

TeSys E thermal



Possible I _{max} calibration	Thermal overload relay Commercial reference	Compatible with contactor (size 1 & 2) Commercial reference						
		LC1E06	LC1E09	LC1E12	LC1E18	LC1E25	LC1E32	LC1E38
0,10 ... 0,16 A	LRE01	■	■	■	■	■	■	■
0,16 ... 0,25 A	LRE02	■	■	■	■	■	■	■
0,25 ... 0,40 A	LRE03	■	■	■	■	■	■	■
0,40 ... 0,63 A	LRE04	■	■	■	■	■	■	■
0,63 ... 1 A	LRE05	■	■	■	■	■	■	■
1 ... 1,6 A	LRE06	■	■	■	■	■	■	■
1,6 ... 2,5 A	LRE07	■	■	■	■	■	■	■
2,5 ... 4 A	LRE08	■	■	■	■	■	■	■
4 ... 6 A	LRE10	■	■	■	■	■	■	■
5,5 ... 8 A	LRE12		■	■	■	■	■	■
7 ... 10 A	LRE14		■	■	■	■	■	■
9 ... 13 A	LRE16			■	■	■	■	■
12 ... 18 A	LRE21				■	■	■	■
16 ... 24 A	LRE22					■	■	■
23 ... 32 A	LRE32					■	■	■
30 ... 38 A	LRE35							■

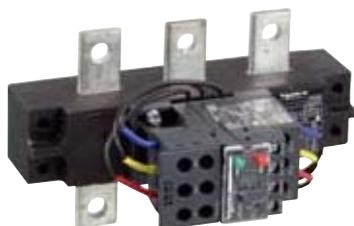
Common characteristics

- > Class: 10 A.
- > Operating voltage: max. 690 V AC.

overload relays



Thermal overload relay Commercial reference	Possible I _{max} calibration	Compatible with contactor (size 3 & 4) Commercial reference				
		LC1E40	LC1E50	LC1E65	LC1E80	LC1E95
LRE322	17...25 A	■	■	■	■	■
LRE353	23...32 A	■	■	■	■	■
LRE355	30... 40 A	■	■	■	■	■
LRE357	37... 50 A		■	■	■	■
LRE359	48... 65 A			■	■	■
LRE361	55... 70 A				■	■
LRE363	63... 80 A				■	■
LRE365	80.. 104 A					■



Version (2011)



Version (2012)

Thermal overload relay Commercial reference	Possible I _{max} calibration	Compatible with contactor (size 5, 6 & 7) Commercial reference				
		LC1E120	LC1E160	LC1E200	LC1E250	LC1E300
LRE480	58...81 A	■	■	■	■	■
LRE481	62...99 A	■	■	■	■	■
LRE482	84...135 A	■	■	■	■	■
LRE483	124...198 A		■	■	■	■
LRE484	146...234 A			■	■	■
LRE485	174...279 A				■	■
LRE486	208...333 A					■

Presentation

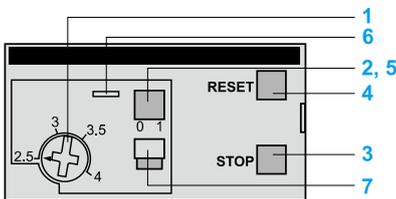


TeSys E thermal overload relays are designed to protect a.c. circuits and motors against:

- overloads
- phase failure
- Long starting time
- prolonged stalled rotor condition.

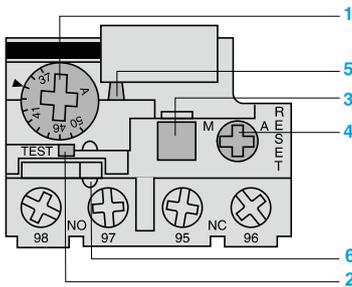
The thermal relay controls permanently the current driven by the motor. When this current exceeds the setting it's auxiliary contacts will change state, causing the motor to stop.

