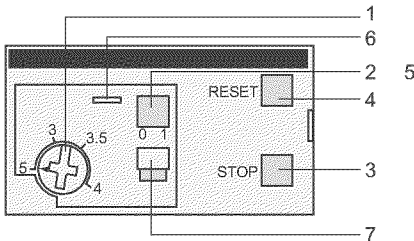
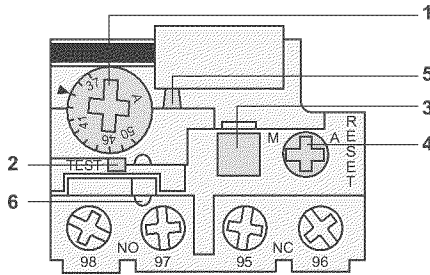


TeSys™ D-Line Contactors and Starters

LR2 and LR3D 3-pole Bimetallic Overload Relays

Description

D-Line 3-pole thermal overload relays are designed to protect ac circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.	
LRD01 to 35	LRD3322 to 4369, LR2D
	
1 Adjustment dial Ir 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. Relays LRD01 to LRD35 are supplied with the selector in the manual position, protected by a cover. Deliberate action is required to move it to the automatic position.	

Environment

Conforming to standards			IEC 60947-1, IEC 60947-4-1, NF C 63-650, VDE 0660, BS 4941
Product certifications			CSA, UL, Sichere Trennung, PTB except LAD4: UL, CSA.
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Protective treatment	Conforming to IEC 60068		"TH"
Ambient air temperature around the device	Storage	°C	- 60 to + 70 (- 140 to + 158 °F)
	Normal operation, without derating (IEC 60947-4-1)	°C	- 20 to + 60 (- 68 to + 140 °F)
	Minimum and maximum operating temperatures (with derating)	°C	- 40 to + 70 (- 104 to + 158 °F)
Operating positions without derating	In relation to normal, vertical mounting plane		Any position
Shock resistance	Permissible acceleration conforming to IEC 60068-2-7		15 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 60068-2-6		6 gn
Dielectric strength at 50 Hz	Conforming to IEC 60255-5	kV	6
Impulse withstand voltage	Conforming to IEC 60801-5	kV	6

Auxiliary Contact Characteristics

Conventional rated thermal current		A	5 Amps AC; 1 Amp DC					
Maximum consumption of operating coils of controlled contactors (Occasional operating cycles of contact 95-96)	ac supply	V	24	48	110	220	380	600
		VA	100	200	400	600	600	600
	dc supply	V	24	48	110	220	440	—
		W	100	100	50	45	25	—
Short-circuit protection ●	By gG, BS or Class CC fuse. Max. rating or by GB2 circuit-breaker	A	5 maximum					
Connection to screw clamp terminals			Min - max c.s.a.					
Flexible cable with cable end	One or two conductors	AWG (mm ²)	18 - 14 (1 - 2.5)					
Solid cable without cable end	One or two conductors	AWG (mm ²)	18 - 14 (1 - 2.5)					
Flexible cable without cable end	One or two conductors	AWG (mm ²)	18 - 14 (1 - 2.5)					
Solid cable without cable end	One or two conductors	AWG (mm ²)	18 - 14 (1 - 2.5)					
Tightening torque		lb-in (N.m)	15 (1.7)					

- Select short circuit protection to meet the National Electrical Code or other local codes and standards.

Catalog Numbers: pages 134, 135

Dimensions: pages 138 - 140

TeSys™ D-Line Contactors and Starters

LR2 and LR3D 3-pole Bimetallic Overload Relays

Electrical Characteristics of Power Circuit

Relay type			LRD 01 to 16 LR3 D01 to D16	LR2 D15••	LRD 21 to 35 LR3 D21 to D35	LR2 D25••	LRD 3322 to 33696 LR3 D3322 to D33696	LR2 D35••	LRD 4365 to 4369
Tripping class	To UL 508, IEC 60947-4-1		10	20	10	20	10	20	10
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	690		690		1000		1000
	Conforming to UL, CSA	V	600		600		600		600 except LRD4369
Rated impulse withstand voltage (Uimp)		kV	6		6		6		6
Frequency limits	Of the operational current	Hz	0 to 400		0 to 400		0 to 400		0 to 400
Setting range	Depending on model	A	0.1 to 13		12 to 38		17 to 104		80 to 140

Connection to screw clamp terminals

Min - max c.s.a.

