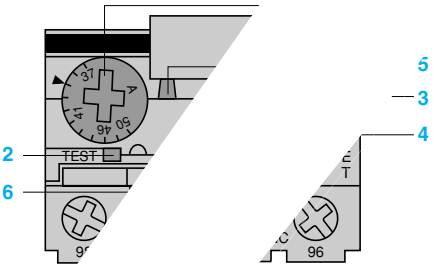
ction components
ad relays, model d

to protect a.c. circuits and motors against
or.

LRD-3322…4369, LR2-D



N/O an
ot affe

e supplied with the selector in the manual position,
o the automatic position.

nvironment

Conforming to standards			EN 60947-1, EN 60947-4-1, NF C 63-650, VDE 0660
Product certifications			CSA, UL, Sichere Trennung, PTB except LAD-4: UL, CSA.
Degree of protection	C		Protection against direct finger contact IP 2X
Protective treatment	Co		"TH"
Ambient air temperature around the device	Storag	°C	- 60…+ 70
	Normal -1)	°C	- 20…+ 60
	Minimum es (with derati	°C	- 40…+ 70
Operating positions without derating	In relation t		Any position
Shock resistance	Permiss 3-2-7		15 gn - 11 ms
Vibration resistance	Permi 3-2-6		6 gn
Dielectric strength at 50 Hz	Con C 25	kV	6
Impulse withstand voltage	Co IEC 801-5	kV	6

Auxiliary contact character

Conventional thermal current		A	5					
Maximum consumption of 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		24	48	110	220	440	–
			100	100	50	45	25	–
Short-circuit protec	By gG or BS fuse. Max. rating or by **GB2** circuit-							
Connection to sc amp terminals								
Flexible c without cable end	1 or 2 conductors							
Flexible e with cable end	1 or 2 conductors							
Solid e without cable end	1 or 2 conductors							
Tigh ing torque								
Connection to spring terminals								
Flexible cable without cable end	1 or 2 conductors							
Solid cable without cable end	1 or 2 conductors							

References: pages 2/112 and 2/113
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119

TeSys protection components
3-pole thermal overload relays, model d

Electrical characteristics of power circuit

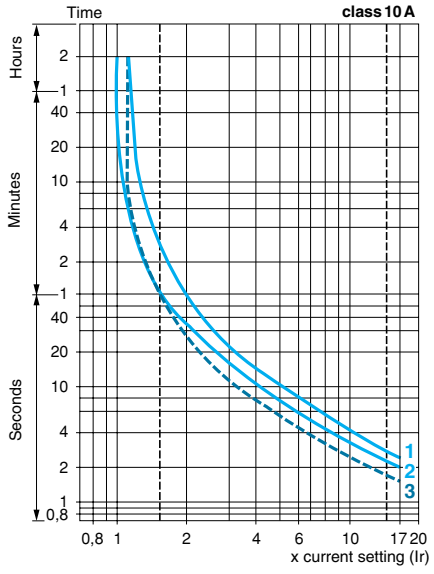
Relay type			LRD-01 to 16 LR3-D01 to D16	LR2-D15●●	LRD-21 to 35 LR3-D21 to D35	LR2-D25●●	LRD-3322 to 33696 LR3-D3322 to D33696	LR2-D35●●	LRD-4365 to 4369
Tripping class	To UL 508, EN 60947-4-1		10 A	20	10 A	20	10 A	20	10 A
Rated insulation voltage (Ui)	Conforming to EN 60947-4-1	**V**	690		690		1000		1000
	Conforming to UL, CSA	**V**	600		600		600		600 except **LRD-4369**
Rated impulse withstand voltage (Uimp)		**kV**	6		6		6		6
Frequency limits	Of the operational current	**Hz**	0…400		0…400		0…400		0…400
Setting range	Depending on model	**A**	0.1…13		12…38		17…104		80…140
Connection to screw clamp terminals			Min/max c.s.a.						
Flexible cable without cable end	1 conductor	**mm²**	1.5/10		1.5/10		4/35		4/50
Flexible cable with cable end	1 conductor	**mm²**	1/4		1/6 except **LRD-21**: 1/4		4/35		4/35
Solid cable without cable end	1 conductor	**mm²**	1/6		1.5/10 except **LRD-21**: 1/6		4/35		4/50
Tightening torque		**N.m**	1.7	1.85	2.5		9		9
Connection to spring terminals			Min/max c.s.a.						
Flexible cable without cable end	1 conductor	**mm²**	1.5/4	–	1.5/4	–	–	–	–
Solid cable without cable end	1 conductor	**mm²**	1.5/4	–	1.5/4	–	–	–	–