Description



LRE●●, LRE48●

- 1 Adjustment dial I_r .
- 2 Test button.
Operation of the Test button allows:
 - checking of control circuit wiring,
 - simulation of relay tripping (actuates both the N/O and N/C contacts).
- 3 Stop button. Actuates the N/C contact; does not affect the N/O contact.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Selector for manual or automatic reset.



LRE3●●

LRE relays are supplied with the selector in the manual position, protected by a cover. Deliberate action is required to move it to the automatic position.

Power circuit characteristics		Ref. Size	LRE01...21 1	LRE22...35	LRE322...365 3	LRE480...484	LRE485/LRE486 5-6
Tripping class	Conforming to IEC 60947-4-1		10 A				
Rated insulation voltage	Conforming to IEC 60947-4-1	V	690				
Rated impulse withstand voltage (Uimp)		kV	6				
Frequency limits	Of the operating current	Hz	50...60				
Setting range	Depending on model	A	0.1...18	16...38	17...104	58...333	

Power circuit connections		Minimum/maximum c.s.a.						
Connection by screw clamp terminals								
	Flexible cable without cable end 1 conductor	mm ²	1.5...6	2.5...10	4...35	-		
	Flexible cable with cable end 1 conductor		1...4	1.5...6	4...35	-		
	Solid cable without cable end 1 conductor		1...6	2.5...10	4...35	-		
	Tightening torque	N.m	1.7	2.5	9	-		
Connection by bars or lugs								
Pitch	Without spreaders	mm	-			50	58	
Bars or cables with lugs	Cross section		-			≤ 6 x 25	6 x 30	
Screws	Type		-			M10	M12	
	Tightening torque	N.m	-			35	58	

Auxiliary contact characteristics											
Conventional thermal current		A	5								
Max. sealed consumption of the operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	a.c. supply	V	110	120	220	240	380	480	500	600	
		A	3.27	3	1.63	1.5	0.95	0.75	0.72	0.12	
Protection against short-circuits	By gG, maximum rating or by GB2	A	5								
Connection by screw clamp terminals											
	Flexible cable without cable end 1 conductor	mm ²	Minimum/maximum c.s.a. 2 x 1...2.5								
	Flexible cable with cable end 1 conductor		2 x 1...2.5								
	Solid cable without cable end 1 conductor		2 x 1...2.5								
	Tightening torque	N.m	1.7								

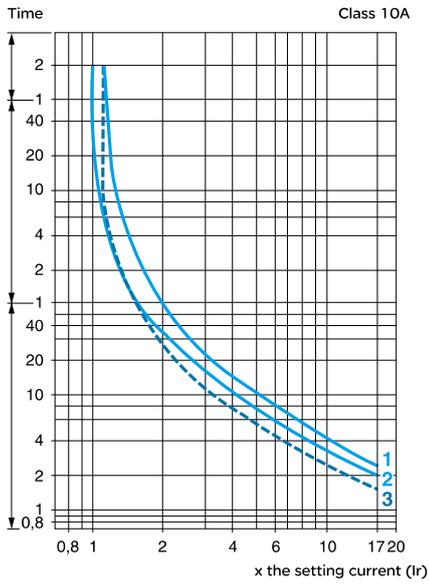
Environment											
Conforming to standard			IEC 60947-4-1, IEC 60947-5-1								
Product certifications			GOST								
Degree of protection	Conforming to IEC 60529		IP20						IP00		
Protective treatment	Conforming to IEC 60068		"TH"								
Ambiant air temperature	Storage	°C	-60...+80								
	Normal operation without derating (IEC 60947-4-1)		-20...+60								
	Minimum/maximum operating temperature (with derating) ⁽¹⁾		-20...+70								
Operating positions without derating	In relation to normal vertical mounting plane		Any position								
Flame resistance	Conforming to IEC 60068-2-1	°C	850								
Shock resistance	Permissive acceleration conforming to IEC 60068-2-7		6 gn - 11 ms								
Vibration resistance	Permissive acceleration conforming to IEC 60068-2-6		3 gn								
Dielectric strenght at 50 Hz	Conforming to IEC 60255-5	kV	6								
Surge withstand	Conforming to IEC 60801-5		6								

Operating characteristics											
Temperature compensation		°C	-20...+60								
Tripping threshold	Conforming to IEC 60947-4-1	A	1.14 ± 0.06 I _r								
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping current 130 % of I _r on two phase, the last one at 0								

(1) Contact your regional sales.

