

# EasyPact TVS thermal



TOR Com. Ref	Possible I <sub>max</sub> Calibration	Compatible with Contactor (size 1 & 2) Com. Ref.						
		LC1E06	LC1E09	LC1E12	LC1E18	LC1E25	LC1E32	LC1E38
LRE01	0.10...0.16 A	■	■	■	■	■	■	■
LRE02	0.16...0.25 A	■	■	■	■	■	■	■
LRE03	0.25...0.40 A	■	■	■	■	■	■	■
LRE04	0.40...0.63 A	■	■	■	■	■	■	■
LRE05	0.63...1 A	■	■	■	■	■	■	■
LRE06	1...1.6 A	■	■	■	■	■	■	■
LRE07	1.6...2.5 A	■	■	■	■	■	■	■
LRE08	2.5...4 A	■	■	■	■	■	■	■
LRE10	4...6 A	■	■	■	■	■	■	■
LRE12	5.5...8 A		■	■	■	■	■	■
LRE14	7...10 A		■	■	■	■	■	■
LRE16	9...13 A			■	■	■	■	■
LRE21	12...18 A				■	■	■	■
LRE22	16...24 A					■	■	■
LRE32	23...32 A					■	■	■
LRE35	30...38 A							■

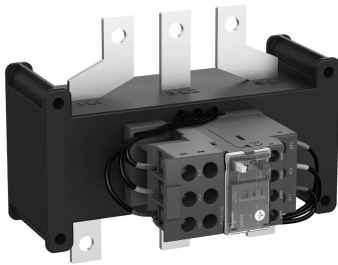
## Common characteristics

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

# overload relays



TOR Com. Ref	Possible I <sub>max</sub> Calibration	Compatible with Contactor (size 3 & 4) Com. Ref.				
		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					■



TOR Com. Ref	Possible I <sub>max</sub> Calibration	Compatible with Contactor (size 5, 6, 7, 8 & 9) Com. Ref.							
		LC1E120	LC1E160	LC1E200	LC1E250	LC1E300	LC1E400	LC1E500	LC1E630
LRE480	51...81A	■	■	□	□	□	□	□	□
LRE481	62...99A	■	■	□	□	□	□	□	□
LRE482	84...135A	■	■	□	□	□	□	□	□
LRE483	124...198A		□	■	□	□	□	□	□
LRE484	146...234A			□	■	■	■	□	□
LRE485	174...279A			□	■	■	■	□	□
LRE486	208...333A				■	■	■	□	□
LRE487	259...414A					■	■	□	□
LRE488	321...513A						□	■	□
LRE489	394...630A							□	■

**Note:**

- means the relay can match with contactor both in electrical and mechanical.
- means the relay can match with contactor only in electrical (can not directly mounting).

## Presentation

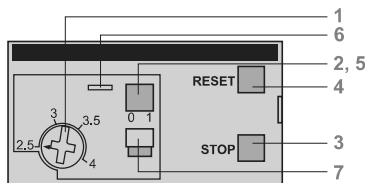


EasyPact TVS thermal overload relays are designed to protect a.c. circuits and motors against:

- 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



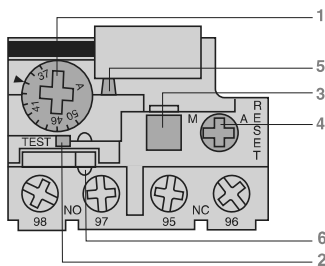
LRE●●, LRE48●

- 1 Adjustment dial I<sub>r</sub>.
- 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.

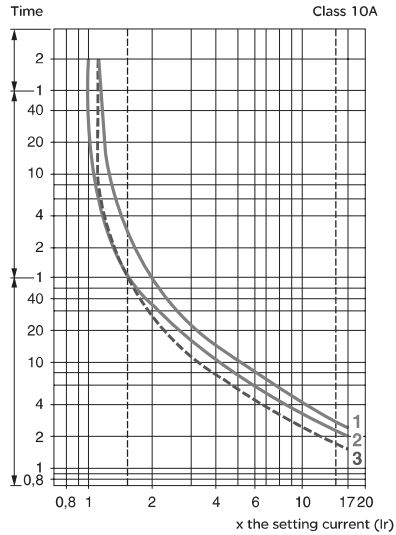
Deliberate action is required to move it to the automatic position.

