

Modular devices

Lovato electric

ENERGY AND AUTOMATION

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www.LovatoElectric.com
Multimedia information about the company and its history.
News and updates on the product range.
Library with download of catalogues, brochures, technical instructions and software.

COMPANY VIDEO



HEAD OFFICE IN GORLE (BERGAMO), ITALY

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The products illustrated in this publication are subject to be revised or improved at any moment. Catalogue descriptions, technical and operational data as well as other details herein specified do not have any contractual value so must be considered only as indication. The products must be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.



moduLo

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MCBs





MINIATURE CIRCUIT BREAKERS UP TO 63A

- In 1-63A
- Breaking capacity: 10kA (6kA for 1P+N)
- Tripping characteristic: B, C, D
- Versions: 1P, 1P+N, 2P, 3P, 4P
- Standards: IEC/EN 60898-1, IEC/EN 60947-2.

MINIATURE CIRCUIT BREAKERS UP TO 125A

- In 80-125A
- Breaking capacity: 10kA
- Tripping characteristic: C
- Versions: 1P, 2P, 3P, 4P
- Standards: IEC/EN 60898-1, IEC/EN 60947-2.



EARTH LEAKAGE RELAYS AND TOROIDS

- 1 operation threshold
- External or incorporated toroidal transformer
- Fixed or adjustable tripping IΔn and delay time.

TOROIDAL CURRENT TRANSFORMERS

- Solid or split core
- 35mm to 210mm diameter.



SURGE PROTECTION DEVICES

- Type 1 and 2
- Monoblock or with plug-in cartridge versions
- 1P, 1P+N, 2P, 3P, 3P+N, 4P versions
- SPD status indicator
- Versions with and without contact for remote status indicator signalling.



MOTOR PROTECTION CIRCUIT BREAKERS

- Thermal trip adjustment ranges 0.1-32A
- IEC breaking capacity Icu at 400V:
  - 100kA (ranges 0.1-10A)
  - 25kA (ranges 9-32A).



FUSE HOLDERS

- Version without indicator: 1P, 1P+N, 2P, 3P, 3P+N
- Version with indicator: 1P
- For fuses 10x38, 14x51 and 22x58mm IEC class gG or aM
- Rated current: 32A, 50A, 125A
- Rated voltage: 690VAC.



SWITCH DISCONNECTORS

- Rated current: 16 to 125A
- Rated voltage: 1000VAC
- Add-on fourth pole
- Padlockable in "0" with no extra accessories.



MODULAR CONTACTORS

- Two, three and four pole version
- IEC rated current Ith: 20 to 63A
- Operation flag indicator
- Very silent during operation or control stage.

RCBOs



- RESIDUAL CURRENT THERMOMAGNETIC CIRCUIT BREAKERS
  - In 25-40A
  - Breaking capacity: 10kA
  - Tripping characteristic: C
  - Versions: 1P+N
  - Standards: IEC/EN 61009-1.

RCCBs



- RESIDUAL CURRENT CIRCUIT BREAKERS
  - In 25-63A
  - Type: AC and A
  - Versions: 2P, 4P
  - Standards: IEC/EN 61008-1.



- TIME RELAYS
  - On delay time, multifunction or staircase time relay versions
  - Multiscale and multifunction
  - Selectable time ranges on front: 0.1 second - 10 days.



- PROTECTION RELAYS

VOLTAGE MONITORING RELAY
- Three-phase system, with or without neutral
- Minimum and maximum AC voltage
- Phase loss, neutral loss and incorrect phase sequence.

CURRENT MONITORING RELAY
- Single-phase system
- AC/DC minimum or maximum current control.



- SWITCHING POWER SUPPLIES
  - Single phase
  - Output voltage: 12 or 24VDC
  - Output power: 10-100W.



- MICRO PLCS
  - 10, 12 and 20 In-Out base units
  - 24VDC or 100-240VAC power supply
  - Relay outputs
  - Expansion module with analog outputs
  - Modbus®-RTU communication module.



- ROTARY CAM SWITCHES
  - Rated current: 16A
  - Rated voltage: 1000VAC.



- METERING INSTRUMENTS AND CTS

ENERGY METERS
- Single phase, three phase with neutral, three phase with or without neutral
- Direct connection or by CTs
- MID certified versions.

MEASURING DEVICES
- Voltmeter, ammeter, frequency meter and cosphi meter for single or three phase systems.

CURRENT TRANSFORMERS
- Primary current: 50-400A
- Secondary current: 5A.

POWER ANALYZERS
- Graphic 128x80 pixel LCD
- Expandable versions.

MCBs
1P - 10kA



P1 MB 1P...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 1P - characteristic B.					
P1 MB 1P B01	B	1	10	12	0.115
P1 MB 1P B02	B	2	10	12	0.115
P1 MB 1P B04	B	4	10	12	0.115
P1 MB 1P B06	B	6	10	12	0.115
P1 MB 1P B10	B	10	10	12	0.115
P1 MB 1P B16	B	16	10	12	0.115
P1 MB 1P B20	B	20	10	12	0.115
P1 MB 1P B25	B	25	10	12	0.115
P1 MB 1P B32	B	32	10	12	0.115
P1 MB 1P B40	B	40	10	12	0.115
P1 MB 1P B50	B	50	10	12	0.115
P1 MB 1P B63	B	63	10	12	0.115
Thermomagnetic circuit breakers - 1P - characteristic C.					
P1 MB 1P C01	C	1	10	12	0.115
P1 MB 1P C02	C	2	10	12	0.115
P1 MB 1P C04	C	4	10	12	0.115
P1 MB 1P C06	C	6	10	12	0.115
P1 MB 1P C10	C	10	10	12	0.115
P1 MB 1P C16	C	16	10	12	0.115
P1 MB 1P C20	C	20	10	12	0.115
P1 MB 1P C25	C	25	10	12	0.115
P1 MB 1P C32	C	32	10	12	0.115
P1 MB 1P C40	C	40	10	12	0.115
P1 MB 1P C50	C	50	10	12	0.115
P1 MB 1P C63	C	63	10	12	0.115
Thermomagnetic circuit breakers - 1P - characteristic D.					
P1 MB 1P D01	D	1	10	12	0.115
P1 MB 1P D02	D	2	10	12	0.115
P1 MB 1P D04	D	4	10	12	0.115
P1 MB 1P D06	D	6	10	12	0.115
P1 MB 1P D10	D	10	10	12	0.115
P1 MB 1P D16	D	16	10	12	0.115
P1 MB 1P D20	D	20	10	12	0.115
P1 MB 1P D25	D	25	10	12	0.115
P1 MB 1P D32	D	32	10	12	0.115
P1 MB 1P D40	D	40	10	12	0.115
P1 MB 1P D50	D	50	10	12	0.115
P1 MB 1P D63	D	63	10	12	0.115

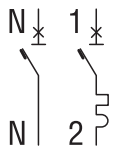
General characteristics
- Ratings 1 to 63A
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics B, C and D
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 440V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCBs
1P+N - 6kA





P1 MB 1N...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 1P+N - characteristic C.					
P1 MB 1N C01	C	1	6	6	0.190
P1 MB 1N C02	C	2	6	6	0.190
P1 MB 1N C04	C	4	6	6	0.190
P1 MB 1N C06	C	6	6	6	0.190
P1 MB 1N C10	C	10	6	6	0.190
P1 MB 1N C16	C	16	6	6	0.190
P1 MB 1N C20	C	20	6	6	0.190
P1 MB 1N C25	C	25	6	6	0.190
P1 MB 1N C32	C	32	6	6	0.190
P1 MB 1N C40	C	40	6	6	0.190
P1 MB 1N C50	C	50	6	6	0.190
P1 MB 1N C63	C	63	6	6	0.190

General characteristics
- Ratings 1 to 63A
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics C
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 440V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.

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

MCBs
2P - 10kA



P1 MB 2P...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 2P - characteristic B.					
P1 MB 2P B01	B	1	10	6	0.230
P1 MB 2P B02	B	2	10	6	0.230
P1 MB 2P B04	B	4	10	6	0.230
P1 MB 2P B06	B	6	10	6	0.230
P1 MB 2P B10	B	10	10	6	0.230
P1 MB 2P B16	B	16	10	6	0.230
P1 MB 2P B20	B	20	10	6	0.230
P1 MB 2P B25	B	25	10	6	0.230
P1 MB 2P B32	B	32	10	6	0.230
P1 MB 2P B40	B	40	10	6	0.230
P1 MB 2P B50	B	50	10	6	0.230
P1 MB 2P B63	B	63	10	6	0.230
Thermomagnetic circuit breakers - 2P - characteristic C.					
P1 MB 2P C01	C	1	10	6	0.230
P1 MB 2P C02	C	2	10	6	0.230
P1 MB 2P C04	C	4	10	6	0.230
P1 MB 2P C06	C	6	10	6	0.230
P1 MB 2P C10	C	10	10	6	0.230
P1 MB 2P C16	C	16	10	6	0.230
P1 MB 2P C20	C	20	10	6	0.230
P1 MB 2P C25	C	25	10	6	0.230
P1 MB 2P C32	C	32	10	6	0.230
P1 MB 2P C40	C	40	10	6	0.230
P1 MB 2P C50	C	50	10	6	0.230
P1 MB 2P C63	C	63	10	6	0.230
Thermomagnetic circuit breakers - 2P - characteristic D.					
P1 MB 2P D01	D	1	10	6	0.230
P1 MB 2P D02	D	2	10	6	0.230
P1 MB 2P D04	D	4	10	6	0.230
P1 MB 2P D06	D	6	10	6	0.230
P1 MB 2P D10	D	10	10	6	0.230
P1 MB 2P D16	D	16	10	6	0.230
P1 MB 2P D20	D	20	10	6	0.230
P1 MB 2P D25	D	25	10	6	0.230
P1 MB 2P D32	D	32	10	6	0.230
P1 MB 2P D40	D	40	10	6	0.230
P1 MB 2P D50	D	50	10	6	0.230
P1 MB 2P D63	D	63	10	6	0.230

General characteristics
- Ratings 1 to 63A
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics B, C and D
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 440V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCBs
3P - 10kA