Tripping curves

Average operating time related to multiples of the setting current



1. *Balanced operation, 3-phase, without prior current flow (cold state).*
2. *2-phase operation, without prior current flow (cold state).*
3. *Balanced operation, 3-phase, after a long period at the set current (hot state).*

TeSys E thermal overload relays

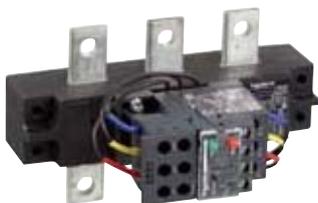
3-pole thermal overload relays



LRE01



LRE03



LRE48
(version 2011)



LRE48
(version 2012)

Differential thermal overload relays

for use with fuses or magnetic circuit-breakers GV2 L and GV3 L

- Compensated relays with manual or automatic reset,
- with relay trip indicator,
- for a.c.

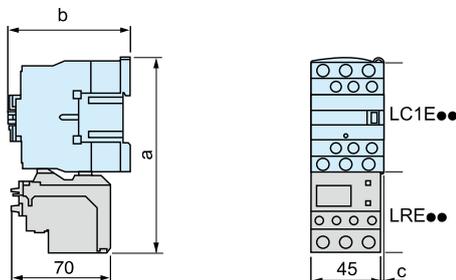
Relay setting range (A)	Fuses to be used with selected relay		For use with contactor LC1	Reference	Weight kg
	aM (A)	gG (A)			
Class 10 A ⁽¹⁾ for connection by screw clamp terminals					
0.10...0.16	0.25	2	E06...E38	LRE01	0.130
0.16...0.25	0.5	2	E06...E38	LRE02	0.130
0.25...0.40	1	2	E06...E38	LRE03	0.130
0.40...0.63	1	2	E06...E38	LRE04	0.130
0.63...1	2	4	E06...E38	LRE05	0.130
1...1.6	2	4	E06...E38	LRE06	0.130
1.6...2.5	4	6	E06...E38	LRE07	0.130
2.5...4	6	10	E06...E38	LRE08	0.130
4...6	8	16	E06...E38	LRE10	0.130
5.5...8	12	20	E09...E38	LRE12	0.130
7...10	12	20	E09...E38	LRE14	0.130
9...13	16	25	E12...E38	LRE16	0.130
12...18	20	35	E18...E38	LRE21	0.130
16...24	25	50	E25...E38	LRE22	0.130
23...32	40	63	E25...E38	LRE32	0.130
30...38	40	80	E38	LRE35	0.130
17...25	25	50	E40...E95	LRE322	0.470
23...32	40	63	E40...E95	LRE353	0.470
30...40	40	100	E40...E95	LRE355	0.470
37...50	63	100	E50...E95	LRE357	0.460
48...65	63	100	E65...E95	LRE359	0.460
55...70	80	125	E80...E95	LRE361	0.480
63...80	80	125	E80...E95	LRE363	0.480
80...104	80	160	E95	LRE365	0.520
Class 10 A ⁽¹⁾ for connection by connectors ⁽²⁾					
51...81	100	125	E120...E300	LRE480	1.670
62...99	125	160	E120...E300	LRE481	1.670
84...135	160	200	E120...E300	LRE482	1.670
124...198	200	250	E160...E300	LRE483	1.670
146...234	250	315	E200...E300	LRE484	1.670
174...279	315	315	E250...E300	LRE485	1.760
208...333	400	400	E300	LRE486	1.760

⁽¹⁾ Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current I_R : class 10 A: between 2 and 10 seconds.

⁽²⁾ Independent mounting of the contactor up to end of 2011; version 2012: direct mounting under contactor.

