	-	0.16-
LMS25 025T	0.16-0.25	-	-	-	-	-	-	0.25
LMS25 04T	0.25-0.4	-	-	-	-	-	-	0.4
LMS25 063T	0.4-0.63	-	-	-	-	-	-	0.63
LMS25 1T	0.63-1	-	-	-	-	-	½	1
LMS25 1V6T	1-1.6	-	-	-	-	¾	¾	1.6
LMS25 2V5T	1.6-2.5	-	⅙	½	½	1	1½	2.5
LMS25 4T	2.5-4	⅙	¼	¾	1	2	3	4
LMS25 6V3T	4-6.3	¼	½	1½	1½	3	5	6.3
LMS25 10T	6.3-10	½	1	2	3	5	7 ½	10
LMS25 16T	10-16	1	2	3	5	10	10	16
LMS25 20T	16-20	1½	3	5	5	10	15	20
LMS25 25T	20-25	2	3	5	7½	15	20	25

NOTE:
UL Listed in USA and Canada as manual motor controller. Fuses only 30A suitable for use on a circuit capable of delivering not more than 5000rms symmetrical amperes, 600VAC. Trip current is 125%.

- ① The appropriate thermal trip range of the controller should be selected on the basis of the motor nameplate full-load current since the horsepower ratings given are for indication and reference purposes only.
- ② Single-phase horsepower ratings are based on wiring the three poles in series; see wiring scheme on page 1-15.

Add-on blocks and accessories



11 LMH...



11 LMU... - 11 LMA...



11 SMX90 32



11 SMX90 30



11 LMZ111 - 11 LMZ112



11 LMZ113 - 11 LMZ114



11 LMZ105

11 LMZ106



11 LMNPE



23 NEON...V

Order code	Characteristics	Qty per pkg	Wt [kg]
		n°	[kg]
Add-on auxiliary contacts. Side mount.			
11 LMH 01	1NC	10	0.037
11 LMH 10	1NO	10	0.036
11 LMH 11	1NO + 1NC	10	0.042
11 LMH 20	2NO	10	0.037
Undervoltage trip release.			
11 LMU ^①	To fit inside starter. For all types	10	0.066
Shunt trip release.			
11 LMA ^①	To fit inside starter. For all types	10	0.064
Terminal block for busbar supply.			
11 SMX90 30	For all types	10	0.048
Three-phase connection busbars 45mm/1.77" spacing.			
11 SMX90 32	For 2 breakers without side-mount contacts	10	0.028
11 SMX90 33	For 3 breakers without side-mount contacts	10	0.050
11 SMX90 34	For 4 breakers without side-mount contacts	10	0.071
11 SMX90 35	For 5 breakers without side-mount contacts	10	0.092
Three-phase connection busbars 54mm/2.13" spacing.			
11 SMX90 42	For 2 breakers complete with side-mount contacts	10	0.031
11 SMX90 43	For 3 breakers complete with side-mount contacts	10	0.056
11 SMX90 44	For 4 breakers complete with side-mount contacts	10	0.081
11 SMX90 45	For 5 breakers complete with side-mount contacts	10	0.089
Surface mount enclosures.			
11 LMZ 111	IP55. 80mm/3.15" wide	1	0.260
11 LMZ 112	IP54. 80mm/3.15" wide	1	0.273
Flush mount enclosures.			
11 LMZ 113	IP55. 85mm/3.35" wide	1	0.204
11 LMZ 114	IP41. 85mm/3.35" wide	1	0.184
ACCESSORIES FOR ENCLOSURES.			
Locking mechanism.			
11 LMZ 105	3 padlocks maximum	10	0.091
Emergency stop button. IP55 protection.			
11 LMZ 106	For LMZ 111, LMZ113 and LMZ 114	1	0.051
Neutral connection.			
11 LMN PE	For all types	10	0.010
Pilot light.			
23 NEON ^② V	Green	10	0.006
23 NEON ^② V	Red	10	0.006
Spare rubber membrane complete with rim for enclosures.			
11 LMM	For LMZ 111, LMZ113 and LMZ 114 enclosures	10	0.012
M25 to PG16 entry adapter.			
11 LM M25 PG16	For LMZ111 and LMZ112 enclosures	10	0.009

^① Specify rated voltage. Add suffix 60 if frequency is 60Hz. Available voltages:
 - AC 50Hz 24/48/110/220-240 (indicate 220)/380-415 (indicate 380)/440-460 (indicate 440)/480 and 575VAC.

