Self-protected combination motor controllers, UL 508 Type E, LMR series

Lovato electric

100% electricity

Self-protected combination motor controllers, UL 508 type E, LMR series

Manual motor protectors LMR up to 32A

LMR32...

Catalog number	Thermal trip adjustment range	Short-circuit ratings		Qty per pkg	Wt
		IEC Icu at 400V	UL KAIC at 480V		
	[A]	[kA]	[kA]	n°	[kg]
LMR32 0016	0.1-0.16	100	65	5	0.320
LMR32 0025	0.16-0.25	100	65	5	0.320
LMR32 0040	0.25-0.4	100	65	5	0.320
LMR32 0063	0.4-0.63	100	65	5	0.320
LMR32 0100	0.63-1	100	65	5	0.320
LMR32 0160	1-1.6	100	65	5	0.320
LMR32 0250	1.6-2.5	100	65	5	0.320
LMR32 0400	2.5-4	100	65	5	0.320
LMR32 0600	4-6	100	65	5	0.320
LMR32 0800	5-8	100	65	5	0.320
LMR32 1000	6-10	100	65	5	0.340
LMR32 1300	9-13	100	65	5	0.340
LMR32 1700	11-17	50	30	5	0.340
LMR32 2200	14-22	50	30	5	0.340
LMR32 2600	18-26	50	30	5	0.340
LMR32 3200	22-32	50	30	5	0.340

General characteristics
LMR are combination motor controllers with high short-circuit interrupting capacity and equipped with thermal and magnetic trip releases. 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.
The LMR32 motor controllers have rotating handle operation and are suitable also as motor disconnect according to IEC/EN 60947/UL508 standards.
Their high short-circuit rating allows to exclude protection fuses and/or circuit breakers on the majority of the installations.

Operational characteristics
- Rated insulation voltage Ui: 690V
- Rated impulse withstand voltage: 6kV
- Rated frequency: 50/60Hz
- Maximum rated current: 32A
- 16 different adjustment ranges
- Short-circuit ratings: for IEC Ics and Icu values, see table on page 4
- Power dissipation: 1.7-7.4W
- Magnetic tripping: 13xIn max
- Thermal tripping class: 10
- Phase failure sensitive
- Mechanical life: 100,000 cycles
- Electrical life: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: Any
- Utilisation category: A
- Padlockable handle with no need of accessories
- Anti-tamper shield, standard supplied.

Certifications and compliance
Certifications obtained: cULus as "Combination Motor Controller Type E".
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 protectors are mounted, side by side, without leaving space between each to allow free air circulation on the protector sides, and have simultaneous operation, the thermal trip adjustment must be positioned at a value 15% greater than the rated motor current.

UL horsepower and short-circuit ratings

Catalog number	Thermal trip adjustment range ❶ [A]	UL maximum horsepower ratings Single-phase ❷ 120V [HP]	240V [HP]	Three-phase 200V [HP]	240V [HP]	480V [HP]	600V [HP]	UL short-circuit ratings (KAIC) Combination motor controller (Type E) ❸ 240V [kA]	480V [kA]	600V [kA]
LMR32 0016	0.1-0.16	—	—	—	—	—	—	100	65	25
LMR32 0025	0.16-0.25	—	—	—	—	—	—	100	65	25
LMR32 0040	0.25-0.4	—	—	—	—	—	—	100	65	25
LMR32 0063	0.4-0.63	—	—	—	—	—	—	100	65	25
LMR32 0100	0.63-1	—	—	—	—	—	1/2	100	65	25
LMR32 0160	1-1.6	—	1/10	—	—	3/4	3/4	100	65	25
LMR32 0250	1.6-2.5	—	1/6	1/2	1/2	1	1 1/2	100	65	25
LMR32 0400	2.5-4	1/8	1/3	3/4	3/4	2	3	100	65	25
LMR32 0600	4-6	1/4	1/2	1	1 1/2	3	5	100	65	25
LMR32 0800	5-8	1/3	1	2	2	5	5	100	65	10
LMR32 1000	6-10	1/3	1 1/2	2	3	5	7 1/2	100	65	10
LMR32 1300	9-13	1/2	2	3	3	7 1/2	10	100	65	10
LMR32 1700	11-17	1	3	3	5	10	15	100	30	10
LMR32 2200	14-22	1 1/2	3	5	7 1/2	15	20	100	30	10
LMR32 2600	18-26	2	3	7 1/2	7 1/2	15	20	100	30	10
LMR32 3200	22-32	2	5	7 1/2	10	20	30	100	30	10

❶ The appropriate thermal trip range of the protector should be selected on the basis of the motor nameplate full-load current since the horsepower ratings given in the table are for reference only.
❷ Single-phase horsepower ratings are based on wiring the three poles in series; see wiring scheme on page 5.
❸ "Self-Protected Combination Motor Controller" per UL508 and CSA 22.2 No.14.

