

TeSys contactors

For motor control up to 75 kW at 400 V,
in category AC-3
Control circuit: a.c., d.c. or low consumption

3-pole contactors for connection by screw clamp terminals or connectors (1)

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 ($\theta \leq 60^\circ\text{C}$)								Rated operational current in AC-3 440 V up to	Instantaneous auxiliary contacts	Basic reference. Complete with code indicating control circuit voltage (2) Fixing (3)	Weight (4)	
220V	380V	415V	440V	500V	660V	690V	1000V					kg
kW	kW	kW	kW	kW	kW	kW	kW	A				
2.2	4	4	4	5.5	5.5	—	—	9	1	1	LC1-D09●● (5)	0.320
3	5.5	5.5	5.5	7.5	7.5	—	—	12	1	1	LC1-D12●● (5)	0.325
4	7.5	9	9	10	10	—	—	18	1	1	LC1-D18●● (5)	0.330
5.5	11	11	11	15	15	—	—	25	1	1	LC1-D25●● (5)	0.370
7.5	15	15	15	18.5	18.5	—	—	32	1	1	LC1-D32●● (5)	0.375
9	18.5	18.5	18.5	18.5	18.5	—	—	38	1	1	LC1-D38●● (5)	0.380
11	18.5	22	22	22	30	22	—	40	1	1	LC1-D40●● (5)	1.400
15	22	25	30	30	33	30	—	50	1	1	LC1-D50●● (5)	1.400
18.5	30	37	37	37	37	37	—	65	1	1	LC1-D65●●	1.400
22	37	45	45	55	45	45	—	80	1	1	LC1-D80●●	1.590
25	45	45	45	55	45	45	—	95	1	1	LC1-D95●●	1.610
30	55	59	59	75	80	75	—	115	1	1	LC1-D115●●	2.500
40	75	80	80	90	100	90	—	150	1	1	LC1-D150●●	2.500

3-pole contactors for connection by lugs or bars (1)

Insert the digit 6 before the voltage code in the references selected above.
Example: LC1-D09●● becomes LC1-D096●●.

Accessories

Auxiliary contact blocks and modules: see pages 2/84 to 2/91.

- (1) See note (1) on next page.
- (2) Control circuit voltages.

a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
LC1-D09...D150 (D115 and D150 coils with integral suppression device fitted as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	—

d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440	
LC1-D09...D38 (coils with integral suppression device fitted as standard)												
U 0.7...1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD	
LC1-D40...D95												
U 0.85...1.1 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD	
U 0.75...1.2 Uc	JW	BW	CW	EW	—	SW	FW	—	MW	—	—	
LC1-D115 and D150 (coils with integral suppression device fitted as standard)												
U 0.75...1.2 Uc	—	BD	—	ED	ND	SD	FD	GD	MD	UD	RD	

Low consumption

Volts	—	5	24	48	72
LC1-D09...D38 (coils with integral suppression device fitted as standard)					
U 0.7...1.25 Uc	—	AL	BL	EL	SL

For other voltages between 5 and 690 V, see pages 2/102 to 2/107.

(3) LC1-D09 to D38: clip-on mounting on 35 mm rail AM1-DP or screw fixing.

LC1-D40 to D95: clip-on mounting on 35 mm or 75 mm rail AM1-DL or screw fixing.

LC1-D40 to D95: clip-on mounting on 75 mm rail AM1-DL or screw fixing.

LC1-D115 and D150: clip-on mounting on 2 x 35 mm rails AM1-DP or screw fixing.

(4) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg for contactors LC1-D09 to D38, 0.785 kg for contactors LC1-D40 to D65 and 1 kg for contactors LC1-D80 and D95.

(5) For purchase in bulk packs, see page 1/51.



