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Motor protection circuit breakers SM1... up to 40A. Magnetic and thermal protection



SM1P...



SM1R...



Order code	Thermal trip adjustment range		Short circuit breaking capacity at 400V		Qty per pack	Wt
	[A]	[A]	Icu [kA]	Ics [kA]		
Button control.						
SM1P 0016	0.1...0.16		100	100	1	0.280
SM1P 0025	0.16...0.25		100	100	1	0.280
SM1P 0040	0.25...0.4		100	100	1	0.280
SM1P 0063	0.4...0.63		100	100	1	0.280
SM1P 0100	0.63...1		100	100	5	0.280
SM1P 0160	1...1.6		100	100	5	0.280
SM1P 0250	1.6...2.5		100	100	5	0.350
SM1P 0400	2.5...4		100	100	5	0.350
SM1P 0650	4...6.5		100	100	5	0.350
SM1P 1000	6.3...10		100	100	5	0.350
SM1P 1400	9...14		25	12.5	5	0.350
SM1P 1800	13...18		25	12.5	5	0.350
SM1P 2300	17...23		15	5	1	0.350
SM1P 2500	20...25		15	5	1	0.350
SM1P 3200	24...32		10	5	1	0.350
SM1P 4000	30...40		10	5	1	0.350
Rotating type.						
SM1R 0016	0.1...0.16		100	100	1	0.320
SM1R 0025	0.16...0.25		100	100	1	0.320
SM1R 0040	0.25...0.4		100	100	1	0.320
SM1R 0063	0.4...0.63		100	100	1	0.320
SM1R 0100	0.63...1		100	100	5	0.320
SM1R 0160	1...1.6		100	100	5	0.320
SM1R 0250	1.6...2.5		100	100	5	0.320
SM1R 0400	2.5...4		100	100	5	0.390
SM1R 0650	4...6.5		100	100	5	0.390
SM1R 1000	6.3...10		100	100	5	0.390
SM1R 1400	9...14		100	100	5	0.390
SM1R 1800	13...18		100	100	5	0.390
SM1R 2300	17...23		50	25	1	0.390
SM1R 2500	20...25		50	25	1	0.390
SM1R 3200	24...32		50	25	1	0.390
SM1R 4000	30...40		20	25	1	0.390

General characteristics

SM1P... and SM1R... are modern circuit breakers with thermal and magnetic trip releases and high breaking capacity.

Motor control and protection of up to 22kW (400V) are possible by choosing the suitable adjustment range, from 0.1 to 40A.

The dimensions of SM1P... breakers are compliant with the DIN43880 standard, allowing them to be mounted in all modular enclosures on the market.

A magnetic trip indicator integrated on the SM1R... breakers avoids dangerous closing operations during short-circuit conditions, previously disconnected by the breaker. SM1R... breakers are Type E-certified according to UL508. SM1P... and SM1R... motor protection circuit breakers are suitable for isolation in accordance with IEC/EN 60947 standards and can be padlocked in OFF position without using accessories.

Their high breaking capacity permits the elimination of protection fuses on the majority of installations.

Operational characteristics

- IEC rated insulation voltage U_i : 690V
- IEC rated impulse withstand voltage: 6kV
- Rated frequency: 50/60Hz
- Rated maximum current: 40A
- Adjustment ranges: 16
- IEC breaking capacity: see www.mechtric.com.au
- Heat dissipation per phase: 0.7...3.3W
- Magnetic tripping: 13In max.
- Tripping class: 10A
- Phase failure sensitive
- Mechanical endurance: 100,000 cycles
- Electrical endurance: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: any
- IEC utilisation category: A
- Padlocking in OFF: $\varnothing 4\text{mm}/0.16''$
- Protection rating: IP20.

Certifications and compliance

Certifications obtained: cULus, EAC, CCC. SM1R... breakers are Type E-certified (Self-Protected Combination Motor Controllers) according to UL508.

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

Plastic materials compliant with standards: IEC/EN 60335 and EN 45545

Motor protection circuit breakers SM1RM... up to 40A. Magnetic protection



SM1RM...



Order code	Rated and magnetic trip current		Short circuit breaking capacity at 400V		Qty per pack	Wt
	Rat. [A]	Trip. [A]	Icu [kA]	Ics [kA]		
Rotating type.						
SM1RM 0016	0.16	1.6	100	100	1	0.320
SM1RM 0025	0.25	3.2	100	100	1	0.320
SM1RM 0040	0.4	5.2	100	100	1	0.320
SM1RM 0063	0.63	8.2	100	100	1	0.320
SM1RM 0100	1	13	100	100	5	0.320
SM1RM 0160	1.6	21	100	100	5	0.320
SM1RM 0250	2.5	33	100	100	5	0.320
SM1RM 0400	4	52	100	100	5	0.390
SM1RM 0650	6.5	85	100	100	5	0.390
SM1RM 1000	10	130	100	100	5	0.390
SM1RM 1400	14	182	100	100	5	0.390
SM1RM 1800	18	234	100	100	5	0.390
SM1RM 2300	23	299	50	25	1	0.390
SM1RM 2500	25	325	50	25	1	0.390
SM1RM 3200	32	416	50	25	1	0.390
SM1RM 4000	40	420	20	25	1	0.390

General characteristics

SM1RM... are motor protection circuit breakers with magnetic tripping only and high breaking capacity.

They are typically used to protect starters where there is a thermal relay or other overload protection.

Starter control and protection of up to 22kW (400V) are possible by choosing the suitable adjustment range, from 0.1 to 40A.

Operational characteristics

- IEC rated insulation voltage U_i : 690V
- IEC rated impulse withstand voltage: 6kV
- Rated frequency: 50/60Hz
- Rated maximum current: 40A
- IEC breaking capacity: see www.mechtric.com.au
- Heat dissipation per phase: 0.7...3.3W
- Magnetic tripping: 13In max.
- Mechanical endurance: 100,000 cycles
- Electrical endurance: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: any
- IEC utilisation category: A
- Padlocking in OFF: $\varnothing 4\text{mm}$
- Protection rating: IP20.

Certifications and compliance

Certifications obtained: cULus, EAC, CCC. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14. Plastic materials compliant with standards: IEC/EN 60335 and EN 455 5

See page 2-9 for dimensions.

Motor protection circuit breakers SM2... and SM3... up to 100A. Magnetic and thermal protection



SM2R...



SM3R...



Order code	Thermal trip adjustment range	Short circuit breaking capacity at 400V		Qty per pack	Wt
		Icu	Ics		
	[A]	[kA]	[kA]	n°	[kg]
Rotating type.					
SM2R 5000	34...50	50	50	1	1.000
SM2R 6300	45...63	50	50	1	1.000
Rotating type.					
SM3R 7500	55...75	50	38	1	2.200
SM3R 9000	70...90	50	38	1	2.200
SM3R 9900	80...100	50	38	1	2.200

General characteristics

SM2R... and SM3R... are modern circuit breakers with thermal and magnetic trip releases and high breaking capacity.

Motor control and protection of up to 45kW (400V) are possible by choosing the suitable adjustment range, up to 100A.

SM2R... and SM3R... breakers are Type E-certified according to UL508.

The SM2R... and SM3R... types are suitable for isolation according to IEC/EN 60947 standards and can be padlocked in OFF position without using accessories.

SM3... has a trip function which indicates thermal and magnetic tripping.

Their high breaking capacity permits the elimination of protection fuses on the majority of installations.

Operational characteristics

- IEC rated insulation voltage U_i : 1000V
- IEC rated impulse withstand voltage: 8kV
- Rated frequency: 50/60Hz
- Rated maximum current: 63A (for SM2...); 100A (for SM3...)
- Adjustment ranges: 2 (for SM2...); 3 (for SM3...)
- IEC breaking capacity: see www.mechtric.com.au
- Max. heat dissipation per phase: 7W
- Magnetic tripping: 13In max.
- Tripping class: 10A
- Phase failure sensitive
- Mechanical endurance: 50,000 cycles
- Electrical endurance: 25,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: any
- IEC utilisation category: A
- Padlocking in OFF: $\varnothing 4\text{mm}/0.16''$
- Protection rating: IP20 on front.

Certifications and compliance

Certifications obtained: cULus, EAC, CCC.

SM2... and SM3... circuit breakers (only with accessory SM3X90 00R) are Type E-certified (Self-Protected Combination Motor Controllers) according to UL508.

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

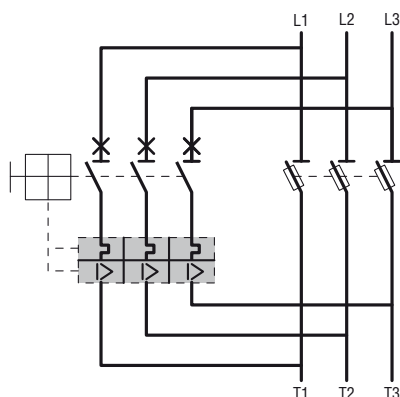
SM1PF... circuit breakers Fuse monitoring function



SM1PF...



Order code	Fixed thermal release current	Short circuit breaking capacity at 400V		Qty per pack	Wt
		Icu	Ics		
	[A]	[kA]	[kA]	n°	[kg]
Button control.					
SM1PF 0020	0.20	100	100	5	0.280



General characteristics

SM1PF... are breakers with magneto-thermal tripping intended specifically for monitoring the status of fuses.

By connecting every phase of the breaker to a fuse, when it blows, the motor protection breaks.

Through the auxiliary contacts fitted on the engine protection, the blown fuses are signalled electrically.

Operational characteristics

- IEC rated insulation voltage U_i : 690V
- IEC rated impulse withstand voltage: 6kV
- Rated frequency: 50/60Hz
- Rated current: 0.2A
- Magnetic tripping: 1.2A.
- Mechanical endurance: 100,000 cycles
- Electrical endurance: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: any
- IEC utilisation category: A
- Padlocking in OFF: $\varnothing 4\text{mm}/0.16''$
- Protection rating: IP20.

Certifications and compliance

Certifications obtained: cULus, EAC, CCC.

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

Plastic materials compliant with standards: IEC/EN 60335 and EN 45545

See page 2-9 for dimensions.



SM1X11...



SM1X12...

SM1X13...



SM1X14...

SM1X15...



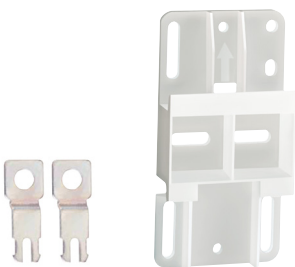
SM1X18 200R



SM1X18B 200R



SM1X18 S



SM1X89 02

BFX89 01

Order code	Characteristics	Qty per pack	Wt [kg]
		n°	[kg]
Add-on auxiliary contacts.			
SM1X11 20	Front mount 2NO	10	0.016
SM1X11 11	Front mount 1NO+1NC	10	0.016
SM1X12 20	Side mount 2NO	1	0.036
SM1X12 11	Side mount 1NO+1NC	10	0.016
SM1X12 02	Side mount 2NC	1	0.036
SM1X13 11	Side mount. Contacts for thermal and magnetic tripping indication 1NO+1NC	1	0.036
SM1X13 11M	Side mount. Contacts for magnetic tripping indication 1NO+1NC	1	0.036
Undervoltage trip releases.			
SM1X14 110	110VAC 50/60Hz	1	0.130
SM1X14 230	230VAC 50/60Hz	1	0.130
SM1X14 400	400VAC 50/60Hz	1	0.130
SM1X15 110R	With early-make contacts 110VAC 50/60Hz	1	0.140
SM1X15 230R	With early-make contacts 230VAC 50/60Hz	1	0.140
SM1X15 400R	With early-make contacts 400VAC 50/60Hz	1	0.140
Shunt trip releases.			
SM1X16 024	24VAC 50/60Hz	1	0.130
SM1X16 110	110VAC 50/60Hz	1	0.130
SM1X16 230	230VAC 50/60Hz	1	0.130
SM1X16 400	400VAC 50/60Hz	1	0.130
Adjuster sealing kit.			
SM1X18 12	With wire and lead included	1	0.006
IP65 padlockable door coupling handle for SM1R...			
SM1X18 200R	Red/yellow complete with rod length 200mm/7.87"	1	0.115
SM1X18B 200R	Black complete with rod length 200mm/7.87"	1	0.115
SM1X18 S	Support for rod >145mm/5.71"	1	0.030
Phase separation barriers for SM1R...			
SM1X9000R	For Type E as per UL508	5	0.016
Three-phase connection busbars 45mm/1.77" spacing.			
11 SMX90 32	For 2 breakers	10	0.028
11 SMX90 33	For 3 breakers	10	0.050
11 SMX90 34	For 4 breakers	10	0.071
11 SMX90 35	For 5 breakers	10	0.092
Three-phase connection busbars 54mm/2.13" spacing.			
11 SMX90 42	For 2 breakers	10	0.031
11 SMX90 43	For 3 breakers	10	0.056
11 SMX90 44	For 4 breakers	10	0.081
11 SMX90 45	For 5 breakers	10	0.090
Terminal block for busbar supply.			
11 SMX90 30	For all busbar types	10	0.048
SM1X90 50	For all busbar types Type E as per UL508	10	0.033
Safety cover.			
11 SMX90 31	For unused terminals	10	0.004
Accessories for screw-fixing motor protection.			
SM1X89 02	Metal brackets for fixing SM1... motor protection with screws	10	0.006
BFX89 01	Universal plastic base for screw-fixing SM1... motor protection	5	0.016

① Only suitable for SM1R... motor protection circuit breakers

General and operational characteristics

ADD-ON AUXILIARY CONTACTS

- Connectable to the left side of the breaker or on the front
- Maximum combinations: 3 SM1X... blocks with 6 auxiliary contacts in total of which 1 front block and 2 side blocks
- IEC conventional free air thermal current Ith: 10A (5A for SM1X11...)
- IEC rated insulation voltage Ui: 690V (300V for SM1X11...)
- Rated impulse withstand voltage Uimp 6kV (4kV for SM1X11...)
- IEC/EN 60947-5-1 designation: A600 - Q600 (B300 - R300 for SM1X11...)
- Maximum tightening torque: 1Nm / 9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75...2.5mm² or 18...14AWG.
- Screw tightening tool: Phillips 2
- Maximum tightening torque: 1Nm / 9lbin
- Width of side-mount auxiliary contacts equal to 0.5 DIN 46880 modules.

UNDERVOLTAGE TRIP RELEASES

- Snap on to the right side of the breaker
- Consumption inrush/holding: 12/3.5VA
- Release voltage: 0.35...0.7Us
- Operating 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.
- Screw tightening tool: Phillips 2
- Maximum tightening torque: 1Nm / 9lbin
- Width of side-mount auxiliary contacts equal to 1 DIN 46880 module.

SHUNT TRIP RELEASES

- Snap on to the right side of the breaker
- Inrush consumption: 20VA
- Operating voltage: 0.7...1.1Us
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75...2.5mm² or 18...14AWG.
- Screw tightening tool: Phillips 2
- Maximum tightening torque: 1Nm / 9lbin
- Width of side-mount auxiliary contacts equal to 1 standard DIN 46880 module.

TERMINAL BLOCKS FOR BUSBAR SUPPLY

- Imax 63A
- Screw tightening tool: Phillips 2
- Maximum tightening torque: 2.3Nm / 20lbin
- Conductor cross section minimum-maximum: 4...25mm² or 10...4AWG.

THREE-PHASE CONNECTION BUSBARS

- 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 breakers.

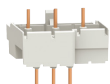
Certifications and compliance

Certifications obtained: cULus, EAC, CCC.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

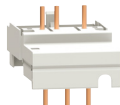
MOTOR & CIRCUIT PROTECTION

Motor Protection Circuit Breakers

Add-on blocks and accessories for SM1...



SM1X30...



SM1X31...
SM1X32...



SM1Z17 01P



SM1Z17 02P



SM1Z17 05P



SM1Z17 15R



SM1X17 40P



SM1X17 45P



SM1X17 46P



11 SMX90 10



11 SMX90 12



11 SMX90 14

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

Rigid SM1 breaker-contactor connections.			
SM1X30 40P	For motor protection breaker SM1P... with BG... mini-actuators	10	0.019
SM1X31 41P	For motor protection breaker SM1P... with BF09..25A contactors	10	0.035
SM1X32 41P	For motor protection breaker SM1P... with BF26..38A contactors	10	0.045
SM1X30 40R	For motor protection breaker SM1R... with BG... mini-actuators	10	0.019
SM1X31 41R	For motor protection breaker SM1R... with BF09..25A contactors	10	0.035
SM1X31 42R	For motor protection breaker SM1R... with contactors BF09..25D and BF09...25L	10	0.044
SM1X32 41R	For motor protection breaker SM1R... with contactors BF26..38A	10	0.045

Surface mount enclosures IP65 for SM1P...			
SM1Z17 01P	Width 80mm/3.15"	1	0.235
SM1Z17 02P	Width 80mm/3.15". With button for emergency stop	1	0.275
SM1Z17 11P	Width 100mm/3.94"	1	0.315
SM1Z17 12P	Width 100mm/3.94". With button for emergency stop	1	0.345

Flush mount enclosure IP65 for SM1P...			
SM1Z17 05P	Width 87mm/3.42"	1	0.205

Surface mount enclosures IP65 for SM1R...			
SM1Z17 15R	With rotary actuator red/yellow. Width 100mm/3.94"	1	0.350
SM1Z17 10R	With black rotary actuator Width 100mm/3.94"	1	0.350

ENCLOSURE ACCESSORIES AND SPARE PARTS. For SM1Z...P enclosures.			
SM1X17 40P	Emergency stop button. IP65	1	0.044
SM1X17 45P	Rubber membrane with rim. IP65	1	0.016
SM1X17 46P	Lockable block. IP65	1	0.030

Pilot lights.			
23 NEONV 0 V	Green	10	0.006
23 NEONV 0 R	Red	10	0.006

Plastic M25 to 1/2" NPT entry adapter.			
11 LM M25 PG16	For enclosures SM1Z17 01P and SM1Z17 02P	10	0.009

Starter assembly adapter plates.			
11 SMX90 10	Adapter plate for direct starter comprising breaker SM1... and contactor BG..., BF09A...BF38A	1	0.058
11 SMX90 12	Adapter plate for reversing switch comprising breaker for motor protection SM1... contactors BG..., BF09A...BF38A	1	0.095
11 SMX90 14	Adapter plate for starter star-delta comprising motor protection breaker SM1... and contactors BF09A...BF38A	1	0.118
11 SMX90 18	35mm rail for passage of wires underneath to contactor; for SMX90 14	1	0.025
11 SMX90 19	DIN rail extension 35mm/1.38"	1	0.025

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

General and operational characteristics

RIGID SM1 BREAKER-CONTACTOR CONNECTIONS
The SM1X3... connections electrically and mechanically fasten the motor protection breaker together with the contactor. This forms a highly compact single-unit starter for quick installation on a single 35mm DIN rail.
The SM1X3... connections can also be mounted in combination with reversing switches and star-delta starters made with the rigid connections indicated in section 1.

SURFACE MOUNT ENCLOSURES

- Top or bottom entry:
 - SM1Z17 01P and SM1Z17 02P 4 M25-threaded knockouts
 - SM1Z17 11P e SM1Z17 11P 4 threaded knockout with Ø20.5mm/0.81" or Ø26.5mm/1.04"
 - SM1Z17 10R e SM1Z17 15R 4 threaded knockout with Ø20.5mm/0.81" or Ø26.5mm/1.04"
- Possibility of rear entry too
- Protection rating: IP65 (UL Type 4X)
- Holds a breaker, one front-mount auxiliary contact block and either one shunt or undervoltage release; only for SM1Z17 10R and SM1Z17 15R, 2 side-mount auxiliary contact blocks can be fitted as well
- The SM1Z17 10R and SM1Z17 15R rotary actuators can be padlocked with a maximum of 3 padlocks Ø4...8mm/0.16...0.31"
- Earth/ground terminal included
- Operating temperature: -25...+60°C
- Storage temperature: -50...+80°C.

FLUSH MOUNT ENCLOSURES

- Holds a breaker, one front-mount auxiliary contact block and either one shunt or undervoltage release
- Protection rating: IP65 (UL Type 4X)
- Earth/ground terminal included
- 70x115mm/2.76x4.53" cutout
- Operating temperature: -25...+60°C
- Storage temperature: -50...+80°C.

ACCESSORIES FOR ENCLOSURES

- Emergency stop button:**
- Turn to release
 - Red button Ø35mm/1.38".
- Lockable block:**
- Prevents closing operation; 3 padlocks maximum Ø4...8mm/0.16...0.31".

STARTER ASSEMBLY ADAPTER PLATES

These accessories permit the assembly of starters, making trim and compact equipment that's easy and quick to install.
The starter adapter plates install on DIN rail 35mm/1.38".

Certifications and compliance

Certifications obtained: cULus, EAC, CCC for rigid connections and enclosures.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 141.

See page 2-10 for dimensions.



