

Bimetal Overload Relays (Type LR1 - D)

"TC" bimetal overload relays type LR1-D are triple pole adjustable with built-in single phasing protection. These relays provide accurate & reliable protection against overloads, unbalanced voltages field, manual reset type, single phasing as per "Class 10" in conformity to IEC 947-4-1 & IS 13947 Part 4/Sec 1. They are available in 22 relay ranges from 0.1Amp upto 80Amps.

Short Circuit Protection

"TC" Overload Relays are designed to give protection only against overloads. These can withstand currents upto 10 times the maximum setting of the range. It must be provided with recommended back up fuses for short circuit protection.

Ambient Temperature Compensation

"TC" Relays are ambient temperature compensated. Relays can be utilised from (-)40°C to (+)60°C.

Relays

"D" range Relays can not be reset manually immediately after tripping (hot condition) thus ensuring that the motor cannot be restarted inadvertently without investigating the cause of the overloading. A unique feature in "TC" Relays is the **provision of a flag indication** -- you can get a positive indication when the motor stoppage is due to relay tripping.

Control Circuit

"D" range Relays are provided with two independent electrically insulated from each other control contacts 1NO and 1NC. These can be used at different voltages for more sophisticated control schemes. Control contacts have a thermal capacity of 10Amps.

Ease in Mounting

"D" range Relays upto 80Amps are suitable for direct mounting on contactors thus reducing the labour cost for wiring. However, if you wish to mount these relays separately, special kits are provided for independent mounting.

Relays for DC Application

"TC" Relays upto 80Amps can also be used DC circuits. Relays upto 80Amp have an insulation level of 660V.

Relay Selection Table (Type D)

These relays have manual reset

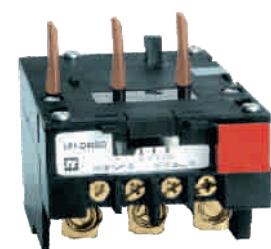
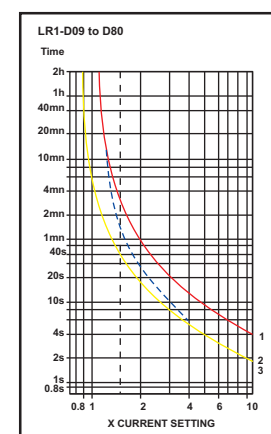
RELAY REFERENCE	RELAY SETTING RANGE (A)	STANDARD POWER RATINGS OF 3-PHASE MOTORS 50/60Hz AC3 CATEGORY					BACK UP FUSE RATING g1 (A)
		220V KW	380V KW	415V KW	440V KW	660V KW	
LR1-D09301.A60 (1)	0.10 to 0.16	*	*	*	*	*	2
LR1-D09302.A60 (1)	0.16 to 0.25	*	*	*	*	*	2
LR1-D09303.A60 (1)	0.25 to 0.40	*	*	*	*	*	2
LR1-D09304.A60 (1)	0.40 to 0.63	*	*	*	*	0.37	2
LR1-D09305.A60 (1)	0.63 to 1.00	*	*	*	*	0.55	4
LR1-D09306.A60 (1)	1.00 to 1.60	*	0.37	*	0.55	1.10	4
LR1-D09307.A60 (1)	1.60 to 2.50	0.37	0.75	1.10	1.10	1.50	6
LR1-D09308.A60 (1)	2.50 to 4.00	0.75	1.50	1.50	1.50	3.00	10
LR1-D09310.A60 (1)	4.00 to 6.00	1.10	2.20	2.20	2.20	4.00	16
LR1-D09312.A60 (1)	5.50 to 8.00	1.50	3.00	3.70	3.70	5.50	20
LR1-D09314.A60 (1)	7.00 to 10.00	2.20	4.00	4.00	4.00	7.50	20
LR1-D12316.A60 (1)	10.00 to 13.00	3.00	5.50	5.50	5.50	10.00	25
LR1-D16321.A60 (1)	13.00 to 18.00	4.00	7.50	9.00	9.00	15.00	32
LR1-D25322.A60 (1)	18.00 to 25.00	5.50	11.00	11.00	11.00	18.50	50
LR1-D32353.A60 (1)	23.00 to 32.00	7.50	15.00	15.00	15.00	—	63
LR1-D32355.A60 (1)	28.00 to 40.00	—	15.00	15.00	—	—	80
LR1-D40353.A60 (1)	23.00 to 32.00	7.50	15.00	15.00	15.00	22.00	63
LR1-D40355.A60 (1)	30.00 to 40.00	10.00	18.50	22.00	22.00	30.00	80
LR1-D63357.A60 (1)	38.00 to 50.00	11.00	22.00	25.00	25.00	37.00	100
LR1-D63359.A60 (1)	48.00 to 57.00	15.00	25.00	30.00	30.00	—	100
LR1-D63361.A60 (1)	57.00 to 66.00	18.50	30.00	37.00	37.00	—	100
LR1-D80363.A60 (2)	63.00 to 80.00	22.00	33.00	40.00	40.00	59.00	125