^② Complete with required voltage. Available voltages:
 - AC 50/60Hz 24/110/220-240 (indicate 220)/380-415 (indicate 380).

General and operational characteristics

ADD-ON AUXILIARY CONTACTS

- Connectable to right or left side of starter
- Maximum combination: 2 LMH... blocks, one on right and one on left side of starter (4 auxiliary contacts max in total)
- IEC rated insulation voltage U_i : 500V
- IEC conventional free air thermal current I_{th} : 6A
- IEC operational current AC15: 3.5A 230V; 2A 400V
- Protection fuse (gL or gG): 6A maximum
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm² or 18/14AWG
- Width of the auxiliary contacts LMH... equal to 0.5 standard DIN43880 modules.

UNDERVOLTAGE AND SHUNT TRIP RELEASES

- Must be fitted inside the motor starter.

	Undervoltage	Shunt
Release range	0.35-0.7Us	—
Operating range	0.85-1.1Us	0.7-1.1Us
On-load factor	100%	—

THREE-PHASE CONNECTION BUSBAR

- I_{max} 63A
- SMX90 3... 45mm/1.77" spacing to reduce the width to the minimum
- SMX90 4... 54mm/2.13" spacing to consent to fit one side mount auxiliary contact block on the breaker
- Conductor cross section minimum-maximum terminal block for busbar supply: 4-25mm² or 10/4 AWG.

TERMINAL BLOCK FOR BAR SUPPLY

- I_{max} 63A
- Conductor cross section minimum-maximum: 4-25mm² or 10/4 AWG.

SURFACE MOUNT ENCLOSURE

- Top or bottom entry:
 - M25 threaded knockouts
- Rear entry:
 - 15.5mm/0.6" knockouts
- Up to two auxiliary contact blocks may be mounted
- Earth/ground terminal included
- Operating temperature: -5...+40°C
- Storage temperature: -50...+80°C.

FLUSH MOUNT ENCLOSURE

- Window size 70x115mm/2.76x4.53"
- Up to two auxiliary contact blocks may be mounted
- Earth/ground terminal included
- Operating temperature: -5...+40°C
- Storage temperature: -50...+80°C.

ACCESSORIES FOR ENCLOSURES

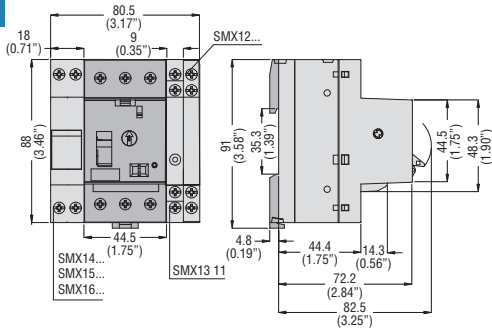
- Locking mechanism:
 - Prevents closing operation; 3 padlocks maximum.
- Emergency stop button:
 - Turn to release
 - Red push-button \varnothing 35mm/1.38"

NOTE: Once mounted on the enclosure, these accessories raise the degree of protection from IP41 to IP55.

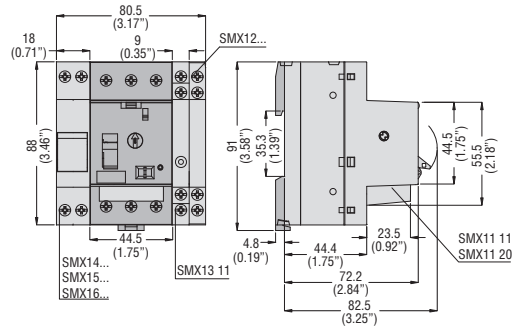
Certifications and compliance

Certifications obtained: GOST for all; UL Listed for USA and Canada (File E155982), under motor controllers, for auxiliary contacts and trip releases. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

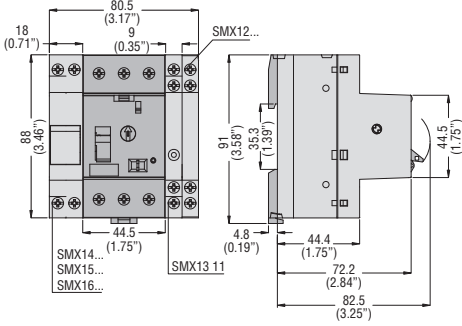
1 Breakers SM1A - SM1B with side-mount auxiliary contacts only