SM2X11...



SM2X12...

SM2X13 11



SM2X14...

SM2X16...



SM2X18...

Order code	Characteristics	Qty per pack	Wt
		n°	[kg]
Add-on auxiliary contacts.			
SM2X11 20	Front mount 2NO	10	0.020
SM2X11 11	Front mount 1NO+1NC	10	0.020
SM2X11 02	Front mount 2NC	10	0.020
SM2X12 20	Side mount 2NO	2	0.040
SM2X12 11	Side mount 1NO+1NC	10	0.040
SM2X12 02	Side mount 2NC	2	0.040
SM2X13 11	Side mount. Indicator contacts for thermal and magnetic tripping 1NO+1NC	2	0.040
Undervoltage trip releases.			
SM2X14 230	230VAC 50/60Hz	5	0.100
SM2X14 400	400VAC 50/60Hz	5	0.100
SM2X14 440	440VAC 50/60Hz	5	0.100
Shunt trip releases.			
SM2X16 024	24VAC 50/60Hz	5	0.100
SM2X16 110	110VAC 50/60Hz	5	0.100
SM2X16 230	230VAC 50/60Hz	5	0.100
SM2X16 400	400VAC 50/60Hz	5	0.100
SM2X16 440	440VAC 50/60Hz	5	0.100
Padlockable IP65 door coupling handle.			
SM2X18 200R	Red/yellow complete with rod length 200mm/7.87"	1	0.115
SM2X18 B200R	Black complete with rod with rod length 200mm/7.87"	1	0.115
Phase separation barriers for SM2R...			
SM3X90 00R	For Type E as per UL508	5	0.175

General and operational characteristics

ADD-ON AUXILIARY CONTACTS

- Insert on the top front or snap on the left side of the breaker
- Maximum combinations: 3 SM1X... blocks with 6 auxiliary contacts in total of which 1 front block and 2 side blocks
- IEC conventional free air thermal current Ith: 10A (5A for SM2X11...)
- IEC rated insulation voltage Ui: 690V (250V for SM2X11...)
- IEC/EN 60947-5-1 designation: A600 – Q300 (B300 – R300 for SM1X11...)
- Maximum tightening torque: 1.2Nm / 9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75...2.5mm² or 18...14AWG
- Screw tightening tool: Pz 2
- Maximum tightening torque: 1.2Nm / 10lbin
- Width of side-mount auxiliary contacts equal to 0.5 DIN 46880 modules.

UNDERVOLTAGE TIP RELEASES

- Snap on to the right side of the breaker for motor protection
- Consumption inrush/holding: 8.5/3VA
- Release voltage: 0.35...0.7Us
- Operating 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
- Screw tightening tool: Pz 2
- Maximum tightening torque: 1.2Nm / 10lbin
- Width of side-mount auxiliary contacts equal to 1 DIN 46880 module.

SHUNT TRIP RELEASES

- Snap on to the right side of the breaker for motor protection
- Inrush consumption: 20VA
- Operating voltage: 0.85...1.1Us
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75...2.5mm² or 18...14AWG
- Screw tightening tool: Pz 2
- Maximum tightening torque: 1.2Nm / 10lbin
- Width of side-mount auxiliary contacts equal to 1 standard DIN 46880 module.

Certifications and compliance

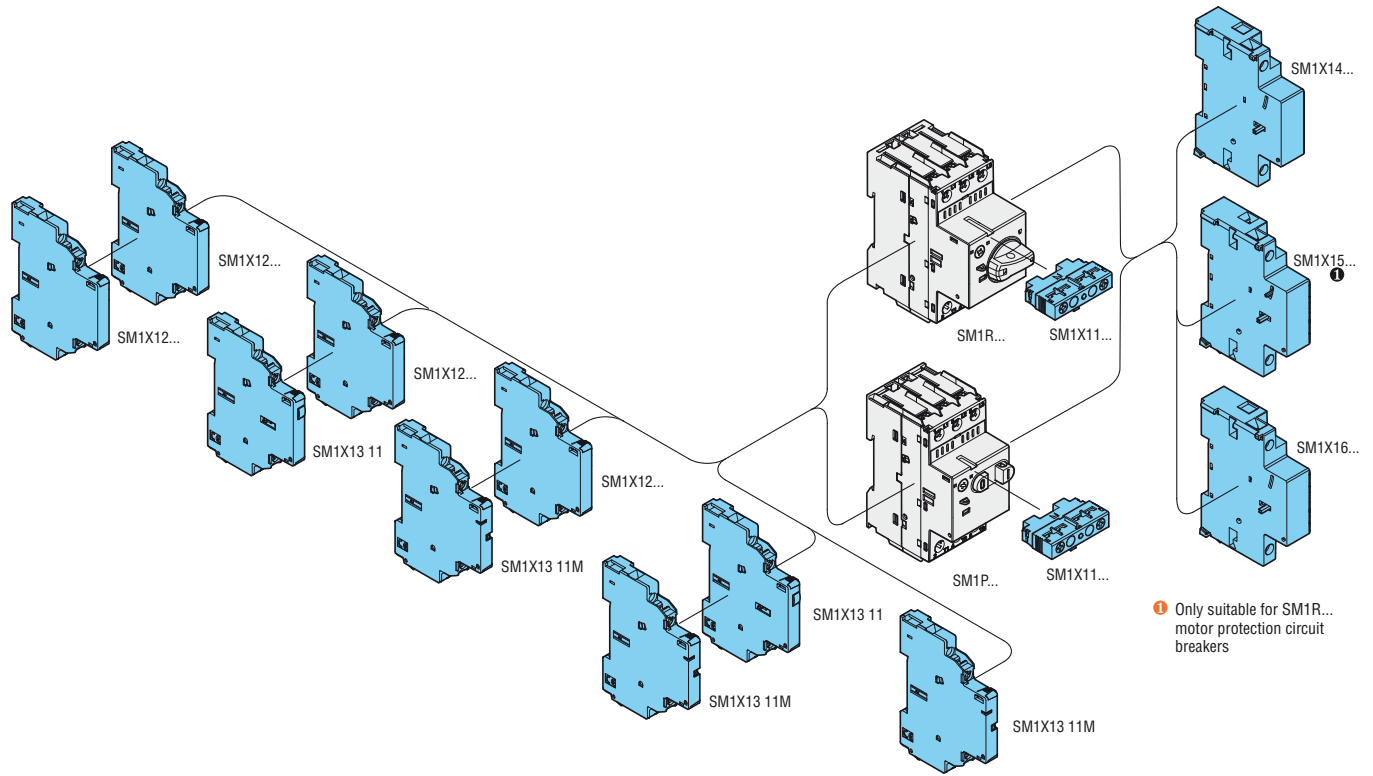
Certifications obtained: cULus, EAC.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

MOTOR & CIRCUIT PROTECTION

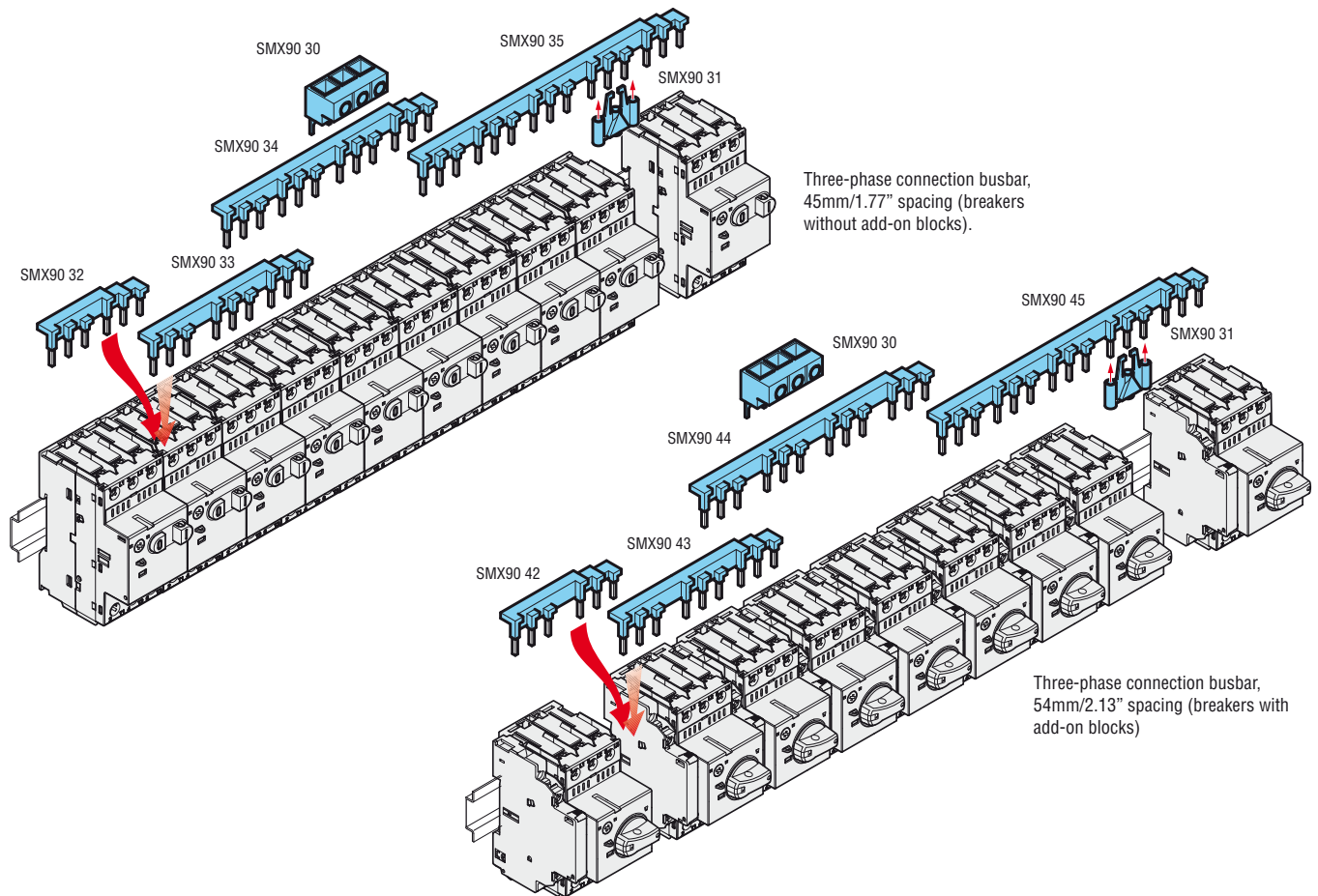
Motor Protection Circuit Breakers
Add-on blocks and accessories for SM1...



Combinations

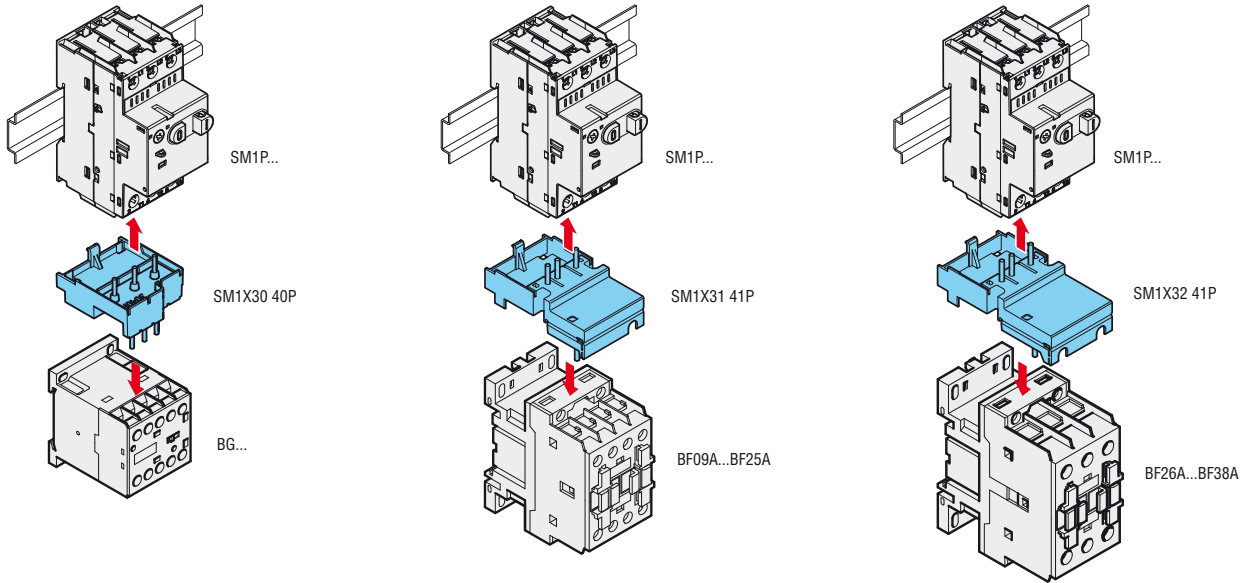


Three-phase connection busbars.

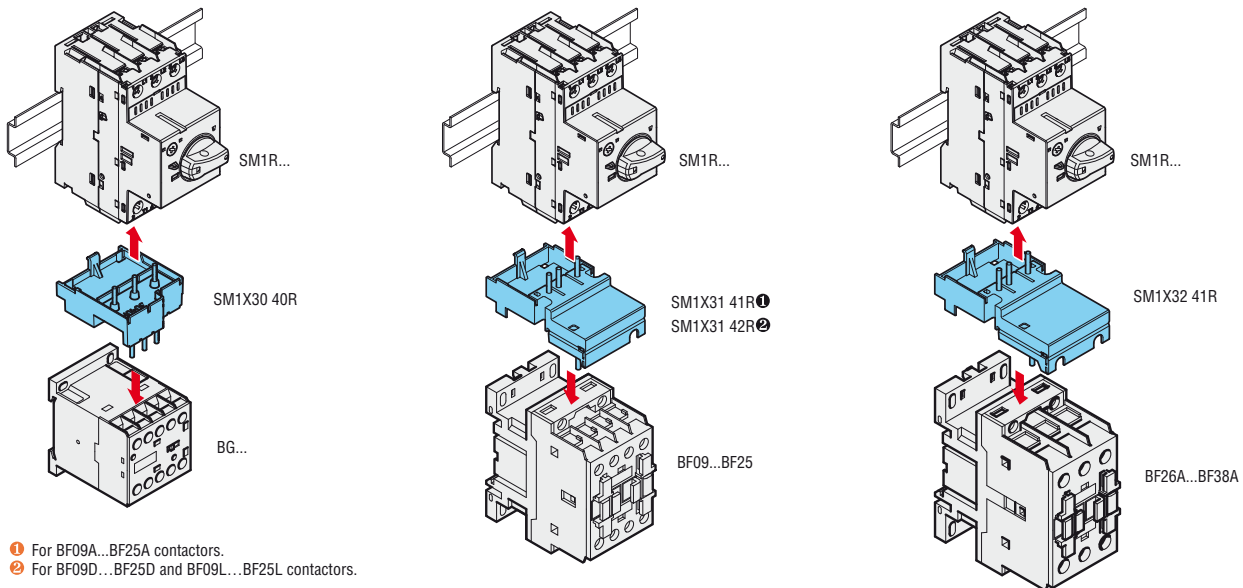


Combinations

Rigid SM1P... breaker - contactor connections.

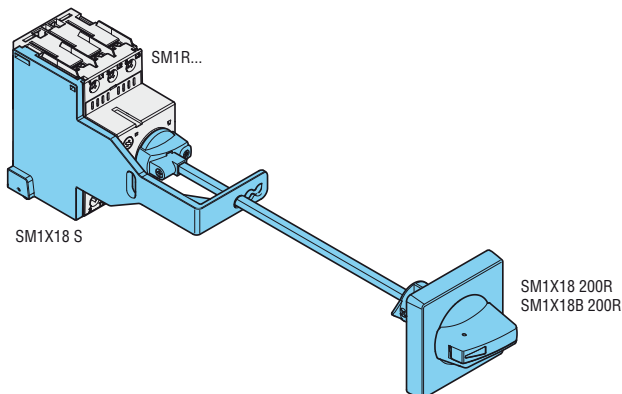


Rigid SM1R... breaker - contactor connections.



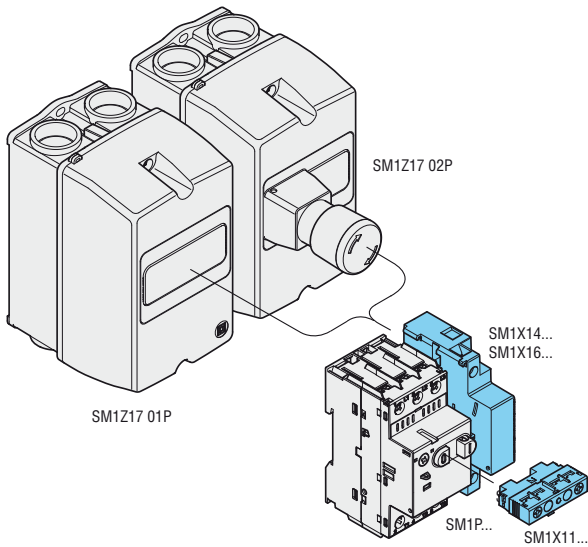
- ¹ For BF09A...BF25A contactors.
- ² For BF09D...BF25D and BF09L...BF25L contactors.

Padlockable door coupling handle.

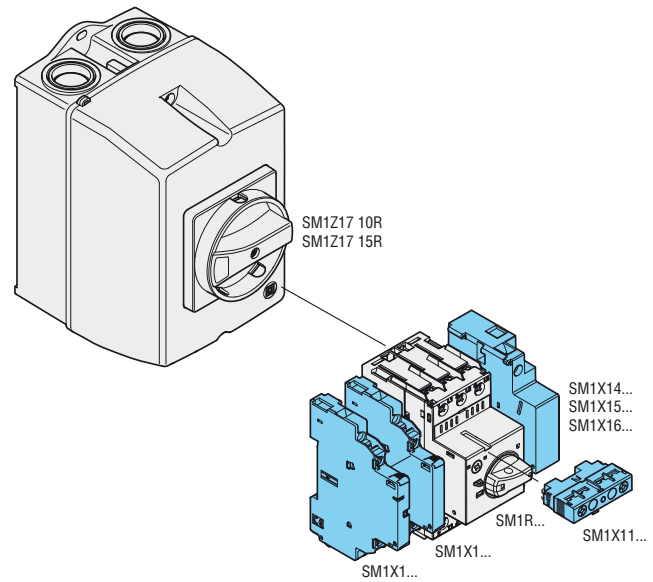


Combinations

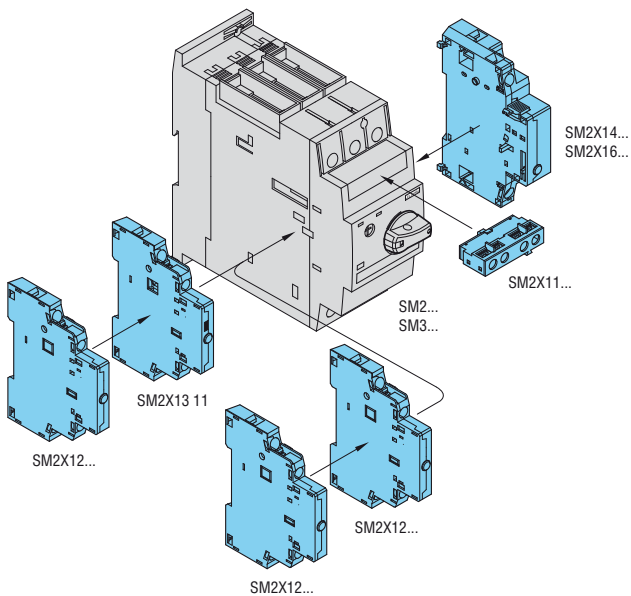
Surface mount enclosures for SM1P... Width 80mm.



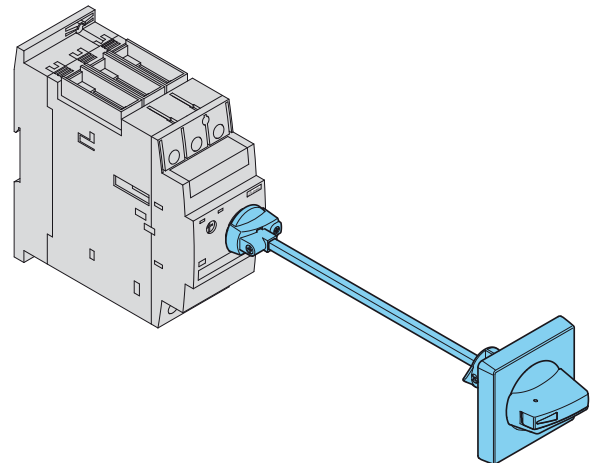
Surface mount enclosures for SM1P... Width 100mm.