Flexible cable without cable end	One conductor	AWG (mm ²)	14 - 8 (1.5 - 10)		14 - 8 (1.5 - 10)		10 - 2 (4 - 35)		10 - 1 (4 - 50)
Flexible cable with cable end	One conductor	AWG (mm ²)	16 - 12 (1 - 4)		16 - 10 (1 - 6) except LRD21: 16 - 12 (1 - 4)		10 - 2 (4 - 35)		10 - 2 (4 - 35)
Solid cable without cable end	One conductor	AWG (mm ²)	16 - 10 (1 - 6)		14 - 8 (1.5 - 10) except LRD21: 16 - 10 (1 - 6)		12 - 2 (4 - 35)		10 - 1 (4 - 50)
Tightening torque		lb-in (N.m)	15.0 (1.7)	16.4 (1.85)	22.1 (2.5)		100 lb-in		100 lb-in

Connection to spring terminals

Min - max c.s.a.

Flexible cable without cable end	One conductor	AWG (mm ²)	14 - 12 (1.5 - 4)	—	14 - 12 (1.5 - 4)	—	—	—	—
Solid cable without cable end	One conductor	AWG (mm ²)	14 - 12 (1.5 - 4)	—	14 - 12 (1.5 - 4)	—	—	—	—

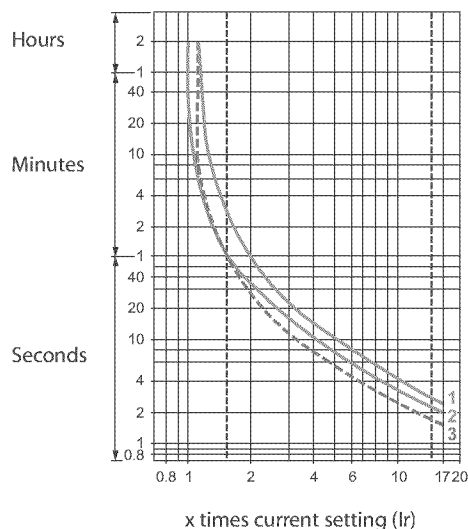
Operating Characteristics

Temperature compensation		°C °F	- 20 to + 60 - 68 to + 140	- 30 to + 60 - 86 to + 140	- 30 to + 60 - 86 to + 140	- 20 to + 60 - 68 to + 140
Tripping threshold	Conforming to IEC 60947-4-1	A	1.14 ± 0.06 In			
Sensitivity to phase failure	Conforming to IEC 60947-4-1		Tripping current 30% of In on one phase, the others at In			

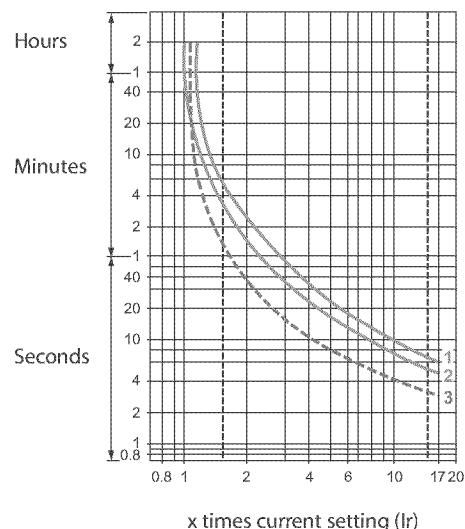
Tripping curves

Average operating time
related to multiples of the
current setting

Class 10



Class 20



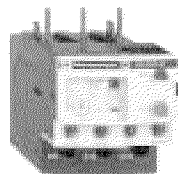
- 1 Balanced operation, 3-phase, from cold state.
- 2 Balanced operation, 2-phase, from cold state.
- 3 Balanced operation, 3-phase, after a long period at the set current (hot state).

