

TeSys

TeSys LR9D Electronic thermal overload relays

Product references



LR9D01 and LR9D32



LR9D110S



LR9D5567



LAD7B205



LAD7B205 mounted on LR9D01



LR9D67

Electronic thermal overload relays for TeSys D contactors

- for use with fuses or magnetic circuit breakers
- compensated relays, with relay trip indicator,
- for a.c.,
- for direct mounting on contactor or independent mounting ⁽¹⁾.

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference
	aM	gG		

A A A

Classes 5.10.20.30 ⁽¹⁾ selectable for direct connection on TeSys D contactors or connection using connectors

0.1...0.5			D09...D38	LR9D01
0.4...2			D09...D38	LR9D02
1.6...8			D09...D38	LR9D08
6.4...32			D09...D38	LR9D32

Classes 5.10.20.30 ⁽¹⁾ selectable for connection using connectors

22...110				LR9D110S
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Classes 10 or 10 A ⁽¹⁾ for connection using bars or connectors

60...100	100	160	D115...D150	LR9D5367
90...150	160	250	D115...D150	LR9D5369

Classes 20 ⁽¹⁾ for connection using bars or connectors

60...100	125	160	D115...D150	LR9D5567
90...150	200	250	D115...D150	LR9D5569

Separate components for relays

Description	For use with	Sold in lots of	Unit reference
Terminal block ⁽²⁾	LR9D01, LR9D02, (AM1DP200) or screws fixing;	1	LAD7B205
	LR9D08, LR9D32		

Electronic overload relays for balanced or unbalanced loads

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference
	aM	gG		

A A A

Classes 10 or 20 ⁽¹⁾ selectable for direct connection using bars or connectors

60...100	100	160	D115...D150	LR9D67
90...150	160	250	D115...D150	LR9D69

⁽¹⁾ Standard IEC 60947-4-1 specifies a tripping time for 7.2 times the setting current I_{R^*} :
 class 5: between 0.5 and 5 seconds
 class 10: between 4 and 10 seconds
 class 10 A: between 2 and 10 seconds
 class 20: between 6 and 20 seconds
 class 30: between 9 and 30 seconds.

⁽²⁾ Terminal blocks are supplied with terminals protected against direct finger contact and screws in the open, "ready-to-tighten" position.

⁽³⁾ Power terminals can be protected against direct finger contact by the addition of shrouds and/or insulated terminal blocks, to be ordered separately (see page B8/20).

TeSys

TeSys LR9F Electronic thermal overload relays

Product references



LR9F53●●



LR9F73●●

Compensated and differential overload relays for TeSys F contactors

- with relay trip indicator,
- for a.c.,
- for direct mounting on contactor or independent mounting ⁽¹⁾.

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference	Weight
	aM	gG			
A	A	A			kg
Class 10 ⁽²⁾					
30...50	50	80	F115...F185	LR9F5357	0.885
48...80	80	125	F115...F185	LR9F5363	0.900
60...100	100	200	F115...F185	LR9F5367	0.900
90...150	160	250	F115...F185	LR9F5369	0.885
132...220	250	315	F225...F265	LR9F5371	0.950
200...330	400	500	F225...F500	LR9F7375	2.320
300...500	500	800	F225...F500	LR9F7379	2.320
380...630	630	800	F400...F630 and F800	LR9F7381	4.160
Class 20 ⁽²⁾					
30...50	50	80	F115...F185	LR9F5557	0.885
48...80	80	125	F115...F185	LR9F5563	0.900
60...100	100	200	F115...F185	LR9F5567	0.900
90...150	160	250	F115...F185	LR9F5569	0.885
132...220	250	315	F225...F265	LR9F5571	0.950
200...330	400	500	F225...F500	LR9F7575	2.320
300...500	500	800	F225...F500	LR9F7579	2.320
380...630	630	800	F400...F630 and F800	LR9F7581	4.160

⁽¹⁾ When mounting overload relays LR9F5●57...LR9F5●71 directly beneath the contactor, supporting the relays with a mounting plate is recommended (see page B11/14).
With overload relays LR9F7●75...LR9F7●81, use of a support mounting plate is mandatory (see page B11/14).

Power terminals can be protected against direct finger contact by the addition of shrouds and/or insulated terminal blocks, to be ordered separately (see page B11/14).
Interconnection kit LA7F407 is required for mounting an LR9F5●71 thermal overload relay together with an LC1F185 contactor.

⁽²⁾ Standard IEC 60947-4 specifies a tripping time for 7.2 times the setting current I_n :
- class 10: between 4 and 10 seconds,
- class 20: between 6 and 20 seconds.

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TeSys LR9F Electronic thermal overload relays

Product references



LR9F57



Compensated overload relays for TeSys F contactors - class 10 or 20

- with relay trip indicator,
- for a.c.,
- for direct mounting on contactor or independent mounting ⁽¹⁾,
- class 10 or 20 by selector switch,
- protection of 3-phase or single-phase circuits by selector switch,
- with alarm function that enables tripping to be forestalled.

Relay setting range	Fuses to be used with selected relay		For direct mounting beneath contactor LC1	Reference	Weight
	aM	gG			
A	A	A			kg
30...50	50	80	F115...F185	LR9F57	0.885
48...80	80	125	F115...F185	LR9F63	0.900
60...100	100	200	F115...F185	LR9F67	0.900
90...150	160	250	F115...F185	LR9F69	0.885
132...220	250	315	F185...F265	LR9F71	0.950
200...330	400	500	F225...F500	LR9F75	2.320
300...500	500	800	F225...F500	LR9F79	2.320
380...630	630	800	F400...F630 and F800	LR9F81	4.160

⁽¹⁾ When mounting overload relays **LR9F57...LR9F71** directly beneath the contactor, supporting the relays with a mounting plate is recommended (see page B11/14).
With overload relays **LR9F75...LR9F81**, use of a support mounting plate is mandatory (see page B11/14).
Power terminals can be protected against direct finger contact by the addition of shrouds and/or insulated terminal blocks, to be ordered separately (see page B11/14).
Interconnection kit **LA7F407** is required for mounting an **LR9F71** thermal overload relay together with an **LC1F185** contactor.