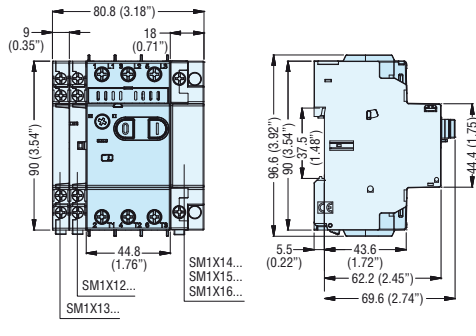
Combinations of SM2... and SM3... motor protection circuit breakers



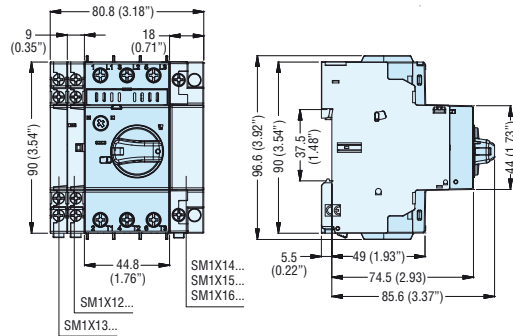
Padlockable door coupling handle.



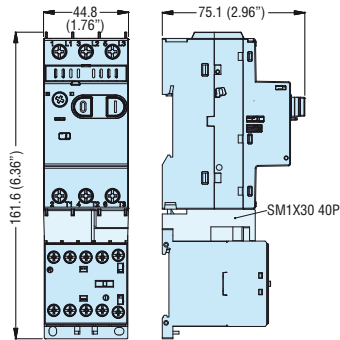
SM1P... with side-mount auxiliary contacts



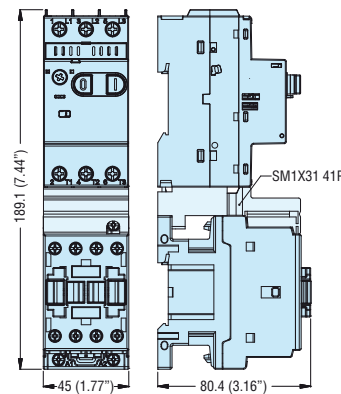
SM1R... with side-mount auxiliary contacts



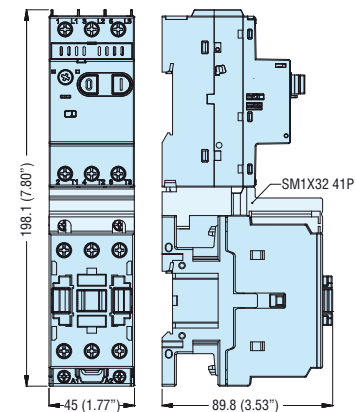
SM1P... with BG... mini-contacts and connection SM1X30 40P



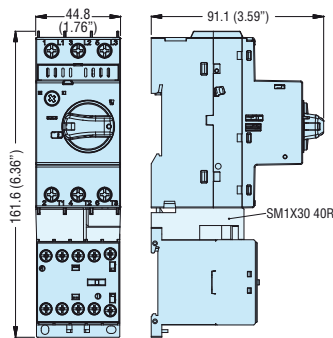
SM1P... with BF09 A...BF25 A... contactors and connection SM1X31 41P



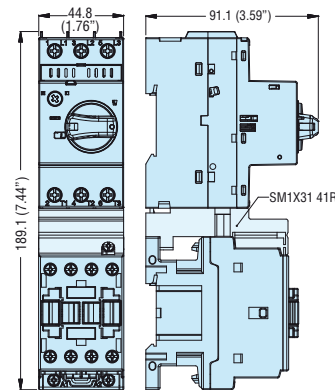
SM1P... with BF26 A...BF38 A... contactors and connection SM1X32 41P



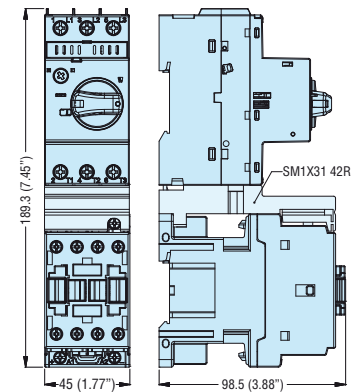
SM1R... with BG... mini-contacts and connection SM1X30 40R



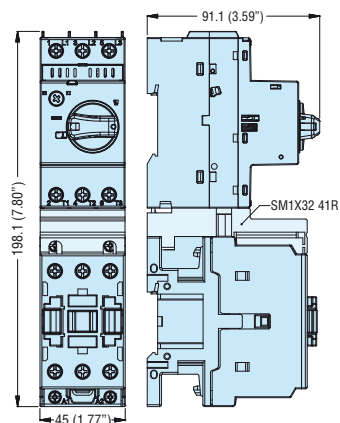
SM1R... with BF09 A...BF25 A... contactors and connection SM1X31 41R



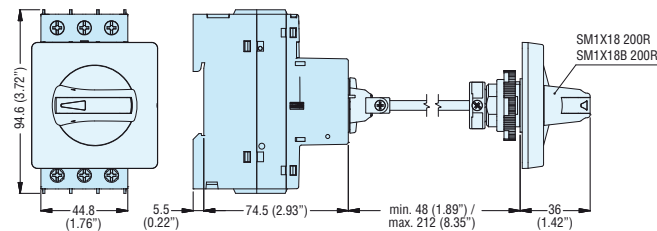
SM1R... with BF09 D...BF25 D... contactors BF09 L...BF25 L... and connection SM1X31 42R



SM1R... with BF26 A...BF38 A... contactors and connection SM1X32 41R



SM1R... padlockable door coupling handle SM1X18 200R or SM1X18B 200R



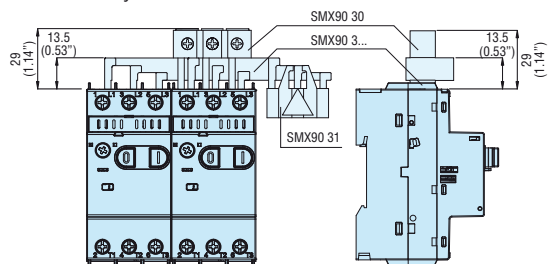
MOTOR & CIRCUIT PROTECTION

Motor Protection Circuit Breakers

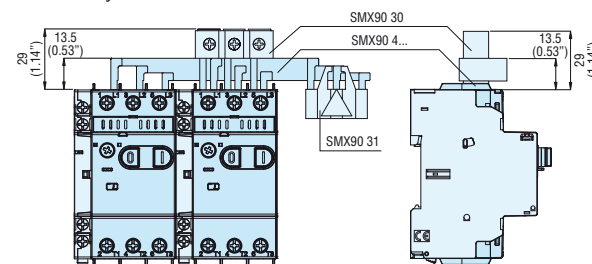
Dimensions [mm (in)]



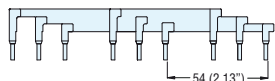
These elements mounted with **SM1... breakers** with no auxiliary contacts



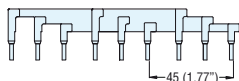
These elements mounted with **SM1... breakers** with auxiliary contacts **SMX12... or SMX13 11**



Connection busbars – 54mm/2.13” spacing
SMX90 42 - SMX90 43 - SMX90 44 - SMX90 45



Connection busbars – 45mm/1.77” spacing
SMX90 32 - SMX90 33 - SMX90 34 - SMX90 35



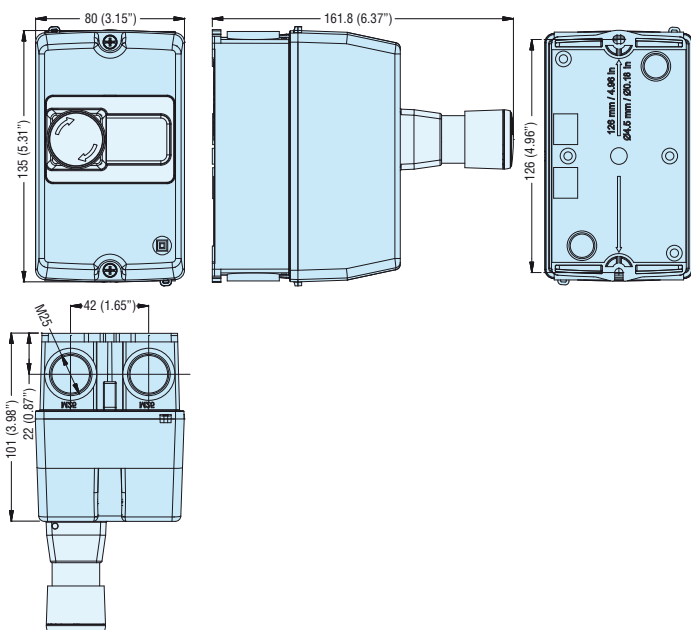
Terminal block for busbar supply **SMX90 30**



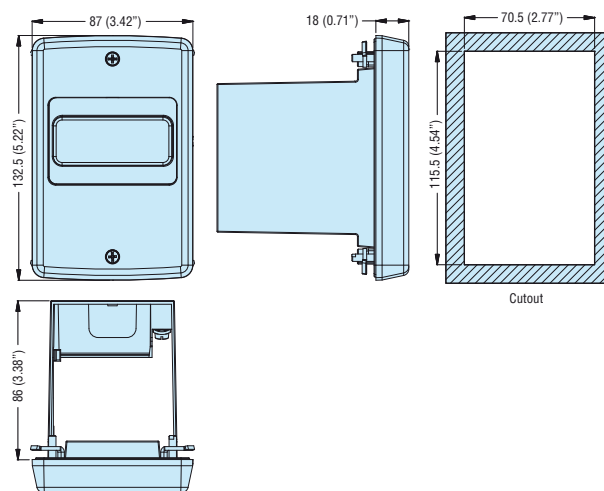
Safety cover **SMX90 31**



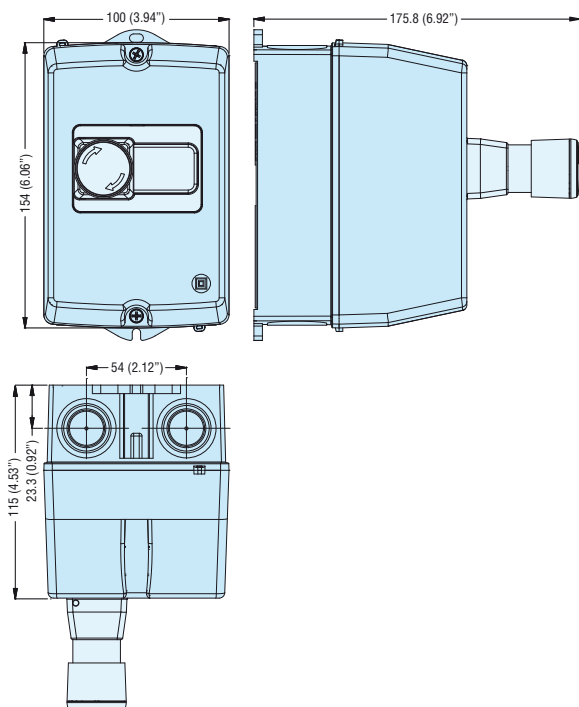
Enclosures **SM1Z17 01P** and **SM1Z17 02P**



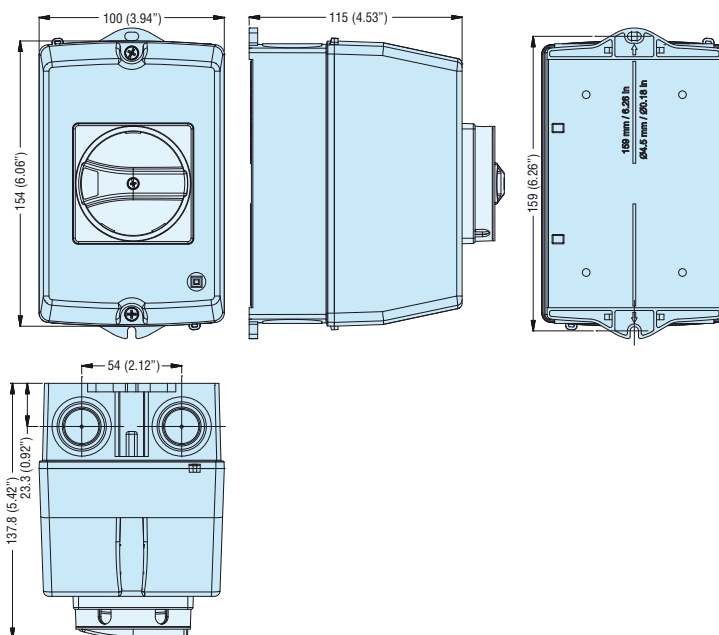
Enclosures **SM1Z17 05P**



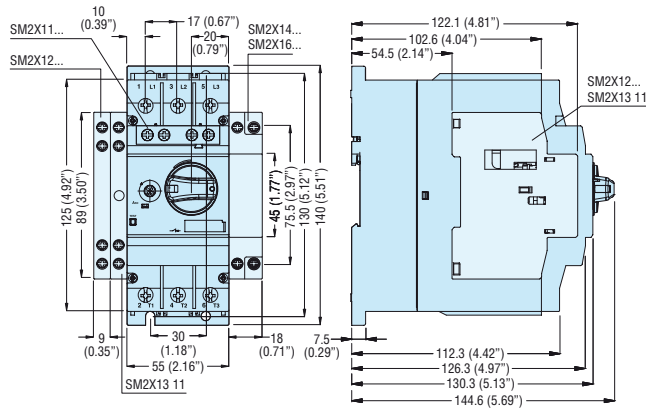
Enclosures **SM1Z17 11P** and **SM1Z17 12P**



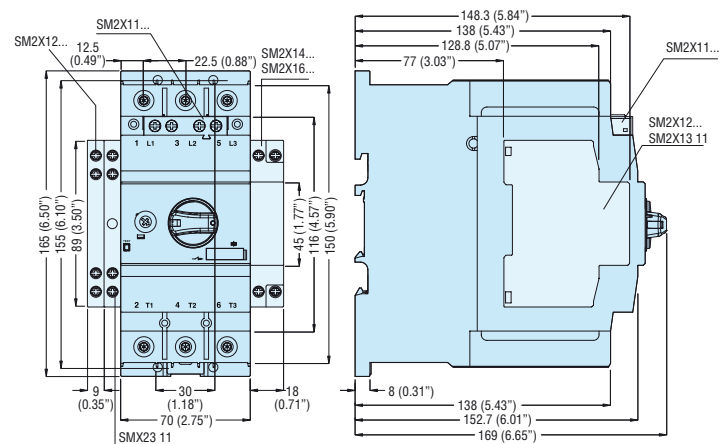
Enclosures **SM1Z17 15R** and **SM1Z17 10R**



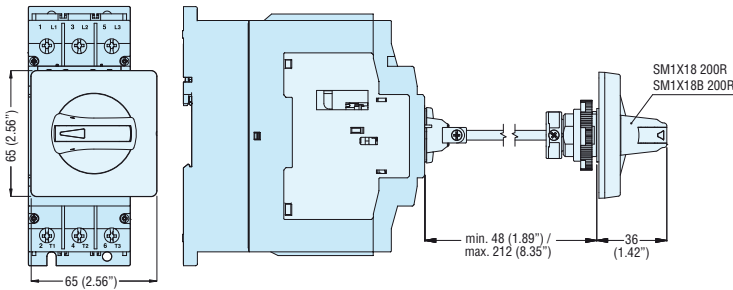
SM2... with side-mount auxiliary contacts



SM3... with side-mount auxiliary contacts



SM2... and SM3... padlockable door coupling handle
SM1X18 200R or SM1X18B 200R



WIRING DIAGRAMS

Motor protection circuit breakers

SM1R... - SM2R... - SM3R...

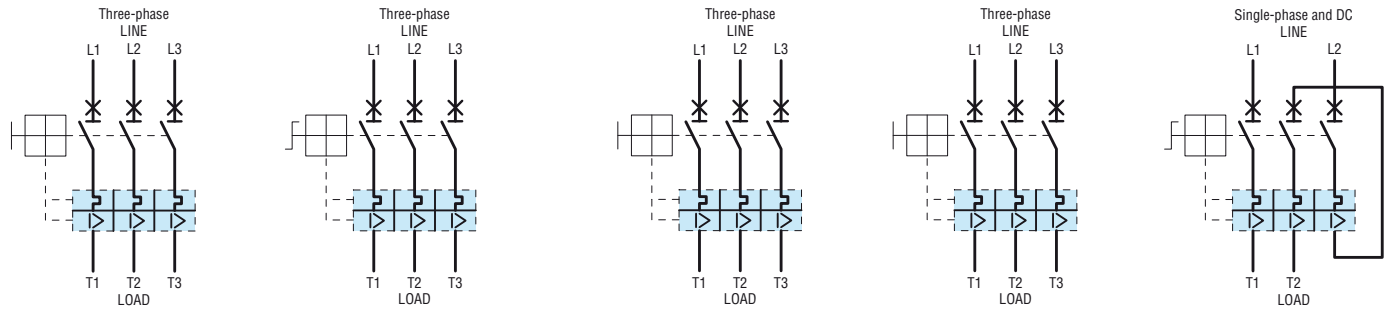
SM1RM...

Circuit breakers

SM1PF...

For all motor protection circuit breakers

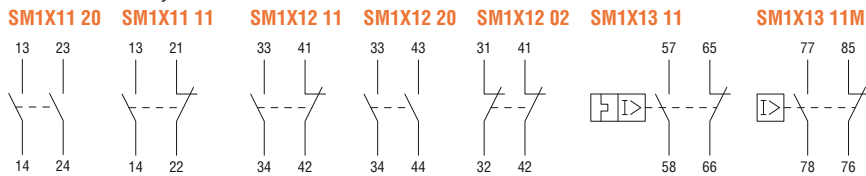
SM1P...



Add-on blocks

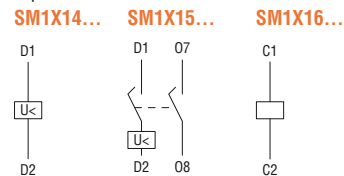
For SM1... types
Front mount auxiliary contacts

Side-mount auxiliary contacts



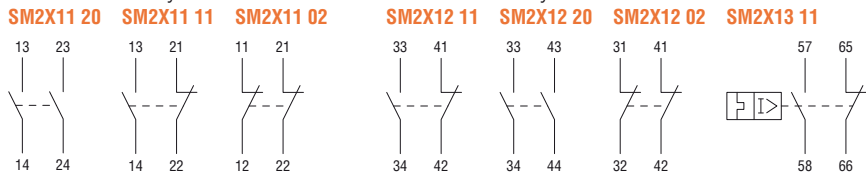
Side mount undervoltage trip releases

Side mount shunt trip release



For SM2R... and SM3R types
Front mount auxiliary contacts

Side-mount auxiliary contacts



Side mount undervoltage trip release

Side mount shunt trip release



TYPE			SM1P...	SM1R...	SM2R...	SM3R...
Rated insulation voltage U_i	V		690			
Rated impulse withstand voltage	kV		6			
Rated frequency: 50/60Hz						
Maximum rated current	A		40	40	63	100
Number of adjustment ranges	No.		16 ^①	16	2	3
Total power dissipation	W		6...14	6...14	7.1...20	10...38
Magnetic tripping	A		13 x I_n ^①	13 x I_n	13 x I_n	13 x I_n
Mechanical life	cycles		100,000	100,000	50,000	50,000
Electrical life (I_e max AC3)	cycles		100,000	100,000	25,000	25,000
Maximum terminal tightening torque	Nm		2.5...3	2.5...3	4.5	6
	lbin		1.8...2.2	1.8...2.2	40	53
	Tool		PH2	PH2	PZ2	Hex 4mm
Conductor section minimum and maximum (1 or 2 wires)	AWG	No.	16...8	16...8	18...3	10...1/0
		mm ²	1...4	1...4	0.75...25	10...50
AMBIENT CONDITIONS						
Temperature	operating	°C	-20...+60 ^②	-20...+60 ^②	-20...+70 ^②	-20...+70 ^②
	storage	°C	-50...+80	-50...+80	-50...+80	-50...+80
	compensation	°C	-20...+50	-20...+50	-5...+40	-5...+40
Maximum altitude	m		3000			
Mounting position			Any			
Fixing			On 35mm DIN rail or screw via accessory		On 35mm DIN rail or screw	

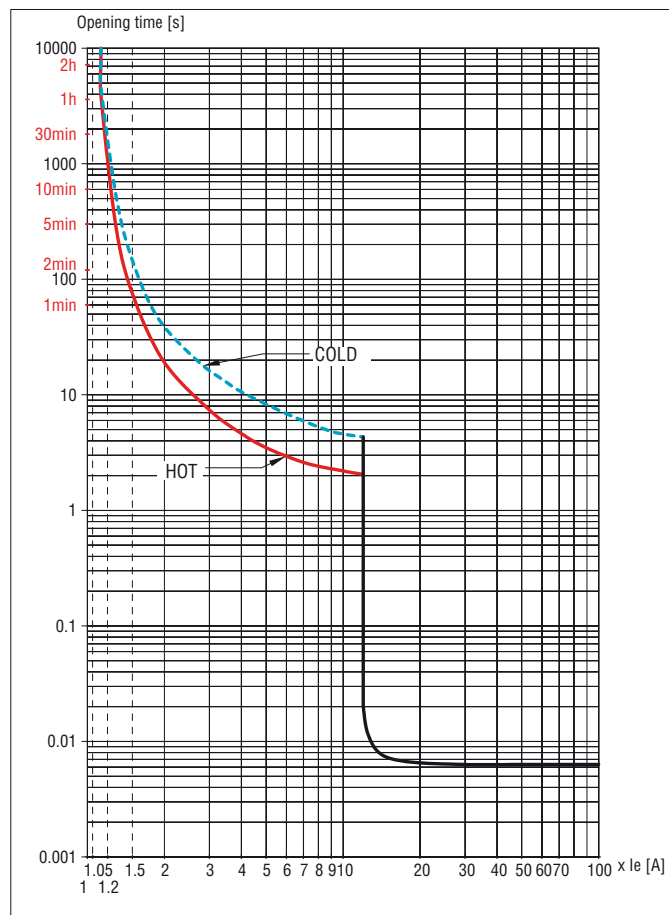
N.B. PH = Phillips; PZ = Pozidriv.