P1 MB 3P...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 3P - characteristic B.					
P1 MB 3P B01	B	1	10	4	0.345
P1 MB 3P B02	B	2	10	4	0.345
P1 MB 3P B04	B	4	10	4	0.345
P1 MB 3P B06	B	6	10	4	0.345
P1 MB 3P B10	B	10	10	4	0.345
P1 MB 3P B16	B	16	10	4	0.345
P1 MB 3P B20	B	20	10	4	0.345
P1 MB 3P B25	B	25	10	4	0.345
P1 MB 3P B32	B	32	10	4	0.345
P1 MB 3P B40	B	40	10	4	0.345
P1 MB 3P B50	B	50	10	4	0.345
P1 MB 3P B63	B	63	10	4	0.345
Thermomagnetic circuit breakers - 3P - characteristic C.					
P1 MB 3P C01	C	1	10	4	0.345
P1 MB 3P C02	C	2	10	4	0.345
P1 MB 3P C04	C	4	10	4	0.345
P1 MB 3P C06	C	6	10	4	0.345
P1 MB 3P C10	C	10	10	4	0.345
P1 MB 3P C16	C	16	10	4	0.345
P1 MB 3P C20	C	20	10	4	0.345
P1 MB 3P C25	C	25	10	4	0.345
P1 MB 3P C32	C	32	10	4	0.345
P1 MB 3P C40	C	40	10	4	0.345
P1 MB 3P C50	C	50	10	4	0.345
P1 MB 3P C63	C	63	10	4	0.345
Thermomagnetic circuit breakers - 3P - characteristic D.					
P1 MB 3P D01	D	1	10	4	0.345
P1 MB 3P D02	D	2	10	4	0.345
P1 MB 3P D04	D	4	10	4	0.345
P1 MB 3P D06	D	6	10	4	0.345
P1 MB 3P D10	D	10	10	4	0.345
P1 MB 3P D16	D	16	10	4	0.345
P1 MB 3P D20	D	20	10	4	0.345
P1 MB 3P D25	D	25	10	4	0.345
P1 MB 3P D32	D	32	10	4	0.345
P1 MB 3P D40	D	40	10	4	0.345
P1 MB 3P D50	D	50	10	4	0.345
P1 MB 3P D63	D	63	10	4	0.345

General characteristics
- Ratings 1 to 63A
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics B, C and D
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 440V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCBs
4P - 10kA



P1 MB 4P...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 4P - characteristic B.					
P1 MB 4P B01	B	1	10	3	0.460
P1 MB 4P B02	B	2	10	3	0.460
P1 MB 4P B04	B	4	10	3	0.460
P1 MB 4P B06	B	6	10	3	0.460
P1 MB 4P B10	B	10	10	3	0.460
P1 MB 4P B16	B	16	10	3	0.460
P1 MB 4P B20	B	20	10	3	0.460
P1 MB 4P B25	B	25	10	3	0.460
P1 MB 4P B32	B	32	10	3	0.460
P1 MB 4P B40	B	40	10	3	0.460
P1 MB 4P B50	B	50	10	3	0.460
P1 MB 4P B63	B	63	10	3	0.460
Thermomagnetic circuit breakers - 4P - characteristic C.					
P1 MB 4P C01	C	1	10	3	0.460
P1 MB 4P C02	C	2	10	3	0.460
P1 MB 4P C04	C	4	10	3	0.460
P1 MB 4P C06	C	6	10	3	0.460
P1 MB 4P C10	C	10	10	3	0.460
P1 MB 4P C16	C	16	10	3	0.460
P1 MB 4P C20	C	20	10	3	0.460
P1 MB 4P C25	C	25	10	3	0.460
P1 MB 4P C32	C	32	10	3	0.460
P1 MB 4P C40	C	40	10	3	0.460
P1 MB 4P C50	C	50	10	3	0.460
P1 MB 4P C63	C	63	10	3	0.460
Thermomagnetic circuit breakers - 4P - characteristic D.					
P1 MB 4P D01	D	1	10	3	0.460
P1 MB 4P D02	D	2	10	3	0.460
P1 MB 4P D04	D	4	10	3	0.460
P1 MB 4P D06	D	6	10	3	0.460
P1 MB 4P D10	D	10	10	3	0.460
P1 MB 4P D16	D	16	10	3	0.460
P1 MB 4P D20	D	20	10	3	0.460
P1 MB 4P D25	D	25	10	3	0.460
P1 MB 4P D32	D	32	10	3	0.460
P1 MB 4P D40	D	40	10	3	0.460
P1 MB 4P D50	D	50	10	3	0.460
P1 MB 4P D63	D	63	10	3	0.460

General characteristics
- Ratings 1 to 63A
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics B, C and D
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 440V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN 60898-1, IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

MCBs
1P, 2P, 3P and 4P - 10kA



P2 MB 1P...



P2 MB 2P...



P2 MB 3P...



P2 MB 4P...

Order code	Characteristic	In	Icn	Qty per pkg	Wt
	Curve	[A]	[kA]	n°	[kg]
Thermomagnetic circuit breakers - 1P - characteristic C.					
P2 MB 1P C080	C	80	10❶	8	0.166
P2 MB 1P C100	C	100	10❶	8	0.166
P2 MB 1P C125	C	125	10❶	8	0.166
Thermomagnetic circuit breakers - 2P - characteristic C.					
P2 MB 2P C080	C	80	10	4	0.340
P2 MB 2P C100	C	100	10	4	0.340
P2 MB 2P C125	C	125	10	4	0.340
Thermomagnetic circuit breakers - 3P - characteristic C.					
P2 MB 3P C080	C	80	10	3	0.510
P2 MB 3P C100	C	100	10	3	0.510
P2 MB 3P C125	C	125	10	3	0.510
Thermomagnetic circuit breakers - 4P - characteristic C.					
P2 MB 4P C080	C	80	10	2	0.680
P2 MB 4P C100	C	100	10	2	0.680
P2 MB 4P C125	C	125	10	2	0.680

❶ Icn at 230V.

General characteristics
- Ratings 80 to 125A
- 1P, 2P, 3P and 4P versions
- Pole width 27mm
- Positive indication with flag window
- Tripping characteristics C
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Add-on blocks available.

Operational characteristics
- Rated insulation voltage Ui: 400V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Ue: 230/400VAC.

Certifications and compliance
Certifications obtained: TUV and UL Recognized for USA and Canada (cURus - File E359585) as Protectors-Components; products having this type of marking are intended for use components of complete workshop-assembled equipment.
Compliant with standards: IEC/EN 60947-2, UL 1077, CSA C22.2 n°235.

Add-on blocks for miniature circuit breakers from 1 to 63A


P1X 1011


P1X 16230

Order code	Characteristics	Qty max per circuit breaker	Qty per pkg	Wt
			n°	[kg]
Auxiliary contact.				
P1X 1011	Side mount 1 changeover	1	1	0.04
Indicator contact.				
P1X 1311	Side mount 1 changeover	1	1	0.04
Undervoltage trip release.				
P1X 14230	230V 50/60Hz	1	1	0.09
Shunt trip release.				
P1X 16230	110-415V 50/60Hz	1	1	0.09

General characteristics
- Auxiliary and indicator contact width 9mm
- Undervoltage and shunt trip release width 18mm
- Installation on the left side of circuit breaker.

Operational characteristics
- Rated impulse withstand voltage Uimp: 4kV
- AC rated operating current: 6A 230V - 3A 400V.

Certifications and compliance
Certifications obtained: TUV (auxiliary contacts).
Compliant with standards: IEC/EN 60947-5-1.

Add-on blocks for miniature circuit breakers from 80 to 125A


P2X 1311


P2X 1311

Order code	Characteristics	Qty max per circuit breaker	Qty per pkg	Wt
			n°	[kg]
Auxiliary contact.				
P2X 1011	Side mount 1 changeover	1	1	0.04
Indicator contact.				
P2X 1311	Side mount 1 changeover	1	1	0.04
Shunt trip release.				
P2X 16230	110-415V 50/60Hz	1	1	0.09

General characteristics
- Auxiliary and indicator contact width 9mm
- Undervoltage and shunt trip release width 18mm
- Installation: auxiliary contacts on left side and shunt trip release on right side.

Operational characteristics
- Rated impulse withstand voltage Uimp: 4kV
- AC rated operating current: 6A 230V - 3A 400V.

Certifications and compliance
Certifications obtained: TUV (auxiliary contacts).
Compliant with standards: IEC/EN 60947-5-1.

Accessories


P1X 90 33


P1X 91 33


P1X 92 01

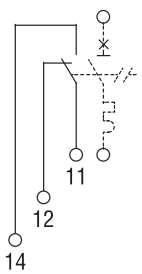

P1X 92 02

Order code	Description	Qty per pkg	Wt
	[A]	n°	[kg]
P1X 90 31	Single-phase connection busbar, for 57 modules in total, 1m long (57 MCB 1P)	10	0.240
P1X 90 33	Three-phase connection busbar, for 57 modules in total, 1m long (19 MCB 3P)	10	0.465
P1X 91 30	Safety cover for unused busbar terminals	25	0.010
P1X 91 31	End cap for P1X 90 31 busbar	50	0.001
P1X 91 33	End cap for P1X 90 33 busbar	50	0.001
P1X 92 01	One-pole terminal for 25mm² max conductor	25	0.010
P1X 92 02	One-pole terminal for 50mm² max conductor	25	0.020

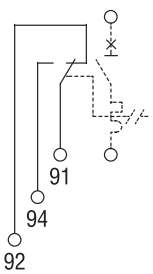
General and operational characteristics
SINGLE-PHASE BUSBAR
- Central point of power supply: 100A max
- Side point of power supply: 63A max
- Pitch: 18mm
- Busbar section: 10mm²
- Number of modules/poles: 57
- For paralleling connection
- Length (standard supplied): 1m which can be cut in shorter sections.

THREE-PHASE BUSBAR
- Central point of power supply: 100A max
- Side point of power supply: 63A max
- Pitch: 18mm
- Busbar section: 10mm²
- Number of modules/poles: 57 (19 three-pole MCB)
- For paralleling connection
- Length (standard supplied): 1m which can be cut in shorter sections.

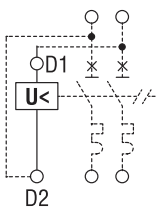
P1X 1011
P2X 1011



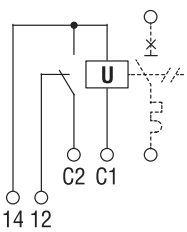
P1X 1311
P2X 1311



P1X 14230



P1X 16230
P2X 16230



RCBOs
1P+N - 10kA



P1 RB 1N...

Order code	Char.	In	Icn	IΔn	Qty per pkg	Wt
	Curve	[A]	[kA]	[mA]	n°	[kg]
Residual current thermomagnetic circuit breakers - 1P+N - type AC.						
P1 RB 1N C06 AC030	C	6	10	30	6	0.205
P1 RB 1N C06 AC300	C	6	10	300	6	0.205
P1 RB 1N C10 AC030	C	10	10	30	6	0.205
P1 RB 1N C10 AC300	C	10	10	300	6	0.205
P1 RB 1N C16 AC030	C	16	10	30	6	0.205
P1 RB 1N C16 AC300	C	16	10	300	6	0.205
P1 RB 1N C20 AC030	C	20	10	30	6	0.205
P1 RB 1N C20 AC300	C	20	10	300	6	0.205
P1 RB 1N C25 AC030	C	25	10	30	6	0.205
P1 RB 1N C25 AC300	C	25	10	300	6	0.205
P1 RB 1N C32 AC030	C	32	10	30	6	0.205
P1 RB 1N C32 AC300	C	32	10	300	6	0.205
P1 RB 1N C40 AC030	C	40	10	30	6	0.205
P1 RB 1N C40 AC300	C	40	10	300	6	0.205
Residual current thermomagnetic circuit breakers - 1P+N - type A.						
P1 RB 1N C06 A030	C	6	10	30	6	0.205
P1 RB 1N C06 A300	C	6	10	300	6	0.205
P1 RB 1N C10 A030	C	10	10	30	6	0.205
P1 RB 1N C10 A300	C	10	10	300	6	0.205
P1 RB 1N C16 A030	C	16	10	30	6	0.205
P1 RB 1N C16 A300	C	16	10	300	6	0.205
P1 RB 1N C20 A030	C	20	10	30	6	0.205
P1 RB 1N C20 A300	C	20	10	300	6	0.205
P1 RB 1N C25 A030	C	25	10	30	6	0.205
P1 RB 1N C25 A300	C	25	10	300	6	0.205
P1 RB 1N C32 A030	C	32	10	30	6	0.205
P1 RB 1N C32 A300	C	32	10	300	6	0.205
P1 RB 1N C40 A030	C	40	10	30	6	0.205
P1 RB 1N C40 A300	C	40	10	300	6	0.205

General characteristics
- Ratings 6 to 40A
- 1P+N version
- Pole width 18mm
- Positive indication with flag window
- Tripping characteristics C
- Mounting on 35mm DIN rail (IEC/EN 60715).