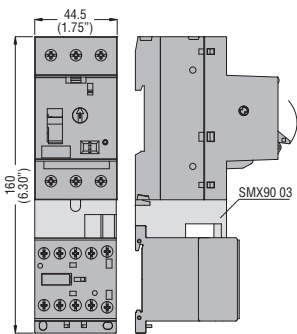
SM1A - SM1B with front and side-mount auxiliary contacts



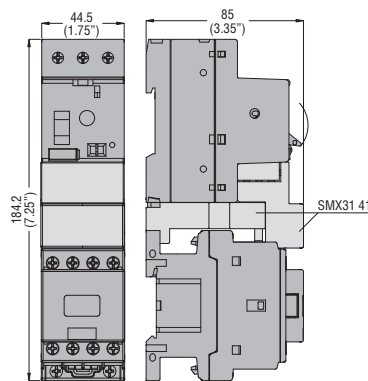
SM1C with side-mount auxiliary contacts only



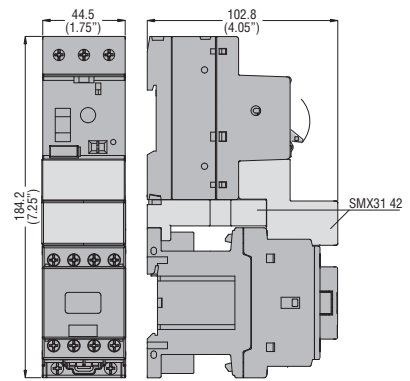
Breakers SM1 with SMX90 03 connector and BG contactors



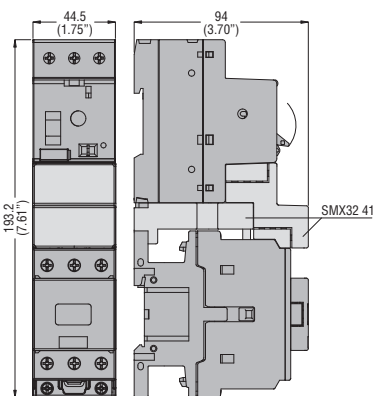
SM1 with SMX31 41 connector and BF09A-BF25A contactors



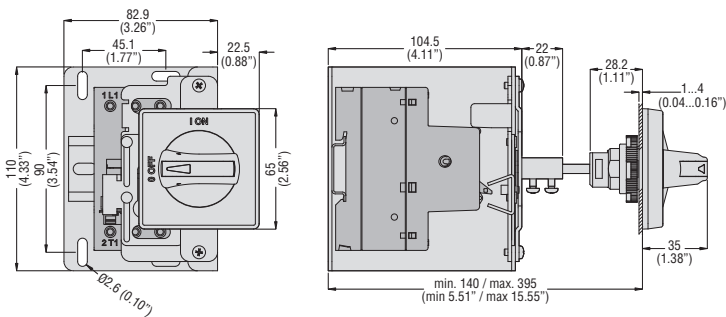
SM1 with SMX31 42 connector and BF09D/L-BF25D/L contactors



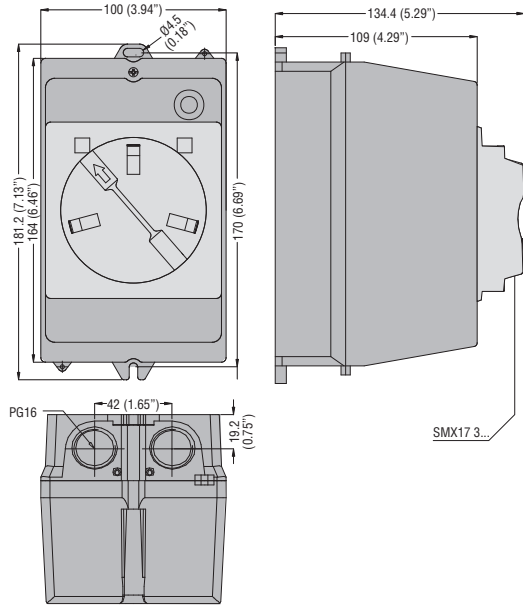
SM1 with SMX32 41 connector and BF26A-BF38A contactors