① SM1PF00 20 has a single 0.2A thermal adjustment and magnetic tripping at 6 x I_n (1.2A).

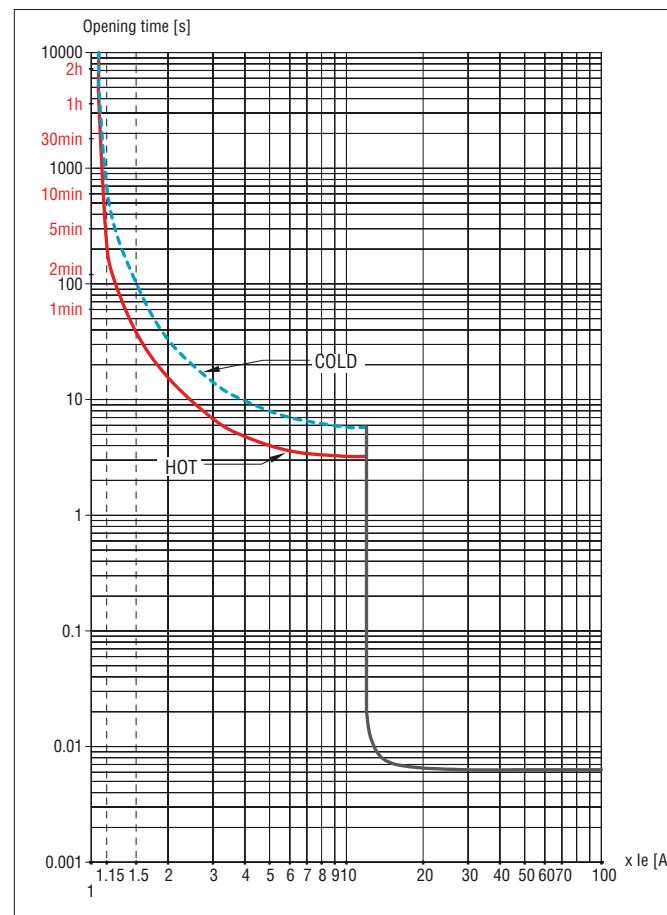
② When more than one breaker are mounted, side by side, without leaving space between each to consent free air circulation on the breaker sides, and have simultaneous operation, the thermal trip adjuster must be positioned at a value 15% greater than the rated motor current.

THERMAL TRIPPING CURVE (AVERAGE TIMES)

Balanced operation on 3 phases



Operation on 2 phases (phase failure)



Trip times have a $\pm 20\%$ dispersion with respect to the average curve indicated in the graph.

Phase failure / single phase sensitive Three poles (three phase)



11 RF9...



11 RFA9...

Order code	Adjustment range	Protection fuses		Qty per pkg	Wt [kg]
		aM [A]	gG [A]		

MANUAL RESETTING.

Direct mounting on BG06, BG09, BG12 mini-contactors.

11 RF9 015	0.09 - 0.15	0.25	—	1	0.123
11 RF9 023	0.14 - 0.23	0.5	—	1	0.123
11 RF9 033	0.2 - 0.33	0.5	1	1	0.123
11 RF9 05	0.3 - 0.5	1	2	1	0.123
11 RF9 075	0.45 - 0.75	1	2	1	0.123
11 RF9 1	0.6 - 1	2	4	5	0.123
11 RF9 1V5	0.9 - 1.5	2	4	5	0.123
11 RF9 2V3	1.4 - 2.3	4	6	5	0.123
11 RF9 33	2 - 3.3	4	10	5	0.123
11 RF9 5	3 - 5	6	16	5	0.123
11 RF9 75	4.5 - 7.5	8	20	5	0.123
11 RF9 10	6 - 10	10	32	5	0.123
11 RF9 15	9 - 15	16	40	5	0.123

AUTOMATIC RESETTING.

Direct mounting on BG06, BG09, BG12 mini-contactors.

11 RFA9 015	0.09 - 0.15	0.25	—	1	0.123
11 RFA9 023	0.14 - 0.23	0.5	—	1	0.123
11 RFA9 033	0.2 - 0.33	0.5	1	1	0.123
11 RFA9 05	0.3 - 0.5	1	2	1	0.123
11 RFA9 075	0.45 - 0.75	1	2	1	0.123
11 RFA9 1	0.6 - 1	2	4	1	0.123
11 RFA9 1V5	0.9 - 1.5	2	4	1	0.123
11 RFA9 2V3	1.4 - 2.3	4	6	1	0.123
11 RFA9 33	2 - 3.3	4	10	1	0.123
11 RFA9 5	3 - 5	6	16	1	0.123
11 RFA9 75	4.5 - 7.5	8	20	1	0.123
11 RFA9 10	6 - 10	10	32	1	0.123
11 RFA9 15	9 - 15	16	40	1	0.123

The appropriate adjustment range of the overload relay should be selected on the basis of the motor nameplate full-load current when direct, across the line starting is considered.

Three-phase motor powers ①

230V [kW]	400V [kW]	415V [kW]	440V [kW]	500V [kW]	690V [kW]
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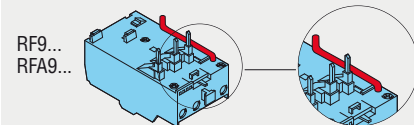
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	0.37
⊗	⊗	⊗	0.37	0.37	0.55
⊗	⊗	0.55	0.55	0.55	0.75
0.37	0.55-0.75	0.75	0.75	1.1	1.1-1.5
0.55	1.1	1.1	1.1-1.5	1.5	2.2
0.75-1.1	1.5	1.5-2.2	2.2	2.2	3-3.7
1.5	2.2-3	3-3.7	3-3.7	3-3.7	4
2.2	3.7-4	4	3.7-4	4-5.5	—
3.2	5.5	5.5-7.5	5.5	—	—

⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	⊗
⊗	⊗	⊗	⊗	⊗	0.37
⊗	⊗	⊗	0.37	0.37	0.55
⊗	⊗	0.55	0.55	0.55	0.75
0.37	0.55-0.75	0.75	0.75	1.1	1.1-1.5
0.55	1.1	1.1	1.1-1.5	1.5	2.2
0.75-1.1	1.5	1.5-2.2	2.2	2.2	3-3.7
1.5	2.2-3	3-3.7	3-3.7	3-3.7	4
2.2	3.7-4	4	3.7-4	4-5.5	—
3.2	5.5	5.5-7.5	5.5	—	—

① The indicated powers apply to 4-pole motors; it is advisable to always check that the nameplate motor current is within the relay adjustment range.

⊗ No standard powers ratings exist; select relay according to current consumption.

NOTE: To facilitate connection between the auxiliary NC contact of the RF...9 thermal relay and terminal A2 of the contactor, insert the conductor into the appropriate conduit as shown.



Certifications and compliance

Certifications obtained:

Type	C U L u s	C S A	G O S T	C C C
RF9... - RFA9...	●	●	●	●

● Certified products.

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

Phase failure / single phase sensitive Three poles (three phase)



RF38...

Order code	Adjustment range	Protection IEC aM	fuses gG	fuses UL ①	Qty per pkg	Wt [kg]
	[A]	[A]	[A]	[A]	n°	[kg]

MANUAL OR AUTOMATIC RESETTING.
Direct mounting on BF09...BF38 contactors.
Independent mounting with RFX38 04 base.

RF38 0016	0.1...0.16	0.25	—	1	1	0.160
RF38 0025	0.16...0.25	0.5	—	1	1	0.160
RF38 0040	0.25...0.4	0.5	1	3	1	0.160
RF38 0063	0.4...0.63	1	2	3	1	0.160
RF38 0100	0.63...1	2	4	3	5	0.160
RF38 0160	1...1.6	2	4	6	5	0.160
RF38 0250	1.6...2.5	4	6	10	5	0.160
RF38 0400	2.5...4	4	6	15	5	0.160
RF38 0650	4...6.5	8	16	25	5	0.160
RF38 1000	6.3...10	10	20	40	5	0.160
RF38 1400	9...14	16	32	50	5	0.160
RF38 1800	13...18	25	40	70	5	0.160
RF38 2300	17...23	25	50	90	5	0.160
RF38 2500	20...25	32	50	100	5	0.160
RF38 3200	24...32	40	63	120	1	0.160
RF38 3800	32...38	40	63	150	1	0.160

① UL RK5 fuse class for RF38 types and UL K5 fuse class for RF...95 types.

NOTE: Two pole (single phase) versions are available on request.
Add the letter "S" in the order code e.g. RF381000 is three pole; RFS381000 two pole.

The appropriate adjustment range of the overload relay should be selected on the basis of the motor nameplate full-load current when direct, across the line starting is considered.

Three-phase IEC motor powers ②

230V [kW]	400V [kW]	415V [kW]	440V [kW]	500V [kW]	690V [kW]
-----------	-----------	-----------	-----------	-----------	-----------

②	②	②	②	②	0.06
②	0.06	0.06	0.06-0.09	0.06-0.09	0.09-0.12
0.06	0.09	0.09	0.12	0.12	0.18
0.09	0.12-0.18	0.12-0.18	0.18	0.18	0.25
0.12	0.25	0.25	0.37	0.25-0.37	0.37-0.55
0.18-0.25	0.37-0.55	0.37-0.55	0.55	0.55-0.75	0.75
0.37	0.75	0.75	0.75-1.1	1.1	1.1-1.5
0.55-0.75	1.1-1.5	1.1-1.5	1.1	1.5-2.2	2.2-3
1.1-1.5	2.2	2.2	2.2-3	3	4
1.5-2.2	3-4	4	4	4-5.5	5.5-7.5
3	5.5	5.5	5.5-7.5	5.5-7.5	11
4	7.5	7.5-9	9	11	15
5.5	11	9-11	11	11	18.5
5.5	11	11	11	15	22
7.5	15	15	15	18.5	30
11	18.5	18.5	18.5	22	30

② No standard powers ratings exist; select relay according to current consumption.

③ The indicated powers apply to 4-pole motors; it is advisable to always check that the nameplate motor current is within the relay adjustment range.

Certifications and compliance

Certifications obtained:

Typo	cULus	CSA	EAC	CCC	Register of shipping L R O S
RF38	●	—	●	●	—

● Certified products.

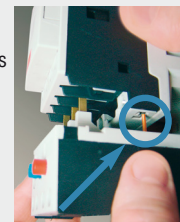
cULus – UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices – Thermal Overload Relays, 600VAC, open type, ambient compensated, 5000 Amps RMS symmetrical short circuit rating up to 82A FLA range and 10000 Amps RMS for 95A and 110A FLA range; the trip current is 120% FLA.
CSA – CSA certified for Canada only (File 54332) as Auxiliary Devices for use with magnetic contactors.

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

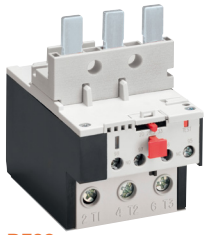
FIXING EASE OF THE THERMAL OVERLOAD RELAY

While the thermal overload relay is being linked to the contactor, its auxiliary contact fits on and connects to the coil terminal by rigid terminal.

Complete relay fixing is done in a single operation, with no need of other connections.

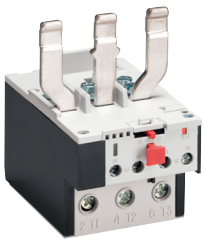


Phase failure / single phase sensitive Three poles (three phase)



RF82

new



11 RF95 3...



RFA82



11 RFA95 3...

Order code	Adjustment range	Protection IEC		fuses UL	Qty per pkg	Wt [kg]
	[A]	aM [A]	gG [A]	UL n° [A]		

MANUAL RESETTING.
Direct mounting on BF40...BF80 contactors (BF80 ...A... and ...E... type).
Complete with G261 links.
Independent mounting with G270 base.

RF82 3300	20...33	40	63	110	1	0.365
RF82 4200	28...42	50	80	150	1	0.365
RF82 5000	35...50	50	100	175	1	0.365
RF82 6500	46...65	80	125	200	1	0.365
RF82 8200	60...82	100	200	250	1	0.365

MANUAL RESETTING.
Direct mounting on BF95...BF110 contactors.
Complete with G261 links.
Independent mounting with G270 base.

11 RF95 3 82	60...82	100	200	250	1	0.365
11 RF95 3 95	70...95	100	200	350	1	0.365
11 RF95 3 110	90...110	125	200	350	1	0.365

AUTOMATIC RESETTING.
Direct mounting on BF40...BF80 contactors (BF80 ...A... and ...E... type).
Complete with G261 links.
Independent mounting with G270 base.

RFA82 3300	20...33	40	63	110	1	0.365
RFA82 4200	28...42	50	80	150	1	0.365
RFA82 5000	35...50	50	100	175	1	0.365
RFA82 6500	46...65	80	125	200	1	0.365
RFA82 8200	60...82	100	200	250	1	0.365

AUTOMATIC RESETTING.
Direct mounting on BF95...BF110 contactors.
Complete with G261 links.
Independent mounting with G270 base.

11 RFA95 3 82	60...82	100	200	250	1	0.365
11 RFA95 3 95	70...95	100	200	350	1	0.365
11 RFA95 3 110	90...110	125	200	350	1	0.365

① UL RK5 fuse class for RF82 types and UL K5 fuse class for RF...95 types.

NOTE: Two pole (single phase) versions are available on request.
Add the letter "S" in the order code e.g. RF82S200 is three pole; RFS82S200 two pole.

The appropriate adjustment range of the overload relay should be selected on the basis of the motor nameplate full-load current when direct, across the line starting is considered.

Three-phase IEC motor powers ☺

230V [kW]	400V [kW]	415V [kW]	440V [kW]	500V [kW]	690V [kW]
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7.5	11-15	11-15	15-18.5	15-18.5	22-25
9-10	15-18.5	18.5-22	18.5-22	22-25	30-33
10-11	22	25	25	30	37-40
15-18.5	25-30	30-33	30-33	33-40	45-55
22	33-40	37-45	37-45	45-55	59-75

22	33-40	37-45	37-45	45-55	59-75
22-25	40-45	45-51	45-55	55-63	75-80
30	55	55	55	75	90

7.5	11-15	11-15	15-18.5	15-18.5	22-25
9-10	15-18.5	18.5-22	18.5-22	22-25	30-33
10-11	22	25	25	30	37-40
15-18.5	25-30	30-33	30-33	33-40	45-55
22	33-40	37-45	37-45	45-55	59-75

22	33-40	37-45	37-45	45-55	59-75
22-25	40-45	45-51	45-55	55-63	75-80
30	55	55	55	75	90

☺ The indicated powers apply to 4-pole motors; it is advisable to always check that the nameplate motor current is within the relay adjustment range.

Certifications and compliance

Certifications obtained:

Typo	cULus	CSA	ETC	CCC	Register of shipping LROs
RF82	●	—	●	●	—
RFNA82	●	—	●	●	—
RF95	●	●	●	●	●
RFA95	●	●	●	●	—

● Certified products.

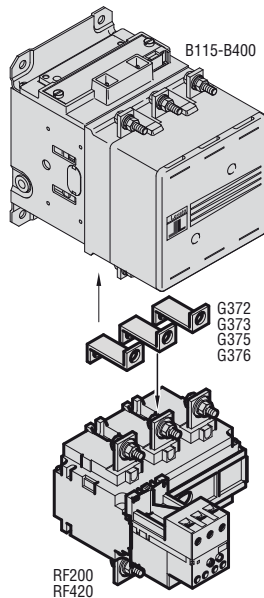
cULus – UL Listed for USA and Canada (cULus - File E93601) as Auxiliary Devices – Thermal Overload Relays, 600VAC, open type, ambient compensated, 5000 Amps RMS symmetrical short circuit rating up to 82A FLA range and 10000 Amps RMS for 95A and 110A FLA range; the trip current is 120% FLA.
CSA – CSA certified for Canada only (File 54332) as Auxiliary Devices for use with magnetic contactors.

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

**Phase failure /
single phase sensitive
Three poles (three phase)**



RF200... - RF420...



Order code	Adjustment range	Protection fuses		Qty per pkg	Wt [kg]
		aM [A]	gG [A]		
	[A]	[A]	[A]	n°	[kg]

MANUAL OR AUTOMATIC RESETTING.

Independent screw fixing or direct mounting on contactors:
B115-B145-B180 using G372 links
B250-B310-B400 using G373 links

RF200 100	60-100	100	160	1	2.15
RF200 125	75-125	125	200	1	2.15
RF200 150	90-150	160	250	1	2.15
RF200 200	120-200	200	315	1	2.15

Independent screw fixing or direct mounting on contactors:
B145-B180 using G375 links
B250-B310-B400 using G376 links

RF420 250	150-250	250	400	1	2.46
RF420 300	180-300	315	500	1	2.46
RF420 420	250-420	400	630	1	2.46

NOTE: The appropriate adjustment range of the overload relay should be selected on the basis of the motor nameplate full-load current when direct, across the line starting is considered.

RELAYS FOR B500 AND B630 CONTACTORS

MANUAL OR AUTOMATIC RESETTING.
Contact our Customer Service 1800 252 995 or sales@mechtronic.com.au for the relative order codes and detailed information.

Three-phase motor powers ①

230V [kW]	400V [kW]	415V [kW]	440V [kW]	550V [kW]	690V [kW]
-----------	-----------	-----------	-----------	-----------	-----------

18.5-25	33-51	37-55	37-59	45-63	59-92
22-37	40-63	45-63	51-75	55-80	75-110
25-45	51-80	55-80	55-92	63-100	92-140
37-59	75-100	75-100	75-110	92-140	129-184

45-75	92-132	92-147	100-150	110-162	140-220
55-92	100-162	110-162	129-184	129-198	180-280
75-110	129-198	147-220	150-220	180-280	250-368

NOTE: For 1000V powers, contact our Customer Service 1800 252 995 or sales@mechtronic.com.au

① The indicated powers apply to 4-pole motors; it is advisable to always check that the nameplate motor current is within the relay adjustment range.

Certifications and compliance

Certifications obtained:

Type	C U L U S	G O S T
RF200	●	●
RF420	●	●

● Certified products.

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



RFX38 02



RFX38 03



11 G262



RFX38 04



11 G228



11 G244

Order code	For relay	Qty per pkg	Wt
		n°	[kg]

Set of links for direct contactor mounting.

11 G372	RF...200 on B115-B145-B180	1	0.250
11 G373	contactor B250-B310-B400	1	0.360
11 G375	RF...420 on B145-B180	1	0.313
11 G376	contactor B250-B310-B400	1	0.500

Protection cover for thermal overload relay-contactor assembly.

RFX38 02	RF38 on contactor BF09 - BF12 - BF18 - BF25	10	0.014
RFX38 03	RF38 on contactor BF26 - BF32 - BF38	10	0.014

Protection shrouds for power terminals.

11 G262	For RF...95...3	10	0.004
11 G361	RF...200	6	0.026
11 G363	RF...420	6	0.046

Independent mounting.

Screw fixing or 35mm DIN rail (IEC/EN 60715) mounting.

RFX38 04	RF...38	5	0.082
11 G270	RF...95	10	0.148

Electrical reset.

11 G228	RF...9 - RF...95	5	0.072
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Sealing device.

RFX38 01	RF...38 - RF...200 - RF...420	10	0.002
11 G233	RF...9 - RF...95	1	0.006

Electric button NO.

11 G244	RF...9 - RF...95	10	0.011
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Marking element.

11 RB6	RF...9 - RF...95	100	0.003
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Set of 100 alphanumeric symbol.

3958	RF...9 - RF...95	1	0.002
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- ① Front IP20 protection is warranted to contactor-thermal relay connections.
- ② Independent mounting base for any RF95 relay. Remove the links fixed on RF...95 and use those supplied with the base.
- ③ Replace with voltage digit. Standard voltages are:
- AC 50/60Hz 24V / 48V / 110-125V / 220-240V / 380-415V.
- ④ Replace with the required alphanumeric symbol. Each package contains 100 pieces of the same symbol.