Add-on blocks and accessories

LMRX11...

LMRX13 11

LMRX14...

LMRX16...

LMRX18...

11 SMX90 31

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

LMRX90 50

Catalog number	Characteristics	Qty per pkg	Wt
		n°	[kg]
Add-on auxiliary contacts.			
LMRX11 20	Front mount 2NO	10	0.020
LMRX11 11	Front mount 1NO+1NC	10	0.020
LMRX11 02	Front mount 2NC	10	0.020
LMRX12 20	Side mount 2NO	2	0.040
LMRX12 11	Side mount 1NO+1NC	2	0.040
LMRX12 02	Side mount 2NC	2	0.040
LMRX13 11	Side-mount indicator contact switch for thermal and magnetic tripping 1NO+1NC	1	0.040
Undervoltage trip releases.			
LMRX14 230	230VAC 50/60Hz 240VAC 60Hz	1	0.100
LMRX14 400	400VAC 50/60Hz 440VAC 60HZ	1	0.100
LMRX14 440	440VAC 50/60Hz 480VAC 60HZ	1	0.100
Shunt trip releases.			
LMRX16 024	24VAC 50/60Hz	1	0.100
LMRX16 110	110VAC 50/60Hz 120VAC 60Hz	1	0.100
LMRX16 230	230VAC 50/60Hz 240VAC 60Hz	1	0.100
LMRX16 400	400VAC 50/60Hz 440VAC 60HZ	1	0.100
LMRX16 440	440VAC 50/60Hz 480VAC 60HZ	1	0.100
Padlockable door-coupling handle, defeatable per UL508A. IP65.			
LMRX18 15	Black colour	1	0.120
LMRX18 14	Red/yellow colour	1	0.120
Safety isolating cover.			
11 SMX90 31	For unused busbar terminals	10	0.005
Three-phase connection busbars 45mm spacing.			
11 SMX90 32	For 2 protectors without side-mount contacts	10	0.027
11 SMX90 33	For 3 protectors without side-mount contacts	10	0.048
11 SMX90 34	For 4 protectors without side-mount contacts	10	0.068
11 SMX90 35	For 5 protectors without side-mount contacts	10	0.090
Three-phase connection busbars 54mm spacing.			
11 SMX90 42	For 2 protectors with side-mount contacts	10	0.034
11 SMX90 43	For 3 protectors with side-mount contacts	10	0.054
11 SMX90 44	For 4 protectors with side-mount contacts	10	0.078
11 SMX90 45	For 5 protectors with side-mount contacts	10	0.103
Three-pole enlarged terminals. Terminal block for busbar supply.			
LMRX90 50	4-25mm^2; 10-4 AWG. For all types	10	0.033
Rigid LMR32 protector-contactor connection.			
LMRX31 41	For LMR32 protector with BF09A, BF12A, BF18A and BF25A contactor	10	0.040

General and operational characteristics

ADD-ON AUXILIARY BLOCKS
- Snap on to the front or left-side of the motor controller
- Maximum combination: 6 auxiliary contacts of which
  - 2 on front and 4 side mount
  - or
  - 2 on front, 2 side mount and 2 side mount indicator switches
- Conventional free air thermal current Ith: 10A (5A for LMRX11...)
- Rated insulation voltage Ui: 690V (250V for LMRX11)
- Designation according to IEC/EN 60947-5-1: A600 Q300
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm^2 or 18/14 AWG
- Width of side-mount auxiliary contacts equal to 0.5 standard DIN 46880 module.

UNDERVOLTAGE TRIP RELEASE
- Connectable on the right side of the motor controller
- Consumption in-rush/holding: 8.5/3VA
- Drop-out voltage: 0.35-0.7Uz
- Pick-up voltage: 0.85-1.1Us
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm^2 or 18/14 AWG.