Catalog Numbers: pages 134, 135

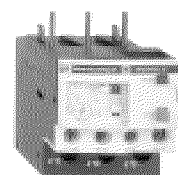
Dimensions: pages 138 - 140

TeSys™ D-Line Contactors and Starters

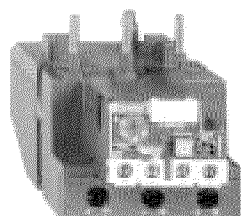
Selection of 3-pole Class 10 Bimetallic Overload Relays



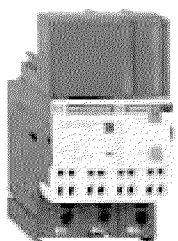
LRD08



LRD21



LRD33



LRD083

Differential (Single Phase Sensitive) Thermal Overload Relays

Compensated Relays with Manual or Automatic Reset, with Relay Trip Indicator, for ac or dc.

Short-circuit Protection for North American Applications				By Circuit Breaker By Fuses	Select in Accordance with NEC and Local Codes Maximum 400% of Motor FLA	
Relay Setting Range	Fuses to be used with Selected Relay			For use with Contactor LC1-	Catalog Number	Weight lb. (kg)
A	aM	gG	BS88			
A	A	A	A			
Class 10 with Connection by Screw Clamp Terminals						
0.10 to 0.16	0.25	2	—	D09 to D38 (2)	LRD01	0.27 (0.124)
0.16 to 0.25	0.5	2	—	D09 to D38 (2)	LRD02	0.27 (0.124)
0.25 to 0.40	1	2	—	D09 to D38 (2)	LRD03	0.27 (0.124)
0.40 to 0.63	1	2	—	D09 to D38 (2)	LRD04	0.27 (0.124)
0.63 to 1	2	4	—	D09 to D38 (2)	LRD05	0.27 (0.124)
1 to 1.6	2	4	6	D09 to D38 (2)	LRD06	0.27 (0.124)
1.6 to 2.5	4	6	10	D09 to D38 (2)	LRD07	0.27 (0.124)
2.5 to 4	6	10	16	D09 to D38 (2)	LRD08	0.27 (0.124)
4 to 6	8	16	16	D09 to D38 (2)	LRD10	0.27 (0.124)
5.5 to 8	12	20	20	D09 to D38 (2)	LRD12	0.27 (0.124)
7 to 10	12	20	20	D09 to D38 (2)	LRD14	0.27 (0.124)
9 to 13	16	25	25	D12 to D38 (2)	LRD16	0.27 (0.124)
12 to 18	20	35	32	D18 to D38 (2)	LRD21	0.27 (0.124)
16 to 24	25	50	50	D25 to D38 (2)	LRD22	0.27 (0.124)
23 to 32	40	63	63	D25 to D38 (2)	LRD32	0.27 (0.124)
30 to 38	50	80	80	D32 and D38 (2)	LRD35	0.27 (0.124)
17 to 25	25	50	50	D40 to D95	LRD3322	1.12 (0.510)
23 to 32	40	63	63	D40 to D95	LRD3353	1.12 (0.510)
30 to 40	40	100	80	D40 to D95	LRD3355	1.12 (0.510)
37 to 50	63	100	100	D40 to D95	LRD3357	1.12 (0.510)
48 to 65	63	100	100	D50 to D95	LRD3359	1.12 (0.510)
55 to 70	80	125	125	D50 to D95	LRD3361	1.12 (0.510)
63 to 80	80	125	125	D65 to D95	LRD3363	1.12 (0.510)
80 to 104	100	160	160	D80 and D95	LRD3365	1.12 (0.510)
80 to 104	125	200	160	D115 and D150	LRD4365	1.98 (0.900)
95 to 120	125	200	200	D115 and D150	LRD4367	1.98 (0.900)
110 to 140	160	250	200	D150	LRD4369	1.98 (0.900)
80 to 104	100	160	160	D115 and D150	LRD33656 (1)	2.20 (1.000)
95 to 120	125	200	200	D115 and D150	LRD33676 (1)	2.20 (1.000)
110 to 140	160	250	200	D115 and D150	LRD33696 (1)	2.20 (1.000)
Class 10 with Spring Terminal Connections (for direct mounting on the contactor only)						
0.10 to 0.16	0.25	2	—	D09 to D38 (2)	LRD013	6.31 (0.140)
0.16 to 0.25	0.5	2	—	D09 to D38 (2)	LRD023	6.31 (0.140)
0.25 to 0.40	1	2	—	D09 to D38 (2)	LRD033	6.31 (0.140)
0.40 to 0.63	1	2	—	D09 to D38 (2)	LRD043	6.31 (0.140)
0.63 to 1	2	4	—	D09 to D38 (2)	LRD053	6.31 (0.140)
1 to 1.6	2	4	6	D09 to D38 (2)	LRD063	6.31 (0.140)
1.6 to 2.5	4	6	10	D09 to D38 (2)	LRD073	6.31 (0.140)
2.5 to 4	6	10	16	D09 to D38 (2)	LRD083	6.31 (0.140)
4 to 6	8	16	16	D09 to D38 (2)	LRD103	6.31 (0.140)
5.5 to 8	12	20	20	D09 to D38 (2)	LRD123	6.31 (0.140)
7 to 10	12	20	20	D09 to D38 (2)	LRD143	6.31 (0.140)
9 to 13	16	25	25	D12 to D38 (2)	LRD163	6.31 (0.140)
12 to 18	20	35	32	D18 to D38 (2)	LRD213	6.31 (0.140)
16 to 24	25	50	50	D25 to D38 (2)	LRD223	6.31 (0.140)