Electrical reset (G228) operational characteristics

Control circuit voltage AC (50/60Hz)	V	12 - 550
Power consumption in AC	VA	300
Minimum reset time	ms	20

NOTE: Coils can remain supplied for a maximum interval of 500ms; 3 consecutive operations are allowed, followed by a 5 minute interval.

To see the recommended wiring diagram, refer to www.mechtric.com.au

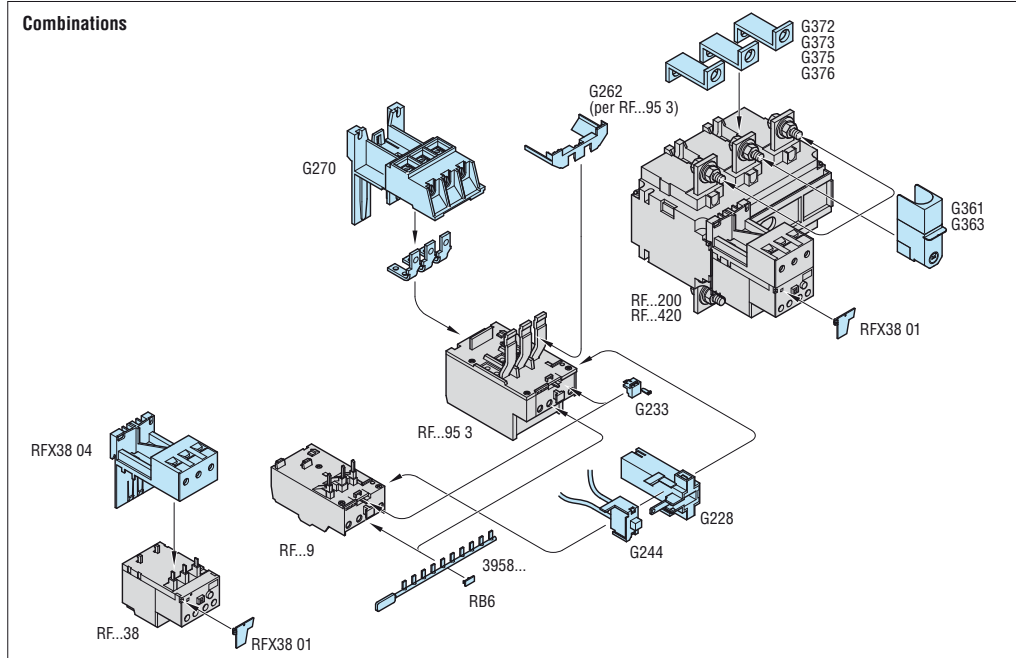
Certifications and compliance

Certifications obtained:

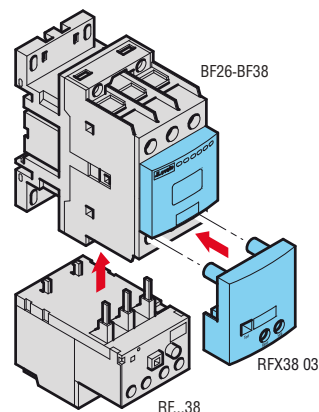
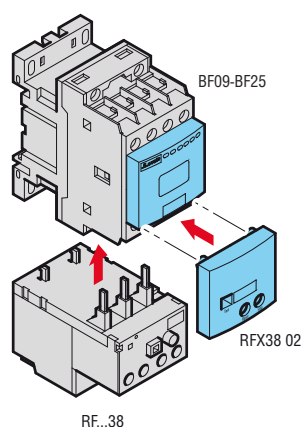
Tipo	C U L U S	C S A	G O S T
G361	●	●	●
G363	●	●	●
G372	—	●	●
G373	—	●	●
G375	—	●	●
G376	—	●	●
G270	●	—	●
RFX38 04	●	—	●

- Certified products.
- "Recognised". Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

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



Protection cover for thermal overload relay-contactor assembly



Thermistor protection relay



31 DRPT...

Order code	Rated auxiliary supply voltage	Qty per pkg	Wt.
	[V]	n°	[kg]
DC supply (version for 35 mm DIN rail IEC/EN 60715).			
31 DRPTC 24	24VDC	1	0.269
AC supply (version for 35 mm DIN rail IEC/EN 60715).			
31 DRPT 24	24VAC	1	0.269
31 DRPT 110	110VAC	1	0.269
31 DRPT 220	220-240VAC	1	0.269
ACCESSORY			
Order code	Description	Qty per pkg	Wt.
		n°	[kg]
31 CE106	Adapter for screw fixing of DRPT relay on mounting plate.	10	0.008

Galvanic isolation between supply and internal circuit does not exist.

General characteristics

The DRPT is a thermal protection relay of motors equipped with thermistor PTC sensors immersed in the winding heads. The maximum number of thermistors to be used is limited by the resistance of all the sensors connected in series; total ohmic value is not to exceed 1.5kΩ at 25°C.

The DRPT type has fail-safe operation: the protective feature trips even in the case the PTC circuit is disconnected or there is a lack of voltage.

Operational characteristics

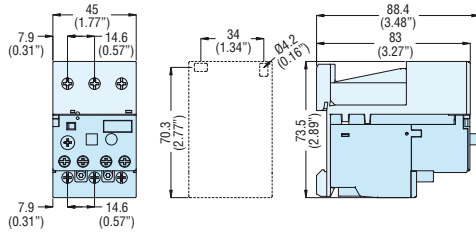
- Supply circuit
 - Rated frequency: 50-60Hz for AC types only
 - Operational limits: 0.85-1.1 Us
 - Maximum heat dissipation: 2.5W
 - Connection: permanent.
- Measuring circuit
 - Type of connectable PTC sensor: According to DIN 44081
 - Total PTC resistance at 25°C: ≤1.5kΩ
 - Tripping resistance: 2.7-3.1kΩ
 - Resetting resistance: 1.5-1.8kΩ
 - Voltage at PTC terminals: ≤ 2.5VDC.
- Remote resetting
 - Control: NC contact opening
 - Contact voltage: 5VDC
 - Current consumption: about 1mA.
- Output relay
 - Arrangement: 1 relay with 2 changeover contacts
 - Rated operational voltage Ue: 250VAC
 - Conventional free air thermal current Ith: 5A
 - Designation to IEC/EN 60947-5-1: B300
 - Mechanical life: 50x10⁶ cycles
 - Electrical life (with rated load): 2x10⁵ cycles.
- Indications
 - Green LED indicator for power ON
 - Red LED indicator for relay state TRIP
- Ambient conditions
 - Operating temperature: -10...+60°C
 - Storage temperature: -30...+80°C.
- Housing
 - Snap on 35mm DIN rail (IEC/EN 60715)
 - For screw fixing, use CE106 adapter
 - Degree of protection
 - IP40 housing
 - IP20 terminals.

Certifications and compliance

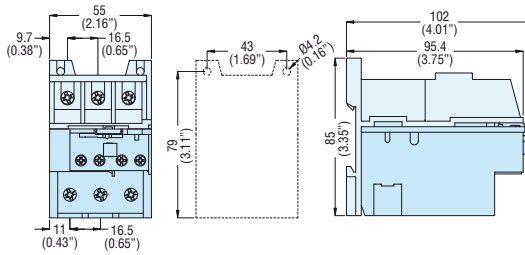
Certifications obtained: GOST.
Compliant with standards: IEC/EN 60255-5.

ACCESSORIES FOR THERMAL OVERLOAD RELAYS

RFX38 04 base c/w RF...38 thermal relay

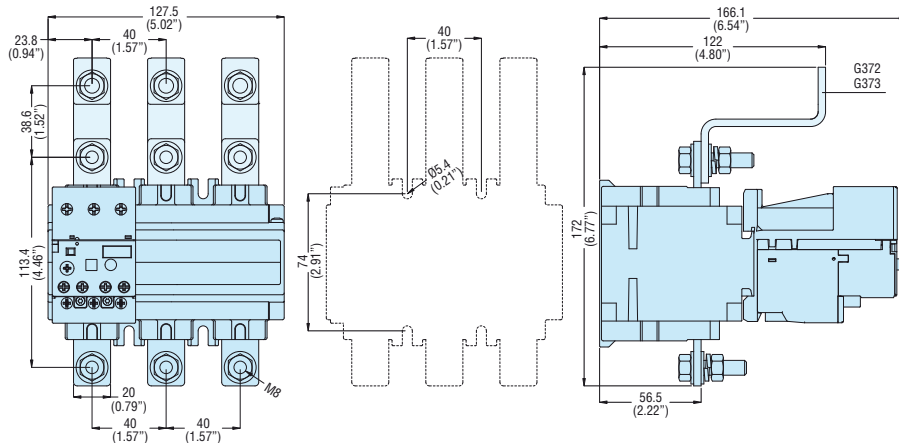


G270 base c/w RF...82 and RF...95 thermal relay

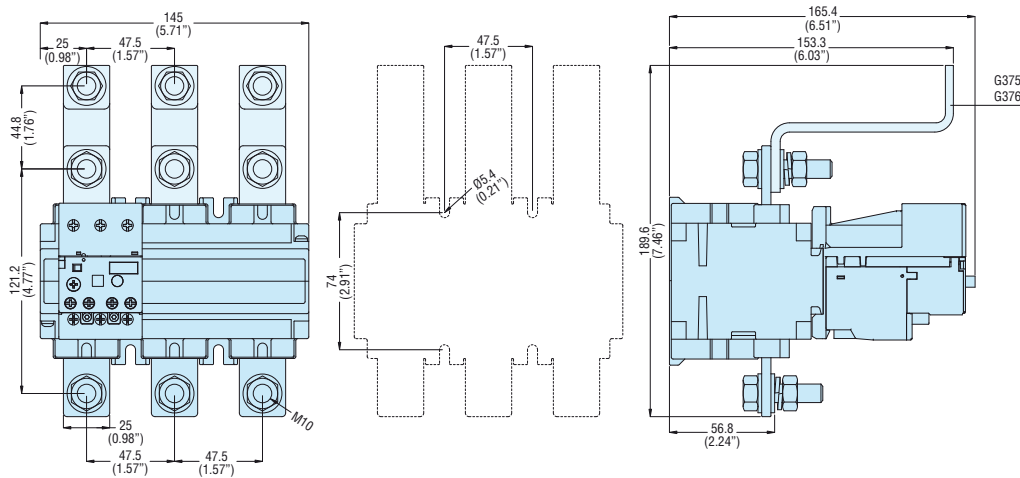


THERMAL RELAYS WITH LINKS

RF...200 with **G372** and **G373**

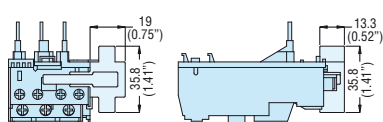


RF...420 with **G375** and **G376**

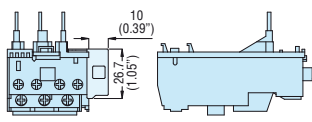


ADD-ON BLOCKS FOR THERMAL OVERLOAD RELAYS RF...9, RF...82 and RF...95

G228... reset

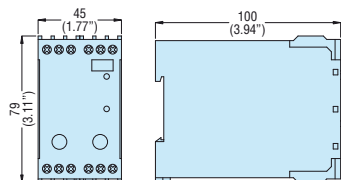


G244 button

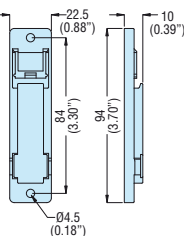


THERMISTOR PROTECTION RELAY

DRPT



CE106 adapter



Fuse holders UL Recognised and CSA certified



FB01 A... FB01 A 1PL



FB02 A... FB02 A 1PL



FB03 A... FB03 A 1PL

new

new

Order code	Pole arrangement	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

For 10x38mm fuses.
IEC 32A rated current at 690VAC.

FB01 F 1P	1P	—	1	12	0.066
FB01 F 1PL	1P	YES	1	12	0.065
FB01 A 1M	1P+N	—	1	12	0.062
FB01 F 1N	1P+N	—	2	6	0.134
FB01 F 2P	2P	—	2	6	0.132
FB01 F 3P	3P	—	3	4	0.188
FB01 F 3N	3P+N	—	4	3	0.260

For 14x51mm fuses.
IEC 50A rated current at 690VAC.

FB02 A 1P	1P	—	1	12	0.113
FB02 A 1PL	1P	YES	1	12	0.114
FB02 A 1N	1P+N	—	2	6	0.237
FB02 A 2P	2P	—	2	6	0.224
FB02 A 3P	3P	—	3	4	0.335
FB02 A 3N	3P+N	—	4	3	0.460

For 22x58mm fuses.
IEC 125A rated current at 690VAC.

FB03 A 1P	1P	—	1	12	0.167
FB03 A 1PL	1P	YES	1	12	0.167
FB03 A 1N	1P+N	—	2	6	0.354
FB03 A 2P	2P	—	2	6	0.334
FB03 A 3P	3P	—	3	4	0.500
FB03 A 3N	3P+N	—	4	3	0.720

Use with gG/aM class 125A fuses, not dissipating more than 12W power.

NOTE:
For FB01 F type: UL Recognized as "Fuseholders - Component". Current rating: 30A. Voltage rating: 750V max. CSA certified as "Fuseholder Assemblies". Current rating: 30A. Voltage rating: 600V max.
For FB02 A type: UL Recognized as "Fuseholders - Component". Current rating: 50A. Voltage rating: 750V max.
For FB03 A type: UL Recognized as "Fuseholders - Component". Current rating: 100A. Voltage rating: 750V max.

Operational characteristics

- IEC rated voltage U_e :
 - 690VAC (FB01 A 1M excluded)
 - 400VAC (FB01 A 1M only)
- IEC rated current I_e :
 - FB01 A 1M: 32A
 - FB01 F: 32A
 - FB02 A: 50A
 - FB03 A: 125A
- IEC utilisation category:
 - FB01 A 1M: AC22B 400V
 - FB01 F: AC22B 500V, AC21B 690V
 - FB02 A: AC22B 500V, AC21B 690V
 - FB03 A: AC21B 690V
- Suitable for IEC fuse class: gG and aM
- IEC degree of protection: IP20.

Certifications and compliance

Certifications obtained:

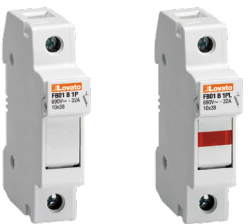
Type	CSA certified (File 252040 class 6255)	UL Recognized for USA and Canada (cULus - File E343395)
FB01 F...	●	●
FB02 A...	—	●
FB03 A...	—	●

● Certification obtained.

"UL Recognized": Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

Compliant with standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-1, IEC/EN 60947-3, UL 4248-1, UL 4248-4, CSA C22.2 n°4248.1, CSA C22.2 n°4248.4.

Fuse holders



FB01 B... FB01 B 1PL

Order code	Pole arrangement	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

For 10x38mm fuses.
IEC 32A rated current at 690VAC.

FB01 B 1P	1P	—	1	12	0.062
FB01 B 1PL	1P	YES	1	12	0.064
FB01 B 1N	1P+N	—	2	6	0.127
FB01 B 2P	2P	—	2	6	0.128
FB01 B 3P	3P	—	3	4	0.185
FB01 B 3N	3P+N	—	4	3	0.247

Operational characteristics

- IEC rated voltage U_e : 690VAC
- IEC rated current I_e : 32A
- IEC utilisation category: AC22B 500V, AC21B 690V
- Suitable for IEC fuse class: gG and aM
- IEC degree of protection: IP20.

Reference standards

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, IEC/EN 60269-1, IEC/EN 60269-2.

Fuse holders for photovoltaic applications

UL Listed / CSA certified



FB01 D... FB01 D 1PL

Order code	Pole arrangement	Status indicator	DIN size	Qty per pkg	Wt [kg]
			n°	n°	[kg]

For 10x38mm fuses.
IEC 32A rated current at 1000VDC.

FB01 D 1P	1P	—	1	12	0.064
FB01 D 1PL	1P	YES	1	12	0.065
FB01 D 2P	2P	—	2	6	0.127
FB01 D 2PL	2P	YES	2	6	0.130

NOTE: UL Listed and CSA certified as "Photovoltaic fuseholders" for use with Photovoltaic Fuses. Interrupting rating 30,000 DC Amps. Voltage rating 1000V. Current rating 30A.

Operational characteristics

- IEC rated voltage U_e : 1000VDC
- IEC rated current I_e : 32A
- IEC utilisation category: DC20B 1000VDC
- Suitable for IEC fuse class: gPV
- IEC degree of protection: IP20.

Certifications and compliance

Certifications obtained: UL Listed for USA (UL - File E366062) and CSA certified for Canada (file ref. not available at time of catalogue printing).
Compliant with standards: IEC/EN 60269-1, IEC/EN 60269-2, IEC/EN 60947-1, IEC/EN 60947-3, UL 4248-1, UL4248-18, CSA C22.2 n° 4248-1, CSA C22.2 n° 4248-18.

Fuse for photovoltaic applications



FE01 D...

Order code	Rated current I_n	Qty per pkg	Wt [kg]
	[A]	n°	[kg]

For 10x38mm fuses.
IEC 30kA breaking capacity at 1000VDC.

FE01 D 00200	2	10	0.008
FE01 D 00400	4	10	0.008
FE01 D 00600	6	10	0.008
FE01 D 00800	8	10	0.008
FE01 D 01000	10	10	0.008
FE01 D 01200	12	10	0.008
FE01 D 01600	16	10	0.008
FE01 D 02000	20	10	0.008

Operational characteristics

- IEC rated voltage U_e : 1000VDC
- IEC rated current I_e : 2-20A
- IEC fuse class: gPV.

Reference standards

Compliant with standards: IEC/EN 60269-6.

Accessories



FBX 00 FBX 01 FBX 02
FBX 03



P1X 90 33



P1X 92 01 P1X 92 02



P1X 91 33

Order code	Description	Qty per pkg	Wt [kg]
	[A]	n°	[kg]
FBX 00	Coupling clip for 10x38, 14x51 and 22x58mm sizes	100	0.003
FBX 01	Coupling pin for 10x38mm size type FB01 A1M, FB01 B1P and FB01 B1PL only	100	0.005
FBX 02	Coupling pin for 14x51 and 22x58mm sizes	100	0.008
FBX 03	Coupling pin for 10x38mm size types FB01 F, FB01 G, FB01 D only	1	0.005

For FB01 F, FB01 A1M, FB01 B and FB01 G types, AC duty.

P1X 90 31	1-phase connection busbar for 57 modules in total, 996mm/39.2" long	10	0.240
P1X 90 33	3-phase connection busbar for 60 modules in total, 1060mm/41.7" long	10	0.474
P1X 91 30	Kit of 5 isolating covers for unused busbar terminals	10	0.030
P1X 91 31	End cap for 1-phase P1X9031 busbar	50	0.001
P1X 91 33	End cap for 3-phase P1X9033 busbar	50	0.001
P1X 92 01	1-pole terminal for busbar supply, 25mm ² max conductor	25	0.011
P1X 92 02	1-pole terminal for busbar supply, 50mm ² max conductor	25	0.022

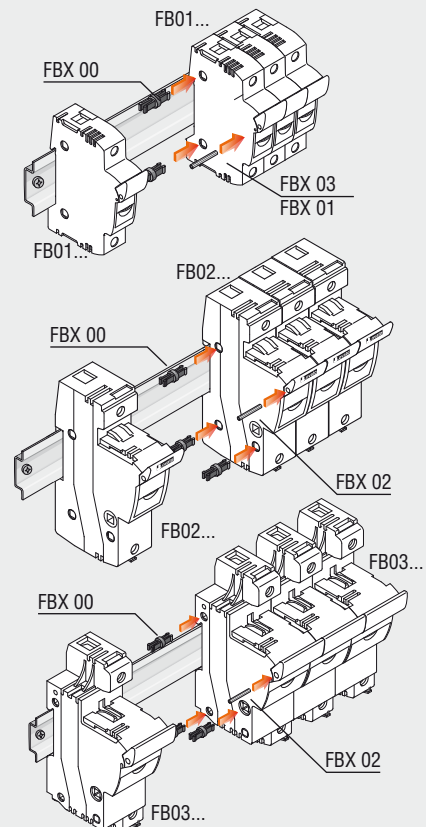
① See technical characteristics under derating factor of FB01 type for operating conditions.

General and operational characteristics

SUPPLY CONNECTION BUSBARS

- Central point of power supply: 100A max ①
- Side point of power supply: 63A max ①
- Pitch: 18mm/0.7"
- Busbar section: 10mm²
- For paralleling connection
- Length can be cut in shorter sections.