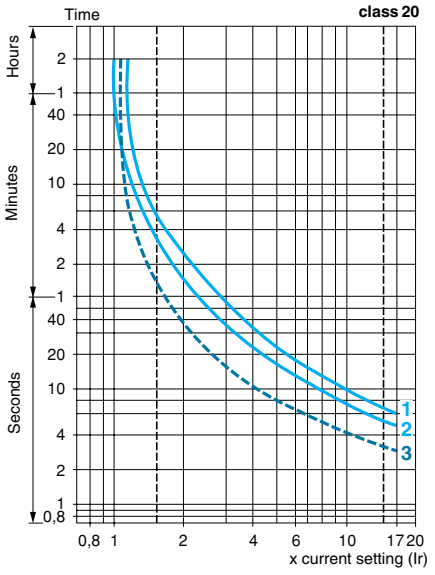
Operating characteristics

Temperature compensation		**˚C**	- 20…+ 60		- 30…+ 60-		- 30…+ 60		- 20…+ 60
Tripping threshold	Conforming to EN 60947-4-1	**A**	1.14 ± 0.06 In						
Sensitivity to phase failure	Conforming to EN 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





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).

References: pages 2/112 and 2/113
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119

TeSys protection components
3-pole electronic thermal overload relays LR9-D

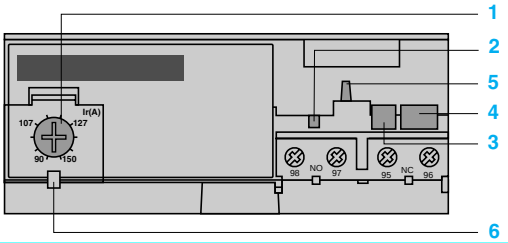
Description

LR9-D electronic thermal overload relays are designed for use with contactors LC1-D115 and D150.

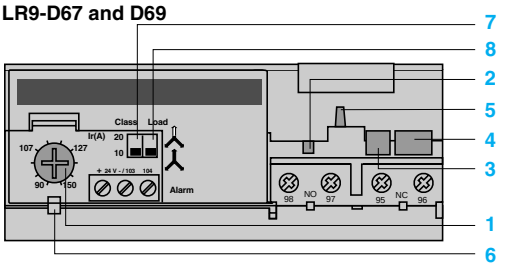
In addition to the protection provided by model d thermal overload relays (see page 2/108) they offer the following special features:
- Protection against phase imbalance.
- Choice of starting class.
- Protection of unbalanced circuits.
- Protection of single-phase circuits.
- Alarm function to avoid tripping by load shedding.

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

LR9-D5367…D5569



LR9-D67 and D69



Environment

Conforming to standards			EN 60947-4-1, 255-8, 255-17, VDE 0660
Product certifications			UL 508 , CSA 22-2
Degree of protection	Conforming to IEC 529 and VDE 0106		IP 20 on front face with protective covers **LA9-D11570●** or **D11560●**
Protective treatment	Standard version		"TH"
Ambient air temperature around the device (conforming to IEC 255-8)	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 68-2-27		13 gn - 11 ms
Vibration resistance	Permissible acceleration conforming to IEC 68-2-6		2 gn - 5 to 300 Hz
Dielectric strength at 50 Hz	Conforming to IEC 255-5	**kV**	6
Impulse withstand voltage	Conforming to IEC 1000-4-5	**kV**	6
Resistance to electrostatic discharge	Conforming to IEC 1000-4-2	**kV**	8
Resistance to radio-frequency conducted disturbances	Conforming to IEC 1000-4-3 and NF C 46-022	**V/m**	10
Resistance to fast transient currents	Conforming to IEC 1000-4-4	**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					
Maximum consumption of 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	–
Short-circuit protection	By gG or BS fuse or by **GB2** circuit-breaker	**A**	5					
Cabling Flexible cable without cable end	1 or 2 conductors	**mm²**	Minimum c.s.a.: 1/maximum c.s.a.: 2.5					
	Tightening torque	**N.m**	1.2					

(1) For operation at 70 ˚C, please call our Customer information centre on 0870 608 8 608.

References: pages 2/112 and 2/113
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119

TeSys protection components
3-pole electronic thermal overload relays LR9-D

Electrical characteristics of power circuit

Relay type			**LR9-D**
Tripping class	Conforming to UL 508, EN 60947-4-1		10 A or 20
Rated insulation voltage (Ui)	Conforming to EN 60947-4-1	**V**	1000
	Conforming to UL, CSA	**V**	600
Rated impulse withstand voltage (Uimp)		**kV**	8
Frequency limits	Of the operational current	**Hz**	50…60. For other frequencies, call our Customer information centre on 0870 608 8 608 (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