SHUNT TRIP RELEASE
- Connectable on the right side of the motor controller
- In-rush consumption: 20VA
- Pick-up voltage: 0.85-1.1us
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm^2 or 18/14 AWG.

THREE-PHASE CONNECTION BUSBAR
- Imax 63A
- Conductor cross section minimum-maximum (1 or 2 wires): 4-25mm^2 or 10/4 AWG.

THERMAL BLOCK FOR BUSBAR SUPPLY
- Imax 63A
- Conductor cross section minimum-maximum (1 or 2 wires): 4-25mm^2 or 10/4 AWG.

Certifications and compliance

Certifications obtained: cULus for auxiliary contacts, releases and padlockable handles.
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.

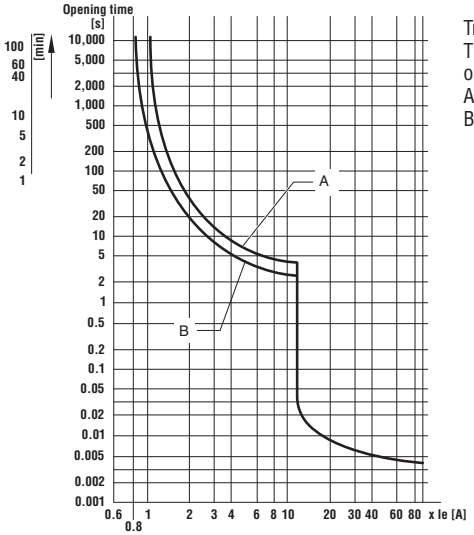
Self-protected combination motor controllers, UL 508 type E, LMR series

Operational characteristics

TYPE			LMR32
Rated insulation voltage Ui		V	690
Rated frequency		Hz	50/60
Rated impulse voltage Uimp		kV	6
Maximum rated current		A	32
Number of adjustment ranges			16
Power dissipation		W	1.7-7.4
Magnetic tripping			13 In
Mechanical life		cycles	100,000
Electrical life (In max AC3)		cycles	100,000
Maximum tightening torque for terminals		Nm	2
		lbin	18
		Tool	PZ2 ❶
Minimum-maximum conductor Section connectable 1 or 2 wires			
	AWG	N°	1x18...6; 2x18...10
	Flexible without lug	mm^2	1-10
AMBIENT CONDITIONS			
Temperature	Operating	°C	-20...+60
	Compensation	°C	-20...+50
	Storage	°C	-50...+80
Maximum altitude		m	3000
Mounting position			any
Mounting / fixing			35mm DIN rail (IEC/EN 60715)

❶ PZ = Pozidrive.