Operational characteristics
- Rated insulation voltage Ui: 400V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Uc: 230V
- Residual current off time ≤0.1s
- Rated residual operating current IΔn: 30mA, 300mA
- Rated short-circuit capacity Icn: 10kA.

Certifications and compliance
Certifications obtained: TUV.
Compliant with standards: IEC/EN 61009-1.

RCCBs
2P and 4P



P1 RC 2P...



P1 RC 4P...

Order code	Type	In	Idn	Qty per pkg	Wt
		[A]	[mA]	n°	[kg]
Residual current devices - 2P - type AC.					
P1 RC 2P 25 AC030	AC	25	30	6	0.185
P1 RC 2P 25 AC300	AC	25	300	6	0.185
P1 RC 2P 40 AC030	AC	40	30	6	0.185
P1 RC 2P 40 AC300	AC	40	300	6	0.185
P1 RC 2P 63 AC030	AC	63	30	6	0.185
P1 RC 2P 63 AC300	AC	63	300	6	0.185
Residual current devices - 2P - type A.					
P1 RC 2P 25 A030	A	25	30	6	0.185
P1 RC 2P 25 A300	A	25	300	6	0.185
P1 RC 2P 40 A030	A	40	30	6	0.185
P1 RC 2P 40 A300	A	40	300	6	0.185
P1 RC 2P 63 A030	A	63	30	6	0.185
P1 RC 2P 63 A300	A	63	300	6	0.185
Residual current devices - 4P - type AC.					
P1 RC 4P 25 AC030	AC	25	30	3	0.326
P1 RC 4P 25 AC300	AC	25	300	3	0.326
P1 RC 4P 40 AC030	AC	40	30	3	0.326
P1 RC 4P 40 AC300	AC	40	300	3	0.326
P1 RC 4P 63 AC030	AC	63	30	3	0.326
P1 RC 4P 63 AC300	AC	63	300	3	0.326
Residual current devices - 4P - type A.					
P1 RC 4P 25 A030	A	25	30	3	0.326
P1 RC 4P 25 A300	A	25	300	3	0.326
P1 RC 4P 40 A030	A	40	30	3	0.326
P1 RC 4P 40 A300	A	40	300	3	0.326
P1 RC 4P 63 A030	A	63	30	3	0.326
P1 RC 4P 63 A300	A	63	300	3	0.326

General characteristics
- Ratings 25A, 40A, 63A
- Operating Idn: 30mA, 300mA
- A and AC type
- 2P and 4P versions
- Pole width 18mm
- Positive indication with flag window
- Mounting on 35mm DIN rail (IEC/EN 60715).

Operational characteristics
- Rated insulation voltage Ui: 400V
- Rated impulse withstand voltage Uimp: 4kV
- Rated operating voltage Uc: 230V (2P); 230/400V (4P).

Certifications and compliance
Certifications obtained: TUV (pending).
Compliant with standards: IEC/EN 61008-1.

Miniature Circuit Breakers are devices used to protect against short circuits and overloads of wiring installations and loads in panel board, office buildings, stores and similar applications. Their purpose is the circuit protection, circuit isolation and load operation. These devices have a fixed thermal and magnetic current tripping value, but they are available with a large range of tripping currents.

P1 MB series is in compliance with IEC/EN 60898 standard that is intended for AC circuit-breakers for operating at a rated voltage not exceeding 440V. As far as possible, P1 MB series is in compliance with standard IEC/EN 60947-2. This series of Miniature Circuit Breakers (MCB) has rated current from 1 to 63A. It is in compliance with the UL 1077 standard specifically required in the U.S. market.

P1 MB MCB can be fitted with accessories like auxiliary contacts, signalling contacts, undervoltage trip releases and shunt trip releases.

P2 MB series with its higher rated current range, from 80 to 125A, is intended specifically for industrial applications so in compliance with IEC/EN 60947-2 standard. It is in compliance with UL1077 too.

MCBs are available with ranges of instantaneous tripping B, C and D.
The meaning of these ranges is:

B = instantaneous tripping 3...5xIn
for non inductive or low inductive loads (heating resistors, generators, very long wire lines)

C = instantaneous tripping 5...10xIn
for inductive loads (mixed loads resistive and inductive with low inrush current).

D = instantaneous tripping 10...14xIn
for high inductive loads (loads with high inrush current like motors).

Residual current operated circuit breakers (RCCB – sometimes called RCD).
These devices are intended to protect persons against indirect contact (electrical shock). They may be used to provide protection against fire hazards due to a persistent earth fault current. To prevent electrical shock, RCCB must be rated with a IΔn not exceeding 30mA so these devices trip in case of earth fault only. Usually they are connected in series with MCBs which assure short circuit and overcurrent protection.

P1 RC series is in compliance with IEC/EN 61008-1 standard and has a range from 25 to 63A with IΔn of 30 or 300mA. It is available in two versions of tripping characteristics:

Type AC - tripping under earth fault is ensured for sinusoidal alternating currents, suddenly applied or slowly rising. This version is suitable to detect sinusoidal residual current only.

Type AC is identified by this symbol: 

Type A - tripping under earth fault is ensured for sinusoidal alternating currents and pulsating currents, suddenly applied or slowly rising. This version, in addition to the protection given by Type AC, protects against residual current with pulsating waveform. This can be caused by circuit with electronic equipment.

Type A is identified by this symbol: 

P1 RC is available in 2 pole and 4 pole version.

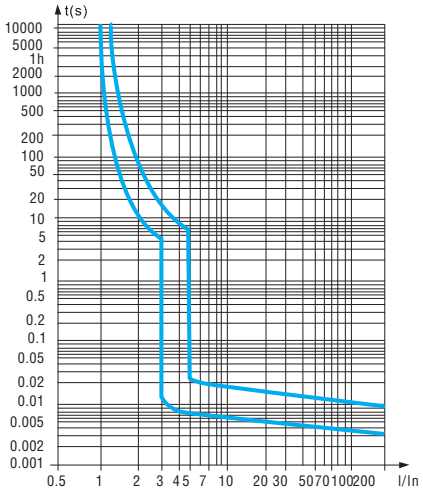
Residual current operated circuit-breakers with integral overcurrent protection (RCBO) are devices simultaneously performing the function of detection and tripping in case of residual current and circuit protection in case of short circuits and overcurrents. Practically, they integrate the function of MCB with RCCB.

P1 RB series is in compliance with IEC/EN61009-1 standard and has a range from 6 to 40A with instantaneous tripping curve type C. It is available in 1P+N version, with IΔn of 30 or 300mA, Type AC or Type A.

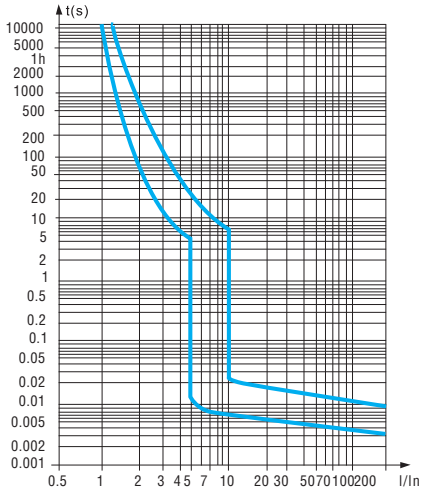
TYPE		P1 MB	P2 MB	P1 RB	P1 RC
Standards		IEC/EN 60898, IEC/EN 60947-2	IEC/EN 60947-2	IEC/EN 61009-1	IEC/EN 61008-1
Rated insulation voltage Ui	V	440	400	400	400
Rated impulse withstand voltage Uimp	kV	4	4	4	4
Rated operational voltage Ue	V	230 (1P, 1P+N) / 230/400 (2P, 3P, 4P)	230 (1P) / 230/400 (2P, 3P, 4P)	230	230 (2P) / 230/400(4P)
Rated frequency	Hz	50/60	50/60	50/60	50/60
Maximum rated current	A	63	125	40	40
Available rated current	A	1, 2, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63	80, 100, 125	6, 10, 16, 20, 25, 32, 40	25, 40, 63
Versions		1P, 1P+N, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P+N	2P, 4P
Tripping characteristic		B-C-D	C	C	—
Instantaneous tripping		curve B 3-5In curve C 5-10In curve D 10-14In	curve C 5-10In	curve C 5-10In	—
Short circuit capacity	kA	10 (6kA 1P+N)	10	10	—
Mechanical life	cycles	20,000	10,000	20,000	20,000
Maximum tightening of terminals	Nm	2	3	2	2
	lbin	15	26	15	15
	Tool	Pz2	Pz2	Pz2	Pz2
Min-max conductor section	mm^2	1-16	2.5-50	1-25	1-35
	AWG	14-6	14-1/0	16-3	16-2
AMBIENT CONDITIONS					
Temperature Operating	°C	-35...+70	-35...+75	-25...+40	-25...+55
Storage	°C	-40...+80	-40...+80	-35...+60	-35...+60
Maximum altitude	m	2,000	2,000	2,000	2,000
Pollution degree		II	III	II	II
Mounting		35mm DIN rail (IEC/EN 60715)			
Residual current operating characteristic		—	—	AC, A	AC, A
Rated residual operating current IΔn	mA	—	—	30, 300	30, 300

TRIPPING CURVE

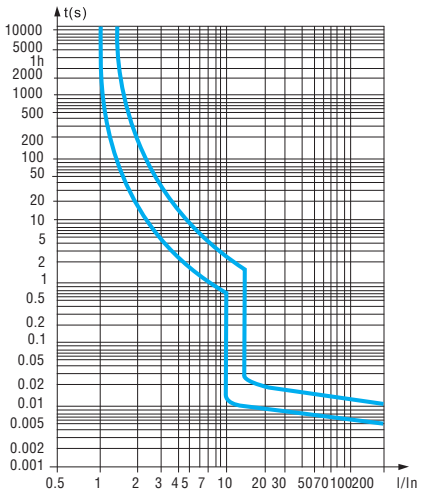
Curve B



Curve C

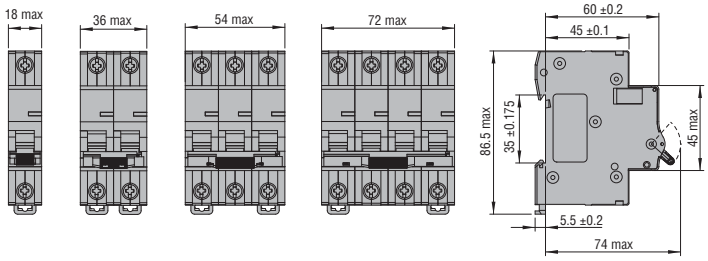


Curve D

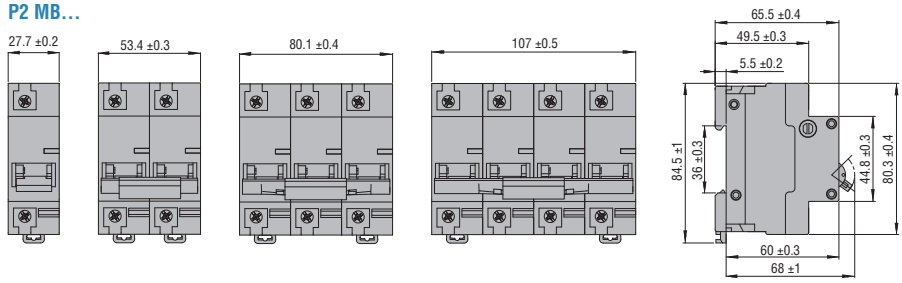


Dimensions

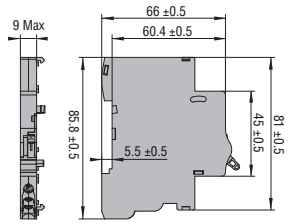
P1 MB...