LA7D03●



LA7D305

Control accessories

Description	Sold in lots of	Unit reference
Remote electrical reset device ⁽¹⁾	1	LA7D03● ⁽²⁾
Remote Reset function control by flexible cable (length = 0.5 m)	1	LA7D305
Remote Stop and/or Reset function control	Adapter for door mounted operator	1 LA7D1020
	Rod (snap-off end to obtain required length, between 17 and 120 mm)	10 ZA2BZ13
	Operating head for spring return pushbutton	1 ZA2B●●●● ⁽³⁾

Connection accessories

For mounting an LR9F5●71 thermal overload relay together with an LC1 F185 contactor

Description	Reference
Set of 3 busbars	LA7F407

For mounting a thermal overload relay beneath a reversing contactor or star-delta contactors

Application	Width of terminal lug	Set of 3 busbars Reference
For relay	For contactor	
		mm
LR9F5●57, F5●63, F5●67, F5●69, LR9F57, F63, F67, F69	LC1 F115	15 LA7F401
LR9F5●57, F5●63, F5●67, F5●69, LR9F57, F63, F67, F69	LC1 F150, F185	20 LA7F402
LR9F5●71, LR9F71	LC1 F185	25 LA7F407
LR9F5●71, LR9F71	LC1 F225, F265	25 LA7F403
LR9F7●75, F7●79, LR9F75, F79	LC1 F225...F400	25 LA7F404
LR9F7●81, LR9F81	LC1 F400	25 LA7F404
LR9F7●75, F7●79, F7●81, LR9F75, F79, F81	LC1 F500	30 LA7F405
LR9F7●81, LR9F81	LC1 F630, F800	40 LA7F406

⁽¹⁾ The time for which the coil of remote electrical reset device LA7D03 can remain energised depends on its rest time: 1 s pulse duration with 9 s rest time; 5 s pulse duration with 30 s rest time; 10 s pulse duration with 90 s rest time. Maximum pulse duration of 20 s with rest time of 300 s. Minimum pulse time: 200 ms.

⁽²⁾ Reference to be completed by adding the coil voltage code.
Standard control circuit voltages,
(for other voltages, please consult your Regional Sales Office):

Volts	12	24	48	96	110	220/ 230	380/ 400	415/ 440
~ 50/60 Hz	–	B	E	–	F	M	Q	N
Consumption, inrush and sealed: < 100 VA								
---	J	B	E	DD	F	M	–	–

Consumption, inrush and sealed: < 100 W.

⁽³⁾ Stop: ZA2BL432 and Reset: ZA2BL639.

PB111591.eps



LA7F90●

PB111592.eps



LA9F70●

PB111590.eps



LA7F70●

11176.eps



LA9F103

Mounting plates for overload relay

For use with relays	Reference
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LR9F5●57, F5●63, F5●67, F5●69, F5●71, LR9F57, F63, F67, F69, F71	LA7F901
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LR9F7●75, F7●79, F7●81, LR9F75, F79, F81	LA7F902
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Sets of power terminal protection shrouds, single-pole

For use with relays	Number of shrouds per set	Set reference
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LR9F5●57, LR9F57	6	LA9F701
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LR9F5●63, F5●67, F5●69, LR9F63, F67, F69	6	LA9F702
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LR9F5●71, LR9F71	6	LA9F705
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LR9F7●75, F7●79, F7●81, LR9F75, F79, F81	6	LA9F703
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Power terminal protection shrouds, 3-pole

For use with relays	Reference
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LR9F5●57, F5●63, F5●67, F5●69, LR9F57, F63, F67, F69	LA7F701
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LR9F5●71, LR9F71	LA7F702
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LR9F7●75, F7●79, F7●81, LR9F75, F79, F81	LA7F703
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Insulated terminal blocks

For use with relays	Set of 2 blocks Reference
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LR9F5●57, F5●63, F5●67, F5●69, LR9F57, F63, F67, F69	LA9F103
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Marking accessories

Description	Sold in lots of	Unit reference
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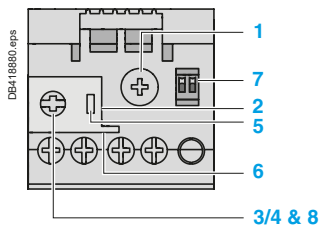
Clip-in marker holder	100	LA7D903
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Bag of 400 blank self-adhesive legends 7 x 16 mm	1	LA9D91
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TeSys

TeSys LR9D Electronic overload relays

Characteristics



LR9D01...110S

Description: LR9D01, 02, 08 and 32

These self-powered electronic thermal overload relays are designed for direct mounting to contactors LC1D09 through LC1D38.

LR9D110S self-powered electronic thermal overload relay is designed for separate mounting only.

In addition to the protection provided by the TeSys D thermal overload relays (see page B11/31), they offer the following additional features:

- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits

- 1 Adjustment dial Ir.
- 2 Test button.
- 3 Stop button.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Class 5/10/20/30 dipswitches.
- 8 Reset mode selector.

Environment

Relay type		LR9D01, 02, 08, 32 and LR9D110S	
Conforming to standards		IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4	
Product certifications		CCC, CSA, UL, CB certification	
Degree of protection	Conforming to IEC 60529 and VDE 0106	IP 20 on front panel	
Ambient air temperature around the device (Conforming to IEC 60255-8)	Storage	°C	-55 to +80
	Normal operation	°C	-25 to +70
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane	Any position	
Shock resistance	Permissible acceleration conforming to IEC 60068-2-27	15 g (11ms)	
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6	6 g (10-150 Hz)	
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV	6
Surge withstand, common mode	Conforming to IEC 61000-4-5	kV	2
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8
Immunity to radiated radio-frequency disturbances	Conforming to IEC 61000-4-3 and NF C 46-022	V/m	10
Immunity to fast transient currents	Conforming to IEC 61000-4-4	kV	2
Electromagnetic compatibility	Draft EN 50081-1 and 2, EN 50082-2	Meets requirements	

Electrical characteristics of auxiliary contacts

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, AC-15	V	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	d.c. supply, DC-13	V	24	48	110	220	-	-
		W	100	100	50	45	-	-
Protection against short-circuits	By gG or BS fuses or by circuit breaker GB2	A	5					
Cabling Flexible cable without cable end	1 or 2 conductors	mm ² (AWG)	1 to 2.5 (18 to 14)					
	Tightening torque	Nm (lb-in)	0.8 (7)					

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TeSys LR9D Electronic overload relays