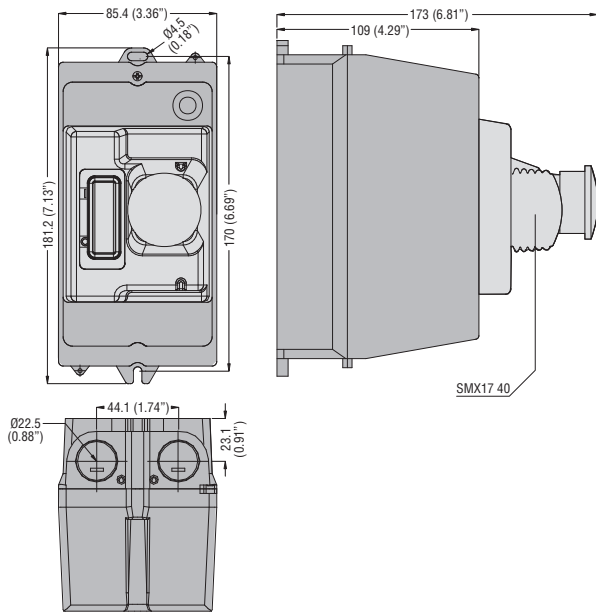
SM1... with SMX18 14 or SMX18 15 door coupling handle



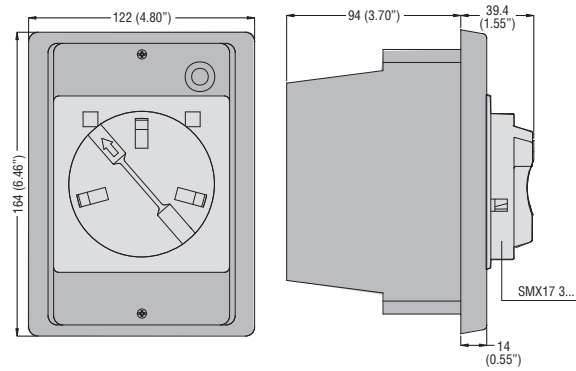
Enclosures **SMX17 10** with SMX17 30 or SMX17 35 handle