Notes :-

- Select and set the Overload Relay according to the current value on the motor Overload manufacturer's rating plate.
- * * * There is no standard power rating for these motors; select the Relay according to current drawn.
- Terminals protected against direct Finger Contact and Ready-to-Wire terminals. To order replace "A60" in the codes mentioned above by "A65"
- (1) -- For direct Mounting on the Contactor, (2) -- For Independent Mounting of the Contactor.

Relay Tripping Curve

LR2 - D09 to D80

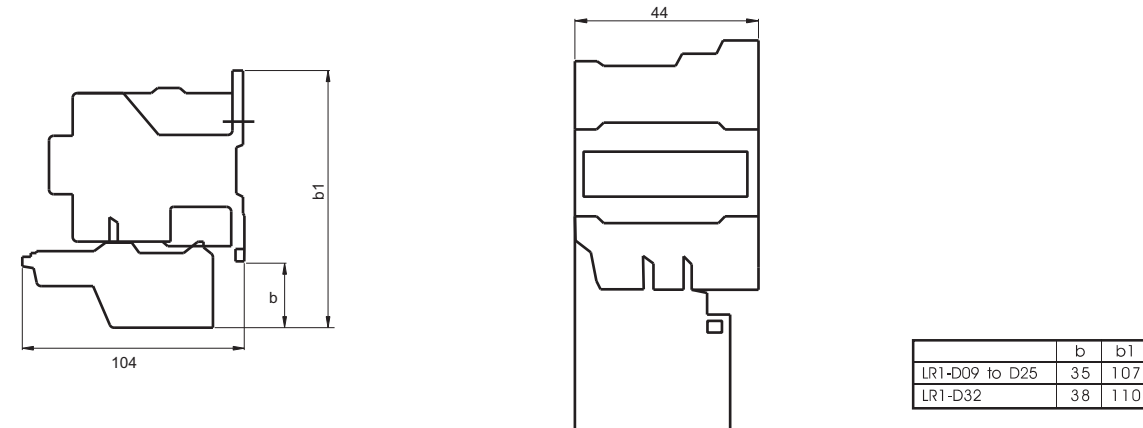


- Balanced operation 3 phase, from cold state.
- Balanced operation 3 phase, after a long period at the set current (hot state).
- Operation following the loss of one phase (single phase tripping) from cold state.

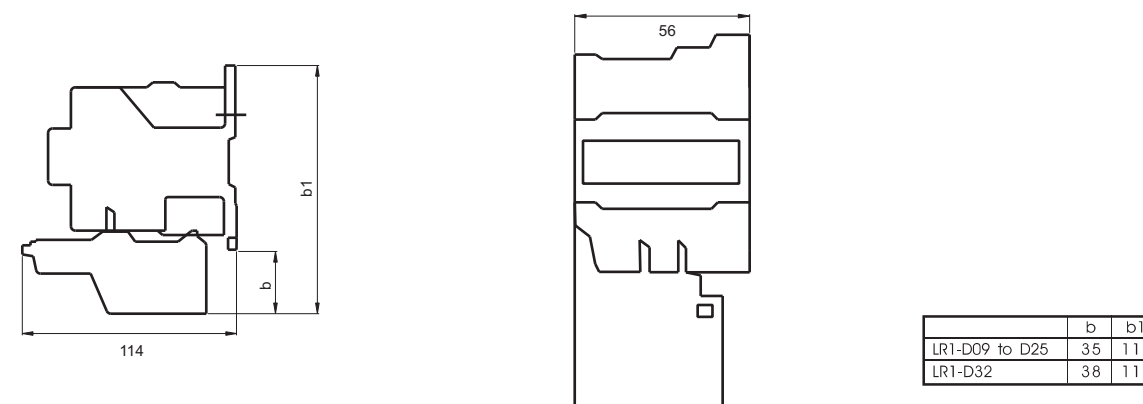
Dimensions (Type D)

(All dimensions in mm)