Characteristics

Electrical characteristics of power circuit

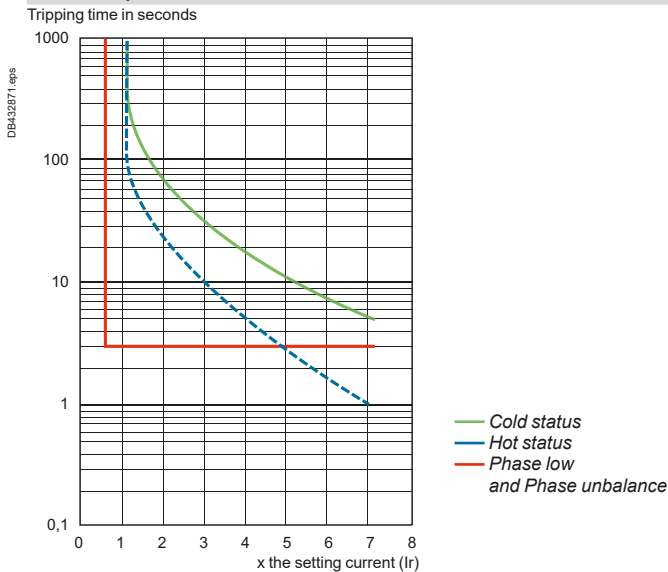
Relay type		LR9D01	LR9D02	LR9D08	LR9D32	LR9D110S
Tripping class	Conforming to IEC/EN 60947-4-1	5, 10, 20, 30				
	Conforming to UL 60947-4-1, CSA C22.2 n° 60947-4-1	10, 20, 30				
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V AC	1000			
Rated operational voltage (Ue)	Conforming to IEC 60947-4-1	V AC	690			
	Conforming to UL/CSA	V AC	600			
Rated impulse withstand voltage		kV	6			
Frequency limits	Of the operating current	Hz	50...60			
Setting range		A	0.1...0.5	0.4...2	1.6...8	6.4...32
Power circuit connections	Wire size - 1 or 2 conductors	mm² (AWG)	1 to 16 (14 to 6)			4 to 50 (10 to 1/0)
	Tightening torque	Nm (lb-in)	3.1 (28)			9 (80)

Operating characteristics

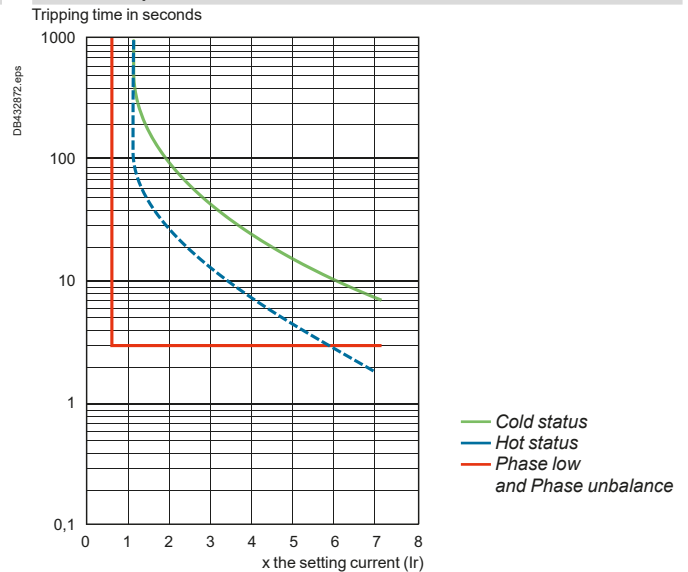
Consumption		mW	< 300			
Tripping thresholds	Conforming to IEC 60947-4-1	A	1.25 I _n			
Sensitivity to phase unbalance	Conforming to IEC 60947-4-1		Phase difference > 40%, tripping in 3 s			
Current setting ratio			5:1			
Automatic reset time		min.	1.5...4			

LR9D01, 02, 08, 32, LR9110S tripping curves

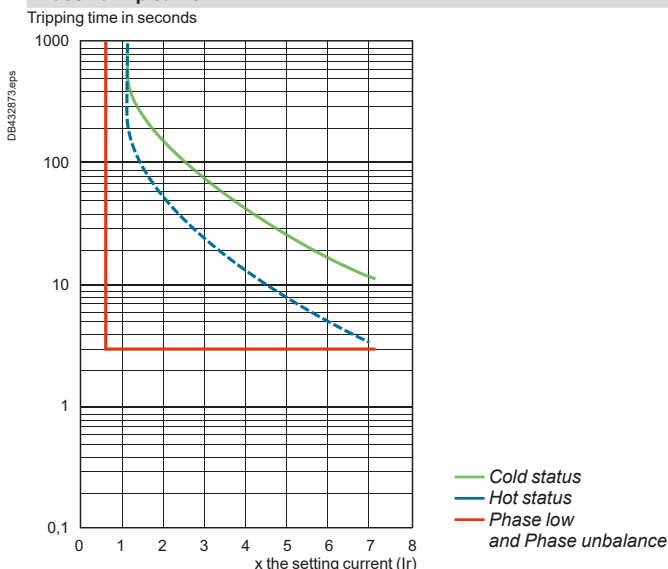
Class 5 Trip curve



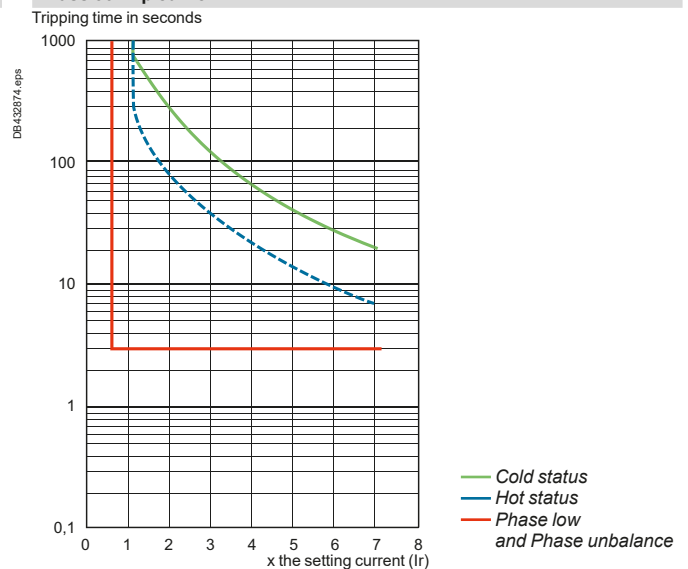
Class 10 Trip curve



Class 20 Trip curve



Class 30 Trip curve



References:
page B11/10

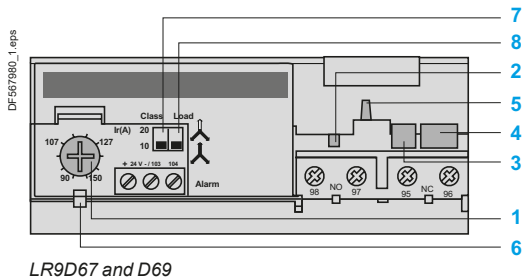
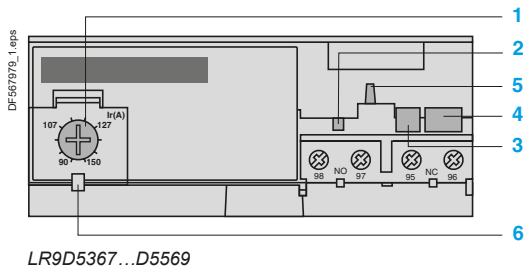
Dimensions, mounting:
page B11/42

Schemes:
page B11/43

TeSys

TeSys LR9D Electronic overload relays

Characteristics



Description: LR9D5367...LR9D5569, LR9D67, LR9D69

These electronic thermal overload relays are designed for use with contactors LC1D115 and D150.