Fuse holder combinations



TYPE	FB01 A...	FB01 B...	FB02 A...	FB03 A...	FB01 C...	FB01 D...
Range	AC				Class CC (AC)	DC
IEC maximum rated current I_n	32A		50A	125A [Ⓜ]	30A	32A
IEC maximum rated voltage U_n	690VAC; 400VAC [Ⓜ]		690VAC		600VAC	1000VDC
IEC utilisation category	AC22B 500V; AC21B 690V; AC22B 400V [Ⓜ]			AC21B 690V	AC22B 500V; AC21B 690V	DC20B 1000VDC
Maximum power dissipation	3W		5W	9.5W	3W	4W
Derating factor of current I_n for different ambient temperatures	20°C	1				
	30°C	0.95				
	40°C	0.9				
	50°C	0.8				
	60°C	0.7				
	70°C	0.5				
Derating factor of current I_n for side-by-side fuse holders - number of poles	1-4	1				
	5-6	0.8				
	7-9	0.7				
	≥10	0.6				
Voltage for status indicator	120...690VAC		230...690VAC		120...600VAC	350...1000VDC

CONNECTIONS

Maximum tightening torque		2.5Nm; 2Nm [Ⓜ] / 22lbin	3Nm / 26lbin	4Nm / 35lbin	2.5Nm / 22lbin	
Maximum conductor cross section	flexible/stranded	1x16mm ² ; 1-16mm ² [Ⓜ] / 8AWG	1x25mm ² / 6AWG	1x35mm ² / 2AWG	1x16mm ² / 8AWG	1x16mm ² / 6AWG
	rigid/solid	1x25mm ² ; 1-10mm ² [Ⓜ] / 8AWG	1x35mm ² / 8AWG	1x50mm ² / 1AWG	1x25mm ² / 10AWG	1x25mm ² / 4AWG

AMBIENT CONDITIONS

Operating temperature	-20...+70°C
Storage temperature	-40...+80°C
Maximum altitude	3,000m
Operation position	Any
Fixing	On 35mm DIN rail (IEC/EN 60715)

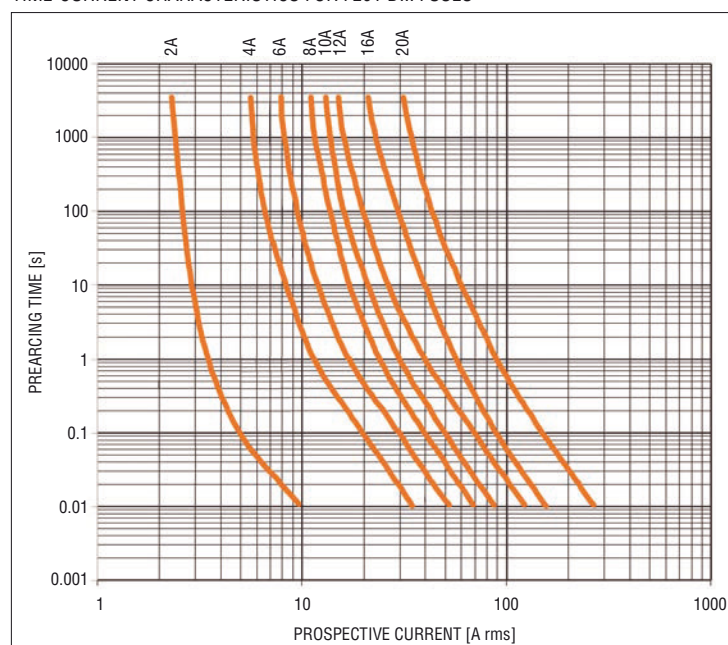
[Ⓜ] Values valid only for FB01 A 1M type.

[Ⓜ] Use with gG/aM class 125A fuses, not dissipating more than 12W power.

TECHNICAL CHARACTERISTICS FOR FE01 D... FUSES

TYPE	Rated current [A]	Power consumption at 0.7 I_n [W]	Power consumption at I_n [W]	Preclearing I^2t [A ² s]	Total I^2t at 1000VDC [A ² s]
FE01 D 00200	2	0.78	1.45	0.62	1
FE01 D 00400	4	0.64	1.57	6.9	11
FE01 D 00600	6	0.76	1.84	24	38
FE01 D 00800	8	0.8	1.92	62	99
FE01 D 01000	10	0.94	2.2	10	48
FE01 D 01200	12	0.98	2.4	18	94
FE01 D 01600	16	1.1	2.7	46	110
FE01 D 02000	20	1.2	2.9	118	282

TIME-CURRENT CHARACTERISTICS FOR FE01 D... FUSES



MCB 6KA

- 1 pole, 1 pole + N and 3 pole
- Trip characteristics B and C curve (optional D curve)
- Accessories for remote indication and release
- IEC rated current I_n 1 to 63A
- 18mm wide module
- Auxiliary contacts and shunt trip release options
- Fixing on 35mm DIN rail (IEC/EN 60715)



ETIMAT 6KA 1P

1 pole B curve

Order Code	Curve	IEC I_n	IEC I_{cn}	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
ETI002111512	B	6	6	1	0.112
ETI002111514	B	10	6	1	0.112
ETI002111515	B	13	6	1	0.112
ETI002111516	B	16	6	1	0.112
ETI002111517	B	20	6	1	0.112
ETI002111518	B	25	6	1	0.112
ETI002111519	B	32	6	1	0.112
ETI002111520	B	40	6	1	0.112
ETI002111521	B	50	6	1	0.123
ETI002111522	B	63	6	1	0.123

1 pole C curve

ETI002141504	C	1	6	1	0.115
ETI002141508	C	2	6	1	0.115
ETI002141510	C	4	6	1	0.115
ETI002141512	C	6	6	1	0.112
ETI002141514	C	10	6	1	0.112
ETI002141515	C	13	6	1	0.112
ETI002141516	C	16	6	1	0.112
ETI002141517	C	20	6	1	0.112
ETI002141518	C	25	6	1	0.112
ETI002141519	C	32	6	1	0.112
ETI002141520	C	40	6	1	0.112
ETI002141521	C	50	6	1	0.123
ETI002141522	C	63	6	1	0.123

General characteristics

These devices are used to protect against short circuits and overloads of wiring installations and loads in panel boards, office buildings, stores, and similar applications. Their purpose is circuit protection, circuit isolation and load operation controls. They have instantaneous trip characteristics defined as follows:

- **B-type:** Instantaneous trip 3-5 times I_n
For non-inductive or low inductive loads (heating resistors, generators, very long wire lines)
- **C-type:** Instantaneous trip 5-10 times I_n
For inductive loads (mixed loads, resistive and inductive with low inrush current)
- **D-type:** Instantaneous trip 10-14 times I_n
For highly inductive loads (loads with high inrush and current such as motors).

Specifications

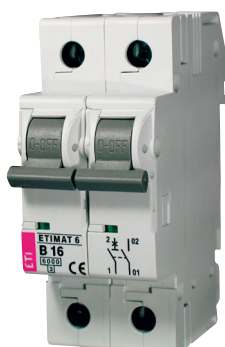
Rated voltage:	230/440VAC, max. 60VDC
Rated current:	B: 6-63A, C: 1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	6kA
Energy limiting class:	3; B, C
Tripping characteristics:	B, C and (D optional)
Terminals:	1-25mm ² , max. 3 Nm
Module width:	18mm/pole
Sealing possibility:	On/Off
Electrical life:	4,000 operations
Mechanical life:	10,000 operations
Operating Temp.:	-40 to +70°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

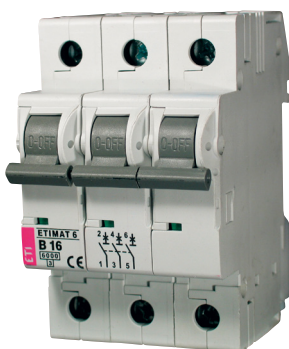
Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-151529-EA
Compliant with standards: IEC 60898, EN60898, AS/NZS 60898.1:2004

MCB 6KA



ETIMAT 6kA 1P+N



ETIMAT 6kA 3P

1 pole +N C curve

Order Code	Curve Type	IEC In	IEC Icn	No. of DIN modules	Weight
		(A)	(kA)		(kg)
ETI002142504	C	1	6	2	0.232
ETI002142508	C	2	6	2	0.232
ETI002142510	C	4	6	2	0.232
ETI002142512	C	6	6	2	0.227
ETI002142514	C	10	6	2	0.227
ETI002142515	C	13	6	2	0.227
ETI002142516	C	16	6	2	0.227
ETI002142517	C	20	6	2	0.227
ETI002142518	C	25	6	2	0.227
ETI002142519	C	32	6	2	0.227
ETI002142520	C	40	6	2	0.227
ETI002142521	C	50	6	2	0.245
ETI002142522	C	63	6	2	0.245

3 pole C curve

ETI002145504	C	1	6	3	0.354
ETI002145508	C	2	6	3	0.354
ETI002145510	C	4	6	3	0.354
ETI002145512	C	6	6	3	0.345
ETI002145514	C	10	6	3	0.345
ETI002145515	C	13	6	3	0.345
ETI002145516	C	16	6	3	0.345
ETI002145517	C	20	6	3	0.345
ETI002145518	C	25	6	3	0.345
ETI002145519	C	32	6	3	0.345
ETI002145520	C	40	6	3	0.345
ETI002145521	C	50	6	3	0.372
ETI002145522	C	63	6	3	0.372

Specifications

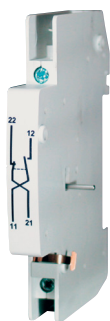
Rated voltage:	230/440VAC, max. 60VDC
Rated current:	B: 6-63A, C: 1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	6kA
Energy limiting class:	3; B, C
Tripping characteristics:	B, C and (D)
Terminals:	1-25mm ² , max. 3 Nm
Module width:	18mm/pole
Sealing possibility:	On/Off
Electrical life:	4,000 operations
Mechanical life:	10,000 operations
Operating Temp.:	-40 to +70°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-151529-EA
Compliant with standards: IEC 60898, EN60898, AS/NZS 60898.1:2004

Accessories



Auxiliary Switch



Shunt Trip Release

Auxiliary Switch

Order Code	Contact	No. of DIN modules	Weight
			(kg)
ETI002159031	NO+NC	0.5	0.035
ETI002159032	1 x NC	0.5	0.030
ETI002159033	1 x NO	0.5	0.030

Shunt Trip Release

Order Code	Voltage	No. of DIN modules	Weight
			(kg)
ETI002159301	230VAC	1	0.110
ETI002159312	24VAC/DC	1	0.110

MCB 10KA



P2 MB 1P ...

- 1 pole, 2 pole, 3 pole and 4 pole
- Thermal and magnetic trip
- Trip characteristics B, C and D curve
- Accessories for remote indication and release
- IEC rated current I_n 1 to 63A
- 17.5mm wide module
- Auxiliary contacts and shunt trip release options
- Fixing on 35mm DIN rail (IEC/EN 60715)

1 pole B curve

Order Code	Curve	IEC I_n	IEC I_{cn}	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
P1 MB 1P B01	B	1	10	1	0.115
P1 MB 1P B02	B	2	10	1	0.115
P1 MB 1P B04	B	4	10	1	0.115
P1 MB 1P B06	B	6	10	1	0.115
P1 MB 1P B10	B	10	10	1	0.115
P1 MB 1P B16	B	16	10	1	0.115
P1 MB 1P B20	B	20	10	1	0.115
P1 MB 1P B25	B	25	10	1	0.115
P1 MB 1P B32	B	32	10	1	0.115
P1 MB 1P B40	B	40	10	1	0.115
P1 MB 1P B50	B	50	10	1	0.115
P1 MB 1P B63	B	63	10	1	0.115

1 pole C curve

P1 MB 1P C01	C	1	10	1	0.115
P1 MB 1P C02	C	2	10	1	0.115
P1 MB 1P C04	C	4	10	1	0.115
P1 MB 1P C06	C	6	10	1	0.115
P1 MB 1P C10	C	10	10	1	0.115
P1 MB 1P C16	C	16	10	1	0.115
P1 MB 1P C20	C	20	10	1	0.115
P1 MB 1P C25	C	25	10	1	0.115
P1 MB 1P C32	C	32	10	1	0.115
P1 MB 1P C40	C	40	10	1	0.115
P1 MB 1P C50	C	50	10	1	0.115
P1 MB 1P C63	C	63	10	1	0.115

1 pole D curve

P1 MB 1P D01	D	1	10	1	0.115
P1 MB 1P D02	D	2	10	1	0.115
P1 MB 1P D04	D	4	10	1	0.115
P1 MB 1P D06	D	6	10	1	0.115
P1 MB 1P D10	D	10	10	1	0.115
P1 MB 1P D16	D	16	10	1	0.115
P1 MB 1P D20	D	20	10	1	0.115
P1 MB 1P D25	D	25	10	1	0.115
P1 MB 1P D32	D	32	10	1	0.115
P1 MB 1P D40	D	40	10	1	0.115
P1 MB 1P D50	D	50	10	1	0.115
P1 MB 1P D63	D	63	10	1	0.115

See page 2-26 for add on blocks and accessories.

General characteristics

These devices are used to protect against short circuits and overloads of wiring installations and loads in panel boards, office buildings, stores, and similar applications. Their purpose is circuit protection, circuit isolation and load operation controls. They have instantaneous trip characteristics defined as follows:

- **B-type:** Instantaneous trip 3-5 times I_n
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- **C-type:** Instantaneous trip 5-10 times I_n
For inductive loads (mixed loads, resistive and inductive with low inrush current)
- **D-type:** Instantaneous trip 10-14 times I_n
For highly inductive loads (loads with high inrush and current such as motors).

Specifications

Rated voltage:	230/440VAC, max. 60VDC
Rated current:	1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	10kA
Impulse withstand voltage:	4kV
Tripping characteristics:	B, C and D
Terminals:	1-16mm ² , max. 2 Nm
Module width:	17.5mm/pole
Dissipation per pole:	3-13W
Electrical life:	4,000 operations
Mechanical life:	20,000 operations
Operating Temp.:	-35 to +75°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

Compliance and standards

Certifications obtained: TÜV – Rheinland; UL Recognised for USA and Canada (cURus – File E359585) as "Supplementary Protectors", designated as Overcurrent type, for general industrial use, suitable for factory wiring only with 125-135% tripping current of amp rating.

Products having this type of marking are intended for use as components of complete workshop- assembled equipment.

Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCB 10KA



P1 MB 2P ...

2 pole B curve

Order Code	Curve	IEC In	IEC Icn	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
P1 MB 2P B01	B	1	10	2	0.230
P1 MB 2P B02	B	2	10	2	0.230
P1 MB 2P B04	B	4	10	2	0.230
P1 MB 2P B06	B	6	10	2	0.230
P1 MB 2P B10	B	10	10	2	0.230
P1 MB 2P B16	B	16	10	2	0.230
P1 MB 2P B20	B	20	10	2	0.230
P1 MB 2P B25	B	25	10	2	0.230
P1 MB 2P B32	B	32	10	2	0.230
P1 MB 2P B40	B	40	10	2	0.230
P1 MB 2P B50	B	50	10	2	0.230
P1 MB 2P B63	B	63	10	2	0.230

2 pole C curve

P1 MB 2P C01	C	1	10	2	0.230
P1 MB 2P C02	C	2	10	2	0.230
P1 MB 2P C04	C	4	10	2	0.230
P1 MB 2P C06	C	6	10	2	0.230
P1 MB 2P C10	C	10	10	2	0.230
P1 MB 2P C16	C	16	10	2	0.230
P1 MB 2P C20	C	20	10	2	0.230
P1 MB 2P C25	C	25	10	2	0.230
P1 MB 2P C32	C	32	10	2	0.230
P1 MB 2P C40	C	40	10	2	0.230
P1 MB 2P C50	C	50	10	2	0.230
P1 MB 2P C63	C	63	10	2	0.230

2 pole D curve

P1 MB 2P D01	D	1	10	2	0.230
P1 MB 2P D02	D	2	10	2	0.230
P1 MB 2P D04	D	4	10	2	0.230
P1 MB 2P D06	D	6	10	2	0.230
P1 MB 2P D10	D	10	10	2	0.230
P1 MB 2P D16	D	16	10	2	0.230
P1 MB 2P D20	D	20	10	2	0.230
P1 MB 2P D25	D	25	10	2	0.230
P1 MB 2P D32	D	32	10	2	0.230
P1 MB 2P D40	D	40	10	2	0.230
P1 MB 2P D50	D	50	10	2	0.230
P1 MB 2P D63	D	63	10	2	0.230

See page 2-26 for add on blocks and accessories.

Specifications

Rated voltage:	230/440VAC, max. 60VDC
Rated current:	1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	10kA
Impulse withstand voltage:	4kV
Tripping characteristics:	B, C and D
Terminals:	1-16mm ² , max. 2 Nm
Module width:	17.5mm/pole
Dissipation per pole:	3-13W
Electrical life:	4,000 operations
Mechanical life:	20,000 operations
Operating Temp.:	-35 to +75°C

For detailed tripping curves see the information on our web site www.mechtronic.com.au

Compliance and standards

Certifications obtained: TÜV – Rheinland; UL Recognised for USA and Canada (cURus – File E359585) as “Supplementary Protectors”, designated as Overcurrent type, for general industrial use, suitable for factory wiring only with 125-135% tripping current of amp rating. Products having this type of marking are intended for use as components of complete workshop- assembled equipment.

Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCB 10KA



P1 MB 3P ...

3 pole B curve

Order Code	Curve	IEC In	IEC Icn	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
P1 MB 3P B01	B	1	10	3	0.345
P1 MB 3P B02	B	2	10	3	0.345
P1 MB 3P B04	B	4	10	3	0.345
P1 MB 3P B06	B	6	10	3	0.345
P1 MB 3P B10	B	10	10	3	0.345
P1 MB 3P B16	B	16	10	3	0.345
P1 MB 3P B20	B	20	10	3	0.345
P1 MB 3P B25	B	25	10	3	0.345
P1 MB 3P B32	B	32	10	3	0.345
P1 MB 3P B40	B	40	10	3	0.345
P1 MB 3P B50	B	50	10	3	0.345
P1 MB 3P B63	B	63	10	3	0.345

3 pole C curve

P1 MB 3P C01	C	1	10	3	0.345
P1 MB 3P C02	C	2	10	3	0.345
P1 MB 3P C04	C	4	10	3	0.345
P1 MB 3P C06	C	6	10	3	0.345
P1 MB 3P C10	C	10	10	3	0.345
P1 MB 3P C16	C	16	10	3	0.345
P1 MB 3P C20	C	20	10	3	0.345
P1 MB 3P C25	C	25	10	3	0.345
P1 MB 3P C32	C	32	10	3	0.345
P1 MB 3P C40	C	40	10	3	0.345
P1 MB 3P C50	C	50	10	3	0.345
P1 MB 3P C63	C	63	10	3	0.345

3 pole D curve

P1 MB 3P D01	D	1	10	3	0.345
P1 MB 3P D02	D	2	10	3	0.345
P1 MB 3P D04	D	4	10	3	0.345
P1 MB 3P D06	D	6	10	3	0.345
P1 MB 3P D10	D	10	10	3	0.345
P1 MB 3P D16	D	16	10	3	0.345
P1 MB 3P D20	D	20	10	3	0.345
P1 MB 3P D25	D	25	10	3	0.345
P1 MB 3P D32	D	32	10	3	0.345
P1 MB 3P D40	D	40	10	3	0.345
P1 MB 3P D50	D	50	10	3	0.345
P1 MB 3P D63	D	63	10	3	0.345

See page 2-26 for add on blocks and accessories.

Specifications

Rated voltage:	230/440VAC, max. 60VDC
Rated current:	1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	10kA
Impulse withstand voltage:	4kV
Tripping characteristics:	B, C and D
Terminals:	1-16mm ² , max. 2 Nm
Module width:	17.5mm/pole
Dissipation per pole:	3-13W
Electrical life:	4,000 operations
Mechanical life:	20,000 operations
Operating Temp.:	-35 to +75°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

Compliance and standards

Certifications obtained: TÜV – Rheinland; UL Recognised for USA and Canada (cURus – File E359585) as “Supplementary Protectors”, designated as Overcurrent type, for general industrial use, suitable for factory wiring only with 125-135% tripping current of amp rating. Products having this type of marking are intended for use as components of complete workshop- assembled equipment.

Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCB 10KA



P1 MB 4P ...

