SM1B Motor Protective Circuit Breaker Datasheet

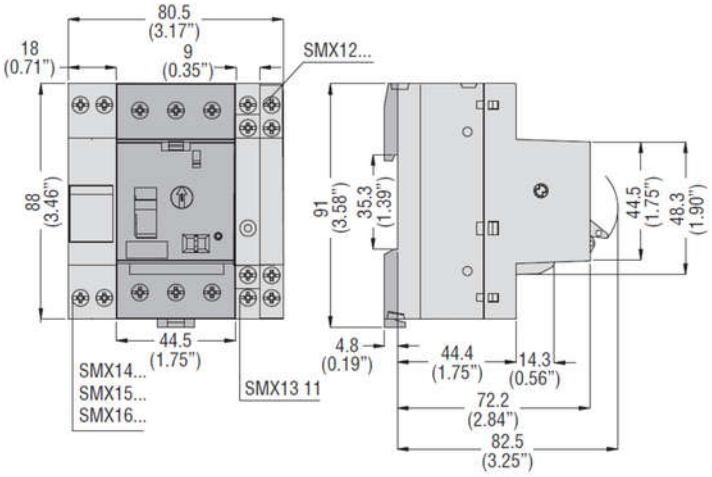
Order code	Thermal trip adjustment range	Short circuit breaking capacity at 400V Icu	Ics	Qty per pkg	Wt
	[A]	[kA]	[kA]	n°	[kg]
IEC breaking capacity Icu 100kA (0.1-10A) / 25kA (9-32A) at 400V.					
11 SM1B 00	0.1-0.16	100	100	5	0.278
11 SM1B 04	0.16-0.25	100	100	5	0.278
11 SM1B 08	0.25-0.4	100	100	5	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

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.

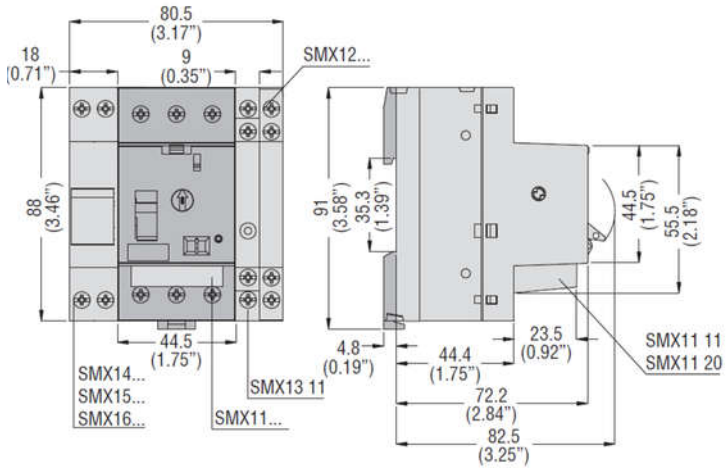
Certifications and compliance
Certifications obtained: EAC; and UL Listed, for USA and Canada (cULus - File E93602); CCC for some SM1B types only (consult Customer Service for details; see contact details on inside front cover).
See UL/CSA details under NOTE on the bottom left side.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

CONTACT AND RELEASE CHARACTERISTICS		
Rated insulation voltage Ui	V	690
Rated impulse voltage Uimp	kV	6
Rated frequency	Hz	50/60
Maximum rated current	A	32
Number of adjustment ranges	N°	15
Power dissipation	W	2.2-9.7
Magnetic tripping	A	12 x In
Mechanical life	cycles	100,000
Electrical life (Ie max AC3)	cycles	100,000
Maximum tightening torque for terminals	Nm	2.3
	lbin	20
	Tool	PH2
Minimum-maximum conductor section connectable 1 or 2 wires		
AWG	N°	16-10
Flexible without lug	mm^2	1-6
AMBIENT CONDITIONS		
Temperature Operating	°C	-20...+60
Storage	°C	-50...+80
Compensation	°C	-20...+50
Maximum altitude	m	3000
Mounting position		Any

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



SM1A - SM1B
with front and side-mount auxiliary contacts



1


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 20❶	Front mount 2NO	10	0.013
11 SMX11 11❶	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+1NC❷	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. Red/yellow	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/1.77" 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/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	0.081

❶ Not suitable for fixing on SM1C types.
❷ 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 Ith: 6A (2.5A for SMX11...)
- IEC rated insulation voltage Ui: 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 mm^2 or 18/14 AWG
- 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): 0.75-2.5mm^2 or 18/14 AWG.