In addition to the protection provided by TeSys D thermal overload relays (see page B11/31), they offer the following special features:

- protection against phase imbalance
- choice of starting class
- protection of unbalanced circuits
- protection of single-phase circuits
- alarm function to avoid tripping by load shedding.

- 1 Adjustment dial Ir.
- 2 Test button.
- 3 Stop button.
- 4 Reset button.
- 5 Trip indicator.
- 6 Setting locked by sealing the cover.
- 7 Class 10/class 20 selector switch.
- 8 Selector for balanced load /unbalanced load

Environment

Relay type		LR9D5367...LR9D5569, LR9D67, LR9D69	
Conforming to standards		IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4	
Product certifications		UL, CSA, CCC, ABS, BV, DNV-GL	
Degree of protection	Conforming to IEC 60529	IP 20 on front panel with protective covers LA9D11570● or D11560●	
Climatic withstand		according to IACS E10	
Ambient air temperature around the device (Conforming to IEC 60255-8)	Storage	°C	- 40...+ 85
	Normal operation	°C	- 20...+ 55 ⁽¹⁾
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane	Any position	
Shock resistance	Permissible acceleration conforming to IEC60028-2-27	13 gn - 11 ms	
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6	2 gn - 5...300 Hz	
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV	6
Surge withstand	Conforming to IEC 61000-4-5	kV	6
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8
Immunity to radiated radio-frequency disturbances	Conforming to IEC 61000-4-3	V/m	10
Immunity to fast transient currents	Conforming to IEC 61000-4-4	kV	2
Electromagnetic compatibility	EN 50081-1 and 2, EN 50082-2	Meets requirements	

Electrical characteristics of auxiliary contacts

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	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	d.c. supply	V	24	48	110	220	440	–
		W	100	100	50	45	25	–
Protection against short-circuits	By gG or BS fuses or by circuit breaker GB2	A	5					
Cabling Flexible cable without cable end	1 or 2 conductors	mm²	Minimum c.s.a.: 1					
	Tightening torque	Nm	Maximum c.s.a.: 2.5					
			1.2					

⁽¹⁾ For operating temperatures up to 70 °C, please consult your Regional Sales Office.

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TeSys LR9D Electronic overload relays

Characteristics

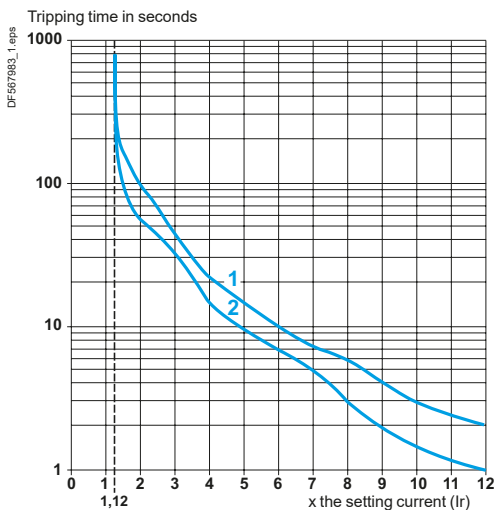
Electrical characteristics of power circuit			
Relay type		LR9D5367...LR9D5569, LR9D67, LR9D69	
Tripping class	Conforming to IEC/EN 60947-4-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1		10 or 20
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	1000
	Conforming to UL, CSA	V	600
Rated impulse withstand voltage (Uimp)		kV	8
Frequency limits	Of the operating current	Hz	50...60 ⁽¹⁾
Setting range	Depending on model	A	60...150
Power circuit connections	Width of terminal lug	mm	20
	Clamping screw		M8
	Tightening torque	N.m	18

Operating characteristics			
Temperature compensation		°C	-20...+70
Tripping thresholds	Conforming to IEC 60947-4-1		
	Alarm	A	1.05 ± 0.06 I _n
	Trip	A	1.12 ± 0.06 I _n
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping in 4 s ± 20 % in the event of phase failure

Alarm circuit characteristics			
Rated supply voltage	d.c. supply	V	24
Supply voltage limits		V	17...32
Current consumption	No-load	mA	≤ 5
Switching capacity		mA	0...150
Protection	Short-circuit and overload		Self protected
Voltage drop	Closed state	V	≤ 2.5
Cabling	Flexible cable without cable end	mm ²	0.5...1.5
Tightening torque		N.m	0.45

⁽¹⁾ For other frequencies and for applications involving the use of these overload relays with soft starters or variable speed drives, please consult your Regional Sales Office.

LR9D5367...LR9D5569, LR9D67, LR9D69 tripping curves



Average operating time related to multiples of the setting current

- 1 Cold state curve
- 2 Hot state curve

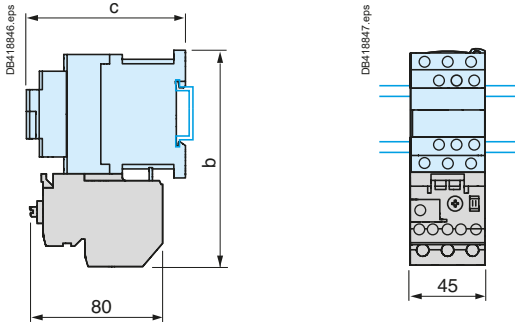


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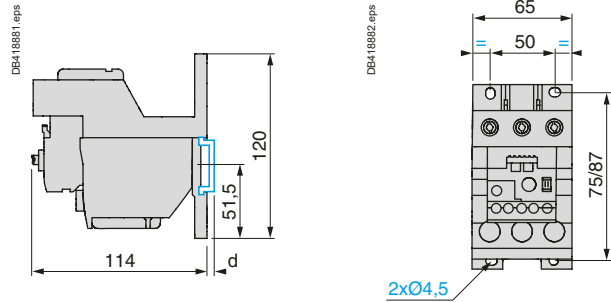
TeSys LR9D Electronic overload relays

Dimensions, mounting

LR9D01, 02, 08, 32

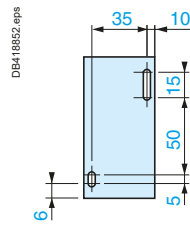
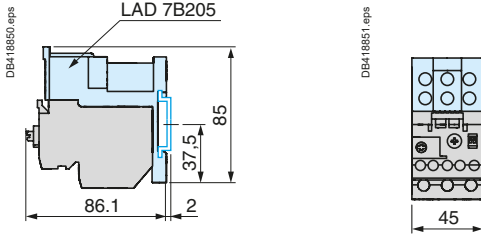