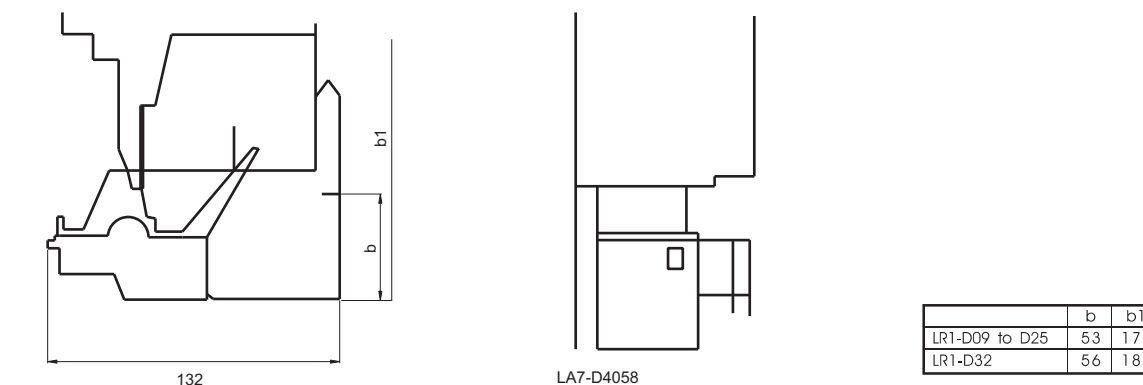
LR1 D09 to D32 mounted directly on Contactors LC1-D09 to D17



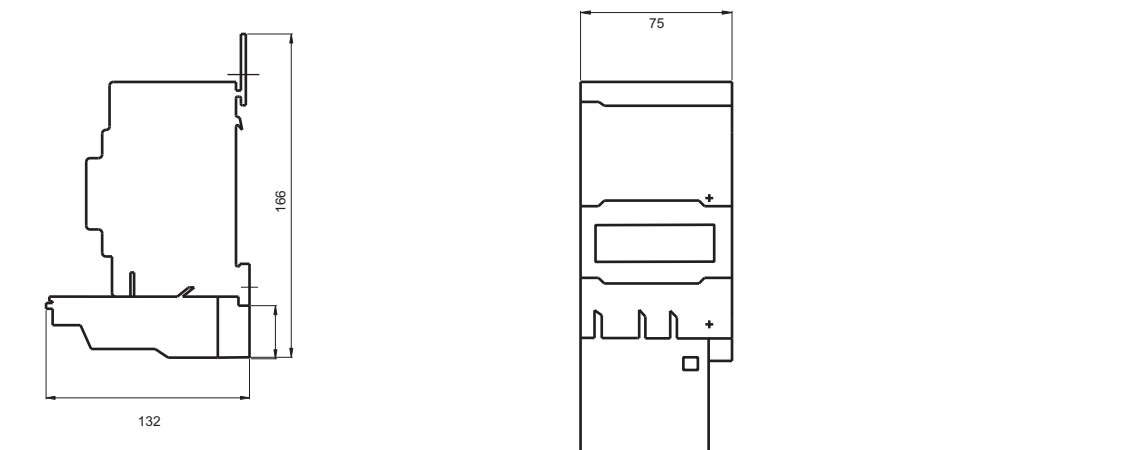
Mounted directly on Contactor LC1-D25 and D32