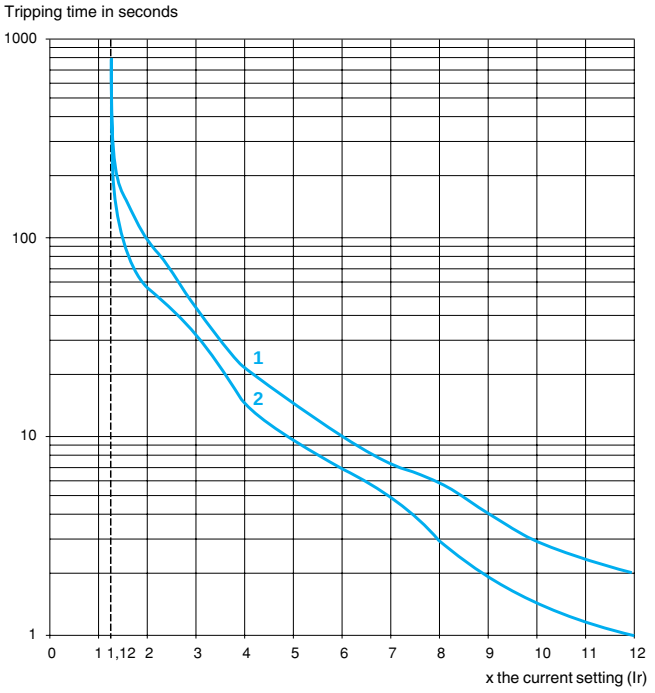
Temperature compensation			**˚C**	- 20…+ 70
Tripping thresholds	To EN 60947-4-1	Alarm	**A**	1.05 ± 0.06 In
		Tripping	**A**	1.12 ± 0.06 In
Sensitivity to phase failure	Conforming to EN 60947-4-1			Tripping in 4 s ± 20 % in the event of phase failure

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	**mm²**	0.5…1.5
Tightening torque		**N.m**	0.45

Tripping curve LR9-D

Average operating time related to multiples of the current setting



1 Cold state curve
2 Hot state curve

(1) For use of these relays with soft start units or variable speed controllers, please call our Customer information centre on 0870 608 8 608.

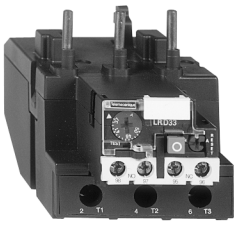
References: pages 2/112 and 2/113
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119

TeSys protection components

3-pole thermal overload relays, model d

LRD-08

LRD-21



LRD-33●●

LRD-083

Differential thermal overload relays for use with fuses. Class 10 A tripping

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

Relay setting range	Fuses to be used with selected relay aM	gG	BS88	For use with contactor LC1-	Reference	Weight
A	**A**	**A**	**A**			kg
Class 10 A (1) **with connection by screw clamp terminals**						
0.10…0.16	0.25	2	–	D09…D38	**LRD-01**	0.124
0.16…0.25	0.5	2	–	D09…D38	**LRD-02**	0.124
0.25…0.40	1	2	–	D09…D38	**LRD-03**	0.124
0.40…0.63	1	2	–	D09…D38	**LRD-04**	0.124
0.63…1	2	4	–	D09…D38	**LRD-05**	0.124
1…1.7	2	4	6	D09…D38	**LRD-06**	0.124
1.6…2.5	4	6	10	D09…D38	**LRD-07**	0.124
2.5…4	6	10	16	D09…D38	**LRD-08**	0.124
4…6	8	16	16	D09…D38	**LRD-10**	0.124
5.5…8	12	20	20	D09…D38	**LRD-12**	0.124
7…10	12	20	20	D09…D38	**LRD-14**	0.124
9…13	16	25	25	D12…D38	**LRD-16**	0.124
12…18	20	35	32	D18…D38	**LRD-21**	0.124
16…24	25	50	50	D25…D38	**LRD-22**	0.124
23…32	40	63	63	D25…D38	**LRD-32**	0.124
30…38	50	80	80	D32 and D38	**LRD-35**	0.124
17…25	25	50	50	D40…D95	**LRD-3322**	0.510
23…32	40	63	63	D40…D95	**LRD-3353**	0.510
30…40	40	100	80	D40…D95	**LRD-3355**	0.510
37…50	63	100	100	D40…D95	**LRD-3357**	0.510
48…65	63	100	100	D50…D95	**LRD-3359**	0.510
55…70	80	125	125	D50…D95	**LRD-3361**	0.510
63…80	80	125	125	D65 and D95	**LRD-3363**	0.510
80…104	100	160	160	D80 and D95	**LRD-3365**	0.510
80…104	125	200	160	D115 and D150	**LRD-4365**	0.900
95…120	125	200	200	D115 and D150	**LRD-4367**	0.900
110…140	160	250	200	D150	**LRD-4369**	0.900
80…104	100	160	160	(2)	**LRD-33656**	1.000
95…120	125	200	200	(2)	**LRD-33676**	1.000
110…140	160	250	200	(2)	**LRD-33696**	1.000
Class 10 A (1) **with spring terminal connections (for direct mounting on the contactor only)**						
0.10…0.16	0.25	2	–	D09…D38	**LRD-013**	0.140
0.16…0.25	0.5	2	–	D09…D38	**LRD-023**	0.140
0.25…0.40	1	2	–	D09…D38	**LRD-033**	0.140
0.40…0.63	1	2	–	D09…D38	**LRD-043**	0.140
0.63…1	2	4	–	D09…D38	**LRD-053**	0.140
1…1.6	2	4	6	D09…D38	**LRD-063**	0.140
1.6…2.5	4	6	10	D09…D38	**LRD-073**	0.140
2.5…4	6	10	16	D09…D38	**LRD-083**	0.140
4…6	8	16	16	D09…D38	**LRD-103**	0.140
5.5…8	12	20	20	D09…D38	**LRD-123**	0.140
7…10	12	20	20	D09…D38	**LRD-143**	0.140
9…13	16	25	25	D12…D38	**LRD-163**	0.140
12…18	20	35	32	D18…D38	**LRD-213**	0.140
16…24	25	50	50	D25…D38	**LRD-223**	0.140