LR9D110S



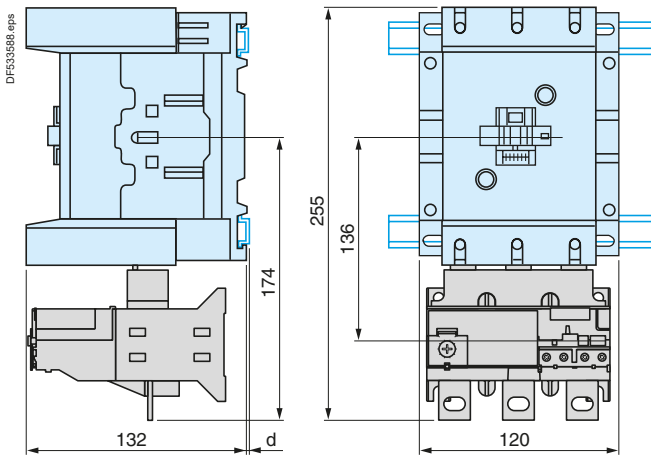
LC1	D09...D18	D25...D38
b	130	140
c	See pages B8/65 and B8/66	

LR9D01...32



LR9D53●●, LR9D55●●, LR9D67, LR9D69

Direct mounting beneath contactors LC 1D115 and D150



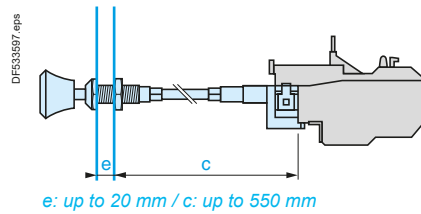
AM1	DP200 and DR200	DE200 and ED●●●
d	2.5	10.5

LR9D

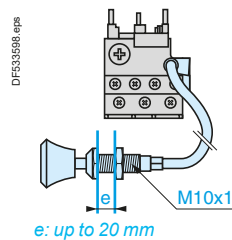
"Reset" by flexible cable

LA7D305 and LAD7305

Mounting with cable straight



Mounting with cable bent



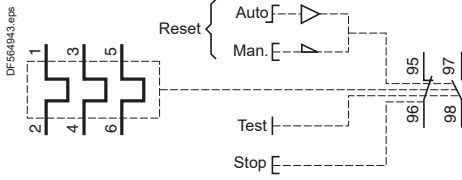
Overload relays

TeSys

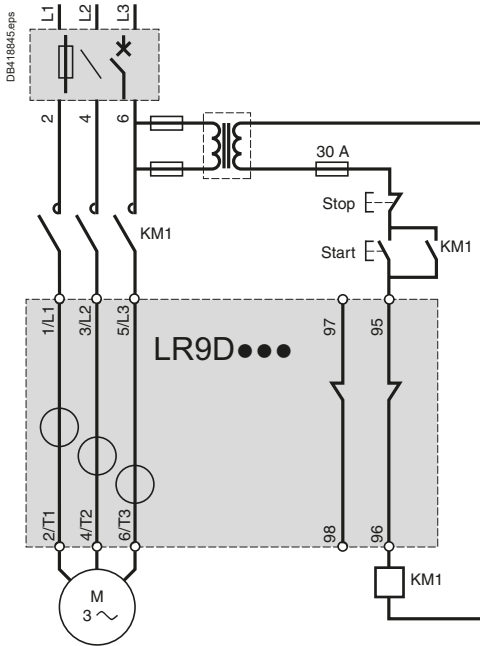
TeSys LR9D Electronic overload relays

Schemes

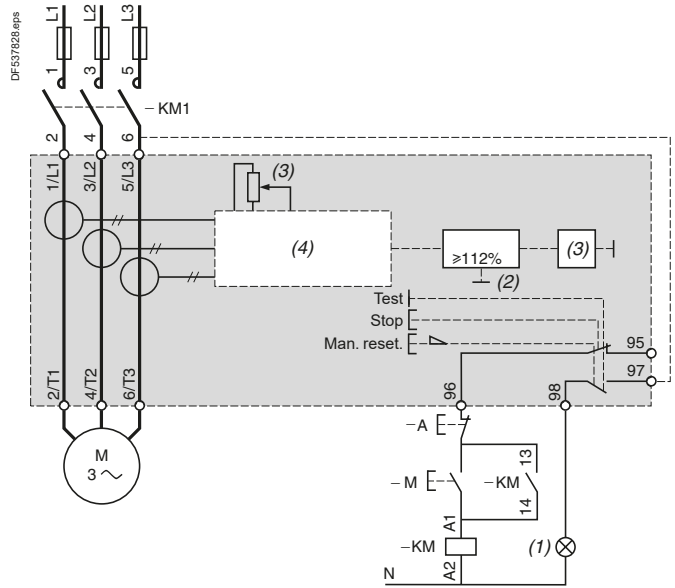
LR9D01, 02, 08, 32, LR9D110S



LR9D01, 02, 08, 32, LR9 D110S



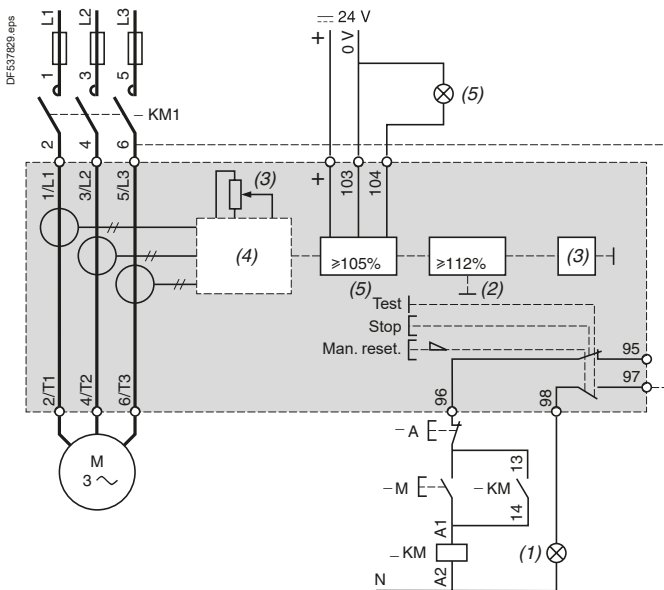
LR9D5...



- (1) Tripped.
- (2) Overload.

- (3) Setting current.
- (4) Specialised circuit.