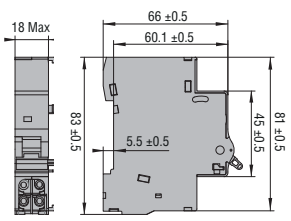
P2 MB...



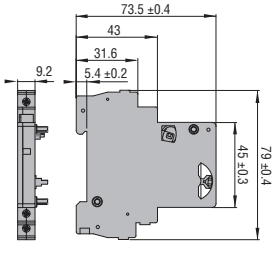
P1X 1011
P1X 1311



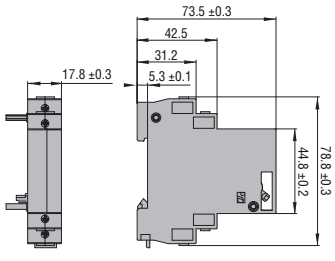
P1X 14230
P1X 16230



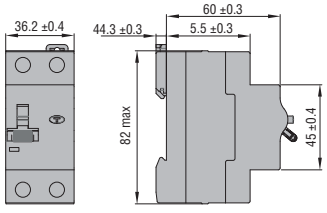
P2X 1011
P2X 1311



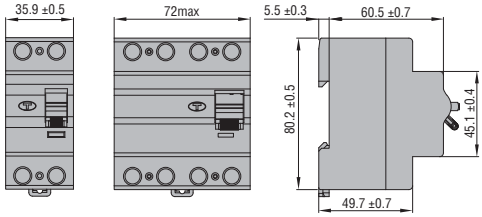
P2X 14230



P1 RB...



P1 RC...



Relays with 1 operation threshold



31 RM...



31 RMT...

Order code	Rated auxiliary supply voltage	Output contacts	Qty per pkg	Wt
	[V]	⅄'	n°	[kg]
1 OPERATION THRESHOLD. Modular, 35mm DIN (IEC/EN 60715) rail mounting. External CT. Fixed tripping set point and time.				
RM1 415	110-240-415V AC ❶	1	1	0.175
1 OPERATION THRESHOLD. Modular, 35mm DIN (IEC/EN 60715) rail mounting. External CT.				
31 RM 415	110-240-415V ❶	1	1	0.190
1 OPERATION THRESHOLD. Modular, 35 mm DIN (IEC/EN 60715) rail mounting. Ø 28 mm incorporated CT. Configurable fail safe.				
31 RMT 415	110-240-415V ❶	2 ❷	1	0.375

❶ Supply voltage:
110-125VAC (50/60Hz)/DC
220-240VAC (50/60Hz)
380-415VAC (50/60Hz).
❷ 2 output relays, each with 1 changeover contact.

General characteristics
- Earth leakage relay type A
- Configurable fail safe operation for RMT type only
- Green power LED indicator (ON)
- Red relay tripped LED indicator (TRIP)
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN 43880 housing, 2 module, with transparent cover, suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP20 terminals, IP40 on front with cover.

SETTINGS FOR RM1
- Selectable tripping set point (IΔn): fixed 0.3A or 0.5A
- Selectable tripping time (t): fixed 0.02s or 0.5s

ADJUSTMENTS FOR RM AND RMT
- Configurable tripping set-point (IΔn): 0.025-0.25A, 0.25-2.5A, 2.5-25A, 25-250A (with external multiplier RX10 for RM only)
- Configurable tripping delay time (t): 0.02-0.5s, 0.2-5s

Reference standards
Compliant with standards: IEC/EN 60947-2.

Toroidal current transformers



31 RT...



31 RT...

Order code	Diameter	Openable	Qty per pkg	Wt.
	[mm]		n°	[kg]
31 RT 35	35	No	1	0.200
31 RT 60	60	No	1	0.245
31 RT 80	80	No	1	0.410
31 RT 110	110	No	1	0.400
31 RT 210	210	No	1	1.200
31 RTA 110	110	Yes	1	0.540
31 RTA 210	210	Yes	1	1.820

Reference standards
Compliant with standards: IEC/EN 60947-2.

Type 1 and 2



SA1 1P A320R



SA1 3N A320R

Order code	Pole arrange-ment	Contact remote available	DIN size	Qty per pkg	Wt
			n°	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

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 sub-distribution boards.

Operational characterstics
- IEC maximum continuous operating voltage Uc: 320VAC/420VDC
- IEC maximum discharge current Imax (8/20µs): 100kA per pole
- IEC rated discharge current In (8/20µs): 25kA per pole
- Standard-supplied contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards
Compliant with standards: IEC 61643-1, EN 61643-11.

Type 2



SA2 2P A320R



SA2 3N A320R

Order code	Pole arrange-ment	Contact remote available	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
VERSION WITH PLUG-IN CARTRIDGES. IEC maximum discharge current Imax (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

Main characteristics
The surge protection device type SA2 is suitable for installation in sub-distribution boards and close to 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 voltage Uc: 320VAC/420VDC
- IEC rated discharge current In (8/20µs): 20kA per pole
- Versions with or without contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards
Compliant with standards: IEC 61643-1, EN 61643-11.

Type 1 and 2



SA0 1P A320R



SA0 2P A320R

Order code	Pole arrange-ment	Contact remote available	DIN size	Qty per pkg	Wt
			n°	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
The surge protection device type SA0 with plug-in cartridge 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 close by terminal equipment.
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 Imax (8/20µs): 60kA per pole
- IEC rated discharge current In (8/20µs): 25kA per pole
- IEC combined surge Uoc/Isc(1.2/50, 8/20µs): 10kV/5kA.
- Standard-supplied contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards
Compliant with standards: IEC 61643-1, EN 61643-11.

MPCBs from 0.1 to 32A



11 SM1C...

Order code	Thermal trip adjustment range	Short circuit breaking capacity at 400V Icu	Ics	Qty per pkg	Wt
	[A]	[kA]	[kA]	n°	[kg]
IEC breaking capacity Icu 100kA (0.1-10A) / 25kA (9-32A) at 400V. Suitable for mounting in modular consumer switchboards ❶.					
11 SM1C 00❶	0.1-0.16	100	100	5	0.278
11 SM1C 04❶	0.16-0.25	100	100	5	0.278
11 SM1C 08❶	0.25-0.4	100	100	5	0.278
11 SM1C 12❶	0.4-0.63	100	100	5	0.278
11 SM1C 16❶	0.63-1	100	100	5	0.278
11 SM1C 20❶	1-1.6	100	100	5	0.352
11 SM1C 24❶	1.6-2.5	100	100	5	0.352
11 SM1C 28❶	2.5-4	100	100	5	0.352
11 SM1C 32❶	4-6.5	100	100	5	0.352
11 SM1C 36❶	6.3-10	100	100	5	0.352
11 SM1C 40❶	9-14	25	12.5	5	0.352
11 SM1C 44❶	13-18	25	12.5	5	0.352
11 SM1C 48❶	17-23	25	12.5	5	0.352
11 SM1C 52❶	20-25	25	12.5	5	0.352
11 SM1C 56❶	24-32	25	12.5	5	0.352

❶ The SM1C version permits mounting in enclosures and modular consumer switchboards with minimum depth of at least 45mm between the DIN rail and the opening.



11 SMX12...



11 SMX13 11

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]
Add-on auxiliary contacts.			
11 SMX12 11	Side mount 1NO+1NC	10	0.045
11 SMX13 11	Side-mount indicator contacts for thermal and magnetic tripping 1NO+1NC❶	10	0.045
Terminal block for busbar supply.			
11 SMX90 30	For all types	10	0.048
Three-phase connection busbars 45mm spacing.			
11 SMX90 32	For 2 breakers without side-mount contacts	10	0.027
11 SMX90 33	For 3 breakers without side-mount contacts	10	0.050
11 SMX90 34	For 4 breakers without side-mount contacts	10	0.071
11 SMX90 35	For 5 breakers without side-mount contacts	10	0.092
Three-phase connection busbars 54mm spacing.			
11 SMX90 42	For 2 breakers complete with side-mount contacts	10	0.031
11 SMX90 43	For 3 breakers complete with side-mount contacts	10	0.056
11 SMX90 44	For 4 breakers complete with side-mount contacts	10	0.081
11 SMX90 45	For 5 breakers complete with side-mount contacts	10	0.081

❶ Tripping is indicated by flag indicator on front.

General characteristics

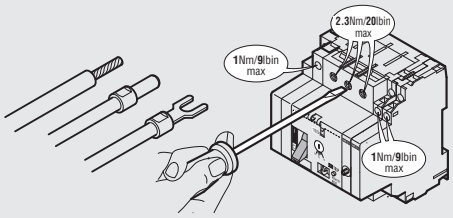
The SM1 is a modern series of circuit breakers with thermal and magnetic trip releases and high breaking capacity. Motor control and protection, up to 15kW at 400V/20HP 480V/30HP 600V, are possible by choosing the suitable adjustment range, 0.1 to 32A.
A magnetic trip indicator integrated on the SM1 breakers avoids dangerous closing operations during short-circuit conditions, previously disconnected by the breaker.
The SM1 types are suitable for isolation according to IEC/EN 60947 standards.
Their high breaking capacity consents to exclude protection fuses on the majority of the installations.

Operational characteristics

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

Certifications and compliance

Certifications obtained: UL Listed, for USA and Canada (cULus - File E93602) as manual motor controller suitable as motor disconnect; GOST.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.