Class 10 A (1) **with connection by lug-clamps**

Select the appropriate overload relay with screw clamp terminals from the table above and add **6** to the end of the reference. Example: **LRD-01** becomes **LRD-016**.

Thermal overload relays for use with unbalanced loads

Class 10 A (1) **with connection by screw clamp terminals**

Change the prefix in the references above from **LRD** (except **LRD-4●●●**) to **LR3-D**. Example: **LRD-01** becomes **LR3-D01**.

Thermal overload relays for use on 1000 V supplies

Class 10 A (1) **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 **LRD-33●●A66**. Example: **LRD-12** becomes **LRD-3312A66.**

Order an **LA7-D3064** terminal block separately, see page 2/115.

(1) Standard IEC 947-4-1 specifies a tripping time for 7.2 times the setting current I_R:
class 10 A: between 2 and 10 seconds.
(2) Independent mounting.

Characteristics: pages 2/108 to 2/111
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119

TeSys protection components
3-pole thermal overload relays, model d

Differential thermal overload relays for use with fuses. Class 20 tripping

- Compensated relays with manual or automatic reset,
- with relay trip indicator,
- for a.c. or d.c.
- LR2-D1508 to 2553: independent mounting
  - either by ordering a terminal block **LA7-D1064** or **LA7-D2064**, see page 2/115,
  - or by ordering the the relay pre-assembled; in this case add the suffix **LA7** to the reference.
  Example: **LR2-D1508** becomes **LR2-D1508LA7**.

LR2-D15●●

Relay setting range	Fuses to be used with the selected relay aM	gG	BS88	For use with contactor LC1	Reference	Weight
A	**A**	**A**	**A**			kg
Class 20 (1) **for connection by screw clamp terminals**						
2.5…4	6	10	16	D09…D32	**LR2-D1508**	0.190
4…6	8	16	16	D09…D32	**LR2-D1510**	0.190
5.5…8	12	20	20	D09…D32	**LR2-D1512**	0.190
7…10	16	20	25	D09…D32	**LR2-D1514**	0.190
9…13	16	25	25	D12…D32	**LR2-D1516**	0.190
12…18	25	35	40	D18…D32	**LR2-D1521**	0.190
17…25	32	50	50	D25 and D32	**LR2-D1522**	0.190
23…32	40	63	63	D25 and D32	**LR2-D2553**	0.345
17…25	32	50	50	D40…D95	**LR2-D3522**	0.535
23…32	40	63	63	D40…D95	**LR2-D3553**	0.535
30…40	50	100	80	D40…D95	**LR2-D3555**	0.535
37…50	63	100	100	D50…D95	**LR2-D3557**	0.535
48…65	80	125	100	D50…D95	**LR2-D3559**	0.535
55…70	100	125	125	D65…D95	**LR2-D3561**	0.535
63…80	100	160	125	D80 and D95	**LR2-D3563**	0.535

Electronic differential thermal overload relays for use with fuses. Class 10 A or 20

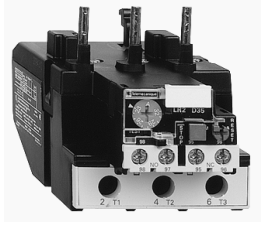
- Compensated relays,
- with relay trip indicator,
- for a.c. or d.c.,
- for direct mounting on contactor or independent mounting (2).