LR9D67 and LR9D69



- (1) Tripped.
- (2) Overload.
- (3) Setting current.
- (4) Specialised circuit.
- (5) Alarm.

Introduction

TeSys LR9F electronic protection relays are especially suited to the operating conditions of motors.

They provide protection against:

- thermal overload of 3-phase or single-phase balanced or unbalanced circuits;
- phase failure and large phase unbalance,
- protracted starting times,
- prolonged stalled rotor condition.

LR9F electronic protection relays are mounted directly below an LC1 F type contactor. They cover a range from 30 to 630 A, in eight ratings.

The settings can be locked by sealing the transparent protective cover.

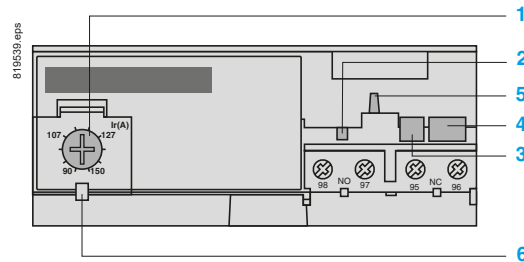
A reset button is mounted on the front of the relay.

Two versions are available:

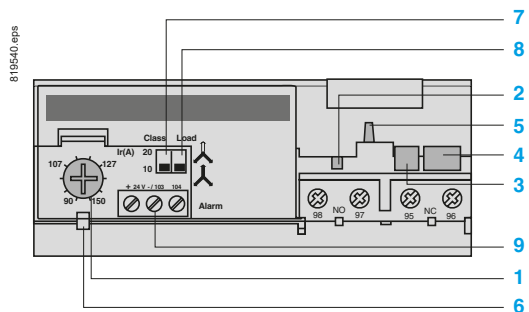
- simplified version: class 10: LR9F●3●●, class 20: LR9F●5●●,
- complete version: class 10, 10 A or class 20, selectable, conforming to EN 60947-4-1: LR9F●●.



This latter version includes an alarm function which makes it possible to forestall tripping by load shedding.

Simplified version: class 10 or 20



Complete version: class 10, 10 A or class 20, selectable, and alarm circuit



- 1 Ir adjustment dial
- 2 Test button
- 3 Stop button
- 4 Reset button
- 5 Trip indicator
- 6 Setting locked by sealing the cover
- 7 Class 10/class 20 selector switch
- 8 Selector switch for balanced load  / unbalanced load 
- 9 Alarm circuit

Ref.



Overload relays

TeSys

TeSys LR9F Electronic overload relays

Characteristics

Environment			
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 60947-4-1, CSA C22.2 n° 60947-4-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.4
Product certifications			UL, CSA, CCC, ABS, BV, DNV-GL
Degree of protection	Conforming to VDE 0106		IP 20
	Conforming to IEC 60529		IP 20 on front of relay with accessories LA9F103 or LA7F70 , see page B11/14
Climatic withstand			according to IACS E10
Ambient air temperature around the device (conforming to IEC 60255-8)	Storage	°C	-40...+85
	Normal operation	°C	-20...+55 ⁽¹⁾
Maximum operating altitude	Without derating	m	2000
Operating positions without derating	In relation to normal vertical mounting plane		Any position
Shock resistance	Permissible acceleration conforming to IEC 60068-2-7		13 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6		2 gn - 5 to 300 Hz
Dielectric strength at 50 Hz	Conforming to IEC 60947-4-1	kV	6
Surge withstand	Conforming to IEC 61000-4-5	kV	4
Resistance to electrostatic discharge	Conforming to IEC 61000-4-2	kV	8 (in air) 6 (in indirect mode)
Resistance to radiated radio-frequency disturbance	Conforming to IEC 61000-4-3	V/m	10
Resistance to fast transient currents	Conforming to IEC 61000-4-4	kV	2
Electromagnetic compatibility	EN 50081-1 and 2, EN 50082-2		Conforming

⁽¹⁾ For operating temperatures up to 70 °C, please consult your Regional Sales Office.

Ref.



Overload relays

Characteristics

Electrical characteristics of power circuit								
Relay type	LR9	F5●57, F57	F5●63, F63 F5●67, F67F5●69, F69	F5●71, F71	F7●75, F75 F7●79, F79	F7●81, F81		
Rated insulation voltage (Ui) Conforming to IEC 60947-4-1	V	1000						
Rated impulse withstand voltage (Uimp) Conforming to IEC 60947-1	kV	8						
Rated operational current (Ie)	A	30 to 630						
Short-circuit protection and coordination		See pages: A6/11, A6/12, A6/15 and A6/16						
Frequency limits Of the operating current	Hz	50...60. For other frequencies, please consult your Regional Sales Office ⁽¹⁾						
Power circuit connections	Width of terminal lug	mm	20	25	25	30 LR9F7●75 and LR9F75 40 LR9F7●79 and LR9F79	40	
	Clamping screw		M6	M8	M10	M10	M12	
	Tightening torque	N.m	10	18	35	35	58	
Auxiliary contact electrical characteristics								
Conventional thermal current	A	5						
Short-circuit protection By gG or BS fuses or by circuit-breaker GB2CD10	A	5						
Control circuit connections	Flexible cable with cable end	1 conductor	mm ²	Min. 1 x 0.75			Max. 1 x 2.5	
		2 conductors	mm ²	2 x 1			2 x 1.5	
	Flexible cable without cable end	1 conductor	mm ²	1 x 0.75			1 x 4	
		2 conductors	mm ²	2 x 1			2 x 2.5	
	Solid cable	1 conductor	mm ²	1 x 0.75			1 x 2.5	
		2 conductors	mm ²	2 x 1			–	
	Tightening torque	N.m	1.2					
Maximum sealed current consumption of the coils of associated contactors (occasional operating cycles of contact 95-96)	a.c. supply	V	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	d.c. supply	V	24	48	110	220	440	–
		W	100	100	50	45	25	–

⁽¹⁾ For applications involving the use of these overload relays with soft starters or variable speed drives, please consult your Regional Sales Office.

Ref.