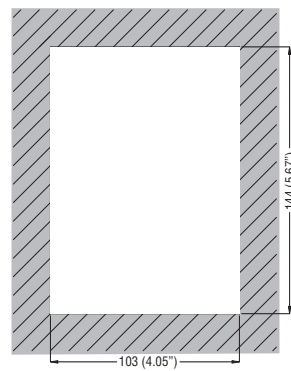
SMX17 11 with SMX17 40 button



SMX17 20 with SMX17 30 or SMX17 35 handle

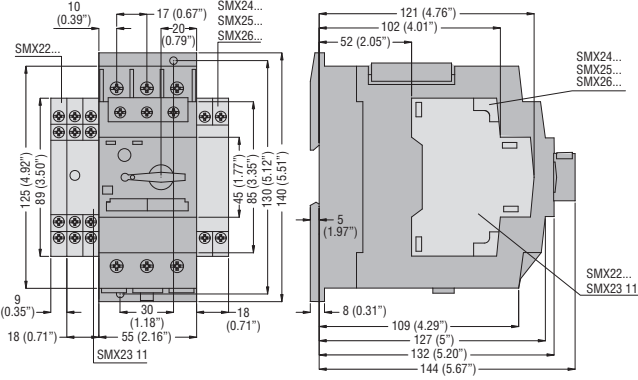


Cutout

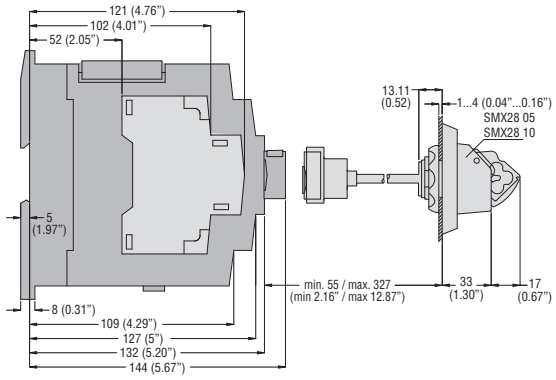


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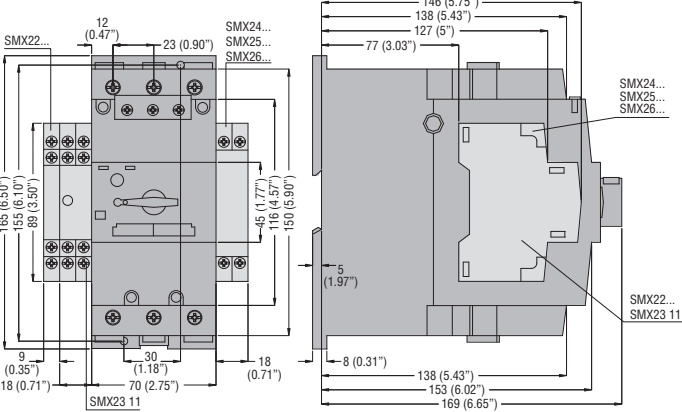
Breakers **SM2A** with side-mount SMX2... blocks



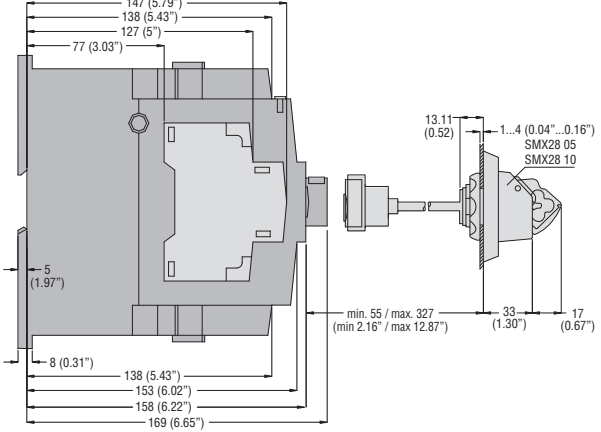
SM2A with SMX28 05 or SMX28 10 door coupling handle



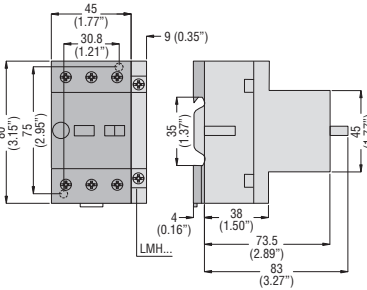
Breakers **SM3A** with side-mount SMX2... blocks



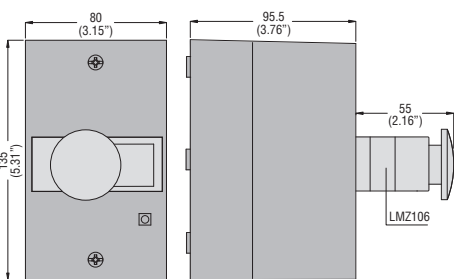
SM3A with SMX28 05 or SMX28 10 door coupling handle



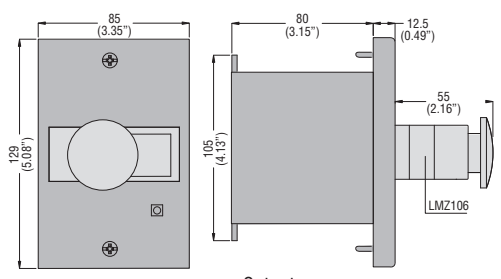
Manual starters **LMS25** with side-mount LMH... contacts



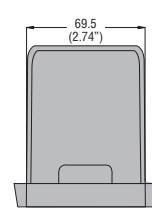
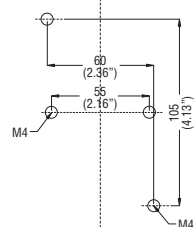
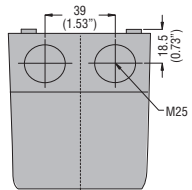
Enclosures **LMZ111 - LMZ112** with LMZ106 emergency stop button



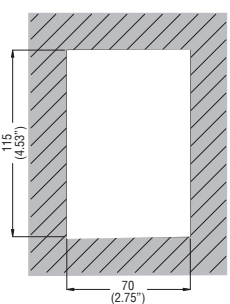
LMZ113 - LMZ114 with LMZ106 emergency stop button