Thermal tripping curve



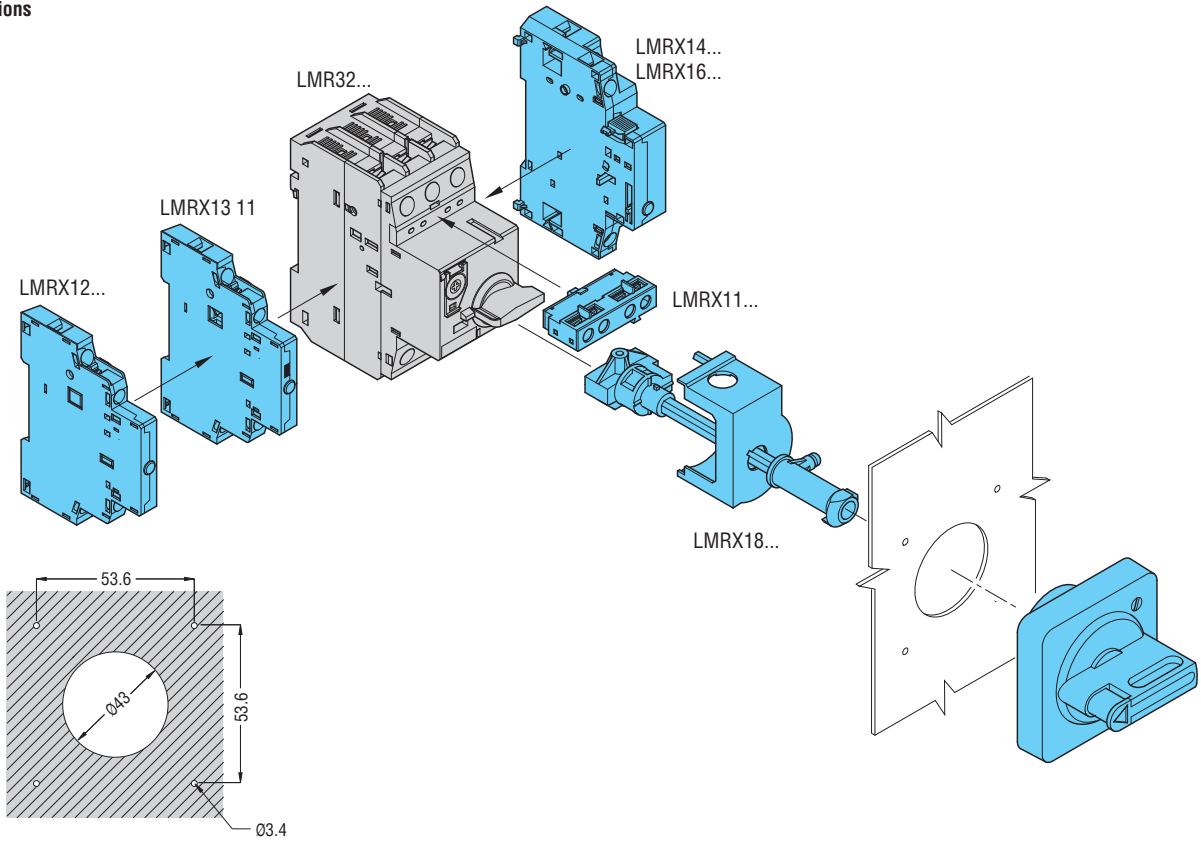
Tripping times at cold state are an indication only.
The tripping time at hot state is obtained by multiplying the value obtained from the characteristic curve by 0.75.
A = Balanced 3-phase operation
B = 2-phase operation (phase failure).

Short-circuit ratings (IEC breaking capacity)

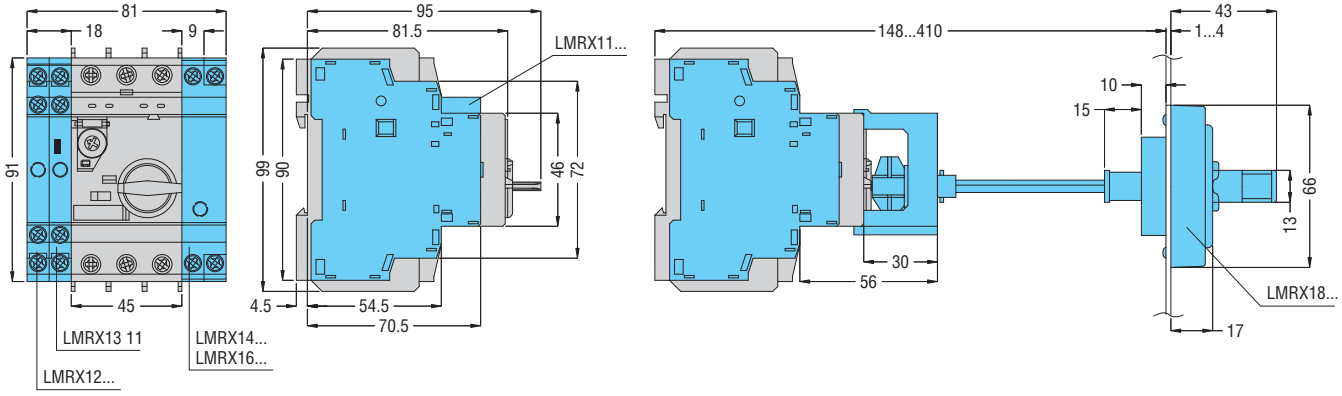
TYPE	RATED SHORT-CIRCUIT BREAKING CAPACITY [kA]									
	230V/240V		400V/415V		440V/460V		500V		690V	
	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
LMR32 0016	100	100	100	100	100	100	100	100	100	100
LMR32 0025	100	100	100	100	100	100	100	100	100	100
LMR32 0040	100	100	100	100	100	100	100	100	100	100
LMR32 0063	100	100	100	100	100	100	100	100	100	100
LMR32 0100	100	100	100	100	100	100	100	100	100	100
LMR32 0160	100	100	100	100	100	100	100	100	100	100
LMR32 0250	100	100	100	100	100	100	100	100	8	8
LMR32 0400	100	100	100	100	100	100	100	100	8	8
LMR32 0600	100	100	100	100	100	100	100	100	6	6
LMR32 0800	100	100	100	100	50	38	50	38	6	6
LMR32 1000	100	100	100	100	50	38	50	38	6	6
LMR32 1300	100	100	100	100	50	38	42	32	6	6
LMR32 1700	100	100	50	38	20	15	10	8	4	4
LMR32 2200	100	100	50	38	20	15	10	8	4	4
LMR32 2600	100	100	50	38	20	15	10	8	4	4
LMR32 3200	100	100	50	38	20	15	10	8	4	4