LR1 D09 to D32 mounted directly on Contactors LC1-D40, D50, D63

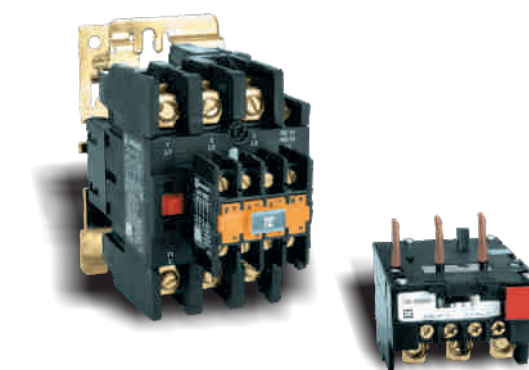
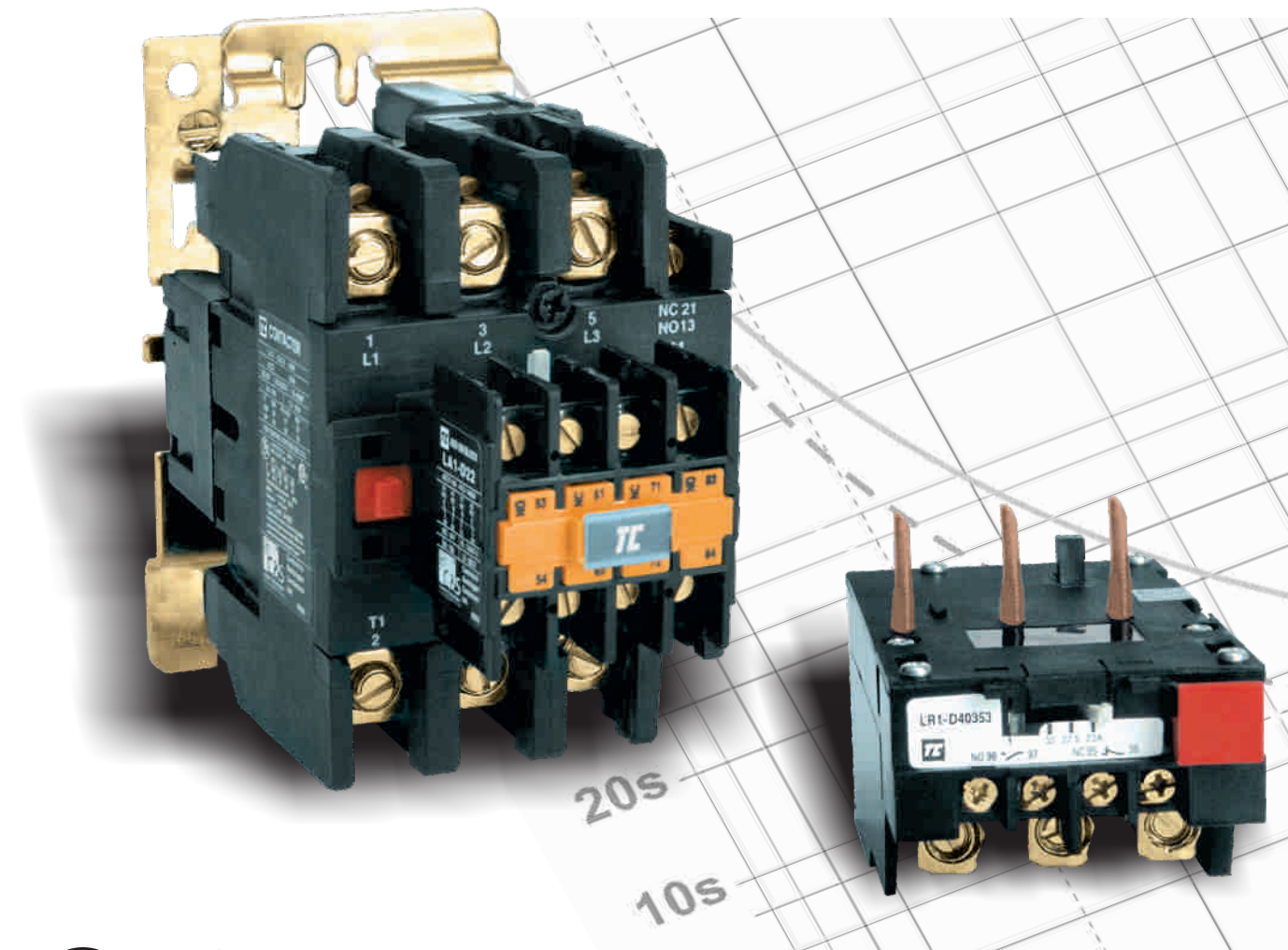


LR1 D40 to D60 Contactors LC1-D40, D50, D63



Contactors, Overload Relays & Accessories

(D - Range)



Distributor



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Controls & Switchgear Contactors Ltd.

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Contactor Code

Standards : IEC 947-4-1; IS 13947 Part 4/Sec-1; EN 60947

Certification & Approvals  

Environment

Rated Insulation Voltage (at Pollution Degree 3)	(Ui)	V
Rated Impulse withstand voltage	(Uimp)	kV
Ambient Air Temperature	Storage °C	°C
	Operation °C	°C
Operating Altitude		meters
Operating Position		
Mechanical Life (Million Operation on no-load)		Cycles

Characteristics

Rated Operational Voltage	(Ue)	V
Rated Thermal Current (I _{th}) ≤ 40°C		A
Rated Operational Current / Power (3 Phase, 415/440V, 50-60Hz, AC3)	(Ie)	A / kW
Rated making capacity at 415V		A
Rated breaking capacity at 415V		A

AC2 & AC4 Duty

Max. breaking current according to duty		
Thermal limit, ambient ≤ 55°C	150 and 15%	
	150 and 20%	
Ops./Hr. & ON-load factor	150 and 30%	
	150 and 55%	
	150 and 85%	

Max. Power rating of slipring or squirrel cage motor at 50/60Hz	220V kW/Hp	
	415V kW/Hp	
	500V kW/Hp	
	660V kW/Hp	

Coil Rating	Supply frequency	H z
(Cold Coil) 1.0 x U	In-rush	VA
AC operation 50Hz	p.f.	
	Sealed	VA
	p.f.	