LR2-D25●●

Relay setting range	Fuses to be used with selected relay aM	gG	For direct mounting beneath contactor LC1	Reference	Weight
A	**A**	**A**			kg
Class 10 or **10A** (1) with connection using bars or connectors					
60…100	100	160	D115 and D150	**LR9-D5367**	0.885
90…150	160	250	D115 and D150	**LR9-D5369**	0.885
Class 20 (3) with connection using bars or connectors					
60…100	125	160	D115 and D150	**LR9-D5567**	0.885
90…150	200	250	D115 and D150	**LR9-D5569**	0.885

Electronic thermal overload relays for use with balanced or unbalanced loads

- Compensated relays,
- with separate outputs for alarm and tripping.



LR2-D35●●

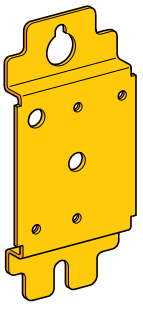
Relay setting range	Fuses to be used with the selected relay aM	gG	For direct mounting beneath contactor LC1	Reference	Weight
A	**A**	**A**			kg
Class 10 A or **20** (1) selectable with connection using bars or connectors					
60…100	100	160	D115 and D150	**LR9-D67**	0.900
90…150	160	250	D115 and D150	**LR9-D69**	0.900

(1) Standard IEC 947-4-1 specifies a tripping time for 7.2 times the setting current I_R
class 10: between 4 and 10 seconds,
class 10 A: between 2 and 10 seconds,
class 20: between 6 and 20 seconds.
(2) 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 2/90).