LRE01...E35

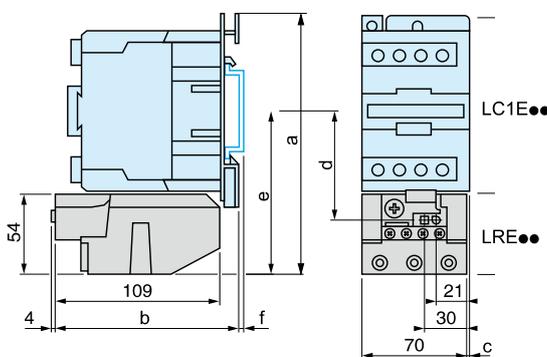
Direct mounting under LC1E06...38 contactors with screw clamp connections



With contactor	LC1E06...E18	LC1E25	LC1E32/E38
a	123	137	137
b	84	92	92
c	0	0	11

LRE3●●

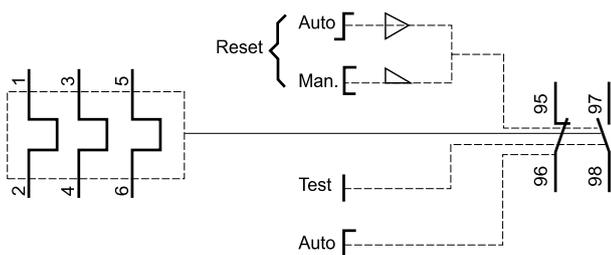
Direct mounting under LC1E06...38 contactors with screw clamp connections



With contactor on DIN rail	AM1-DL201	AM1-DL200
f	7	17

With contactor	LC1E40	LC1E50	LC1E65	LC1E80	LC1E95
a	175	175	175	180	180
b	119	119	119	124	124
c	4.5	4.5	4.5	9.5	9.5
d	72.4	72.4	72.4	76.9	76.9
e	111	111	111	115.5	115.5