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): 0.75-2.5mm^2 or 18/14 AWG.

TERMINAL BLOCK FOR BUSBAR SUPPLY
- Imax 63A
- Maximum tightening torque: 2.3Nm/20lbin
- Conductor cross section minimum-maximum: 4-25mm^2 or 10/4 AWG.

THREE-PHASE CONNECTION BUSBAR
- Imax 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.

Certifications and compliance

Certifications obtained: EAC for all; UL Listed, for USA and Canada (cULus - File E93602), under motor controllers, for auxiliary contacts, releases and padlockable attachment of 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/4" wide	1	0.404
11 SMX17 11❶	IP40. 85mm/3.3" wide	1	0.358
Flush mount enclosure.			
11 SMX17 20	IP40. 122mm/4.8" wide, 103x144mm/4.05x5.67" cutout	1	0.341
ACCESSORIES FOR ENCLOSURES. Padlockable rotary actuator.			
11 SMX17 30❷	IP65. Grey-black. For SMX17 10 and SMX17 20 enclosures	1	0.110
11 SMX17 35❷	IP65. Red-yellow. For SMX17 10 and SMX17 20 enclosures	1	0.142
Actuator with emergency stop button.			
11 SMX17 40❷	IP65. For SMX17 11 enclosure	10	0.174
IP65 membrane complete with rim.			
11 SMX17 45	For SMX17 11 enclosure	10	0.035
Neutral connection.			
11 SMX17 50	For SMX17 10 and SMX17 20 enclosures only	10	0.026
Pilot light.			
23 NEONV❸V	Green	10	0.006
23 NEONR❸V	Red	10	0.006
Marking elements.			
BFX30	Blank label for writing	50	0.002

❶ To obtain IP65 degree of protection, mount the 11 SMX17 45 membrane.
❷ The device obtained with this actuator is not suitable for isolation per IEC/EN 60947-2 standards.
❸ Complete with required voltage. Available voltages:
– AC 50/60Hz 24/110/220-240 (indicate 220)/380-415 (indicate 380) VAC.

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: EAC for all SMX... types and pilot lights; UL Listed for USA and Canada (cULus - 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.

1

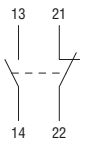
ADD-ON BLOCKS
For SM1… types

Front mount auxiliary contacts

SMX11 20

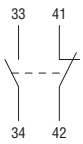


SMX11 11



Side mount auxiliary contacts

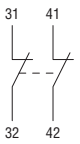
SMX12 11



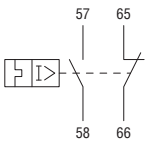
SMX12 20



SMX12 02



SMX13 11



Side mount undervoltage trip releases

SMX14…

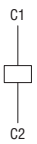


SMX15…



Side mount shunt trip release

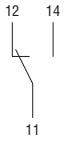
SMX16…



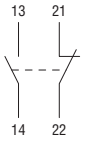
For SM2A… and SM3A types

Front mount auxiliary contacts

SMX20 11

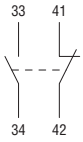


SMX21 11



Side mount auxiliary contacts

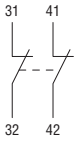
SMX22 11



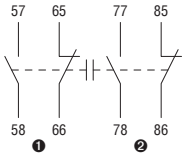
SMX22 20



SMX22 02



SMX23 11



Side mount undervoltage trip releases

SMX24…

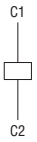


SMX25…



Side mount shunt trip release

SMX26…



❶ Change in event of magnetic and/or thermal tripping.
❷ 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