Class 10 with Ring-Tongue Terminals for LRD01 through LRD35 (load side terminals only)

Select the appropriate overload relay with screw clamp terminals from the table above and add **6** to the end of the reference.
Example: LRD01 becomes LRD016.

Thermal Overload Relays for use on single phase loads

Class 10 with connection by screw clamp terminals

Change the prefix in the references above from LRD (except LRD4●●●) to LR3D. Example: LRD01 becomes LR3D01.

Thermal Overload Relays for use on 1000 V Supplies

Class 10 with connection by screw clamp terminals

For relays LRD-01 to LRD-35 only, for an operating voltage of 1000 V, and only for independent mounting, the reference becomes LRD33 A66. Example: LRD12 becomes LRD3312A66.

Order an LA7D3064 terminal block separately; see page 137.

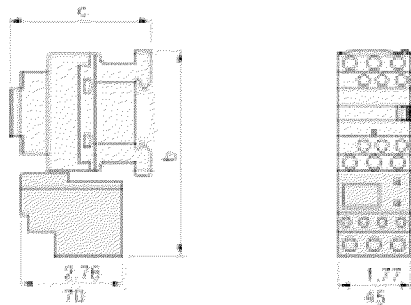
- (1) These are special separate mounted versions of the LRD43 overload relays for the LC1D115 and D150 contactors. Part number includes overload relay, terminal block and 6 connectors (unit is not UL/CSA approved).
- (2) When used with D25-D38 contactors, order spacer clip (part number W816366180111). See page 137.

TeSys™ D-Line Contactors and Starters
Dimensions for 3-pole Bi-metallic and Solid-state Overload Relays

D-Line Thermal Overload Relays

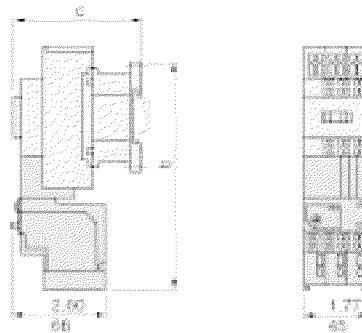
LRD-01-35

Direct mounting beneath contactors with screw



LRD-013-353

Direct mounting beneath contactors with spring terminal connections

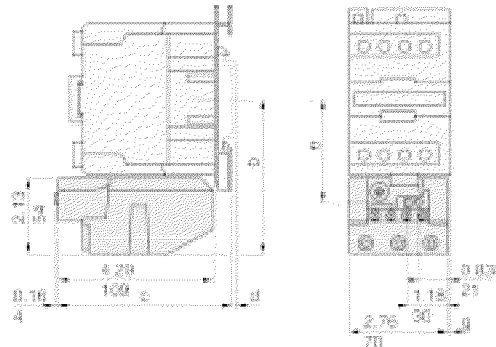


Dual Dimensions: Inches
mm

LC1•	D09 - D18	D25 - D38	LC1•	D093 - 383
b	4.84 (123)	5.39 (137)	b	4.84 (123)
c	See pages 122, 123.		c	See pages 122, 123.