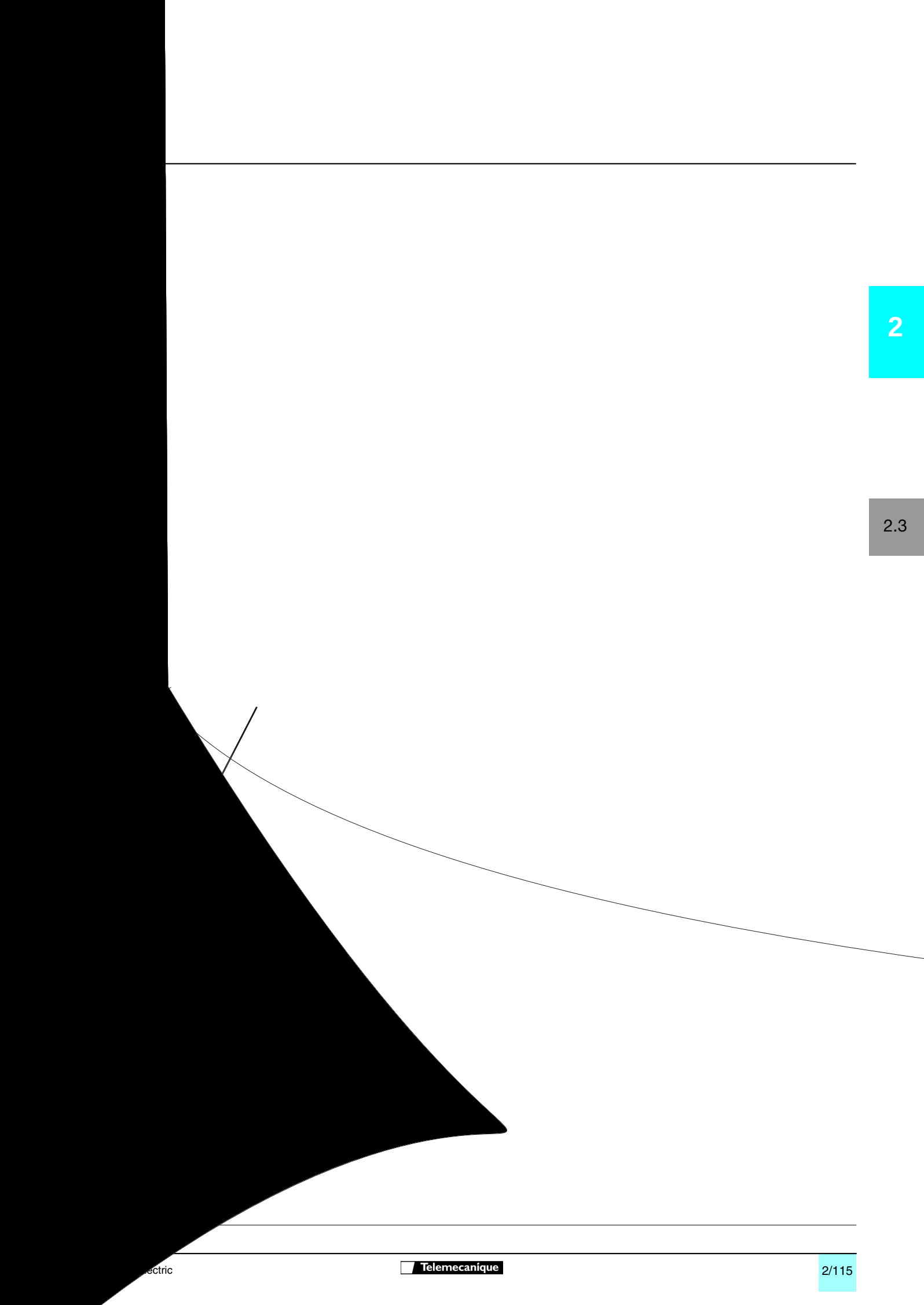
Other versions

Thermal overload relays for resistive circuits in category AC-1.
Please call our Customer information centre on 0870 608 8 608.

Characteristics: pages 2/108 to 2/111
Dimensions: pages 2/116 to 2/118
Schemes: page 2/119



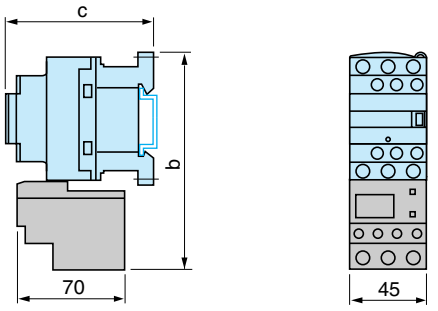
DX1-AP26



2

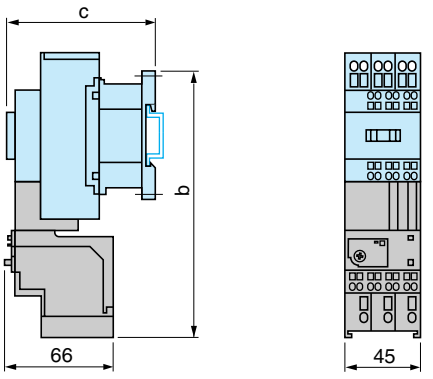
2.3

LRD-01...35
Direct mounting beneath contactors with screw clamp connections



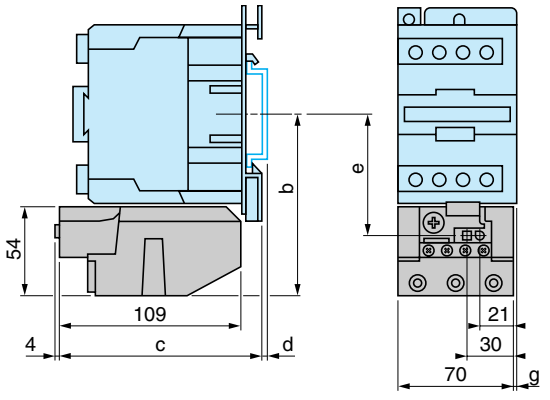
LC1-	D09...D18	D25...D38
b	123	137
c	see pages 2/94 and 2/95	

LRD-013...353
Direct mounting beneath contactors with spring terminal connections



LC1-	D093...D383
b	168
c	see pages 2/94 and 2/95

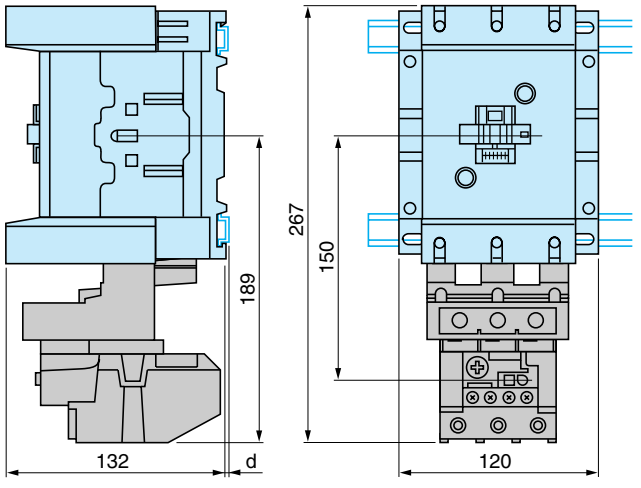
LRD-3●●●
Direct mounting beneath contactors
LC1-D40 to D95 and LP1-D40 to D80