4 pole B curve

Order Code	Curve	IEC In	IEC Icn	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
P1 MB 4P B01	B	1	10	4	0.460
P1 MB 4P B02	B	2	10	4	0.460
P1 MB 4P B04	B	4	10	4	0.460
P1 MB 4P B06	B	6	10	4	0.460
P1 MB 4P B10	B	10	10	4	0.460
P1 MB 4P B16	B	16	10	4	0.460
P1 MB 4P B20	B	20	10	4	0.460
P1 MB 4P B25	B	25	10	4	0.460
P1 MB 4P B32	B	32	10	4	0.460
P1 MB 4P B40	B	40	10	4	0.460
P1 MB 4P B50	B	50	10	4	0.460
P1 MB 4P B63	B	63	10	4	0.460

4 pole C curve

P1 MB 4P C01	C	1	10	4	0.460
P1 MB 4P C02	C	2	10	4	0.460
P1 MB 4P C04	C	4	10	4	0.460
P1 MB 4P C06	C	6	10	4	0.460
P1 MB 4P C10	C	10	10	4	0.460
P1 MB 4P C16	C	16	10	4	0.460
P1 MB 4P C20	C	20	10	4	0.460
P1 MB 4P C25	C	25	10	4	0.460
P1 MB 4P C32	C	32	10	4	0.460
P1 MB 4P C40	C	40	10	4	0.460
P1 MB 4P C50	C	50	10	4	0.460
P1 MB 4P C63	C	63	10	4	0.460

4 pole D curve

P1 MB 4P D01	D	1	10	4	0.460
P1 MB 4P D02	D	2	10	4	0.460
P1 MB 4P D04	D	4	10	4	0.460
P1 MB 4P D06	D	6	10	4	0.460
P1 MB 4P D10	D	10	10	4	0.460
P1 MB 4P D16	D	16	10	4	0.460
P1 MB 4P D20	D	20	10	4	0.460
P1 MB 4P D25	D	25	10	4	0.460
P1 MB 4P D32	D	32	10	4	0.460
P1 MB 4P D40	D	40	10	4	0.460
P1 MB 4P D50	D	50	10	4	0.460
P1 MB 4P D63	D	63	10	4	0.460

See page 2-26 for add on blocks and accessories.

Specifications

Rated voltage:	230/440VAC, max. 60VDC
Rated current:	1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	10kA
Impulse withstand voltage:	4kV
Tripping characteristics:	B, C and D
Terminals:	1-16mm ² , max. 2 Nm
Module width:	17.5mm/pole
Dissipation per pole:	3-13W
Electrical life:	4,000 operations
Mechanical life:	20,000 operations
Operating Temp.:	-35 to +75°C

For detailed tripping curves see the information on our web site www.mechtronic.com.au

Compliance and standards

Certifications obtained: TÜV – Rheinland; UL Recognised for USA and Canada (cURus – File E359585) as “Supplementary Protectors”, designated as Overcurrent type, for general industrial use, suitable for factory wiring only with 125-135% tripping current of amp rating.

Products having this type of marking are intended for use as components of complete workshop- assembled equipment.

Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCB 10KA



P2 MB 1P



P2 MB 2P ...



P2 MB 3P ...



P2 MB 4P ...

- 1 pole, 2 pole, 3 pole and 4 pole
- Thermal and magnetic trip
- Trip characteristics C and D curve
- Accessories for remote indication and release
- IEC rated current In 80 to 125A
- 27mm wide module
- Auxiliary contacts and shunt trip release options
- Fixing on 35mm DIN rail (IEC/EN 60715)

1 pole C curve

Order Code	Curve	IEC In	IEC Icn	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
P2 MB 1P C080	C	80	10	1.5	0.166
P2 MB 1P C100	C	100	10	1.5	0.166
P2 MB 1P C125	C	125	10	1.5	0.166

2 pole C curve

P2 MB 2P C080	C	80	10	3	0.340
P2 MB 2P C100	C	100	10	3	0.340
P2 MB 2P C125	C	125	10	3	0.340

3 pole C curve

P2 MB 3P C080	C	80	10	4.5	0.510
P2 MB 3P C100	C	100	10	4.5	0.510
P2 MB 3P C125	C	125	10	4.5	0.510

3 pole D curve

P2 MB 3P D080	D	80	10	4.5	0.510
P2 MB 3P D100	D	100	10	4.5	0.510
P2 MB 3P D125	D	125	10	4.5	0.510

4 pole C curve

P2 MB 4P C080	C	80	10	6	0.680
P2 MB 4P C100	C	100	10	6	0.680
P2 MB 4P C125	C	125	10	6	0.680

4 pole D curve

P2 MB 4P D080	D	80	10	6	0.680
P2 MB 4P D100	D	100	10	6	0.680
P2 MB 4P D125	D	125	10	6	0.680

See page 2-26 for add on blocks and accessories.

General characteristics

These devices are used to protect against short circuits and overloads of wiring installations and loads in industrial applications.

Their purpose is circuit protection, circuit isolation and load operation controls. They have instantaneous trip characteristics defined as follows:

- **C-type:** Instantaneous trip 5-10 times In
For inductive loads (mixed loads, resistive and inductive with low inrush current)
- **D-type:** Instantaneous trip 10-14 times In
For highly inductive loads (loads with high inrush and current such as motors).

Specifications

Rated voltage:	230/440VAC, max. 60VDC
Rated current:	1-63A
Rated frequency:	50/60Hz
Rated short circuit capacity:	10kA
Impulse withstand voltage:	4kV
Tripping characteristics:	C and D
Terminals:	2.5-50mm ² , max. 3 Nm
Module width:	27mm/pole
Dissipation per pole:	15-20W
Electrical life:	4,000 operations
Mechanical life:	10,000 operations
Operating Temp.:	-35 to +75°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

Compliance and standards

Certifications obtained: TÜV – Rheinland; UL Recognised for USA and Canada (cURus – File E359585) as “Supplementary Protectors”, designated as Overcurrent type, for general industrial use, suitable for factory wiring only with 125-135% tripping current of amp rating. Products having this type of marking are intended for use as components of complete workshop- assembled equipment.

Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

Add-on blocks for P1MB miniature circuit breakers 1-63A



P1X 1011

P1X 16230



Order code	Characteristics	Qty per MCB	Qty per pkg	Wt [kg]
Auxiliary contact.				
P1X 1011	One changeover (SPDT), side mount	1	10	0.040
Indicator contact for thermal-magnetic trip.				
P1X 1311	One changeover (SPDT), side mount	1	10	0.040
Undervoltage trip release.				
P1X 14230	230V 50/60Hz, side mount	1	8	0.070
Shunt trip release.				
P1X 16230	110-415V 50/60Hz, side mount	1	8	0.070

General characteristics

- Auxiliary and indicator contact width: 9mm / 0.35" (0.5 module)
- Undervoltage and shunt trip release width: 17.5mm / 0.69"
- Maximum combination: 3 add-on blocks on MCB left side only of which 1 undervoltage or shunt release directly on MCB side and then 2 contacts of which 1 auxiliary and 1 indicator.

Operational characteristics

- IEC rated impulse voltage Uimp: 4kV
- IEC rated operational current in AC: 6A 230V for releases; 3A 400V for auxiliary contacts.

Certifications and compliance

Certifications obtained: UL Recognized for USA and Canada (cURus – File E359585) as Accessories for supplementary protectors. Products having this type of marking are intended for use as components of complete workshop-assembled equipment. Compliant with standards: IEC/EN 60947-5-1.

Add-on blocks for P2MB miniature circuit breakers 80-125A



P2X 1011

P2X 1311



Order code	Characteristics	Qty per MCB	Qty per pkg	Wt [kg]
Auxiliary contact.				
P2X 1011	One changeover (SPDT), side mount	1	10	0.040
Indicator contact for thermal-magnetic trip.				
P2X 1311	One changeover (SPDT), side mount	1	10	0.040
Undervoltage trip release.				
P2X 14230	230V 50/60Hz, side mount	1	8	0.070

General characteristics

- Auxiliary and indicator contact width: 9mm / 0.35" (0.5 module)
- Undervoltage and shunt trip release width: 17.5mm / 0.69"
- Maximum combination: 3 add-on blocks on MCB sides of which 1 undervoltage or shunt release on MCB right side and 2 contacts on the left of which 1 auxiliary and 1 indicator.

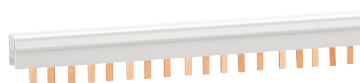
Operational characteristics

- IEC rated impulse voltage Uimp: 4kV
- IEC rated operational current in AC: 6A 230V for releases; 3A 400V for auxiliary contacts.

Reference standards

Compliant with standards: IEC/EN 60947-5-1.

Accessories for P1MB types



P1X 90 33



P1X 91 33



P1X 92 01



P1X 92 02

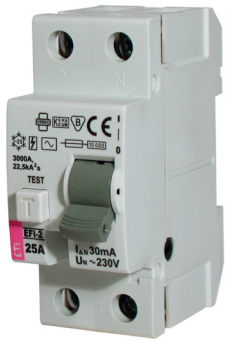
Order code	Description	Qty per pkg	Wt [kg]
		n°	[kg]
P1X 90 31	1-phase connection busbar for 55 1P modules (55 1P MCBs in total), 966mm/39.2" long	10	0.240
P1X 90 33	3-phase connection busbar for 60 modules (20 3P MCBs in total), 1060mm/41.7" long	10	0.474
P1X 91 30	Kit of 5 isolating covers for unused busbar terminals	10	0.030
P1X 91 31	End cap for 1-phase P1X9031 busbar	50	0.001
P1X 91 33	End cap for 3-phase P1X9033 busbar	50	0.001
P1X 92 01	1-pole terminal for busbar supply, 25mm ² max conductor	25	0.011
P1X 92 02	1-pole terminal for busbar supply, 50mm ² max conductor	25	0.022

General and operational characteristics

- SINGLE-PHASE SUPPLY BUSBAR**
- Central point of power supply: 100A max
 - Side point of power supply: 63A max
 - Pitch: 17.5mm / 0.69"
 - Busbar section: 10mm²
 - Number of modules/poles: 55
 - For paralleling connection
 - Standard-supplied length: 966mm/39.2" which can be cut in shorter sections.

- THREE-PHASE SUPPLY BUSBAR**
- Central point of power supply: 100A max
 - Side point of power supply: 63A max
 - Pitch: 17.5mm / 0.69"
 - Busbar section: 10mm²
 - Number of modules/poles: 60 (20pcs 3P MCBs)
 - For paralleling connection
 - Standard-supplied length: 1060mm/41.7" which can be cut in shorter sections.

EFI-2 RCCB



EFI-2 16-80A



EFI-2 100A

- 2 pole (1P + N)
- Instantaneous break time (short time delayed and selective optional)
- Rated residual current 30mA (100mA and 300mA optional)
- Type A (sinusoidal AC and pulsating DC)
- IEC rated current I_n 16 to 100A
- 36mm wide module
- Fixing on 35mm DIN rail (IEC/EN 60715)

2 pole 30mA Type A

Order Code	IEC I_n	No. of DIN modules	Weight (kg)
	(A)		
ETI002062521	16	2	0.229
ETI002062522	25	2	0.229
ETI002062523	40	2	0.229
ETI002062524	63	2	0.244
ETI002062525	80	2	0.244
ETI002062530	100	2	0.244

General characteristics

The EFI-2 residual current circuit breakers detect and trip in the event of residual current. Used for the protection against indirect or direct contact with live conductors or parts in network systems where the neutral and earth conductors are separated. They have instantaneous trip characteristics with maximum break time of 40ms.

Specifications

Rated voltage: 230V/415 AC
 Rated current: 16-100A
 Rated frequency: 50/60Hz
 Conditional short circuit current: 10kA
 Rated making and breaking capacity: 800A
 Rated residual current: 30mA (100mA and 300mA optional)

Residual current sensitivity: A
 Terminals: 1-25mm², (1-35mm² 100A)
 max. 1.5 Nm

Module width: 36mm / 72mm
 Electrical life: ≥2,000 operations
 Mechanical life: ≥4,000 operations
 Operating Temp.: - 25 to +55°C

Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-150551-EA
 Compliant with standards: IEC 61008, AS/NZS 61008.1:2011

EFI-4 RCCB



EFI-4 16-80A



EFI-4 100A

- 4 pole (3P + N)
- Instantaneous break time (short time delayed and selective optional)
- Rated residual current 30mA (100mA and 300mA optional)
- Type A (sinusoidal AC and pulsating DC)
- IEC rated current I_n 16 to 100A
- 72mm wide module
- Fixing on 35mm DIN rail (IEC/EN 60715)

4 pole 30mA Type A

Order Code	IEC I_n	No. of DIN modules	Weight (kg)
	(A)		
ETI002062541	16	4	0.229
ETI002062542	25	4	0.229
ETI002062543	40	4	0.229
ETI002062544	63	4	0.244
ETI002062545	80	4	0.244
ETI002062550	100	4	0.244

KZS-1M RCBO 6KA



KZS-1M

- 2 pole (L+N)
- Trip characteristics B and C curve
- Rated residual current 30mA (10mA and 100mA optional)
- Type A (sinusoidal AC and pulsating DC)
- IEC rated current I_n 6 to 25A
- 18mm wide module
- Fixing on 35mm DIN rail (IEC/EN 60715)

2 pole B curve 30mA

Order Code	Curve	IEC I _n	IEC I _{cn}	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
ETI002175201	B	6	6	1	0.115
ETI002175202	B	10	6	1	0.115
ETI002175203	B	13	6	1	0.115
ETI002175204	B	16	6	1	0.115
ETI002175205	B	20	6	1	0.115
ETI002175206	B	25	6	1	0.115

2 pole C curve 30mA

ETI002175221	C	6	6	1	0.115
ETI002175222	C	10	6	1	0.115
ETI002175223	C	13	6	1	0.115
ETI002175224	C	16	6	1	0.115
ETI002175225	C	20	6	1	0.115
ETI002175226	C	25	6	1	0.115

General characteristics

The KZS-1M residual current circuit breakers with integral over-current protection, detect and trip in the event of residual current and protect circuits in the case of short circuits and overcurrent. From a practical point of view, RCBOs integrate both functions of MCB and of RCCB, functionally dependant on the line voltage (min 90V). Used for the protection against indirect or direct contact with live conductors or parts in network systems where the neutral and earth conductors are separated. They have instantaneous trip characteristics defined as follows:

- **B-type:** Instantaneous trip 3-5 times I_n
For non-inductive or low inductive loads (heating resistors, generators, very long wire lines)
- **C-type:** Instantaneous trip 5-10 times I_n
For inductive loads (mixed loads, resistive and inductive with low inrush current)

Specifications

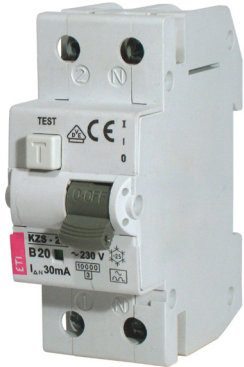
Rated voltage:	230V AC
Min. supply voltage:	90V
Rated current:	6-25A
Rated frequency:	50/60Hz
Rated short circuit capacity:	6kA
Rated residual current:	30mA (10mA and 100mA optional)
Tripping characteristics:	B and C
Terminals:	1-10mm ² , max. 1.5 Nm
Module width:	18mm
Electrical life:	≥2,000 operations
Mechanical life:	≥4,000 operations
Operating Temp.:	-25 to +55°C

For detailed tripping curves see the information on our web site www.mechtronic.com.au

Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-150148-EA
Compliant with standards: IEC 61009, AS/NZS 61009.1:2011

KZS-2M RCBO 10KA



KZS-2M

- 2 pole (L+N)
- Trip characteristics C curve (B curve optional)
- Rated residual current 30mA (10mA and 300mA optional)
- Type AC (pure sinusoidal current) and type A (sinusoidal AC and pulsating DC)
- IEC rated current I_n 6 to 40A
- 36mm wide module
- Fixing on 35mm DIN rail (IEC/EN 60715)

2 pole C curve 30mA Type A

Order Code	Curve	IEC I_n	IEC I_{cn}	No. of DIN modules	Weight
	Type	(A)	(kA)		(kg)
ETI002173221	C	6	10	2	0.230
ETI002173222	C	10	10	2	0.230
ETI002173223	C	13	10	2	0.230
ETI002173224	C	16	10	2	0.230
ETI002173225	C	20	10	2	0.230
ETI002173226	C	25	10	2	0.230
ETI002173227	C	32	10	2	0.230
ETI002173228	C	40	10	2	0.230

2 pole C curve 30mA Type AC

ETI002173121	C	6	10	2	0.230
ETI002173122	C	10	10	2	0.230
ETI002173123	C	13	10	2	0.230
ETI002173124	C	16	10	2	0.230
ETI002173125	C	20	10	2	0.230
ETI002173126	C	25	10	2	0.230
ETI002173127	C	32	10	2	0.230
ETI002173128	C	40	10	2	0.230

General characteristics

The KZS-2M residual current circuit breakers with integral over-current protection, detect and trip in the event of residual current and protect circuits in the case of short circuits and overcurrent. From a practical point of view, RCBOs integrate both functions of MCB and of RCCB, functionally independent on the line voltage. Used for the protection against indirect or direct contact with live conductors or parts in network systems where the neutral and earth conductors are separated. They have instantaneous trip characteristics defined as follows:

- **B-type:** Instantaneous trip 3-5 times I_n
For non-inductive or low inductive loads (heating resistors, generators, very long wire lines)
- **C-type:** Instantaneous trip 5-10 times I_n
For inductive loads (mixed loads, resistive and inductive with low inrush current)

Specifications

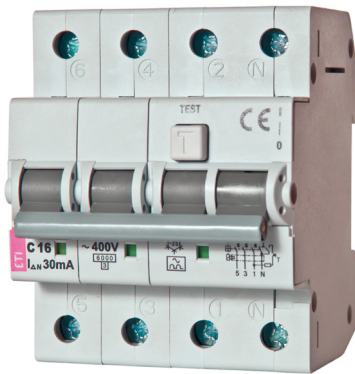
Rated voltage:	230V AC
Rated current:	6-40A
Rated frequency:	50/60Hz
Rated short circuit capacity:	6kA
Rated residual current:	30mA (10mA and 300mA optional)
Tripping characteristics:	B and C
Terminals:	1-25mm ² , max. 3 Nm
Module width:	36mm
Electrical life:	≥2,000 operations
Mechanical life:	≥4,000 operations
Operating Temp.:	-25 to +55°C

For detailed tripping curves see the information on our web site www.mechtric.com.au

Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-150552-EA
Compliant with standards: IEC 61009, AS/NZS 61009.1:2011

KZS-4M RCBO 6KA



KZS-4M

- 3 pole +N
- Trip characteristics C curve (B curve optional)
- Rated residual current 30mA (10mA and 300mA optional)
- Type A (sinusoidal AC and pulsating DC)
- IEC rated current In 6 to 32A
- 72mm wide module
- Fixing on 35mm DIN rail (IEC/EN 60715)

3 pole +N C curve 30mA Type A

Order Code	Curve	IEC In	IEC Icn	No. of DIN modules	Weight (kg)
	Type	(A)	(kA)		
ETI002174921	C	6	6	4	0.478
ETI002174922	C	10	6	4	0.478
ETI002174923	C	13	6	4	0.478
ETI002174924	C	16	6	4	0.478
ETI002174925	C	20	6	4	0.478
ETI002174926	C	25	6	4	0.478
ETI002174927	C	32	6	4	0.478

General characteristics

The KZS-4M residual current circuit breakers with integral over-current protection, detect and trip in the event of residual current and protect circuits in the case of short circuits and overcurrent. From a practical point of view, RCBOs integrate both functions of MCB and of RCCB, functionally independent on the line voltage. Used for the protection against indirect or direct contact with live conductors or parts in network systems where the neutral and earth conductors are separated. They have instantaneous trip characteristics defined as follows:

- **B-type:** Instantaneous trip 3-5 times In
For non-inductive or low inductive loads (heating resistors, generators, very long wire lines)
- **C-type:** Instantaneous trip 5-10 times In
For inductive loads (mixed loads, resistive and inductive with low inrush current)

Specifications

Rated voltage:	415V AC
Rated current:	6-32A
Rated frequency:	50/60Hz
Rated short circuit capacity:	6kA
Rated residual current:	30mA (10mA and 300mA optional)
Tripping characteristics:	B and C
Terminals:	25/35mm ² , max. 2.4 Nm
Module width:	72mm
Electrical life:	≥2,000 operations
Mechanical life:	≥4,000 operations
Operating Temp.:	-25 to +55°C

For detailed tripping curves see the information on our web site www.mechtronic.com.au

Compliance and standards

Certifications obtained: CE, VDE, KEMA, SAA Certificate No. SAA-150552-EA
Compliant with standards: IEC 61009, AS/NZS 61009.1:2011

Surge protection devices Type 1 and 2 monoblock



SA1 1P A320R



SA1 3N A320R

Order code	Pole arrangement	Relay output	Number of DIN modules	Qty per pkg	Wt
		(SPDT)		n°	[kg]

MONOBLOCK VERSION.
IEC impulse current Iimp (10/350µs) 25kA per pole.