Power circuit characteristics										
Relay type	Ref.	LRE 01...21	LRE 22...35	LRE 322...365	LRE 480...482	LRE 483	LRE 484	LRE 485...487	LRE 488	LRE 489
	Size	1	2			3			4	
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	51...630					
Power circuit connections										
Connection by screw clamp terminals				Minimum/maximum c.s.a.						
	Flexible cable without cable end 1 conductor	mm <sup>2</sup>	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	-		34.8	40	48	48	55	80
Bars or cables with lugs	Cross section		-		3X18	3X20	3X25	4X25	5x30	6X40
Screws	Type		-		M8	M8	M10	M10	M10	M12
	Tightening torque	N.m	-		27.5	27.5	35	35	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				Minimum/maximum c.s.a.						
	Flexible cable without cable end 1 conductor	mm <sup>2</sup>	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			EAC							
Degree of protection	Conforming to IEC 60529		IP2X				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) <sup>(1)</sup>		-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 <sub>r</sub>							
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping current 130 % of I <sub>r</sub> 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).

# EasyPact TVS thermal overload relays

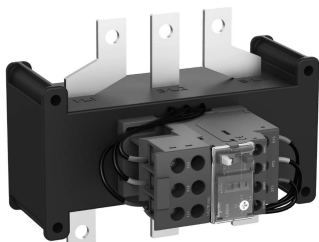
## 3-pole thermal overload relays



LRE00



LRE30



LRE48

### 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)			
<b>Class 10 A<sup>(1)</sup> for connection by screw clamp terminals</b>					
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
<b>Class 10 A<sup>(1)</sup> directly connected by connector</b>					
51...81	100	125	E120...E160	LRE480	2.2
62...99	125	160	E120...E160	LRE481	2.2
84...135	160	200	E120...E160	LRE482	2.2
124...198	200	250	E200	LRE483	2.1
146...234	250	315	E250...E400	LRE484	2.2
174...279	315	315	E250...E400	LRE485	2.2
208...333	400	400	E250...E400	LRE486	2.2
259...414	400	500	E300...E400	LRE487	2.4
321...513	500	800	E500	LRE488	3.2
394...630	630	1000	E630	LRE489	3.9

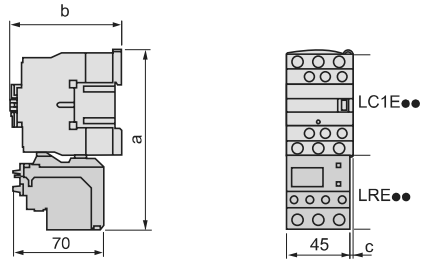
(1) Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current  $I_R$ : class 10 A: between 2 and 10 seconds.

# EasyPact TVS thermal overload relays

Direct connection to LRE contactors

## LRE01...E35

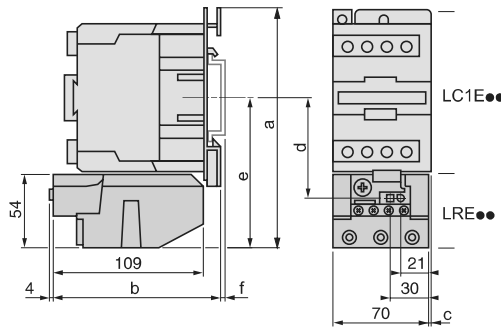
Direct mounting under LC1E06...38 contactors with screw clamp connections



With contactor	LC1E06...E18	LC1E25	LC1E32/E38
a	128	137	137
b	84	92	92
c	0	0	11

## LRE300

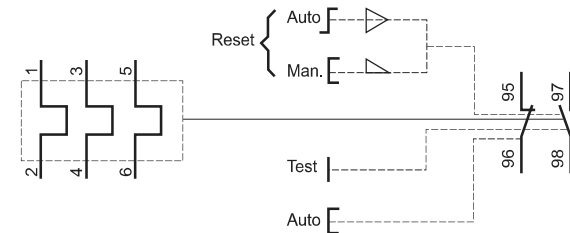
Direct mounting under LC1E06...38 contactors with screw clamp connections