AM1-	DL201	DL200
d	7	17

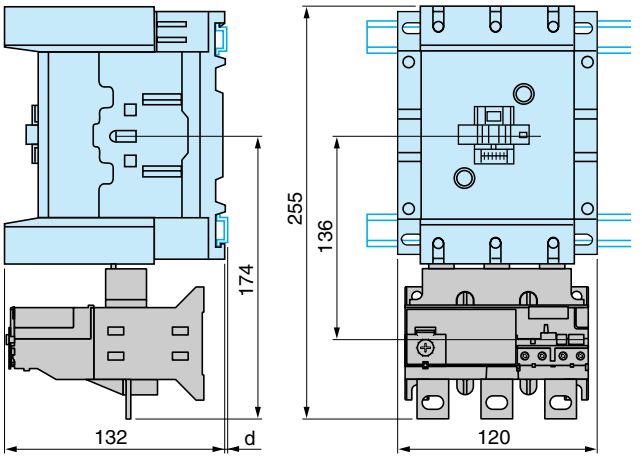
	b	c	e	g (3P)	g (4P)
Control circuit: a.c.					
LC1-D40	111	119	72.4	4.5	13
LC1-D50	111	119	72.4	4.5	–
LC1-D65	111	119	72.4	4.5	13
LC1-D80	115.5	124	76.9	9.5	22
LC1-D95	115.5	124	76.9	9.5	–
Control circuit: d.c.					
LC1-D40, LP1-D40	111	176	72.4	4.5	13
LC1-D50	111	176	72.4	4.5	–
LC1-D65, LP1-D65	111	176	72.4	4.5	13
LC1-D80, D95, LP1-D80	115.5	179.4	76.9	9.5	22

LRD-4●●●
Direct mounting beneath contactors
LC1-D115 and D150



	AM1-DL200 and DR200	AM1-DE200 and ED●●●
d	2.5	10.5

LR9-D
Direct mounting beneath contactors
LC1-D115 and D150



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

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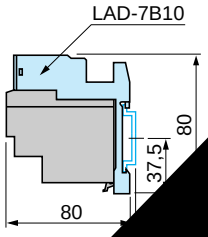
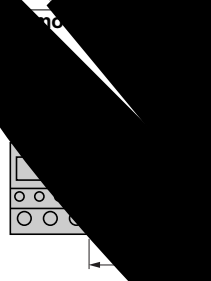
References: pages 2/112 and 2/113
Schemes: page 2/119

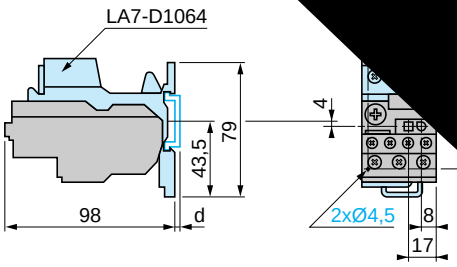
LRD-01...35
Independent mounting on 50 mm centres
or on rail AM1-DP200 or DE200





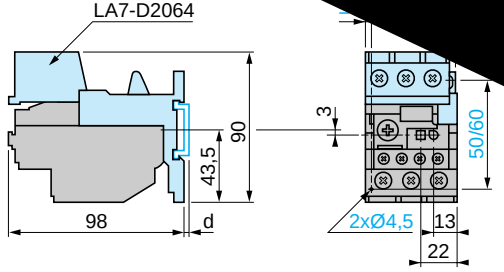
(1) Can only be m

LR2-D15●●
Independent mountin
or on rail AM1-DP200 o



	AM1-DP200	AM1-DE200
d	2	9.5

LR2-D2
Independent
or on rail AM1-DP



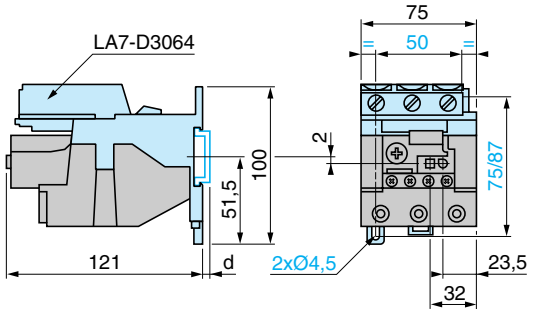
	AM1-DP200	AM1-DE200
d	2	9.5

(1) Can be mounted on RH or LH side of re

2

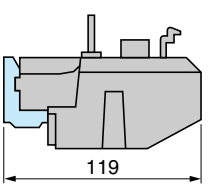
2.3

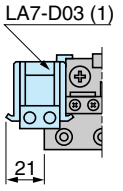
LRD-3●●● and LR2-D35●●
Independent mounting on 50 mm centres
or on mounting rail AM1-DP200 or DE200



	AM1-DP200	AM1-DE200
d	2	9.5

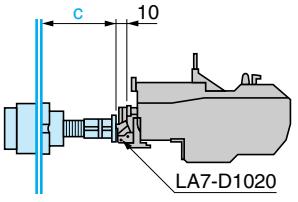
LRD-3●●●, LR2-D35●● and LR9-D
Remote tripping or electrical reset