TeSys

TeSys LR9F Electronic overload relays

Characteristics

Operating characteristics

Tripping class	Conforming to IEC 60947-4-1			10 and 20
Temperature compensation			°C	-20...+70
Reset				Manual on front of relay
Fault indication				On front of relay
Test function				On front of relay
Stop function				Actuation of N/C contact, without affecting N/O contact
Tripping thresholds	Conforming to IEC 60947-4-1	Alarm	A	$1.05 \pm 0.06 I_n$
		Tripping	A	$1.12 \pm 0.06 I_n$
Sensitivity to phase failure	Conforming to IEC 60947-4-1			Tripping in $4 \text{ s} \pm 20 \%$ in the event of phase failure
Adjustment (nominal motor current)				Setting dial on front of relay
Security sealing				Yes

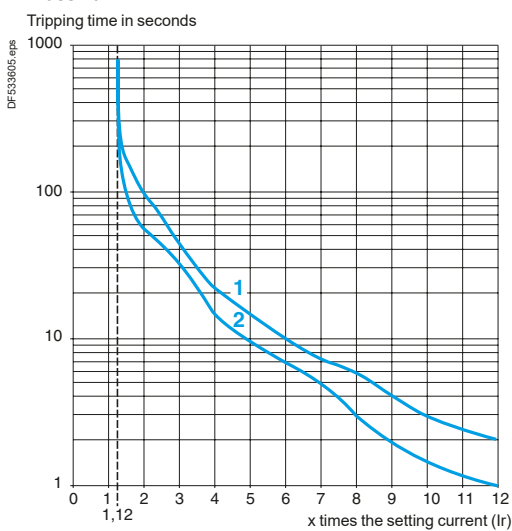
Alarm circuit characteristics

Rated supply voltage	d.c. supply	V	24
Supply voltage limits		V	17...32
Current consumption	No-load	mA	≤ 5
Switching current		mA	0...150
Protection	Short-circuit and overload		Auto-protected
Voltage drop	Closed state	V	≤ 2.5
Connection	Flexible cable without cable end	mm²	0.5...1.5
Tightening torque		N.m	0.45

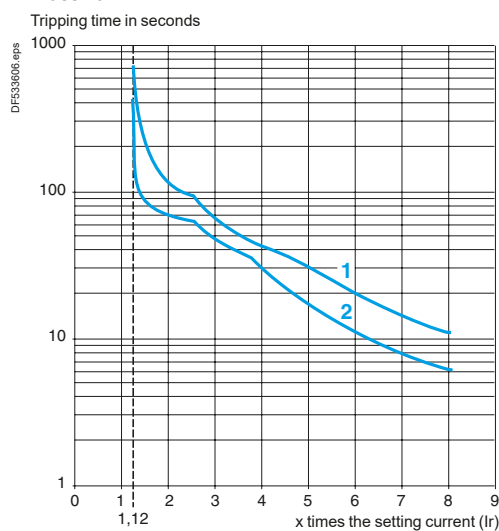
LR9F tripping curve

Average operating times depending on multiples of the setting current

Class 10



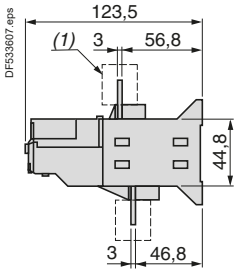
Class 20



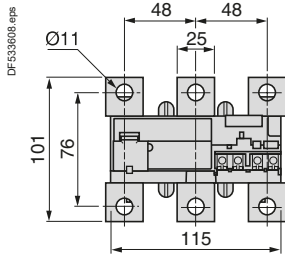
- 1 Cold state curve
- 2 Hot state curve

Dimensions

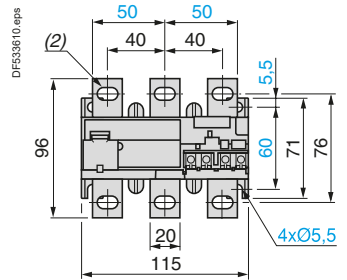
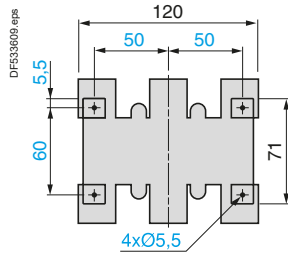
Common side view



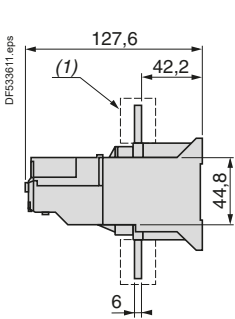
LR9F57, F71



LR9F57, F563, F567, LR9F569, F57, F63, F67, F69

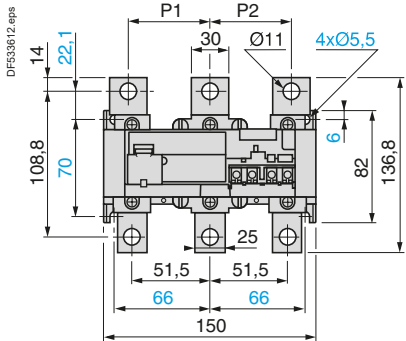


(1) Terminal shroud LA9F70
Common side view

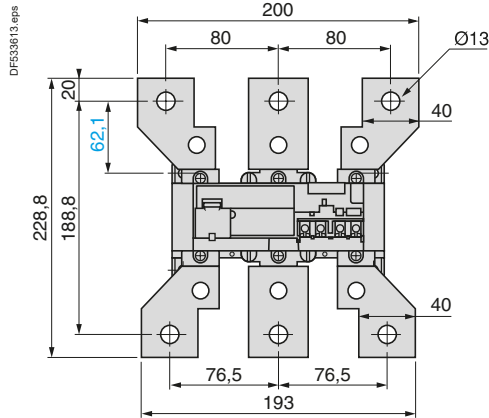


(2) 6.5 x 13.5 for LR9F57 and F57. 8.5 x 13.5 for LR9F563, F567, F569, F63, F67, F69

LR9F775, F779, F781, LR9F75, F79, F81



LR9F781 (for mounting beneath LC1F630 and F800), LR9F81

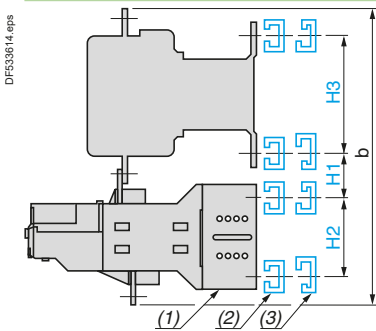


Ref.