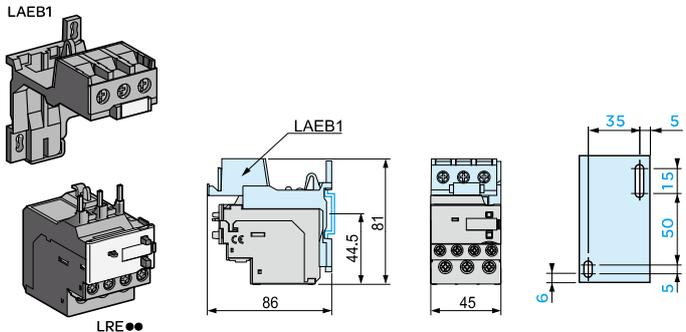
Electrical diagram all relays



Connection to a terminal block

LRE01...E35 connected to LAEB1 terminal block

Independent mounting on 50 mm centres; or on rail AM1 DP200 or DE200

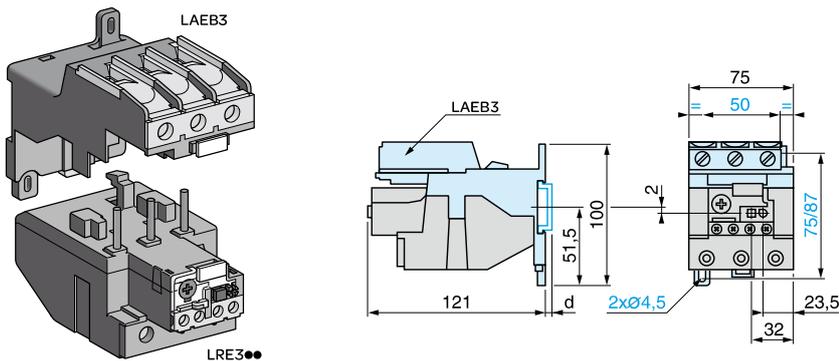


Mounting on DIN rail AM1D

Mounting customer back plate

LRE322...E365, connected to LAEB3 terminal block

Independent mounting on 50 mm centres; or on rail AM1 DP200 or DE200



Mounting on DIN rail AM1D

	AM1-DP200	AM1-DE200
d	2	9.5

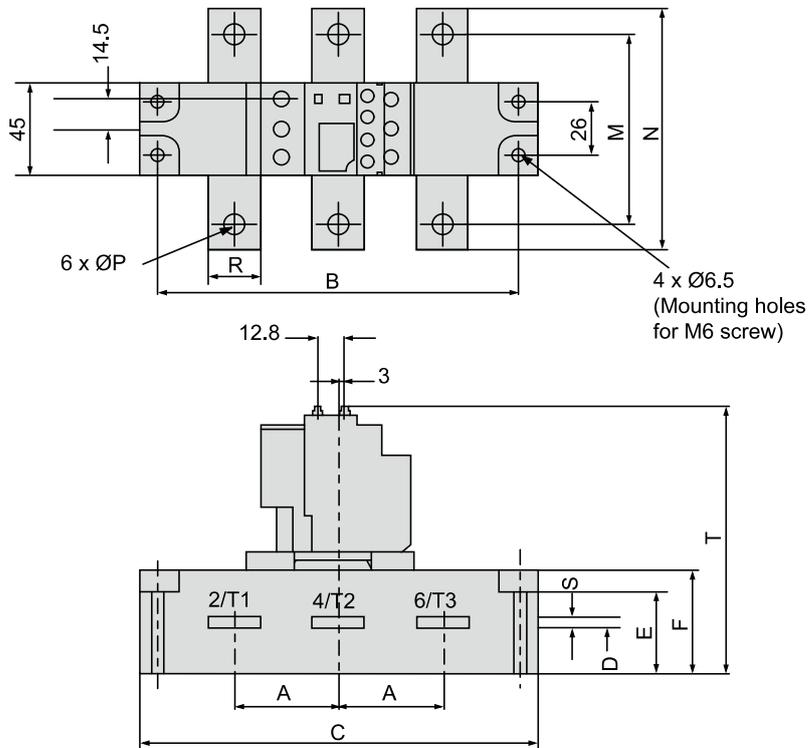
TeSys E thermal overload relays

Independant mounting and connection

LRE48●

Independent mounting on mounting plate

2011 version LRE48●: with separate mounting only.



Dimensions and mounting

Range (A)	A	B	C	D	E	F	M	N	P	R	S	T
51...81	50	174	192	28	40	50	93	117	11	25	5	130
62...99												
84...135												
124...198												
146...234												
174...279	58	200	218	29	40	50	103	133	12.5	30	6	130
208...333												

The LRE48● is mounted separately from the contactor (LCE120...300) on a mounting plate with 4 x M6 screws (torque = 6 N.m).

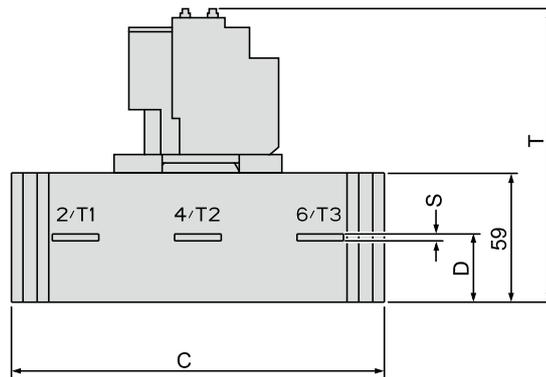
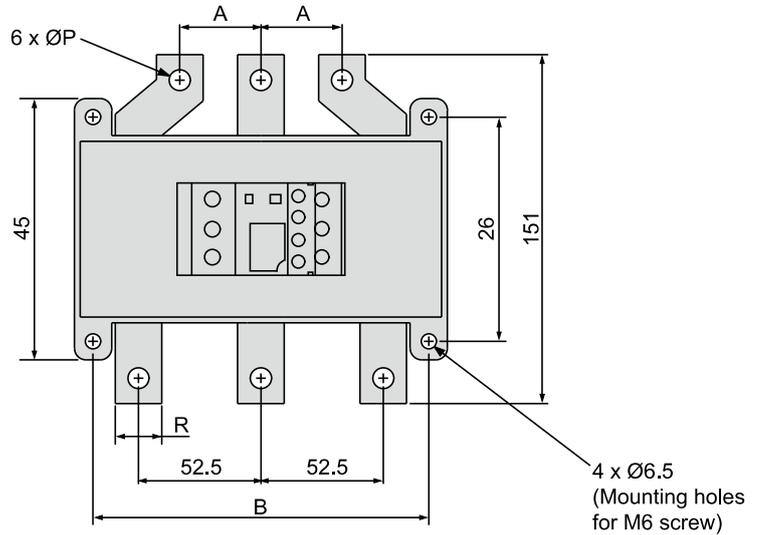
The connections with the contactor are done with bars and cables with lugs.