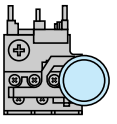


(1) Can be mounted on RH or LH side of relays LRD-3●●●, LR2-D35●● or LR9-D

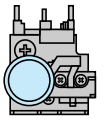
LR2-D and LRD-3●●●
Adapter for door interlock mechanism
LA7-D1020



Stop

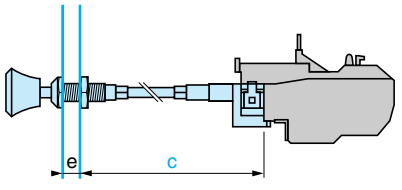


Reset



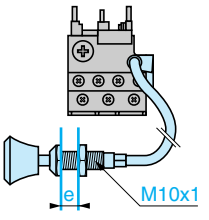
c: adjustable from 17 to 120 mm

LRD, LR2-D and LR9-D
"Reset" by flexible cable
LA7-D305 and LAD-7305
Mounting with cable straight



c: up to 550 mm
e: up to 20 mm

Mounting with cable bent



e: up to 20 mm

Characteristics:
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References:
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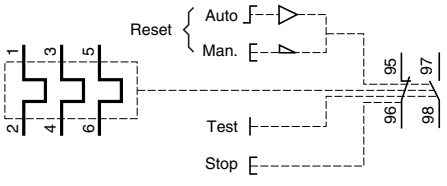
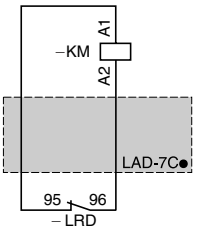
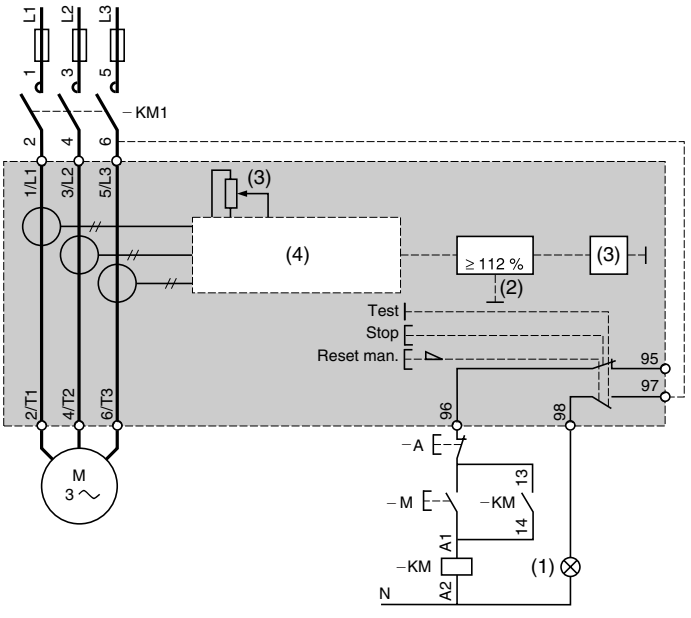
LRD, LR2-D and LR3-D



Pre-cabling kit
LAD-7C1, LAD-7C2

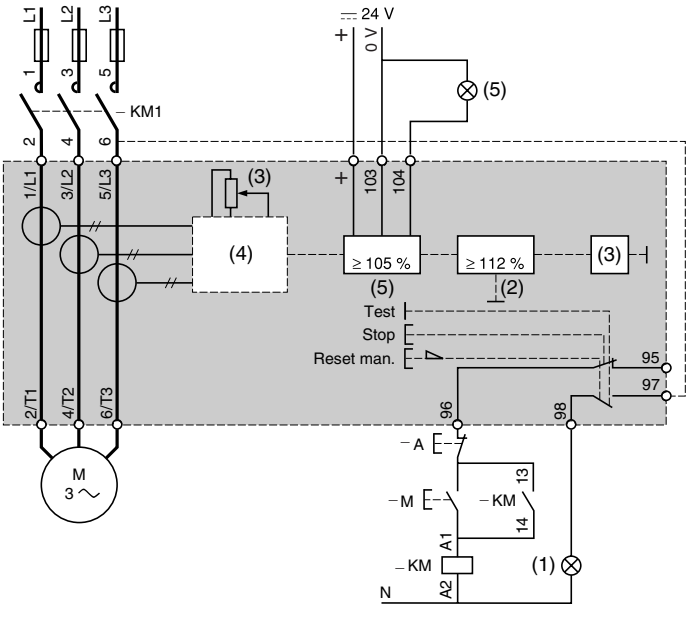


LR9-D5●●●



(1) Tripped
(2) Overload
(3) Setting current
(4) Specialised circuit

LR9-D67 and LR9-D69



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

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References: pages 2/112 and 2/113
Dimensions: pages 2/116 to 2/118