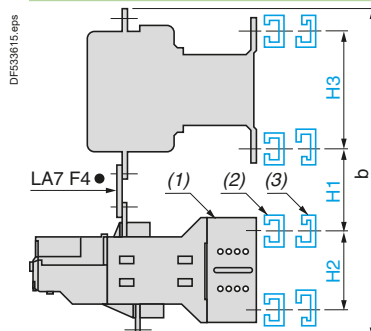
(1) Terminal shroud LA9F70

	P1	P2
LR9F775, F75	48	48
LR9F779, F781, F79, F81	55	55

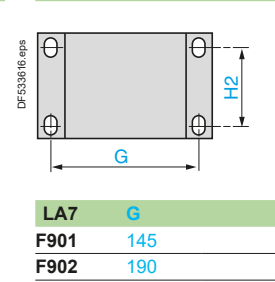
Direct mounting beneath contactor LC1F



Mounting beneath contactors: reversing LC2F or star-delta LC3F



Mounting plate for LR9F



Contactors LC1	With LR9 relays	b	H1	H2	H3
F115	F57, F563, F567, F569, F57, F63, F67, F69	240	30	50	120
F150	F57, F563, F567, F569, F57, F63, F67, F69	246	30	50	120
F185	F57, F563, F567, F569, F57, F63, F67, F69	250	30	50	120
F225	F57, F71, F775, F779, F75, F79	273	40	50	120
F265	F57, F71	279	40	50	120
	F775, F779, F75, F79	314	60	58	120
F330	F775, F779, F75, F79	317	60	58	120
F400	F775, F779, F781, F75, F79, F81	317	60	58	180
F500	F775, F779, F781, F75, F79, F81	346	70	58	180
F630, F800	F781, F81	510	110	58	180

Contactors LC1	With LR9 relays	b	H1	H2	H3
F115	F57, F563, F567, F569, F57, F63, F67, F69	279	60	50	120
F150	F57, F563, F567, F569, F57, F63, F67, F69	283	60	50	120
F185	F57, F563, F567, F569, F57, F63, F67, F69	285	60	50	120
F225	F57, F71, F775, F779, F75, F79	360	100	58	120
F265	F57, F71	332	90	50	120
	F775, F779, F75, F79	363	100	58	120
F330	F775, F779, F75, F79	364	100	58	120
F400	F775, F779, F781, F75, F79, F81	364	100	58	180
F500	F775, F779, F781, F75, F79, F81	390	110	58	180
F630, F800	F781, F81	509	120	58	180

(1) Relay mounting plate LA7F90, see page B11/14.
(2) AM1EC or AM1DF for LC1F115 to F630 and LC1F800.

(3) DZ5MB for LC1F115 to F400.

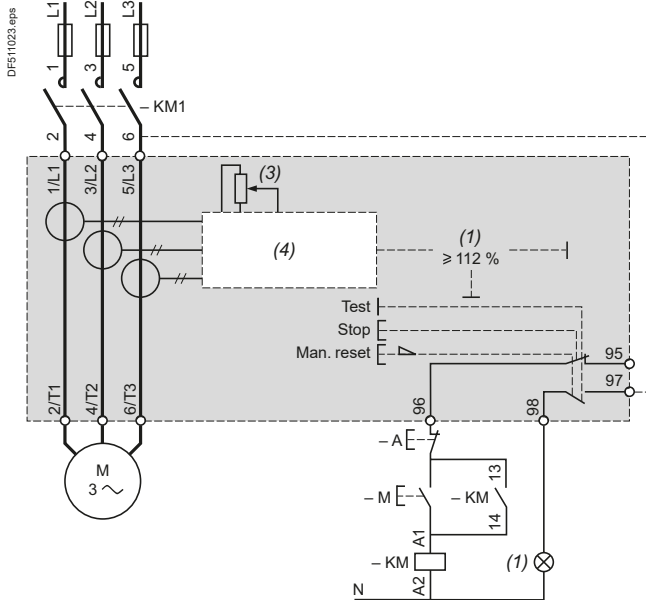
TeSys

TeSys LR9F Electronic overload relays

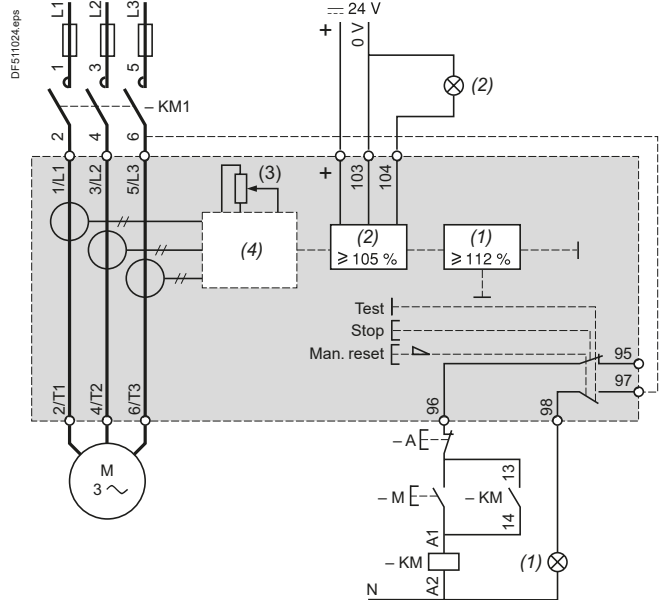
Schemes, setting-up

Schemes

LR9F5...F7...F81



LR9F57...F81 (with alarm)

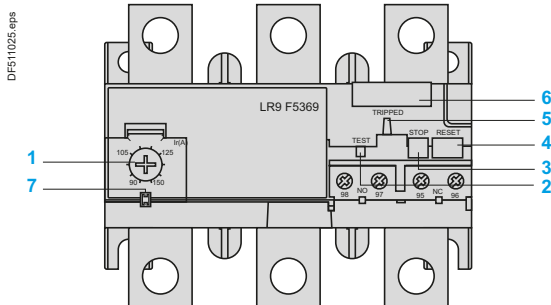


- (1) Tripped on thermal overload.
- (2) Overheating alarm.
- (3) Setting current.
- (4) Specialised circuit.

Setting-up the special functions of TeSys LR9F thermal overload relays

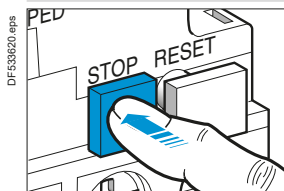
Setting the relay

- Lift the transparent cover 7 to gain access to the various settings.
- Adjustment is achieved by turning dial 1 which is graduated directly in Amperes.
- The setting can be locked by sealing the cover 7.



"Stop" function 3

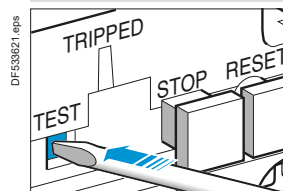
Stop



- The "Stop" function is obtained by pressing the red "STOP" button 3.
- Pressing the Test button:
 - actuates the N/C contact,
 - has no effect on the N/O contact.
- The "STOP" button can be locked by fitting a "U" clip (reference: LA7D901).

"Test" function 2

Test



- The "Test" function is obtained by pressing the red "TEST" button 2 with a screwdriver.
- Operation of the "TEST" button simulates tripping of the relay and:
 - actuates both the N/O and N/C contacts,
 - actuates the trip indicator 5.

Trip indicator