Self-protected combination motor controllers, UL 508 type E, LMR series

Combinations

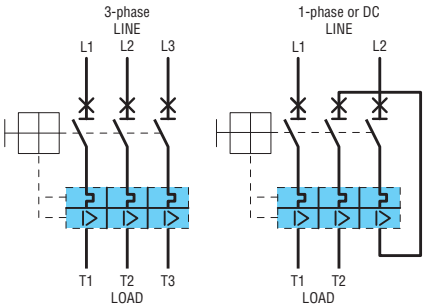


Overall dimensions [mm]



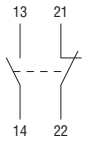
Wiring schemes

LMR32



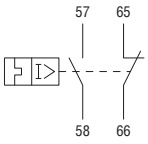
LMRX11 20

LMRX11 11



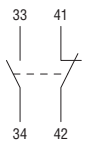
LMRX11 02

LMRX13 11



LMRX12 20

LMRX12 11



LMRX12 02

LMRX14...

LMRX16...

new

2011

Switch disconnectors
16 to 1600A

Fuse holders

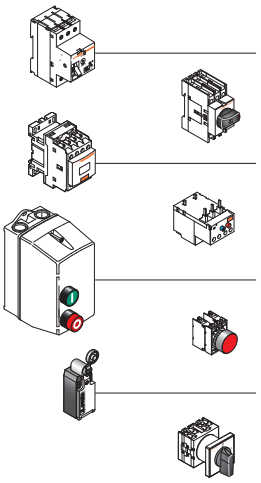
Modular digital multimeters

Flush-mount digital multimeters
and power analyzers

Energy meters

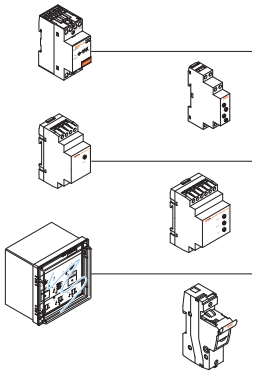
Switching battery chargers

Planet Switch



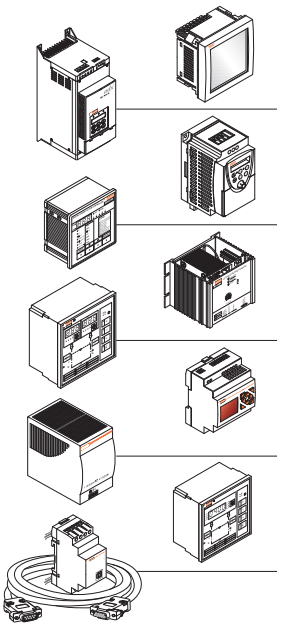
- Motor protection circuit breakers
- Switch disconnectors
- Contactors
- Motor protection relays
- Electromechanical starters
- Control and signalling units
- Limit , micro and foot switches
- Rotary cam switches

Planet Din



- Modular contactors
- Time relays
- Protection relays
- Level control relays
- Earth leakage relays
- Fuse holders

Planet Logic



- Metering instruments and current transformers
- Soft starters
- AC motor drives
- Automatic power factor controllers
- Automatic battery chargers
- Automatic transfer switch controllers
- Programmable logic relays
- Switching power supplies
- Engine and generator controllers
- Expansion modules and accessories

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