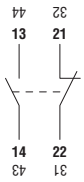
LMH 01



LMH 10



LMH 11



LMH 20

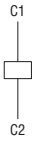


Inside-fitted undervoltage trip and shunt trip releases

LMU…



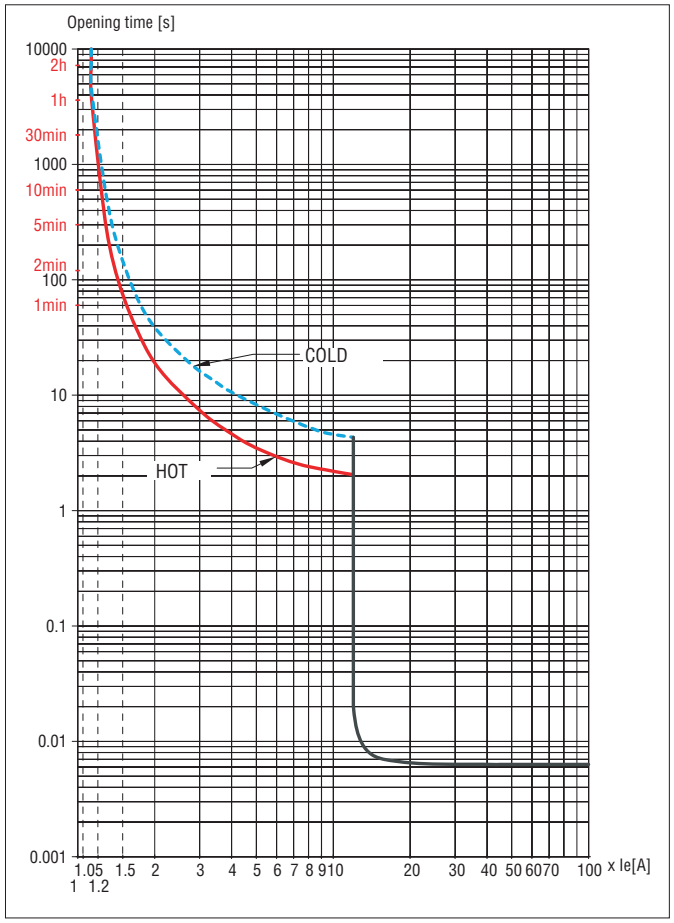
LMA…



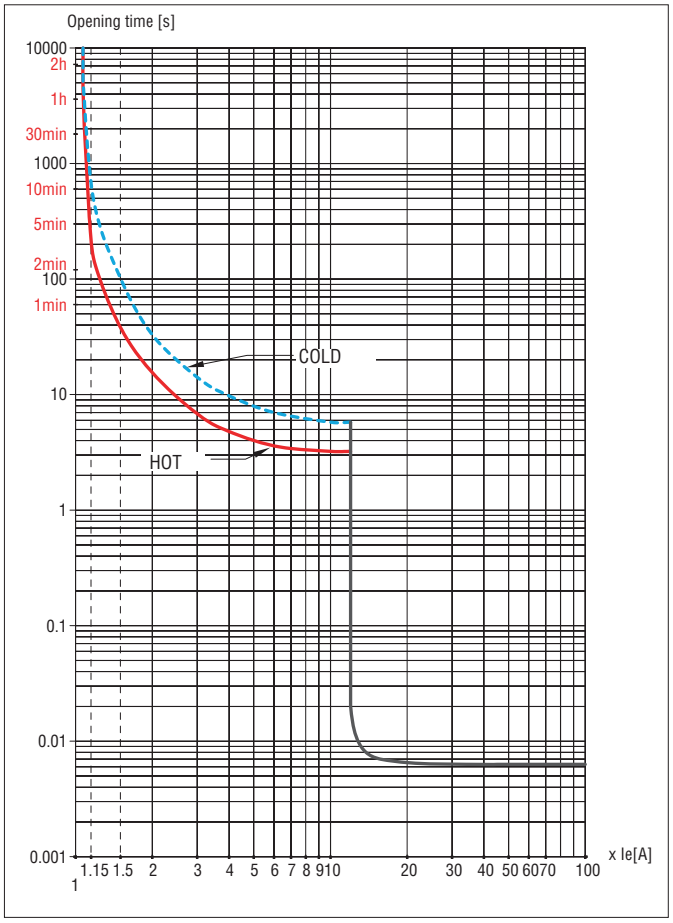
Technical characteristics

THERMAL TRIP CHARACTERISTIC (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.