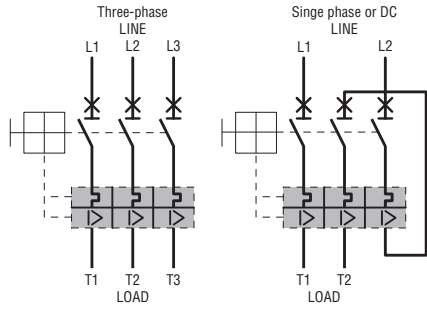
Surface fixing Enclosure rear drillings



Cutout



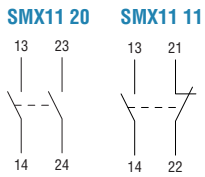
MOTOR PROTECTION CIRCUIT BREAKERS SM1A... – SM1B... – SM1C... and SM2A... – SM3A... and LMS25...



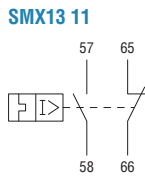
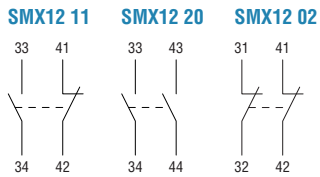
ADD-ON BLOCKS

For SM1... types

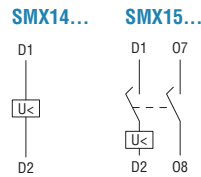
Front mount auxiliary contacts



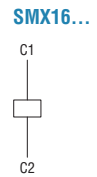
Side mount auxiliary contacts



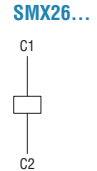
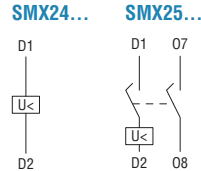
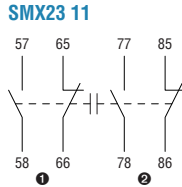
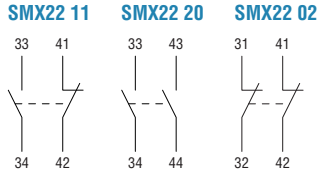
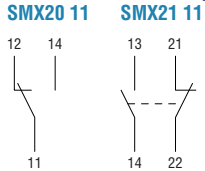
Side mount undervoltage trip releases



Side mount shunt trip release



For SM2A... and SM3A types



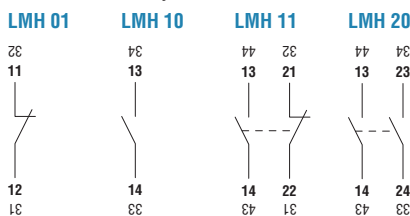
① Change in event of magnetic and/or thermal tripping.
② Change in event of magnetic tripping.

NOTE: During breaker testing, only contacts 57-58 and 65-66 switch.

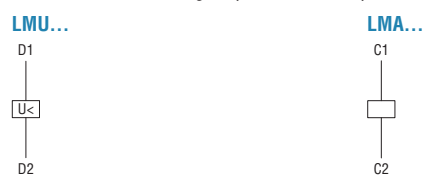
For LMS25 types

The termination of the LMH... auxiliary contacts has more than one numbering due to the fact that the block can assume various mounting positions. The numbering in boldface indicates when it is mounted on the left side of the breaker.