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

AC fuse holders



FB01 A... FB01 A 1PL



FB02 A... FB02 A 1PL



FB03 A... FB03 A 1PL

Order code	Pole arrange-ment	Status indicator	DIN size	Qty per pkg	Wt
			n°	n°	[kg]
For 10x38mm fuses. 32A rated current at 690VAC.					
FB01 A 1P	1P	—	1	12	0.066
FB01 A 1PL	1P	YES	1	12	0.065
FB01 A 1M ❶	1P+N	—	1	12	0.062
FB01 A 1N	1P+N	—	2	6	0.134
FB01 A 2P	2P	—	2	6	0.132
FB01 A 3P	3P	—	3	4	0.188
FB01 A 3N	3P+N	—	4	3	0.260
For 14x51mm fuses. 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. 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

❶ Not UR certified.

Operational characteristics

- IEC rated voltage Ue:
  - 690VAC (FB01 A 1M excluded)
  - 400VAC (FB01 A 1M only)
- IEC rated current Ie:
  - FB01 A: 32A
  - FB02 A: 50A
  - FB03 A: 125A
- IEC utilisation category:
  - FB01 A: AC22B 500V, AC21B 690V (except FB01 A 1M: AC22B 400V)
  - 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	UL Recognized for USA (UR - File E343395)	CSA certified (File 252040 class 6255)	UL Recognized for USA and Canada (cULus - File E343395)
FB01 A 1P, FB01 A 1PL, FB01 A 1N	●	●	—
FB02 A...	—	—	●
FB03 A...	—	—	●

● Certification obtained; UL designation as Fuseholders - Component and CSA description as Fuseholder assemblies.

"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.

Three-pole switch disconnectors



GA016 A...
GA040 A
GA063 SA



GA063 A...
GA125 A

Order code	IEC conventional free air thermal current Ith AC21A (≤690V)	IEC rated operational current Ie AC22A (≤690V) AC23A (≤415V)	Qty per pkg	Wt
	[A]	[A]	n°	[kg]
Direct operating version, complete with black handle.				
GA016 A	16	16	1	0.146
GA025 A	25	25	1	0.146
GA032 A	32	32	1	0.146
GA040 A	40	40	1	0.146
GA063 SA	63	45	1	0.148
GA063 A	63	63	1	0.388
GA080 A	80	80	1	0.388
GA100 A	100	100	1	0.388
GA125 A	125	125	1	0.388

General characteristics
- 16A to 125A ratings
- Compact and modular size
- Screw or 35mm DIN (IEC/EN 60715) rail fixing
- Padlockable in 0 position with no extra accessory.

Operational characteristics
- IEC rated insulation voltage Ui: 1000V
- IEC rated impulse withstand Uimp: 8kV
- Electrical life in IEC AC21A:
  - 100,000 cycles for GA016-GA040
  - 15,000 cycles for GA063 SA
  - 30,000 cycles for GA063-GA125
- Mechanical life:
  - 100,000 cycles for GA016-GA040-GA063 SA
  - 30,000 cycles for GA063-GA125.

Certifications and compliance
Certifications obtained:

Type	cULus per UL508 / CSA C22.2 n°14 UL Listed (File E93602)	cULus per UL98 / CSA C22.2 n°4 UL Listed (File E328470)	GOST	KEMA
GA016 A...GA040 A	●	—	●	●
GA063 SA	●	—	●	—
GA063 A...GA125 A	—	●	●	●

● Certification obtained, as manual motor controllers while UL designation is general purpose switch for GA016/40 while GA063/125 open type unfused switch.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, UL508, UL98, CSA C22.2.

Fourth pole add on



GAX42...A
GAX41...A
GAX42 063SA
GAX41 063SA

Order code	IEC conventional free air thermal current Ith AC21A (≤690V)	IEC rated operational current Ie AC22A (≤690V) AC23A (≤415V)	Qty per pkg	Wt
	[A]	[A]	n°	[kg]
Simultaneous closing operation as switch poles.				
GAX42 040A❶	40	40	1	0.045
GAX42 063SA❷	63	45	1	0.045
GAX42 063A	63	63	1	0.126
GAX42 080A	80	80	1	0.126
GAX42 100A	100	100	1	0.126
GAX42 125A	125	125	1	0.126
Early-make closing operation with respect to switch poles.				
GAX41 040A❶	40	40	1	0.046
GAX41 063SA❷	63	45	1	0.046
GAX41 125A❸	125	125	1	0.116

❶ For GA016 A-GA040 A only.
❷ For GA063 SA only.
❸ For GA063 A-GA125 A only.

Type	cULus per UL508 / CSA C22.2 n°14 UL Listed (File E93602)	cULus per UL98 / CSA C22.2 n°4 UL Listed (File E328470)	GOST
GAX41 040A-GAX42 040A	●	—	●
GAX41 063SA-GAX42 063SA	●	—	●
GAX41 125A	—	●	●
GAX42 063A...GAX42 125A	—	●	●

● Certification obtained.

Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, UL508, UL98, CSA C22.2.

Add-on blocks and accessories



GAX50...

Order code	Characteristics	Qty per pkg	Wt
		n°	[kg]
Mechanical interlock for line changeover (I-0-II).			
GAX50 00	For GA016 A-GA040 A, GA063 SA; ☐ 5mm	1	0.050
GAX50 01	For GA063 A-GA125 A; ☐ 5mm	1	0.075

Modular contactors



CN20...



CN25...



CN40...



CN63...

Order code	Rated auxiliary supply voltage	Configuration and n° of contacts		Qty per pkg	Wt
	[V]❶	NO	NC	n°	[kg]
One or two-pole.					
CN20 11 024❷❼	24VAC/DC	1	1❸	10	0.135
CN20 11 220❷❼	220-230VAC❻	1	1❸	10	0.135
CN20 20 024❷❼	24VAC/DC	2	—	10	0.135
CN20 20 220❷❼	220-230VAC❻	2	—	10	0.135
Three-pole or four-pole.					
CN25 10 024❺	24VAC/DC	4❹	—	5	0.260
CN25 10 220❺	220-230VAC❻	4❹	—	5	0.260
CN25 01 024❺	24VAC/DC	3	1❹	5	0.260
CN25 01 220❺	220-230VAC❻	3	1❹	5	0.260
Three-pole or four-pole.					
CN40 10 024❺	24VAC/DC	4❹	—	5	0.425
CN40 10 220❺	220-230VAC❻	4❹	—	5	0.425
CN40 01 024❺	24VAC/DC	3	1❹	5	0.425
CN40 01 220❺	220-230VAC❻	3	1❹	5	0.425
Three-pole or four-pole.					
CN63 10 024	24VAC/DC	4❹	—	5	0.425
CN63 10 220	220-230VAC❻	4❹	—	5	0.425
CN63 01 024	24VAC/DC	3	1❹	5	0.425
CN63 01 220	220-230VAC❻	3	1❹	5	0.425

❶ Other voltages on request. Consult Customer Service; see contact details on inside front cover.
❷ 2NC version supplied on request.
❸ The last (NC) pole has the same characteristics as the power pole. It can therefore be used indifferently as an auxiliary or as a NC power contact.
❹ The fourth NO or NC pole has the same characteristics as the power poles; therefore it can be used indifferently as auxiliary or as power contact.
❺ On request CN25 and CN40 contactors in the following versions can be supplied: 2NO + 2NC or 4NC power poles. Consult Customer Service; see contact details on inside front cover.
❻ Can also operate at 220VDC.
❼ No auxiliary contacts can be mounted.

General characteristics
- DC powered magnetic core system assuring silent operation and noise damping during the control phase
- Overvoltage protection circuit and voltage peak limitation of the magnetic core
- Equipped with 2 or 4 closing contacts of equal capacity permitting use in power or auxiliary circuits
- Operation flag indicator
- Fast mounting.

Operational characteristics

Type	IEC conventional free-air thermal current Ith in AC1	IEC operating power in AC3 230V		Protection fuse gG (IEC) 400V
	[A]	[kW]	[kW]	[A]
CN20...	20	1.3	—	20
CN25...	25	2.2	4	35
CN40...	40	5.5	11	63
CN63...	63	8.5	15	80

- IEC degree of protection: IP20
- Mounting on 35mm DIN rail (IEC/EN 60175).

When contactors are mounted side by side and operate in continuous service (≥1 hour), spacing is needed between equipment to consent appropriate cooling.
9mm spacing is required; there is an accessory, called half-module spacer, order code CNX 80, for this specific type of mounting. The following table indicates details of the space needed between each.

Maximum number of contactors to be mounted side-by-side without spacing; the CNX 80 spacer is required when the number of pieces are more than indicated below:

	CN20	CN25	CN40	CN63
Ambient temper. ≤40°C	3	3	3	3
Ambient temper. >40°...55°C	2	2	3	2

Operational characteristics of contactor-incorporated auxiliary contacts

Type	IEC insulation voltage Ui	IEC rating (AC15 category) 230V	400V
	[V]	[A]	[A]
CN20...	440	6	6
CN25...	440	6	4
CN40...	500	6	4
CN63...	500	6	4

Certifications and compliance
Certifications obtained: GOST.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1, IEC/EN 61095.

Add-on blocks and accessories



CNH...

Order code	Characteristics	Max qty per contactor	Qty per pkg	Wt
		n°	n°	[kg]
Auxiliary contacts❶.				
CNH 11❶	1NO + 1NC	1	1	0.044
CNH 20❶	2NO	1	1	0.044
Spacer.				
CNX 80	1/2 module wide	1	10	0.013

❶ Not suitable for CN20 modular contactors.

Operational characteristics for auxiliary contacts
- Rated insulation voltage: 440VAC
- IEC conventional free air thermal current Ith: 6A
- Minimum switching capacity: 5mA 12V
- Conductor section: 1...1.5mm^2
- Maximum tightening torque: 1Nm.

Certifications and compliance
Certifications obtained: GOST.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-4-1, IEC/EN 60947-5-1, IEC/EN 61095.

On delay time relay. Multiscale. Multivoltage



TM P

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM P	0.1-1s 1-10s 6-60s 1-10min 6min-1h 1-10h 0.1-1 day 1-10 days ON only OFF only	24-48VDC 24-240VAC	1	0.048

General characteristics
- Electronic time relay, multiscale, multivoltage. On delay, delay on make, with start at relay energising
- 1 relay output with 1 changeover contact (SPDT)
- Delay time adjustable on front by rotary switch: 10-100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (File E93601) as Auxiliary Devices - Timers; GOST.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Multifunction time relay. Multiscale. Multivoltage. 1 relay output



TM M1

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM M1	0.1-1s 1-10s 6-60s 1-10min 6min-1h 1-10h 0.1-1 day 1-10 days ON only OFF only	12-240V AC/DC	1	0.086

General characteristics
- Electronic time relay, multifunction, multiscale, multivoltage
- Enabling input
- 1 relay output with 1 changeover contact (SPDT)
- Selectable functions: (a) On delay; delay on make with start at relay energising. (b) Pulse on relay energising with start when energised. (c) Flasher starting with OFF interval. Equal timing recycle. (d) Flasher starting with ON interval. Equal timing recycle. (e) Off delay; relay energising at external contact closing with start on break. (f) Pulse on relay energising with start on external contact closing. (g) Pulse on relay energising with start on external contact opening. (h) On-off delay. Delay on make, with start at external contact closing, and delay at break, with start at external contact opening. (i) Internal ON/OFF trigger with relay contact closing or operating at each closing of an external contact. (j) Pulse generator, unequal timing recycle; starting with OFF pulse time and 0.5s ON pulse.
- Delay time adjustable on front by rotary switch: 10-100%
- Green LED indicator for power on
- Red LED indicator for relay state; flashing for delay and steady when relay energised
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: GOST; UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Tmers.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Staircase time relay



TM LS

Order code	Time of scale range	Rated auxiliary supply voltage	Qty per pkg	Wt
		[V]	n°	[kg]
TM LS	0.5-20min	220-240VAC	1	0.080

General characteristics
- Electronic time relay single scale and voltage for staircase illumination
- 1 relay output with 1 powered normally open (N/O-SPST) contact
- Delay time adjustable on front by rotary switch
- Suitable for 3 or 4-wire systems
- 1 slide switch for timed or constant lighting operation
- Function for one hour lighting and fast switch off
- Green LED indicator for power on
- Connection with up to 50 light-up switches maximum; ≤ 1mA each
- Modular DIN 43880 housing, 1 module suitable for fixing on 35mm DIN rail (IEC/EN 60715)
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601) as Auxiliary Devices - Timers; GOST.
Compliant with standards: IEC/EN 61812-1, UL508, CSA C22.2 n° 14.