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



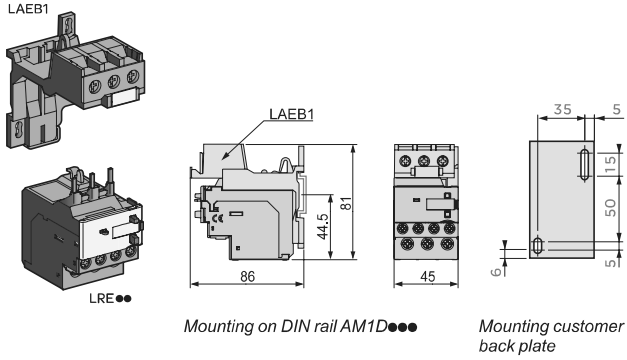
# EasyPact TVS thermal overload relays

## Connection to a terminal block

### LRE01...E35 connected to LAEB1 terminal block

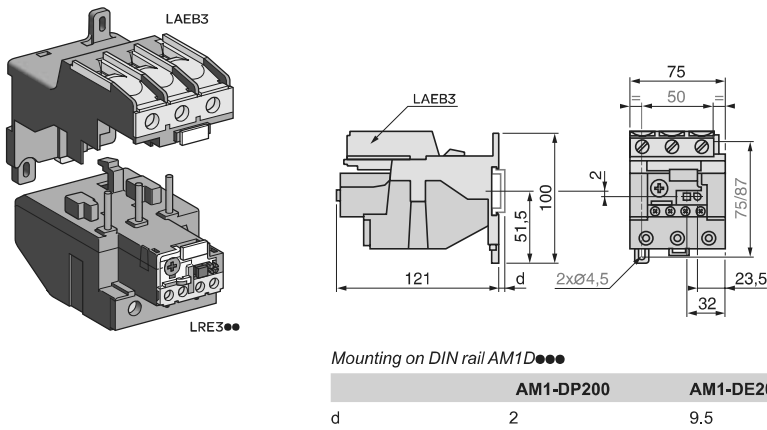
Independent mounting on 50 mm centres; or on rail AM1 DP200 or DE200

Independent mounting on 110 mm centres



### LRE322...E365, connected to LAEB3 terminal block

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





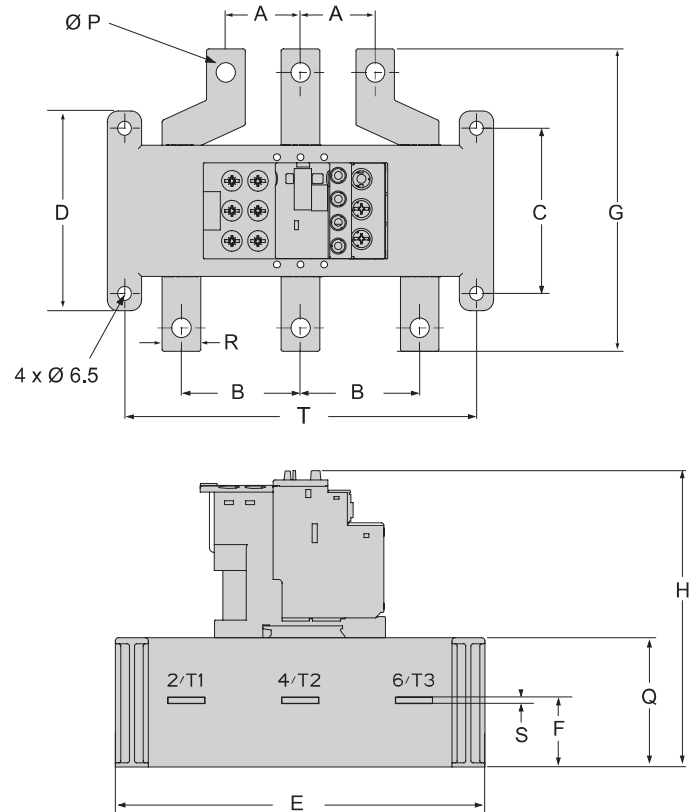
# EasyPact TVS thermal overload relays

Independent mounting and connection

## LRE48●

### Independent mounting on mounting plate

LRE48●: with direct mounting under contactors LC1E120...630 or separate mounting (without accessory).