Independant mounting and connection

LRE48●

Independent mounting on mounting plate

2012 version LRE48●: with direct mounting under contactors LC1E120...300 or separate mounting (without accessory).



Dimensions and mounting

Range (A)	A	B	C	D	P	R	S	T
58...81	34.8	144	160	29.5		20	3	130
62...99								
84...135				30.5				
124...198	40	154	170	31	12	25	6	130
146...234	48							
174...279								
208...333						30		

The LRE48● is mounted separately from the contactor (LCE120...300) on a mounting plate with 4 x M6 screws (torque = 6 N.m).

The connections with the contactor are done with bars and cables with lugs.

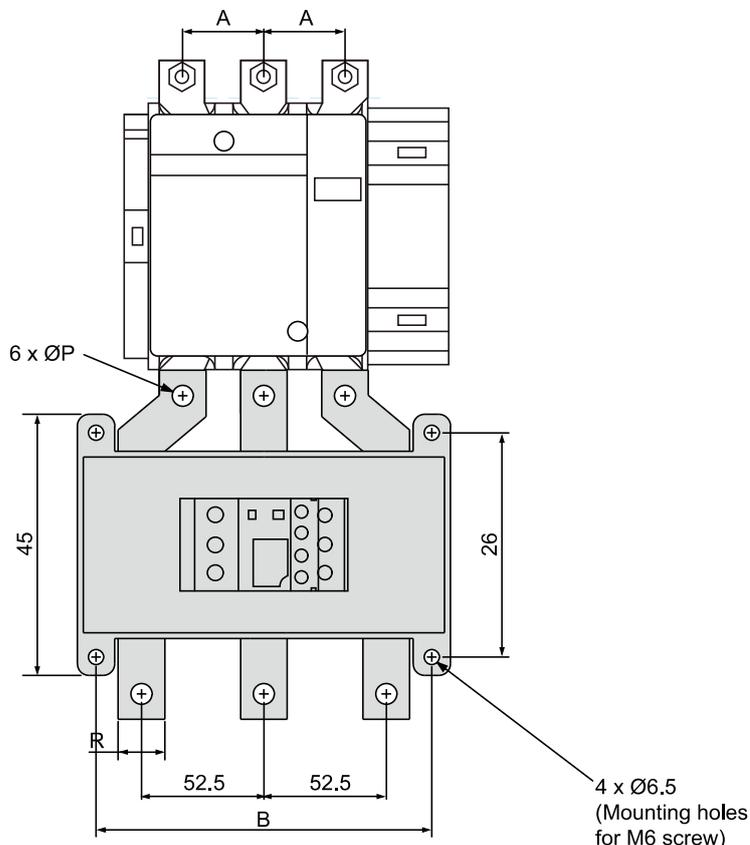
TeSys E thermal overload relays

Independant mounting and connection

LRE48●

Independent mounting on mounting plate

2012 version LRE48●: with direct mounting.



Dimensions and mounting

Range (A)	A	B	C	D	P	R	S	T
58...81	34.8	144	160	29.5		20	3	130
62...99								
84...135				30.5				
124...198	40	154	170	31	12	25	6	
146...234	48							
174...279								
208...333								

The LRE48● is mounted separately from the contactor (LCE120...300) on a mounting plate with 4 x M6 screws (torque = 6 N.m).
The connections with the contactor are done with bars and cables with lugs.