Voltage monitoring relay for three-phase systems with or without neutral



PMV50N...

Order code	Rated voltage to control Ue (phase to phase)	Qty per pkg	Wt
	[V] 50/60Hz	n°	[kg]
Three-phase system, with or without neutral. Minimum and maximum AC voltage. Delayed trip. Phase loss, neutral loss and incorrect phase sequence. Instantaneous trip.			
PMV50N A240	208-240VAC	1	0.150
PMV50N A440	380-440VAC	1	0.150

General characteristics
- Voltage monitoring relay, self powered, for minimum and maximum voltage, phase loss, neutral loss and incorrect phase sequence
- 4 configurable rated voltage (Ue):
  - PMV50N A240: 208-220-230-240VAC (phase-phase) 120-127-132-138VAC (phase-neutral)
  - PMV50N A440: 380-400-415-440VAC (phase-phase) 220-230-240-254VAC (phase-neutral)
- Excellent tripping accuracy
- TRMS measurements (True Root Mean Square)
- Phase loss detection when one of the voltages is <70% rated voltage
- Phase or neutral loss tripping time: 60ms
- 2 relay outputs, each with 1 changeover contact (SPDT)
- Modular DIN 43880 housing, 3-module
- IEC protection degree: IP40 on front (only when placed in IP40 enclosure or control board); IP20 at terminals.

ADJUSTMENTS

"V max"	Maximum voltage tripping threshold 105-115% Ue
"V min"	Minimum voltage tripping threshold 80-95% Ue
"Delay" for each	Tripping time 0.1-20s
"Reset Delay"	Resetting time 0.1-20s.

Reference standards
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.

Current monitoring relay



PMA30 240

Order code	Rated current Ie	Auxiliary supply voltage	Qty per pkg	Wt
	[A]	[V]	n°	[kg]
Single-phase system. AC/DC minimum or maximum current control. Delayed trip. Auxiliary AC/DC power supply. Automatic or manual reset.				
PMA30 240	5 or 16A	24-240V AC/DC	1	0.121

General characteristics
- Current monitoring relay for AC/DC minimum or maximum current control; AC/DC multivoltage auxiliary power supply
- Direct connection up to 16A max, or by current transformer (CT)
- Excellent tripping accuracy
- TRMS current measurements (True Root Mean Square)
- Resetting and inhibition input
- 1 relay output with 1 changeover contact (SPDT)
- Modular DIN 43880 housing, 2-module
- IEC protection degree: IP40 on front (only when placed in IP40 enclosure or control board); IP20 at terminals.

ADJUSTMENTS

"Set point"	Minimum or maximum current tripping threshold 5-100% Ie
"Hysteresis"	Minimum or maximum hysteresis threshold 1-50%
"Trip delay"	Tripping time 0.1-30s
"Inhibition time"	Tripping delay for external input or at power up 1-60s
"Ie"	Current scale selection: 5A or 16A
"Mode"	• Min or max function • Relay output normally energised or de-energised • Tripping memory (Latch) On or Off.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E93601), as Auxiliary Devices - Modular ampere monitoring relays; GOST.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 508, CSA C22.2 n° 14.

Switching power supplies



PSL1M 010...



PSL1M 033 12
PSL1M 036 24

Order code	Rated output voltage	Rated output current	Output power	Qty per pkg	Wt
	[V]	[A]	[W]	n°	[kg]
Single phase.					
PSL1M 010 12	12VDC	0.83	10	1	0.114
PSL1M 024 12		2	24	1	0.177
PSL1M 033 12		2.75	33	1	0.248
PSL1M 054 12		4.5	54	1	0.311
PSL1M 072 12		6	72	1	0.443
PSL1M 010 24	24VDC	0.42	10	1	0.114
PSL1M 024 24		1	24	1	0.177
PSL1M 036 24		1.5	36	1	0.248
PSL1M 060 24		2.5	60	1	0.311
PSL1M 100 24		4.2	100	1	0.443

General characteristics
Switching power supplies transform an AC input voltage into a DC output one. This type of equipment is used in industrial and domestic automation fields. The power supplies are equipped with switching technology offering very high efficiency in an extremely compact size. Dimensions are compatible with modular consumer panels and its plastic housing is suitable for building automation installations as well as industrial automation applications. The wide range of power supply voltages and the choice of DC current outputs provide for the best adaptability to supply voltage needs of the most common electronic and electromechanical devices.

Protections: short circuit, overload and input voltage peaks.

Indications:
– LED indicator for low voltage conditions
– LED indicator for power on.

Operational characteristics
– Rated supply voltage: 100-240VAC
– Mains frequency: 50/60Hz
– Output voltage adjustment by front potentiometer
– High efficiency up to 89%
– Screw connection terminals
– Modular DIN 43880 housing; number of modules:
  • 1 for PSL1M 010...
  • 2 for PSL1M 024...
  • 3 for PSL1M 033 12 and PSL1M 036 24
  • 4 for PSL1M 054 12 and PSL1M 060 24
  • 5 for PSL1M 072 12 and PSL1M 100 24
– IEC degree of protection: IP20 on terminals.

Certifications and compliance
Certifications obtained: UL Listed for USA and Canada (cULus - File E318016) as Power Supplies in power circuit and motor-mounted apparatus category; GOST.
Compliant with standards: IEC/EN 60950-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

Micro PLCs



LRD10...
LRD12...

Order code	Auxiliary supply voltage	In/Out❶	Qty per pkg	Wt
			n°	[kg]
Base modules.				
LRD12R D024	24VDC	8/4 relay	1	0.241
LRD20R D024	24VDC	12/8 relay	1	0.360
LRD10R A240	100-240VAC	6/4 relay	1	0.242
LRD20R A240	100-240VAC	12/8 relay	1	0.367

❶ Inputs/Outputs.

General characteristics
FUNCTIONS
– Addition-Subtraction on variables
– Multiplication-Division on variables
– Comparator on variables
– HMI display for parameter viewing and programming
– PWM output
– High speed input (1kHz)
– PID function
– Multiplexer
– Analog ramp
– Register transfer (numerical variables and status)
– Shift function
– Boolean logic blocks.

Expansion and communication modules



LRE...

Order code	Auxiliary supply voltage	In/Out❶	Qty per pkg	Wt
			n°	[kg]
Expansion and communication modules❷.				
LRE04A D024	24VDC	4 analog outputs 0...10V/0...20mA	1	0.160
LRE04P D024	24VDC	4 PT100 temp. sensor inputs	1	0.160
LRE P00	Modbus®-RTU protocol communication unit		1	0.134

❶ Inputs/Outputs.
❷ The expansion modules are supplied with connector for base module.

Operational characteristics
– 8A Ith current relay outputs for AC and DC versions
– 0.3A 24VDC transistor outputs for DC version
– 0-10V analog inputs for DC version
– Version: modular for mounting on 35mm DIN rail (IEC/EN 60715) or M4x15mm screw fixing
– Type of terminal: Screw
– IEC degree of protection: IP20.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E300049), as Programmable Controllers.
Compliant with standards: IEC/EN 61131-2, UL508, CSA C22.2 n°142.

Accessories

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Accessories.			
LRX C00	PC (RS232)-LRD connecting cable, 1.5m	1	0.083
LRX C03	PC (USB)-LRD connecting cable, 1.5m	1	0.083
LRX SW	Programming and supervision software (CD-ROM)	1	0.057

Modular service cover 35mm DIN rail mount.



Order code		Rated current AC1	Front plate size	Qty per pkg	Weight
		[A]	[mm]	n°	[kg]
ON/OFF SWITCHES. One-pole – 3 wafers – scheme 90.					
GX16 90 048		16	45x54	1	0.110
Two-pole – 3 wafers – scheme 91.					
GX16 91 048		16	45x54	1	0.110
Three-pole – 3 wafers – scheme 10.					
GX16 10 048		16	45x54	1	0.118
Four-pole – 3 wafers – scheme 92.					
GX16 92 048		16	45x54	1	0.125
CHANGEOVER SWITCHES WITH 0. One-pole – 3 wafers – scheme 51.					
GX16 51 048		16	45x54	1	0.098
Two-pole – 3 wafers – scheme 52.					
GX16 52 048		16	45x54	1	0.122
Three-pole – 3 wafers – scheme 53.					
GX16 53 048		16	45x54	1	0.150
Four-pole – 4 wafers – scheme 75.					
GX16 75 048		16	45x54	1	0.170
VOLTMETER SWITCHES. Phase-Neutral L1-N/L2-N/L3-N – 3 wafers – scheme 68.					
GX16 68 048		16	45x54	1	0.130
Phase-Phase L1-L2/L2-L3/L3-L1 – 3 wafers – scheme 67.					
GX16 67 048		16	45x54	1	0.130
For 3 phase to phase voltage and 3 phase voltage readings 3 wafers – scheme 66					
GX16 66 048		16	45x54	1	0.156
AMMETER SWITCHES. Direct L1-L2-L3 current readings – 5 wafers – scheme 97.					
GX16 97 048		16	45x54	1	0.196
For L1-L2-L3 readings via 3 CTs – 4 wafers – scheme 98.					
GX16 98 048		16	45x54	1	0.150

General characteristics
- IEC 16A conventional free air thermal current Ith ratings
- Extended mechanical and electrical life
- Rotation angles: 30°, 45°, 60° and 90°
- Silver-alloy dual-breaking contacts
- Direct opening action ⊖; safety function according to IEC/EN 60947-5-1
- IEC IP40 front degree of protection; IEC IP20 degree of protection of contacts
- Suitable for screw fixing or mounting on 35mm DIN rail (IEC/EN 60175)
- Legend marking is standard supplied as illustrated in the order code table; any other on request.

Special versions
In addition to standard types, particular versions are available with special operating circuit schemes.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E155982) as Manual Motor Controllers; GOST.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-3, IEC/EN 60947-5-1, IEC/EN 61058-1, UL508, CSA C22.2 n° 14.