SA1 1P A320R	1P	YES	2	1	0.275
SA1 1N A320R	1P+N	YES	3	1	0.390
SA1 2P A320R	2P	YES	2	1	0.395
SA1 3P A320R	3P	YES	3	1	0.595
SA1 3N A320R	3P+N	YES	5	1	0.760
SA1 4P A320R	4P	YES	4	1	0.780

Characteristics

Type	IEC rated voltage Un [V]	IEC voltage protection level Up [kV] L-N	Power installation system
SA1 1P A320R	230	<1.3	TN-C, TN-S, TT ^①
SA1 1N A320R	230	<1.4	TT, TN-S
SA1 2P A320R	230	<1.4	TN-S
SA1 3P A320R	230/400	<1.4	TN-C
SA1 3N A320R	230/400	<1.4	TT, TN-S
SA1 4P A320R	230/400	<1.4	TN-S

① For L-PE only.

Main characteristics

The surge protection device type SA1 combines the performance of SPD type 1 and 2 into a single product. It protects against direct and indirect lightning strikes as well as induced overvoltage conditions. It can be installed in areas with a high risk of direct lightning strikes, inside main distribution boards or nearby sub-distribution boards.

Operational characteristics

- IEC maximum continuous operating voltage Uc: 320VAC/420VDC
- IEC maximum discharge current I_{max} (8/20µs): 100kA per pole
- IEC rated discharge current I_n (8/20µs): 25kA per pole
- Version with relay output having changeover contact for remote status indication
- IEC degree of protection: IP20.

Reference standards

Comply with standards: IEC 61643-1, EN 61643-11.

Surge protection devices Type 1 and 2 with plug-in cartridge



SA0 1P A320R



SA0 2P A320R

Order code	Pole arrangement	Relay output	Number of DIN modules	Qty per pkg	Wt
		(SPDT)		n°	[kg]

VERSION WITH PLUG-IN CARTRIDGE.
IEC impulse current Iimp (10/350µs) 12.5kA per pole.

SA0 1P A320R	1P	YES	1	1	0.195
SA0 1N A320R	1P+N	YES	2	1	0.365
SA0 2P A320R	2P	YES	2	1	0.370
SA0 3P A320R	3P	YES	3	1	0.540
SA0 3N A320R	3P+N	YES	4	1	0.670
SA0 4P A320R	4P	YES	4	1	0.670

Main characteristics

SURGE PROTECTION DEVICES TYPE SA0
It has a plug-in cartridge and combines the performance of SPD type 1 and 2 into a single product. It is ideal in all those systems of reduced extent to protect the load side downstream of main circuit breaker to terminal equipment. It protects against direct and indirect lightning strikes as well as induced overvoltage conditions. It can be installed inside main distribution boards and nearby terminal equipment.

The protection cartridges are plug-in and can be easily replaced for quick servicing.

SURGE PROTECTION DEVICE SA2

It is suitable for installation in sub-distribution boards and nearby terminal equipment.

It protects against indirect overvoltages.

The protection cartridges are plug-in and can be easily replaced for quick servicing.

Operational characteristics

- IEC maximum continuous operating voltage Uc: 320VAC/420VDC
- IEC maximum discharge current I_{max} (8/20µs) per pole: 60kA (SA0...); 40kA (SA2...)
- IEC rated discharge current I_n (8/20µs) per pole: 25kA (SA0...); 20kA (SA2...)
- Versions with or without relay output having changeover contact for remote status indication
- IEC degree of protection: IP20.

Reference standards

Comply with standards: IEC/EN 61643-11.

Characteristics

Type	IEC rated voltage Un [V]	IEC voltage protection level Up [kV] L-N	Power installation system
SA0/SA2 1P A...	230	<1.5	TN-C, TN-S, TT ^①
SA0/SA2 1N A...	230	<1.5	TT, TN-S
SA0/SA2 2P A...	230	<1.5	TN-S
SA0/SA2 3P A...	230/400	<1.5	TN-C
SA0/SA2 3N A...	230/400	<1.5	TT, TN-S
SA0/SA2 4P A...	230/400	<1.5	TN-S

① For L-PE only.

Surge protection devices Type 2 with plug-in cartridge



SA2 2P A320R



SA2 3N A320R

Order code	Pole arrangement	Relay output	Number of DIN modules	Qty per pkg	Wt
		(SPDT)		n°	[kg]

VERSION WITH PLUG-IN CARTRIDGE.
IEC maximum discharge current I_{max} (8/20µs) 40kA per pole.

SA2 1P A320	1P	NO	1	1	0.140
SA2 1P A320R	1P	YES	1	1	0.145
SA2 1N A320	1P+N	NO	2	1	0.240
SA2 1N A320R	1P+N	YES	2	1	0.245
SA2 2P A320	2P	NO	2	1	0.260
SA2 2P A320R	2P	YES	2	1	0.265
SA2 3P A320	3P	NO	3	1	0.370
SA2 3P A320R	3P	YES	3	1	0.375
SA2 3N A320	3P+N	NO	4	1	0.465
SA2 3N A320R	3P+N	YES	4	1	0.470
SA2 4P A320	4P	NO	4	1	0.480
SA2 4P A320R	4P	YES	4	1	0.485

Surge protection devices Type 2 for photovoltaic applications with plug-in cartridge



SA2 DG...



SA2 DF...



Order code	Pole arrangement	Relay output	Number of DIN modules	Qty per pkg	Wt
		(SPDT)		n°	[kg]

VERSION WITH PLUG-IN CARTRIDGE.
EN short-circuit current rating I_{scpv} 100A.

SA2 DG 600M2	+, -, PE	NO	2	1	0.320
SA2 DG 600M2R	+, -, PE	YES	2	1	0.325
SA2 DG K00M3	+, -, PE	NO	3	1	0.420
SA2 DG K00M3R	+, -, PE	YES	3	1	0.425

EN short-circuit current rating I_{scpv} 1000A.

SA2 DF 600M2	+, -, PE	NO	2	1	0.285
SA2 DF 600M3	+, -, PE	NO	3	1	0.305
SA2 DF K00M2	+, -, PE	NO	2	1	0.410
SA2 DF K00M3	+, -, PE	NO	3	1	0.500
SA2 DF K20M3	+, -, PE	NO	3	1	0.550

Main characteristics

The surge protection device type SA2 D with plug-in cartridge for photovoltaic applications is suitable for installation on the direct-current end of a photovoltaic installation and protects against induced overvoltage conditions.

The protection cartridges are plug-in and can be easily replaced for quick servicing.

Operational characteristics

- EN maximum continuous voltage U_{cpv}: 600VDC, 1000VDC, 1200VDC
- Versions with or without relay output having changeover contact for remote status indication
- EN degree of protection: IP20.

Certifications and compliance

Certifications obtained: UL Recognised for USA and Canada (cURus – File E352471), as Surge-protective Devices – Component, Type 4 for use in SPD Type 2 photovoltaic applications only; for SA2DF600M2, SA2DFK00M2 and SA2DFK20M3 types.

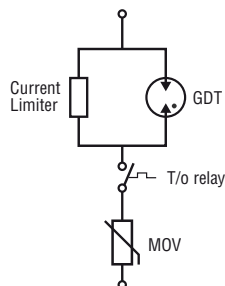
Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

Compliant with standards: EN 50539-11 for all; also UL 1449 and CSA C22.2 n°8 for cURus certified types mentioned above.

Characteristics

Type	EN rated voltage U _n	EN continuous voltage U _{cpv}	EN voltage protection level U _p
	[VDC]	[kV] L-N	[kV]
SA2 DG 600M2	600	600	<1.9
SA2 DG K00M3	1000	1000	<3.6
SA2 DF 600M2	600	600	<2.0
SA2 DF 600M3	600	600	<3
SA2 DF K00M2	1000	1000	<4.0
SA2 DF K00M3	1000	1000	<4.0
SA2 DF K20M3	1200	1200	<4.0

Protection circuit for each module type SA2 DF... Self-protected surge protection devices



In case of short but intense overvoltage conditions, both the spark gap element (GDT- Gas Discharge Tube) and the varistor (MOV – Metal Oxide Varistor) simultaneously trigger. In case of weak but prolonged overvoltage conditions, the current limiter considerably reduces the current flowing through the varistor. This technological solution guarantees a longer varistor life. Ultimately, another particular mechanism of the surge arrester quickly extinguishes the electric arc during the thermal overload tripping phase.

Accessories and spare parts Plug-in cartridges



SAX00 P A320



SAX02 P A320

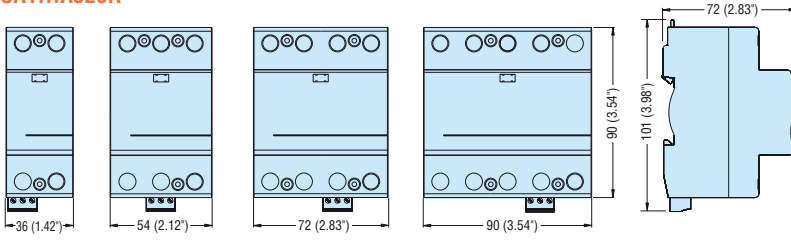


Order code	Description	Qty per pkg	Wt
		n°	[kg]
SAX00 P A320	For SA0... types	1	0.100
SAX02 P A320	For SA2... types	1	0.100
SAX02 DF 600M2	For SA2 DF 600M2 type	1	0.100
SAX02 DF 600M3	For SA2 DF 600M3 type	1	0.100
SAX02 DF K00M2	For SA2 DF K00M2 type	1	0.100
SAX02 DF K00M3	For SA2 DF K00M3 type	1	0.100
SAX02 DF K20M3	For SA2 DF K20M3 type	1	0.100
SAX02 DG 600M2	For SA2 DG 600... types	1	0.100
SAX02 DG K00M3	For SA2 DG K00... types	1	0.100

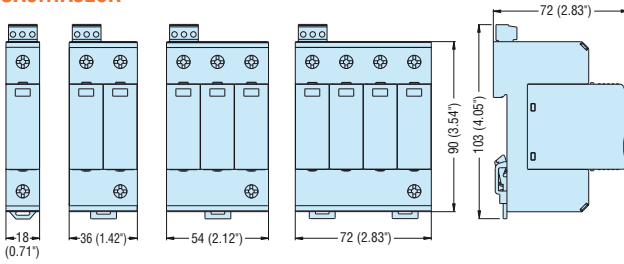
Reference standards

Compliant with standards: IEC/EN 61643-11 for all; EN 50539-11 for types SAX02 DF... and SAX02 DG...; UL 1449, CSA C22.2 n° 8 for SAX02 DF 600M2, SAX02 DF K00M2, SAX02 DF K20M3.

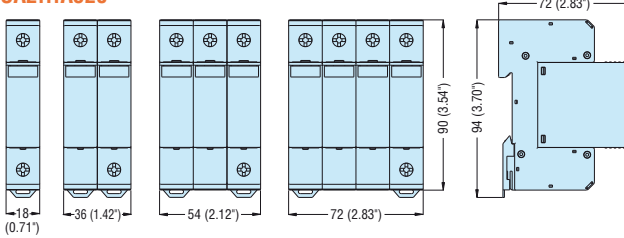
SA1...A320R



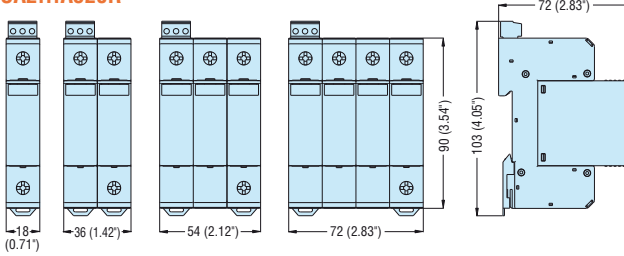
SA0...A320R



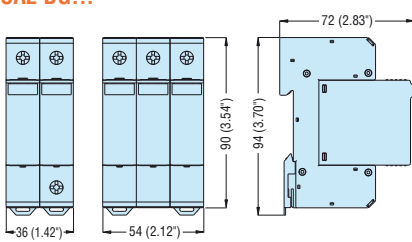
SA2...A320



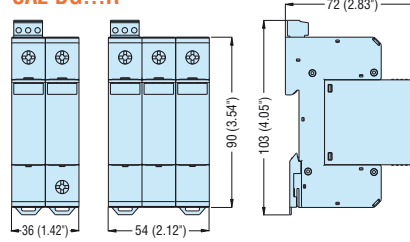
SA2...A320R



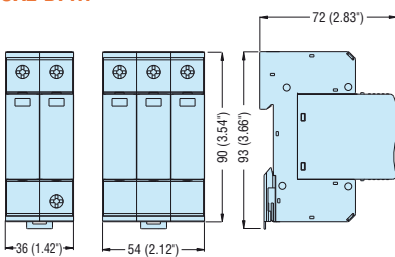
SA2 DG...



SA2 DG...R



SA2 DF...



TYPE	with relay output	SA1 1P A320R	SA1 1N A320R	SA1 2P A320R	SA1 3P A320R	SA1 3N A320R	SA1 4P A320R
ELECTRICAL PROPERTIES							
SPD per IEC/EN 61643-11		Type 1 and 2 (Test class I and II)					
IEC rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltage U _c	VAC / VDC	320 / 420					
IEC impulse current I _{imp} (10/350) (L-N/N-PE)	kA	25	25 / 50	25 per pole	25 per pole	25 / 100	25 per pole
IEC max impulse current I _{max} (8/20) (L-N/N-PE)	kA	100	100 / 100	100 per pole	100 per pole	100 / 100	100 per pole
IEC rated discharge current I _n (8/20) (L-N/N-PE)	kA	25	25 / 50	25 per pole	25 per pole	25 / 100	25 per pole
IEC voltage protection level U _p (L-N/N-PE)	kV	< 1.3	< 1.4 / < 1.5	< 1.4	< 1.4	< 1.4 / < 1.75	< 1.4
Temporary overvoltage (TOV) U _t (L-N for 5s)	VAC	335					
IEC residual voltage U _{res} (L-N/N-PE) at 3kA (8/20)	kV	0.9	0.9 / 0.2	0.9	0.9	0.9 / 0.2	0.9
IEC follow current I _f (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time t _a (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC backup protection fuse (supply > 250A) (L-N/N-PE)	A	250 (gL/gG class)					
IEC maximum short-circuit current	kA	25 / 50 Hz					
Status indicator - operating / failure	Colour	— / Red					
CONNECTIONS							
IEC degree of protection		IP20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm ²	25 (flexible) / 35 (rigid)					
RELAY OUTPUT FOR REMOTE STATUS INDICATION							
Type of contact		Changeover (NO/NC - SPDT)					
Contact capacity	A	0.5A 250VAC; 3A 125VAC; 0.1A 250VDC; 0.2A 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm ²	1.5					
AMBIENT CONDITIONS							
Operating temperature	°C	-40...+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					
TYPE	with relay output	SAO 1P A320R	SAO 1N A320R	SAO 2P A320R	SAO 3P A320R	SAO 3N A320R	SAO 4P A320R
ELECTRICAL PROPERTIES							
SPD per IEC/EN 61643-11		Type 1, 2 and 3 (Test class I, II and II)					
IEC Rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltage U _c	VAC / VDC	320 / 420					
IEC impulse current I _{imp} (10/350) (L-N/N-PE)	kA	12.5	12.5 / 50	12.5 per pole	12.5 per pole	12.5 / 50	12.5 per pole
IEC max discharge current I _{max} (8/20) (L-N/N-PE)	kA	60	60 / 50	60 per pole	60 per pole	60 / 50	60 per pole
IEC rated discharge current I _n (8/20) (L-N/N-PE)	kA	25	25 / 30	25 per pole	25 per pole	25 / 30	25 per pole
IEC combined surge U _{oc} /I _{sc} (1.2/50, 8/20)	kV/kA	10 / 5					
IEC voltage level protection U _p (L-N/N-PE)	kV	< 1.5	< 1.5 / < 1.7	< 1.5	< 1.5	< 1.5 / < 1.7	< 1.5
IEC temporary overvoltage (TOV) U _t (L-N for 5s)	VAC	335					
IEC residual voltage U _{res} (L-N/N-PE) at 5kA (8/20)	kV	0.8	0.8 / 0.2	0.8	0.8	0.8 / 0.2	0.8
IEC follow current I _f (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time t _a (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC backup fuse (supply >160A) (L-N/N-PE)	A	160 (gL/gG class)					
IEC maximum short-circuit current	kA	25 / 50 Hz					
Status indicator - operating / failure	Colour	— / Red					
CONNECTIONS							
IEC degree of protection		IP20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm ²	25 (flexible) / 35 (rigid)					
RELAY OUTPUT FOR REMOTE STATUS INDICATION							
Type of contact		Changeover (NO/NC - SPDT)					
Contact capacity	A	0.5A at 250VAC; 3A at 125VAC; 0.1A at 250VDC; 0.2A at 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm ²	1.5					
AMBIENT CONDITIONS							
Operating temperature	°C	-40...+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					

TYPE	without relay output	SA2 1P A320	SA2 1N A320	SA2 2P A320	SA2 3P A320	SA2 3N A320	SA2 4P A320
	with relay output	SA2 1P A320R	SA2 1N A320R	SA2 2P A320R	SA2 3P A320R	SA2 3N A320R	SA2 4P A320R

ELECTRICAL PROPERTIES

SPD per IEC/EN 61643-11		Type 2 (Test Class II)					
IEC rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltage U _c	VAC / VDC	320 / 420					
IEC max discharge current I _{max} (8/20) (L-N/N-PE)	kA	40	40 / 40	40 per pole	40 per pole	40 / 40	40 per pole
IEC rated impulse current I _n (8/20) (L-N/N-PE)	kA	20	20 / 20	20 per pole	20 per pole	20 / 20	20 per pole
IEC voltage protection level U _p (L-N/N-PE)	kV	< 1.5	< 1.5 / < 2	< 1.5	< 1.5	< 1.5 / < 2	< 1.5
IEC temporary overvoltage (TOV) U _t (L-N for 5s)	VAC	335					
IEC residual voltage U _{res} (L-N/N-PE) at 3kA (8/20)	kV	0.95	0.95 / 0.1	0.95	0.95	0.95 / 0.1	0.95
IEC follow current I _f (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time t _a (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC backup protection fuse (supply > 125A) (L-N/N-PE)	A	125 (gL/gG class)					
IEC maximum short-circuit current 50Hz	kA	25					
Status indicator - operating / failure		Green / Red					

CONNECTIONS

IEC degree of protection		IP20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm ²	25 (flexible) / 35 (rigid)					

RELAY OUTPUT FOR REMOTE STATUS INDICATION

Type of contact		Changeover (NO/NC - SPDT)					
Contact capacity	A	0.5A at 250VAC; 3A at 125VAC; 0.1A at 250VDC; 0.2A at 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm ²	1.5					

AMBIENT CONDITIONS

Operating temperature	°C	-40...+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					

TYPE	without relay output	SA2 DF 600M2	SA2 DF 600M3	SA2 DF K00M2	SA2 DF K00M3	SA2 DF K20M3	SA2 DG 600M2	SA2 DG K00M3
	with relay output	—	—	—	—	—	SA2 DG 600M2R	SA2 DG K00M3R

ELECTRICAL PROPERTIES

SPD per EN 50539-11		Type 2 (Test class II)						
UL Recognised for USA and Canada		Yes	—	Yes	—	Yes	—	—
Rated voltage U _n (EN) / MCOV (UL)	VDC	600	600	1000	1000	1200	600	1000
Maximum continuous voltage U _{cpv} (EN/UL)	VDC	600	600	1000	1000	1200	600	1000
Maximum discharge current I _{max} (8/20) EN	kA/pole	40	30	30	40	40	30	30
	UL	50	—	20	—	50	—	—
Rated discharge current I _n (8/20) EN	kA/pole	20	20	20	20	20	15	15
	UL	20	—	10	—	20	—	—
Voltage protection level U _p (EN) / VPR (UL)	kV	<2.0	<3.0	<4.0	<4.0	<4.0	<1.9	<3.6
EN residual voltage U _{res} at 5kA (8/20)	kV	1						
Tripping time t _a	ns	< 25						
Thermal isolation protection		Yes						
EN maximum short-circuit current I _{scpv}	A	1000					100	
EN backup protection fuse (I _{sc} > 100A)	A	—					100A gPV	
Status indication - operating / failure	Colour	- / Red					Green / Red	

CONNECTIONS

EN degree of protection		IP20						
Terminal tightening torque	Nm	3 (26lbin)					3	
Maximum conductor section	mm ²	1.5-25 (flexible / stranded) / AWG 16-3 - 1.5-35 (rigid / solid) AWG 16-2						

RELAY OUTPUT FOR REMOTE STATUS INDICATION

Type of contact, if any		Changeover (1NO/1NC - SPDT)						
Contact capacity	A	0.5A 250VAC; 3A 125VAC; 0.1A 250VDC; 0.2A 125VDC						
Contact terminal tightening torque	Nm / lbin	0.25 / 2.2						
Maximum contact conductor section	mm ² / AWG	1.5 / 16						

AMBIENT CONDITIONS

Operating temperature		-40...+80°C						
Fixing		On 35mm DIN rail (IEC/EN 60715)						
Housing material		Thermoplastic, RAL 7035, UL 94 V-0						