LC1-D09●●



LC1-D25●●



LC1-D95●●



LC1-D115●●



2

2.3

Type of contactor			LC1-D09...D18 DT20 & DT25	LC1-D25...D38 DT32...DT60	LC1-D40	LC1-D50...D95	LC1-D115 & LC1-D150
Environment							
Rated insulation voltage (Ui)	Conforming to EN 60947-4-1, overvoltage category III, degree of pollution: 3	V	690			1000	
	Conforming to UL, CSA	V	600				
Rated impulse withstand voltage (Uimp)	Conforming to EN 60947	kV	6		8		
Conforming to standards			IEC 947-1, 947-4-1, NFC 63-110, VDE 0660, BS 5424, JEM 1038, EN 60947-1, EN 60947-4-1. GL, DNV, PTB, RINA pending				
Product certifications			UL, CSA Complies with SNCF, Sichere Trennung recommendations				
Separation insulation	Conforming to VDE 0106 parts 101 and A1 (project 2/89)	V	400				
Degree of protection (1) (front face only)	Power connection				Protection against direct finger contact IP 2X		
	Coil connection				Protection against direct finger contact IP 2X (except LC1-D40...D80)		
Protective treatment	Conforming to IEC 68		"TH"				
Ambient air temperature around the device	Storage	°C	- 60...+ 80				
	Operation	°C	- 5...+ 60				
	Permissible	°C	- 40...+ 70, for operation at Uc				
Maximum operating altitude	Without derating	m	3000				
Operating position	Without derating		± 30° possible, in relation to normal vertical mounting plane				
Flame resistance	Conforming to UL 94		V 1				
	Conforming to IEC 695-2-1	°C	960				
Shock resistance (2) 1/2 sine wave = 11ms	Contactor open	gn	10	8	8	8	6
	Contactor closed	gn	15	15	10	10	15
Vibration resistance (2) 5...300 Hz	Contactor open	gn	2				
	Contactor closed	gn	4	4	4	3	4

(1) Protection ensured for the connection cross-sections shown on the next page and for connection via cable.

(2) In the least favourable direction, without change of contact state (coil supplied at Ue).

Type of contactor	LC1-	D09 & D12 DT20 & DT25	D18 (3P)	D25	D32	D38	D18 (4P) DT32...DT60	D40	D50 & D65	D80 & D95	D115 & D150
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Power circuit connections

Connection via cable

Tightening			Screw clamps					2-input connector	Screw clamps	1-input connector	2-input connector
Flexible cable without cable end	1 conductor	mm ²	1...4	1.5...6	1.5...10	2.5...10	2.5...16	2.5...25	2.5...25	4...50	10...120
	2 conductors	mm ²	1...4	1.5...6	1.5...6	2.5...10	2.5...16	2.5...16	2.5...16	4...25	10...120 + 10...50
Flexible cable with cable end	1 conductor	mm ²	1...4	1...6	1...6	1...10	2.5...10	2.5...25	2.5...25	4...50	10...120
	2 conductors	mm ²	1...2.5	1...4	1...4	1.5...6	2.5...10	2.5...10	2.5...10	4...16	10...120 + 10...50
Solid cable without cable end	1 conductor	mm ²	1...4	1.5...6	1.5...6	1.5...10	2.5...16	2.5...25	2.5...25	4...50	10...120
	2 conductors	mm ²	1...4	1.5...6	1.5...6	2.5...10	2.5...16	2.5...16	2.5...16	4...25	10...120 + 10...50
Screwdriver	Phillips head		N° 2	N° 2	N° 2	N° 2	N° 2	–	–	–	–
	Ø flat screwdriver		Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6...Ø 8	Ø 6...Ø 8	Ø 6...Ø 8	–
6 sided key			–	–	–	–	–	–	–	4	4
Tightening torque		N.m	1.7	1.7	2.5	2.5	2.5	5	5	9	12

Connection via spring terminals

Flexible cable without cable end	1 conductor	mm ²	2.5	4	4	4	–	–	–	–	–
	2 conductors	mm ²	2.5 (4: DT25)	4	4	4	–	–	–	–	–

Connection via bars or lugs

Bar cross-section			–	–	–	–	–	–	–	3 x 16	5 x 25
Lug external Ø	mm		8	8	10	10	12	13	16	17	25
Ø of screw	mm		M3.5	M3.5	M4	M4	M5	M5	M6	M6	M8
Screwdriver	Phillips head		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 3	–	–
	Ø flat screwdriver		Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 8	Ø 8	Ø 8	–
Key for hexagonal headed screw			–	–	–	–	–	–	–	10	13
Tightening torque		N.m	1.7	1.7	2.5	2.5	2.5	6	6	8	14