Single phase, non expandable



MID

DME D110 T1...



MID

DME D120 T1...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DME D100 T1	40A direct connection, 1 pulse output, 220-240VAC	1	0.086
DME D100 T1 MID	40A direct connection, 1 pulse output, 230VAC, MID certified	1	0.086
DME D110 T1	40A direct connection, 1 programmable static output, multi-measurements ❶, 220-240VAC	1	0.090
DME D110 T1 MID	40A direct connection, 1 programmable static output, multi-measerements ❶, 230VAC, MID certified	1	0.090
DME D120 T1	63A direct connection, 1 programmable static output, multi-measurements ❶, 220-240VAC	1	0.148
DME D120 T1 MID	63A direct connection, 1 programmable static output, multi-measerements ❶, 230VAC, MID certified	1	0.148

❶ Multi-measurements:
- Total active energy
- Partial active energy
- Total reactive energy
- Partial reactive energy
- Voltage
- Current
- Active power
- Reactive power
- Power factor
- Frequency
- Total hour counter
- Partial hour counter
- Average active power (calculation on every last 15 minutes)
- Maximum demand.

General characteristics
These energy meters are instruments for energy consumption measurement in single-phase systems with direct connection.

Operational characteristics
- Rated supply voltage: 220-240VAC
- Voltage range: 187-264VAC 50/60Hz
- Direct connection
- 40A max. current (DME D100 T1... and DME D110 T1...)
- 63A max. current (DME D120 T1...)
- Active and reactive energy measurement (DME D120 T1...)
- Partial energy measurements are clearable (DME D120 T1...)
- Active energy accuracy: Class 1 (IEC/EN 62053-21) for DME D T1 and DME D120 T1 types only; Class B for MID types
- Reactive energy accuracy: Class 2 (IEC/EN 62053-23) for DME D110 T1 and DME D120 T1 types only
- LCD meter with 5+1 digit count (DME D100 T1... and DME D110 T1...)
- LCD meter with 6+1 digit count (DME D120 T1...)
- Metrological LED with pulse emission for consumption indication
- Static pulse output which is programmable for DME D110 T1... and DME D120 T1...
- Modular DIN 43880 housing, 1-module (DME D100 T1... and DME D110 T1...)
- Modular DIN 43880 housing, 2-module (DME D120 T1...)
- Sealable terminals blocks, standard supplied
- IEC/UL/CSA protection degree: IP40 on front (for MID types, placed in IP51 enclosure or control board); IP20 at terminals.

Operational characteristics only for MID type
- Rated supply voltage: 230VAC
- Voltage range: 187-265VAC 50Hz
- Measurement of 14 electrical parameters for DME D110 T1 and DME D110 T1 MID only
- Active energy measurement accuracy: Class B (EN 50470-3)
- Reactive energy measurement accuracy: Class 2 (IEC/EN 62053-23) for DME D110 T1 MID and DME D120 T1 MID only

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (cULus - File E346886), as Electrical Process Control Equipment - Energy meters.
Certifications obtained for MID type: MID Class B, certifications per module B (type tests) and per module D (production conformity).
Compliant with standards: EN 50470-1, IEC/EN 61010-1, UL 61010-1, CSA C22.2 n°61010-1.
Compliant with standards for MID type: EN 50470-1, EN 50470-3.

Three phase with neutral, non expandable



MID

DME D300 T2...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DME D300 T2	63A direct connection, 2 programmable static outputs, multi-measurements ❶	1	0.360
DME D300 T2 MID	63A direct connection, 2 programmable static outputs, multi-measur. ❶, MID certified	1	0.360

❶ Multi-measurements:
- Total active energy
- Partial active energy
- Total reactive energy
- Partial reactive energy
- Voltage
- Current
- Active power
- Reactive power
- Power factor
- Frequency
- Total hour counter
- Partial hour counter
- Average active power (calculation on every last 15 minutes)
- Maximum demand.

Three phase with or without neutral, expandable



MID

DME D310 T2...

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DME D310 T2	Connection with CT /5A secondary, 2 programmable static outputs, multi-measurements ❶, expandable	1	0.332
DME D310 T2 MID	Connection with CT /5A secondary, 2 programmable static outputs, multi-measurements ❶, expandable, MID certified	1	0.332

❶ Multi-measurements:
- Total active energy
- Partial active energy
- Total reactive energy
- Partial reactive energy
- Voltage
- Current
- Active power
- Reactive power
- Power factor
- Frequency
- Total hour counter
- Partial hour counter
- Average active power (calculation on every last 15 minutes)
- Maximum demand.

General characteristics
The energy meters are digital meters/analyzers of electric energy for systems with direct three-phase connection or by CT. Expandable up to 3 EXM10 series interfaced by infrared beam.

Operational characteristics
- Rated supply voltage:
  230VAC (L-N); 400VAC (L-L) MID types;
  220-240VAC (L-N); 380-425VAC (L-L) for DME D300/D310 T2
- Voltage range:
  187-264VAC (L-N); 323-456VAC (L-L) - 50/60Hz
- Direct connection up to 63A for DME D300 T2... only
- Connection by CT /5A for DME D310 T2... only
- Active energy accuracy: Class 1 (IEC/EN 62053-21) for DME D300/D310 T2; Class B (EN 50470-3) for MID types
- Reactive energy accuracy: Class 2 (IEC/EN 62053-23)
- LCD multifunction meter
- Metrological LED with pulse emission for consumption indication
- Partial active energy measurement is clearable
- 1 programmable digital input
- 2 programmable static outputs
- Optical interface port for EXM10... expansion modules with DME 310 T2... only
- Modular DIN 43880 housing, 4-module
- Sealable terminalsblocks, standard supplied
- IEC protection degree: IP40 on front (for MID types, placed IP51 enclosure or control board); IP20 at terminals.

Operational characteristics only for MID type
- Rated supply voltage: 230VAC (L-N); 400VAC (L-L)
- Voltage range:
  187-264VAC (L-N); 323-456VAC (L-L) - 50Hz
- Active energy accuracy: Class B (EN 50470-3)
- Reactive energy accuracy: Class 2 (IEC/EN 62053-23)

Certifications and compliance
Certifications obtained: MID Class B, certifications per module B (type tests) and per module D (production conformity).
Compliant with standards: EN 50470-1, EN 50470-3.
Compliant with standards MID type: EN 53470-1, IEC/EN 61010-1.

Data concentrator, expandable



DME CD

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Data concentrator.			
DME CD	For DME M100 T1 and DME D... types, 8 energy meters can be connected, RS485 interface, expandable	1	0.337

General characteristics
The data concentrator DME CD has been designed in combination with energy meters DME D...
It is capable of pulse counting coming in from the static outputs of the connected energy meters, storing data and viewing it on the display or directly on a PC through the built-in RS485 port, using the DMK SW software.
Expandable with up to 3 EXM10 series interfaced by infrared beam.

Operational characteristics
- Rated supply voltage: 100-240VAC/110-250VDC
- Voltage range: 85-264VAC 50/50Hz/93.5-300VDC
- Backlight graphic LCD
- 8 inputs, expandable with EMX10... modules up to 14
- Built-in RS485 communication interface
- Modbus®-RTU ASCII and TCP communication protocol
- Multifunction display
- Total and partial energy meter, can be cleared for each channel
- Programmable general counters
- Calculation of derivative average values
- Mathematical operations among meters
- IEC protection degree: IP40 on front; IP20 at terminals.

Certifications and compliance
Certifications obtained: UL Listed, for USA and Canada (File E346886), as Electrical Process Control Equipment - Data concentrator.
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL 61010-1, CSA C22.2 n°61010-1.

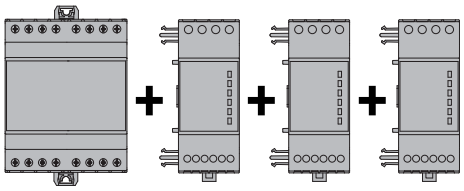
Expansion modules



EXM 10 10

Order code	Description
Inputs and outputs.	
EXM10 00	2 digital inputs and 2 static outputs, opto-isolated
Communication ports.	
EXM10 12	Opto-isolated RS485 interface
EXM10 13	Ethernet interface with Web server function

Maximum combination



LED instruments single phase



DMK 80 R1



DMK 81 R1



DMK 83 R1



DMK 84 R1

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK 80 R1❶	1 voltage value 1 max voltage value 1 min voltage value	1	1	0.268
Ammeter.				
DMK 81 R1❶	1 current value 1 max current value 1 min current value	1	1	0.268
Frequency meter.				
DMK 83 R1❶	1 frequency value 1 max frequency value 1 min frequency value	1	1	0.268
Cosphi meter.				
DMK 84 R1❶	1 cosphi value 1 power factor value	1	1	0.272

❶ Relay output with control and protection functions.

General characteristics
The DMK 8... instruments are available with modular housing, 3-module size.
Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- True RMS measurements
- HIGH and LOW measurement storage
- 1 relay output with 1 changeover contact for DMK...R1 version only
- Terminals: 4mm²
- Modular DIN 43880 housing, 3 modules
- Degree of protection: IP40 on front; IP20 on terminals.

DMK 80 R1
- Voltage measurement range: 15-660VAC
- Operating frequency range: 45-65Hz
- Programmable VT ratio: 1.00-500.00
- Accuracy: ±0.25% f.s. ±1 digit

DMK 81 R1
- Current measurement range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable CT ratio: 5-10,000
- Accuracy: ±0.5% f.s. ±1 digit

DMK 83 R1
- Measurement input: 15-660VAC
- Frequency measurement range: 50-60Hz ±10%
- Measurement accuracy: ±1 digit
- Accuracy: 1° ±1 digit

DMK 84 R1
- Cosphi measurement error: ±0.5° ±1 digit
- Cosphi measurement in 4 quadrants
- Accuracy: ±1° digit

Control and protection functions
DMK 80 R1
- Voltage loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Time delay for max-min voltage or voltage loss, phase loss ❷: 0.0-900.0 seconds.

DMK 81 R1
- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Time delay for max-min current or current loss ❷: 0.0-900.0 seconds.

DMK 83 R1
- Maximum frequency: OFF/101-110%
- Minimum frequency: OFF/90-99%
- Time delay for min-max frequency ❷: 0.5-900.0 seconds.

DMK 84 R1
- Minimum-maximum cosφ thresholds in 4 quadrants
- Minimum-maximum PF thresholds in 4 quadrants
- Delay time for max or min threshold ❷: 1-9,000 seconds.

Reference standards
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

❷ Independent adjustable delays.

LED instruments three phase



DMK 70 R1



DMK 71 R1



DMK 75 R1

Order code	Displayed measurements	Relay output	Qty per pkg	Wt
	n°	n°	n°	[kg]
Voltmeter.				
DMK 70 R1❷	3 phase voltage values 3 phase to phase voltage values 3 max phase voltage values 3 max phase to phase voltage values 3 min phase voltage values 3 min phase to phase voltage values	1	1	0.264
Ammeter.				
DMK 71 R1❷	3 phase current values 3 max phase current values 3 min phase current values	1	1	0.272
Combined voltmeter, ammeter and wattmeter.				
DMK 75 R1❶❷	3 phase voltage values 3 phase to phase voltage values 3 phase current values 4 active power values, phase and total 3 maximum phase voltage values 3 maximum phase to phase voltage values 3 maximum phase current values 4 max active power, phase and total 3 minimum phase voltage values 3 minimum phase to phase voltage values 3 minimum phase current values 4 min active power, phase and total	1	1	0.280

❶ Connection also to single phase.
❷ Relay output with control and protection functions.