Side-mount auxiliary contacts



Inside-fitted undervoltage trip and shunt trip releases



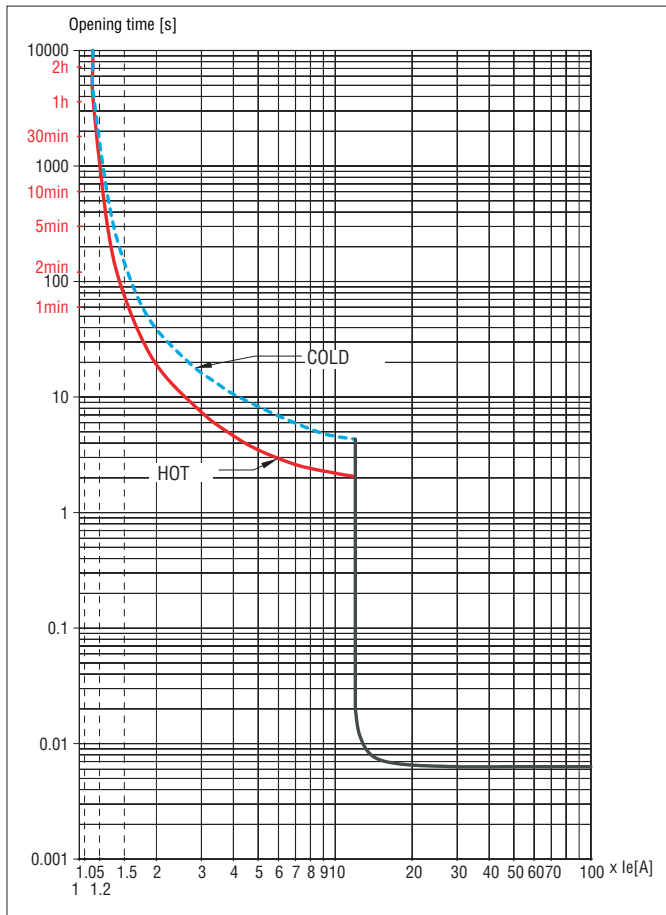
1

TYPE		SM1A	SM1B	SM1C	SM2A	SM3A	LMS25	
CONTACT AND RELEASE CHARACTERISTICS								
Rated insulation voltage U_i	V	690						
Rated frequency	Hz	50/60						
Rated impulse voltage U_{imp}	kV	6						
Maximum rated current	A	32	32	32	50	100	25	
Number of adjustment ranges	N°	5	15	15	3	4	13	
Power dissipation	W	2.2-9.7	2.2-9.7	2.2-9.7	7.1-20	10-38	2-15	
Magnetic tripping	A	$12 \times I_n$	$12 \times I_n$	$12 \times I_n$	$13 \times I_n$	$13 \times I_n$	$12 \times I_n$	
Mechanical life	cycles	100,000	100,000	100,000	25,000	25,000	100,000	
Electrical life (I_e max AC3)	cycles	100,000	100,000	100,000	50,000	50,000	100,000	
Maximum tightening torque for terminals	Nm	2.3	2.3	2.3	4.5	6	1.8	
	lbin	20	20	20	40	53	16	
	Tool	PH2	PH2	PH2	PZ2	Allen 4mm	PZ2	
Minimum-maximum conductor section connectable 1 or 2 wires	AWG	N°	16-10	16-10	16-10	18-3	10-1/0	14-8
	Flexible without lug	mm ²	1-6	1-6	1-6	0.75-25	10-50	0.75-4
AMBIENT CONDITIONS								
Temperature	Operating	°C	-20...+60❶	-20...+60❶	-20...+60❶	-20...+70❶	-20...+70❶	-25...+60❶
	Storage	°C	-50...+80	-50...+80	-50...+80	-50...+80	-50...+80	-25...+70
	Compensation	°C	-20...+50	-20...+50	-20...+50	-20...+50	-20...+50	-5...+40
Maximum altitude	m	3000						
Mounting position		Any						
Mounting		35mm DIN rail (IEC/EN 60715)			Screw fixing or 35mm DIN rail (IEC/EN 60715)	Screw fixing or DIN rail 35mm (IEC/EN 60715) or 75mm (IEC/EN 60715)	Screw fixing or 35mm DIN rail (IEC/EN 60715)	

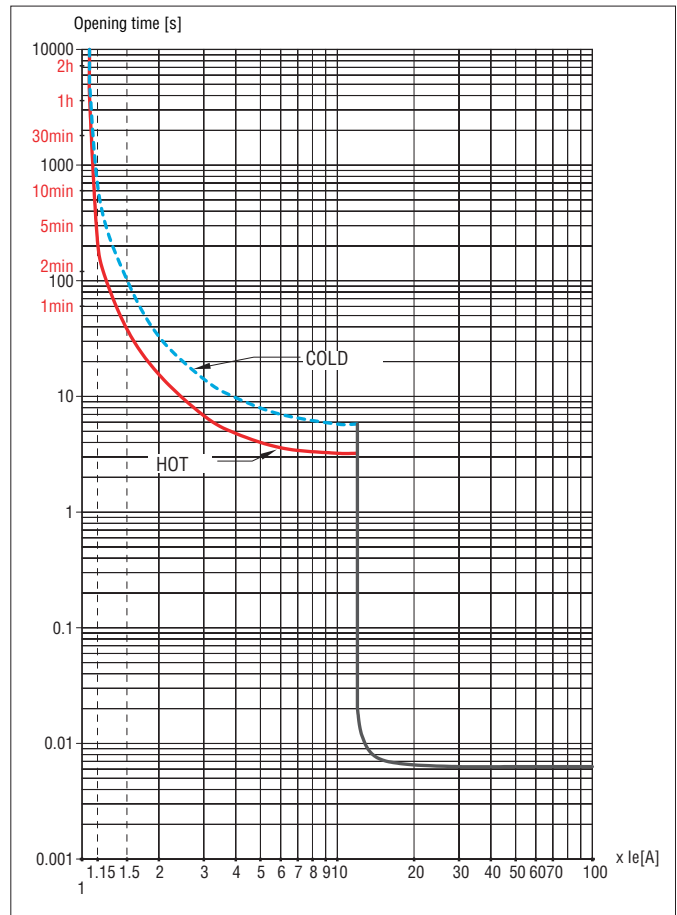
❶ When fitting more than one breaker side by side, without leaving space between each to consent free air circulation on the breaker sides, and have simultaneous operation, the thermal trip adjuster must be positioned at a value 15% higher than the rated motor current.
 N.B. PH = Phillips; PZ = Pozidriv; Allen is metric type.