Control circuit connections

Connection via cable (tightening via screw clamps)

Flexible cable without cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Flexible cable with cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...2.5	1...2.5	1...2.5	1...2.5
	2 conductors	mm ²	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5	1...2.5
Solid cable without cable end	1 conductor	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
	2 conductors	mm ²	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...4	1...2.5
Screwdriver	Phillips head		N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2	N° 2
	Ø flat screwdriver		Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6	Ø 6
Tightening torque		N.m	1.7	1.7	1.7	1.7	1.7	1.2	1.2	1.2	1.2

Connection via spring terminals

Flexible cable without cable end	1 conductor	mm ²	2.5	2.5	2.5	2.5	–	–	–	–	–
	2 conductors	mm ²	2.5	2.5	2.5	2.5	–	–	–	–	–

Connection via bars or lugs

Lug external Ø	mm	(1)						8	8	8	8
Ø of screw	mm	(1)						M3.5	M3.5	M3.5	M3.5
Screwdriver	Phillips head		–	–	–	–	–	N° 2	N° 2	N° 2	N° 2
	Ø flat screwdriver		–	–	–	–	–	Ø 6	Ø 6	Ø 6	N° 6
Tightening torque		N.m	–	–	–	–	–	1.2	1.2	1.2	1.2

(1) Spade connector or cable lug, see connection via cable above.

2

2.3

Type of contactor		LC1-	D09	DT20	D12	DT25	D18	DT32	D25	DT40
Pole characteristics										
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 60 °C	A	9		12		18		25	
	In AC-1, θ ≤ 60 °C	A	25	20	25		32		40	
Rated operational voltage (Ue)	Up to	V	690		690		690		690	
Frequency limits	Of the operating current	Hz	25...400		25...400		25...400		25...400	
Conventional thermal current (Ith)	θ ≤ 60 °C	A	25	20	25	25	32	32	40	40
Rated making capacity (440 V)	Conforming to IEC 947		250		250		300		450	
Rated breaking capacity (440 V)	Conforming to IEC 947		250		250		300		450	
Permissible short-time rating No current flowing for preceding 15 minutes at θ ≤ 40 °C	For 1 s	A	210		210		240		380	
	For 10 s	A	105		105		145		240	
	For 1 min	A	61		61		84		120	
	For 10 min	A	30		30		40		50	
Protection by fuse against short-circuits (U ≤ 690 V)	Without thermal overload relay, fuse gG	type 1	A	25		40		50		63
		type 2	A	20		25		35		40
	With thermal overload relay	A	See pages 2/52 and 2/53, for aM or gG fuse ratings corresponding to the associated thermal overload relay							
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5		2.5		2.5		2	
Power dissipation per pole for the above operating currents	AC-3	W	0.20		0.36		0.8		1.25	
	AC-1	W	1.56		1.56		2.5		3.2	

a.c. control circuit characteristics

Rated control circuit voltage (Uc)	50/60 Hz	V	12...690		
Control voltage limits 50 or 60 Hz coils	Operational		–		
	Drop-out		–		
	50/60 Hz coils	Operational		0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C	
		Drop-out		0.3...0.6 Uc at 60 °C	
Average consumption at 20 °C and at Uc	~ 50 Hz	Inrush	50 Hz coil	VA	–
			Cos φ		0.75
		50/60 Hz coil	VA	70	
	Sealed	50 Hz coil	VA	–	
			Cos φ		0.3
		50/60 Hz coil	VA	7	
~ 60 Hz	Inrush	60 Hz coil	VA	–	
		Cos φ		0.75	
		50/60 Hz coil	VA	70	
	Sealed	60 Hz coil	VA	–	
		Cos φ		0.3	
		50/60 Hz coil	VA	7.5	
Heat dissipation	50/60 Hz	W	2...3		
Operating time (3)	Closing "C"	ms	12...22		
	Opening "O"	ms	4...19		
Mechanical life in millions of operating cycles	50 or 60 Hz coil		–		
	50/60 Hz coil on 50 Hz		15		
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600		

(1) Protection ensured for the connection cross-sections shown on page 2/63 and for connection via cable.

(2) In the least favourable direction, without change of contact state (coil supplied at Ue).