LRD-3••

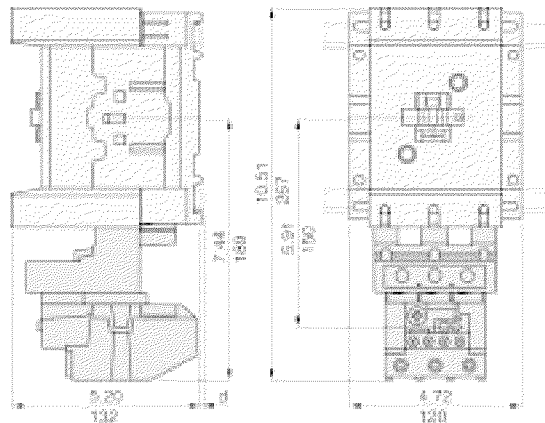
Direct mounting beneath contactors
LC1-D40 to D95 and LP1-D40 to D80



AM1•	DL201	DL200			
d	0.28 (7)	0.67 (17)	b	c	e
ac control circuit:					
LC1D40	4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	0.51 (13)
LC1D50	4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	-
LC1D65	4.37 (111)	4.69 (119)	2.85 (72.4)	0.18 (4.5)	0.51 (13)
LC1D80	4.55 (115.5)	4.88 (124)	3.03 (76.9)	0.37 (9.5)	0.87 (22)
LC1D95	4.55 (115.5)	4.88 (124)	3.03 (76.9)	0.37 (9.5)	-
dc control circuit:					
LC1D40, LP1D40	4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	0.51(13)
LC1D50	4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	-
LC1D65, LP1D65	4.37 (111)	6.93 (176)	2.85 (72.4)	0.18 (4.5)	0.51(13)
LC1D80, D95, LP1D80	4.55 (115.5)	7.06 (179.4)	3.03 (76.9)	0.37 (9.5)	0.87(22)

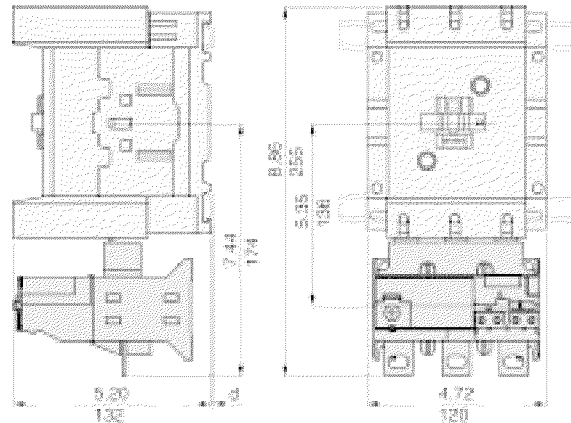
LRD4••

Direct mounting beneath contactors
LC1D115 and D150



LR9D

Direct mounting beneath contactors
LC1D115 and D150



AM1DL200 and DR200	AM1DE200 and ED••	AM1DP200 and DR200	AM1DE200 and ED••
d	0.10 (2.5)	d	0.41 (10.5)
Characteristics: pages 130 - 133		Catalog Number: pages 134, 135	

TeSys™ D-Line Contactors and Starters

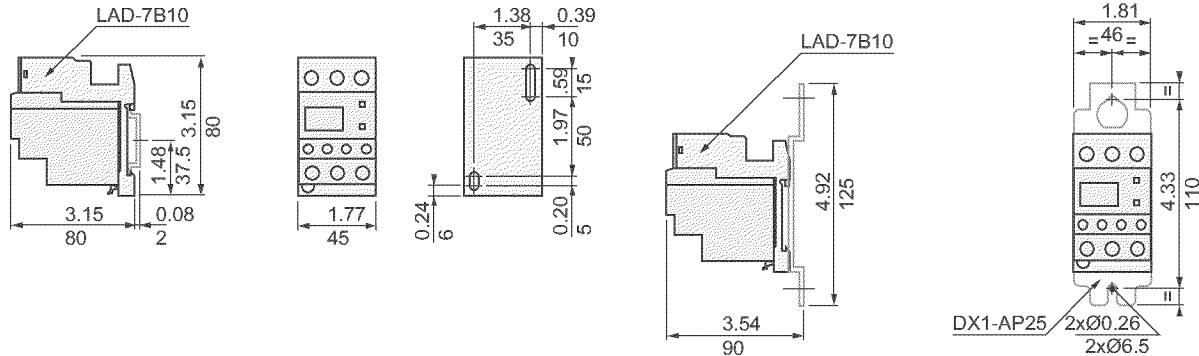
Mounting Information for Bimetallic and Solid-state Overload Relays