Overall Dimension in mm



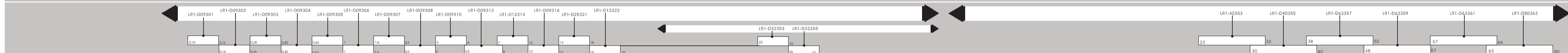
Auxiliary Contact thermal current rating (I _{th})	VA
Rated operation power at AC15 upto 125V (One Million Operations)	VA
	VA
	VA

Auxiliary contact terminal capacity

Thermal Overload Relays
Ambient Temperature compensated (-)40° to (+)60° having built-in single phase protection, potential free 1 NO and 1 NC Contacts, with provision of yellow flag indicator for positive indication of Relay Tripping, Manual reset facility, Base plate for independent mounting available.

Model	CA2-DN	LC1-D09	LC1-D12	LC1-D17	LC1-D25	LC1-D32	LC1-D40	LC1-D50	LC1-D63	LC1-D80
Rated Insulation Voltage (Ui)	660V	660V	660V	660V	660V	660V	660V	660V	660V	660V
Rated Impulse withstand voltage (Uimp)	8	8	8	8	8	8	8	8	8	8
Ambient Air Temperature (Storage)	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80	-60 ... +80
Ambient Air Temperature (Operation)	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70	-50 ... +70
Operating Altitude	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Operating Position	±30° Possible in relation to normal vertical mounting plane									
Mechanical Life (Million Operation on no-load)	20	20	20	16	16	16	16	16	16	10
Rated Operational Voltage (Ue)	660V	660V	660V	660V	660V	660V	660V	660V	660V	660V
Rated Thermal Current (I _{th}) ≤ 40°C	10	25	25	32	40	50	60	80	80	125
Rated Operational Current / Power (3 Phase, 415/440V, 50-60Hz, AC3)	AC 15 Duty as per IS-13947	9 / 4	12 / 5.5	17 / 9	25 / 11	32 / 15	40 / 22	50 / 25	63 / 37	80 / 45
Rated making capacity at 415V	AC 15 Duty as per IS-13947	250	250	320	450	550	800	900	1000	1100
Rated breaking capacity at 415V	AC 15 Duty as per IS-13947	250	250	320	450	550	800	900	1000	1100
Max. breaking current according to duty										
Thermal limit, ambient ≤ 55°C	-	30	40	58	75	80	110	140	160	200
	-	27	36	50	67	70	98	120	148	170
Ops./Hr. & ON-load factor	-	24	30	44	56	60	80	100	132	145
	-	19	24	38	45	50	62	80	110	120
	-	16	21	31	40	45	53	70	90	100
Max. Power rating of slipring or squirrel cage motor at 50/60Hz										
220V kW/Hp	-	2.2 / 3	3 / 4	4 / 5.5	5.5 / 7.5	7.5 / 10	11 / 15	15 / 20	18.5 / 25	22 / 30
415V kW/Hp	-	4 / 5.5	5.5 / 7.5	9 / 12	11 / 15	15 / 20	22 / 30	25 / 35	37 / 50	45 / 60
500V kW/Hp	-	5.5 / 7.5	7.5 / 10	10 / 13	15 / 20	18.5 / 25	22 / 30	30 / 40	37 / 50	55 / 75
660V kW/Hp	-	5.5 / 7.5	7.5 / 10	10 / 10	15 / 20	18.5 / 25	30 / 40	33 / 45	37 / 50	45 / 60
Coil Rating										
Supply frequency	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
(Cold Coil) 1.0 x U	70	70	70	70	110	110	200	200	200	200
AC operation 50Hz	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	8	8	8	8	11	11	20	20	20	20
	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Auxiliary Contact thermal current rating (I _{th})	10	10	10	10	10	10	10	10	10	10
Rated operation power at AC15 upto 125V (One Million Operations)	500	500	500	500	500	500	500	500	500	500
	500	500	500	500	500	500	500	500	500	500
	500	500	500	500	500	500	500	500	500	500

Minimum 1 cable of 1sqmm and maximum 2 cable of 2.5 sqmm



Front mounted Add-on-Blocks

- Auxiliary Contact Blocks
- Time Delay Relay Blocks
- Latch Add-on-blocks