General characteristics
The DMK 7... instruments are available with modular housing, 3-module size.
Measurements are True RMS values and provide for reliable operation even in presence of harmonics.

Operational characteristics
- Auxiliary supply voltage: 220-240VAC
- Operating frequency: 50-60Hz
- True RMS measurements
- HIGH and LOW measurement storage
- 1 relay output with 1 changeover contact for DMK...R1 version only
- Terminals: 4mm^2
- Modular DIN 43880 housing, 3-module
- Degree of protection: IP40 on front; IP20 on terminals.

DMK 70 R1
- Voltage measurement range: 15-660VAC
- Operating frequency range: 45-65Hz
- Programmable VT ratio: 1.00-500.00
- Accuracy: ±0.25% f.s. ±1 digit

DMK 71 R1
- Current measurement range: 0.05-5.75A
- Operating frequency range: 45-65Hz
- Programmable CT ratio: 5-10,000
- Accuracy: ±0.5% f.s. ±1 digit

DMK 75 R1
- Voltage measurement range: 35-660VAC
- Current measurement range: 0.05-5.75A
- Frequency measure range: 45-65Hz
- Programmable VT ratio: 1.00-500.00
- Programmable CT ratio: 5-10,000
- Accuracy: Voltage ±0.25% f.s. ±1 digit
  Current ±0.5% f.s. ±1 digit

Control and protection functions
DMK 70 R1
- Phase loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Asymmetry: OFF/2-20%
- Phase sequence: OFF/L1-L2-L3/L3-L2-L1
- Maximum frequency: OFF/101-110%
- Minimum frequency: OFF/90-99%
- Time delay for max-min voltage, phase loss, asymmetry and min-max frequency ❸: 0.0-900.0 seconds.

DMK 71 R1
- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Asymmetry: OFF/2-20%
- Time delay for max-min current or current loss and asymmetry ❸: 0.0-900.0 seconds.

DMK 75 R1
Voltage
- Phase loss or failure: OFF/5-85%
- Maximum voltage: OFF/102-120%
- Minimum voltage: OFF/70-98%
- Asymmetry: OFF/2-20%
- Phase sequence: OFF/L1-L2-L3/L3-L2-L1

Current
- Current loss: OFF/2-100%
- Maximum current: OFF/102-200%
- Maximum current instantaneous tripping: OFF/110-600%
- Minimum current: OFF/5-98%
- Asymmetry: OFF/2-20%

Power
- Rated power: 1-10,000
- Maximum power: OFF/101-200%
- Maximum power instantaneous tripping: OFF/110-600%
- Minimum power: OFF/10-99%

Frequency
- Maximum frequency: OFF/101-110%
- Minimum frequency: OFF/90-99%
- Time delay for max-min voltage, max-min current or current loss, phase loss, asymmetry and min-max power ❸: 0.0-900.0 seconds.

Reference standards
Compliant with standards: IEC/EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-3.

❸ Independent adjustable delays.

LCD multimeters non expandable



DMG 200 - DMG 210

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 200	Graphic 128x80 pixel LCD, auxiliary supply 100-240VAC/110-250VDC. Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.294
DMG 210	Graphic 128x80 pixel LCD, RS485 port included, auxiliary supply 100-240VAC/110-250VDC. Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.300

LCD multimeters expandable



DMG 300

Order code	Description	Qty per pkg	Wt
		n°	[kg]
DMG 300	Graphic 128x80 pixel LCD, harmonic analysis, auxiliary supply 100-240VAC/110-250VDC. Multilanguage: Italian, English, French, Spanish and Portuguese	1	0.320

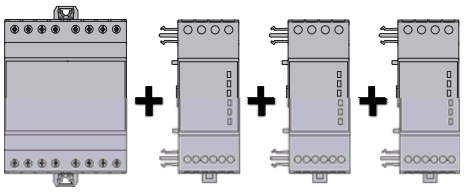
Expansion modules for DMG 300



EXM 10 10

Order code	Description
Inputs and outputs.	
EXM10 00	2 digital inputs and 2 static outputs, opto-isolated
Communication ports.	
EXM10 12	Opto-isolated RS485 interface
EXM10 13	Ethernet interface with Web server function
EXM10 30	Data storage, clock-calendar (RTC) with reserve charge for data logging

Maximum combination





Contact our Customer Service (Tel. +39 035 4282422; email: service@LovatoElectric.com) for setup and supervision software.

General characteristics

DMG 200... , DMG 210 and DMG 300analyzers are available with a modular housing, 4-module size, and are equipped with a graphic backlit LCD capable of providing extremely clear, intuitive and flexible viewing of all electrical parameters of a system. The very accurate measurements combined with their extreme compactness provide an ideal solution for every type of application.
The DMG 210 version is supplied with RS485 opto-isolated built-in interface.
Expandable with up to 3 EXM10 series interfaced by infrared beam.
Main measurements and functions include:

- Voltage: phase, line and system values
- Current: phase values (neutral current calculated)
- Power: apparent, active and reactive phase and total values
- P.F.: Power Factor per phase and total
- Frequency of measured voltage value
- HIGH-LOW-AVERAGE value functions of all measurements
- Maximum demand of power and current values
- Total harmonic distortion (THD) of voltage and current values
- Harmonic analysis of voltage and current up to 31° order (DMG 300 only)
- Energy meters for active, reactive and apparent values
- Hour counter for programmable total and partial hours
- Energy meters for active, reactive, apparent partial and total values, programmable tariff functions (DMG 300 only)
- Pulse counter for general use: pulse counting for water, gas, etc. consumption with expansion module only (DMG 300 only).

Operational characteristics

- Auxiliary supply voltage range:
  85-264VAC / 93.5-300VDC
- Voltage measurement range:
  20-830VAC phase-to-phase
  10-480VAC phase-neutral
- Usage in medium and high-voltage systems with voltage transformers
- Rated input current: with external CT /5A
- Rated input current: with external CT, 5A or 1A (DMG 300 only)
- Current measurement range with CT up to 10,000A
- Frequency measurement range: 45-66Hz
- True RMS measurements for voltage and current values
- Accuracy (for DMG 200 and DMG 210):
  - Voltage: ±0.5% (50-830VAC)
  - Current: ±0.5% (0.1-1.1 In)
  - Power: ±1% f.s.
  - Frequency: 0.05%
  - Active energy: Class 1 (IEC/EN 62053-21)
  - Reactive energy: Class 2 (IEC/EN 62053-23)
- Accuracy (for DMG 300):
  - Voltage: ±0.2% (50-830VAC)
  - Current: ±0.2% (0.1-1.1 In)
  - Power: ±0.5% f.s.
  - Power factor: ±0.5%
  - Frequency: 0.05%
  - Active energy: Class 0.5S (IEC/EN 62053-22)
  - Reactive energy: Class 2 (IEC/EN 62053-23)

n-volatile memory for data storage
mmunication protocol Modbus®-RTU, ASCII and TCP for DMG 210 and DMG 300 only
ɔgramming and remote control by software for DMG 210 only; only with communication expansion modules for DMG 300 only
ɔdular DIN 43880 housing, 4-module
protection degree: IP40 on front; IP20 at terminals.

ications and compliance

cations obtained: UL Listed, for USA and Canada (File)1), as Auxiliary Devices - Multimeter; GOST.
liant with standards: IEC/EN 61010-1,
N 61000-6-2, IEC/EN 61000-6-3, UL 508,
:22.2 n° 14.

Solid-core



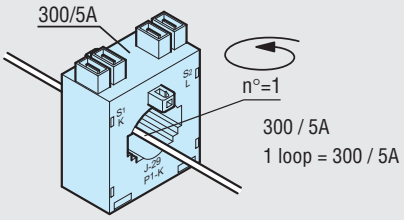
DM1T...



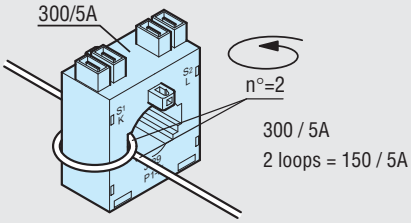
DM2T...

Order code	Primary current Ip	Burden cl. 0.5	Burden cl. 1	Qty per pkg	Weight
	/5 [A]	[VA]	[VA]	n°	[kg]
For Ø22mm cable.					
DM1T 0050	50	—	1.5	1	0.200
DM1T 0060	60	—	2	1	0.200
DM1T 0080	80	—	2.5	1	0.200
DM1T 0100	100	—	2.5	1	0.200
DM1T 0150	150	—	2.5	1	0.200
For Ø23mm cable. For 30x10mm, 25x12.5mm, 20x15mm busbars.					
DM2T 0060	60	—	1	1	0.130
DM2T 0080	80	—	1	1	0.130
DM2T 0100	100	—	1.5	1	0.130
DM2T 0150	150	—	1.5	1	0.130
DM2T 0200	200	—	2.5	1	0.130
DM2T 0250	250	—	2.5	1	0.130
DM2T 0300	300	1.5	3	1	0.130
DM2T 0400	400	2	3	1	0.130

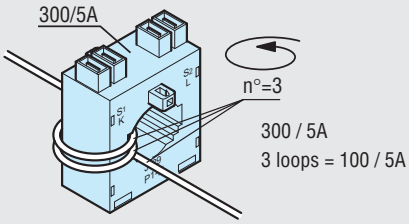
General characteristics
The DM... series current transformers (CT) are installed in electric systems to reduce the line current to a secondary value of 5A, which is compatible with current inputs of digital multimeters or protection relays.
These are without primary winding and are used for high primary current values from 50A upward.
The number of loops of the primary cable does not modify the accuracy but converts the primary current value proportional to secondary current.



300:n/5A
300:1/5A=300/5A



300:n/5A
300:2/5A=150/5A



300:n/5A
300:3/5A=100/5A

Operational characteristics
- Operating frequency: 50-60Hz
- Secondary output current: 5A
- Overload withstand: 120% Ip
- IEC rated insulation voltage Ui: 720V
- IEC rated short-time thermal current Ith: 40-60 Ipn for 1 second
- IEC rated dynamic current Idyn: 2.5 Ith for 1 second
- Insulation (dry type): class E
- IEC degree of protection: IP30
- Ambient conditions:
  - Operating temperature: -25 ... +50°C
  - Storage temperature: -40 ... +80°C.
  - Relative humidity, non condensing: 90%.

Certifications and compliance
Compliant with standards: IEC/EN 60044-1.

The products described in this publication are subject to be revised or improved at any moment. Catalogue descriptions and details, such as technical and operational data, drawings, diagrams and instructions, etc., do not have any contractual value. In addition, products should be installed and used by qualified personnel and in compliance with the regulations in force for electrical systems in order to avoid damages and safety hazards.

Lovato electric

ENERGY AND AUTOMATION

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