D-Line Thermal Overload Relays

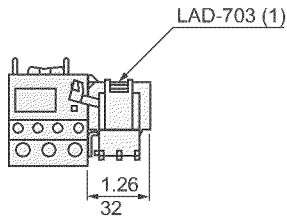
LRD-01-35

Independent mounting on 50 mm centers or on rail AM1DP200 or DE200

Independent mounting on 110 mm centers



Remote tripping or electrical reset



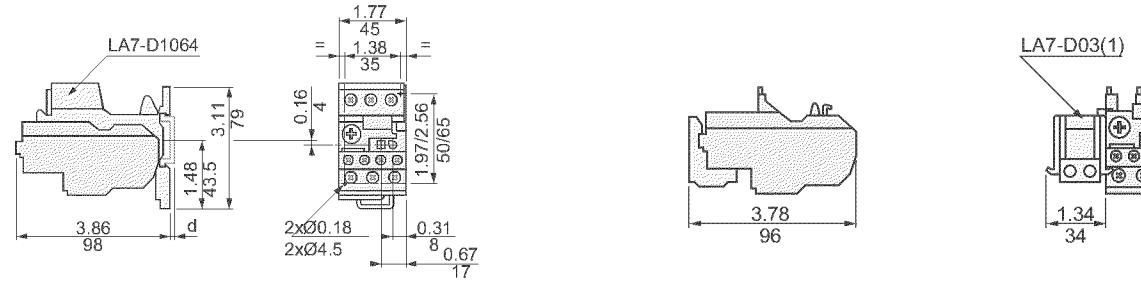
Dual Dimensions: $\frac{\text{Inches}}{\text{mm}}$

(1) Can only be mounted on RH side of relay LRD-01 to 35

LRD15••

Independent mounting on 50 mm centers or on rail AM1DP200 or DE200

Remote tripping or electrical reset



AM1DP200 AM1DE200

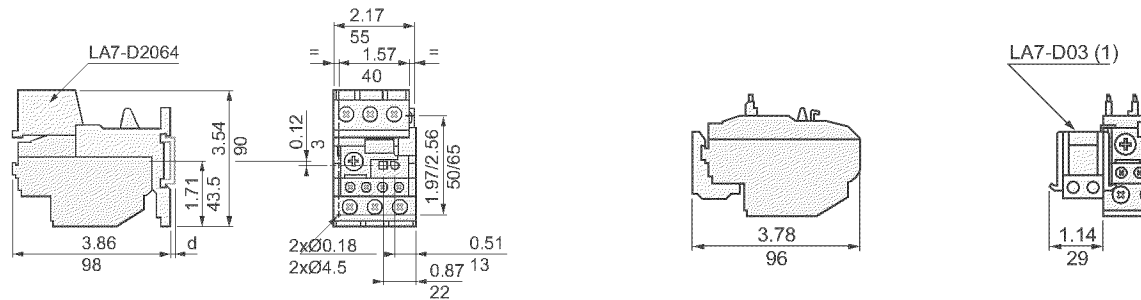
d 0.08 (2) 0.37 (9.5)

(1) Can be mounted on RH or LH side of relay LR2D15••

LR2D25••

Independent mounting on 50 mm centers or on rail AM1DP200 or DE200

Remote tripping or electrical reset



AM1DP200 AM1DE200

d 0.08 (2) 0.37 (9.5)

(1) Can be mounted on RH or LH side of relay LR2D25••

Characteristics: pages 130 - 133 Catalog Number: pages 134, 135