THERMAL TRIPPING CURVE (AVERAGE TIME)

Three-phase balanced operation



Two-phase operation (phase failure/single phasing)



Tripping times can have a ±20% deviation with respect to the average tripping curve values above.

IEC breaking capacity

Type	IEC rated short-circuit breaking capacity [kA]								Protection fuses when $I > I_{cu}$ (IEC gL or gG fuses) ①			
	230V		400V		500V		690V		230V	400V	500V	690V
	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	[A]	[A]	[A]	[A]
SM1A 40	100	100	50	25	10	5	4	2	▲	100	80	63
SM1A 44...SM1A 56	100	100	50	25	10	5	4	2	▲	125	80	63
SM1B 00...SM1B 20	100	100	100	100	100	100	100	100	▲	▲	▲	▲
SM1B 24...SM1B 28	100	100	100	100	100	100	8	8	▲	▲	▲	35
SM1B 32	100	100	100	100	100	100	8	8	▲	▲	▲	40
SM1B 36	100	100	100	100	42	21	8	8	▲	▲	63	50
SM1B 40	100	100	25	12.5	10	5	2	2	▲	80	63	50
SM1B 44...SM1B 56	100	100	25	12.5	4	2	2	2	▲	100	80	63
SM1C 00...SM1C 20	100	100	100	100	100	100	100	100	▲	▲	▲	▲
SM1C 24...SM1C 28	100	100	100	100	100	100	8	8	▲	▲	▲	35
SM1C 32	100	100	100	100	100	100	8	8	▲	▲	▲	40
SM1C 36	100	100	100	100	42	21	8	8	▲	▲	63	50
SM1C 40	100	100	25	12.5	10	5	2	2	▲	80	63	50
SM1C 44...SM1C 56	100	100	25	12.5	4	2	2	2	▲	100	80	63
SM2A 68 - SM2A 72	100	100	50	25	10	5	4	2	▲	160	100	63
SM2A 76	100	100	50	25	10	5	4	2	▲	160	100	80
SM3A 84	100	100	50	25	12	6	6	3	▲	160	100	80
SM3A 88	100	100	50	25	8	4	5	3	▲	160	125	100
SM3A 92 - SM3A 96	100	100	50	25	8	4	5	3	▲	160	125	125
LMS25 016T - LMS25 025T - LMS25 04T - LMS25 063T - LMS25 1T - LMS25 1V6T -	100	100	100	100	100	100	100	100	▲	▲	▲	▲
LMS252V5T	100	100	100	100	3	3	2.5	2.5	▲	▲	25	20
LMS25 4T	100	100	100	100	3	3	2.5	1.9	▲	▲	35	25
LMS25 6V3T	100	100	100	100	3	2.2	2.5	1.9	▲	▲	50	35
LMS25 10T	100	100	6	3	3	2.2	2.5	1.9	▲	80	50	35
LMS25 16T	6	6	4	2	2.5	1.9	2	1.5	80	80	63	35
LMS25 20T - LMS25 25T	6	4.5	4	2	2.5	1.9	2	1.5	80	80	63	50

① Fuses are used only in those cases when the value of short-circuit current at the breaker installation point exceeds the breaking capacity of the breaker.

▲ Fuse not required.