(mm)

Dimensions and mounting		A	B	C	D	E	F	G	H	P	Q	R	S	T
Range (A)														
LRE480	51...81	34.8	55.5	77	93	180	32	141	134	9	63	18	3	164
LRE481	62...99							10		20				
LRE482	84...135							12		25				
LRE483	124...198	40	76	77	93	180	32.5	134	148	12	77	25	4	222
LRE484	146...234	48						30		5				
LRE485	174...279							40		6				
LRE486	208...333	55	76	77	93	180	32.5	134	148	14	77	30	5	222
LRE487	259...414											40	6	
LRE488	321...513	80	80	77	93	242	43	140	148	14	77	30	5	222
LRE489	394...630	80	80	77	93	242	43.5	150	148	14	77	40	6	222

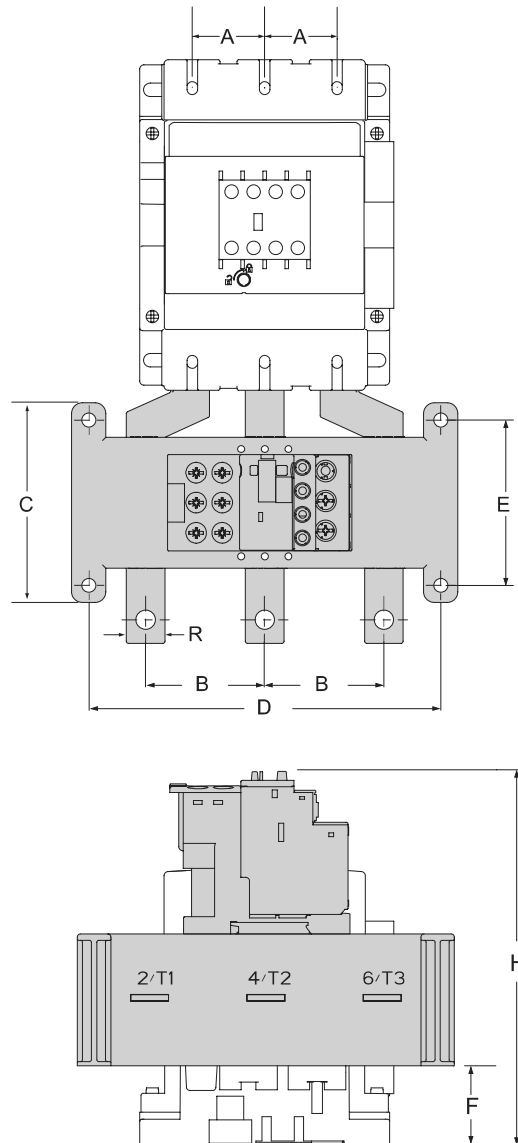
# EasyPact TVS thermal overload relays

Independent mounting and connection

## LRE48●

Independent mounting on mounting plate

LRE48●: with direct mounting.

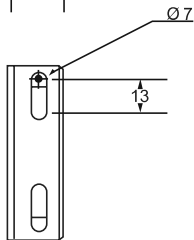
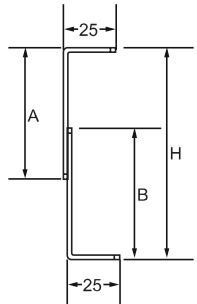
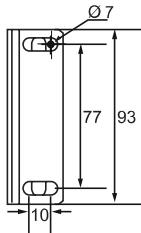
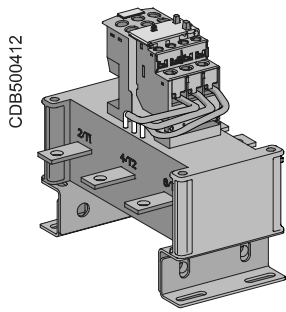


(mm)

Dimensions and mounting		A	B	C	D	E	F	H		
Range (A)										
LRE480	51...81	34.8	55.5	93	164	77	38	180		
LRE481	62...99									
LRE482	84...135									
LRE483	124...198	40			93		164	77	82	223
LRE484	146...234									
LRE485	174...279	48							55.5	
LRE486	208...333									
LRE487	259...414									
LRE488	321...513	55	76	93	222	77	113	264		
LRE489	394...630	80	80					222		125

# EasyPact TVS thermal overload relays

Independant mounting and connection



**Accessories for LRE48X Thermal Overload Relay**  
Relay mounting with Contactor directly

Relay	Contactor	Mounting support	
		cat No.	weight (Kg)
LRE480	LC1E120...160	LAES1	0.32
LRE481	LC1E120...160	LAES1	0.32
LRE482	LC1E120...160	LAES1	0.32
LRE483	LC1E200	LAES2	0.45
LRE484	LC1E250...300	LAES2	0.45
LRE485	LC1E250...300	LAES2	0.45
LRE486	LC1E250...300	LAES2	0.45

Dimension	LAES1	LAES2	
A (mm)	34	70	
B (mm)	30	70	
C (mm)	34-42	75-90	107-122