(3) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

D32	DT60	D38	D40	D50	D65	D80	D95	D115	D150
32	32	38	40	50	65	80	95	115	150
50	60	50	60	80	80	125	125	200	200
690	690	690	1000	1000	1000	1000	1000	1000	1000
25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400	25...400
50	60	50	60	80	80	125	125	200	200
550	500	550	800	900	1000	1100	1100	1260	1660
550	500	550	800	900	1000	1100	1100	1100	1400
430	430	430	720	810	900	990	1100	1100	1400
260	260	310	320	400	520	640	800	950	1200
138	138	150	165	208	260	320	400	550	580
60	60	60	72	84	110	135	135	250	250
63	63	63	80	100	160	200	200	250	315
63	63	63	80	100	125	160	160	200	250
See pages 2/52 and 2/53, for aM or gG fuse ratings corresponding to the associated thermal overload relay									
2	2	2	1.5	1.5	1	0.8	0.8	0.6	0.6
2	2	3	2.4	3.7	4.2	5.1	7.2	7.9	13.5
5	5	5	5.4	9.6	6.4	12.5	12.5	24	24
12...690			24...660				24...500		
-			0.85...1.1 Uc at 55 °C				0.85...1.1 Uc at 55 °C		
-			0.3...0.6 Uc at 55 °C				0.3...0.5 Uc at 55 °C		
0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 60 °C			0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 55 °C				0.8...1.15 Uc on 50/60 Hz at 55 °C		
0.3...0.6 Uc at 60 °C			0.3...0.6 Uc at 55 °C				0.3...0.5 Uc at 55 °C		
-			200				300		-
0.75			0.75				0.8		0.9
70			245				280...350		280...350
-			20				22		-
0.3			0.3				0.3		0.9
7			26				2...18		2...18
-			220				300		-
0.75			0.75				0.8		0.9
70			245				280...350		280...350
-			22				22		-
0.3			0.3				0.3		0.9
7.5			26				2...18		2...18
2...3			6...10				3...8		3...4.5
12...22			20...26		20...26	20...26	20...35	20...35	40...75
4...19			8...12		8...12	8...12	6...20	6...20	20...35
-			16		16	16	10	10	8
15			6		6	6	4	4	8
3600			3600		3600	3600	3600	3600	2400
									1200

d.c. control circuit characteristics

Type of contactor			LC1-D09...D38 DT20...DT60	LC1 or LP1-D40...D65	LC1 or LP1-D80	LC1-D115 & LC1-D150	
Rated control circuit voltage (Uc)	---	V	12...440	12...440		24...440	
Rated insulation voltage	Conforming to IEC 947-1	V	690				
	Conforming to UL, CSA	V	600				
Control voltage limits	Operational	Standard coil	0.7...1.25 Uc at 60 °C	0.85...1.1 Uc at 55 °C		0.75...1.2 Uc at 55 °C	
		Wide range coil	–	0.75...1.2 Uc at 55 °C		–	
	Drop-out		0.1...0.25 Uc at 60 °C	0.1...0.3 Uc at 55 °C		0.15...0.4 Uc at 55 °C	
Average consumption at 20 °C and at Uc	Inrush	Sealed	W	5.4	22	22	270 to 365
			W	5.4	22	22	2.4...5.1
Average operating time (1) at Uc	Closing	“C”	ms	55	85...110	95...130	20...35
	Opening	“O”	ms	20	20...35	20...35	40...75
Note: The arcing time depends on the circuit switched by the poles. For normal 3-phase applications, the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.							
Time constant (L/R)		ms	28	65	75	25	
Mechanical life at Uc	In millions of operating cycles		30	20	20	8	
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600	3600	3600	1200	

Low consumption control circuit characteristics

Rated insulation voltage	Conforming to EN 60947-1	V	690			
	Conforming to UL, CSA	V	600			
Maximum voltage	Of the control circuit on ---		250			
Average consumption d.c. at 20 °C and at Uc	Wide range coil (0.7...1.25 Uc)	Inrush	W	2.4		
		Sealed	W	2.4		
Operating time (1) at Uc and at 20 °C	Closing	“C”	ms	70		
	Opening	“O”	ms	25		
Voltage limits (θ ≤ 60 °C) of the control circuit	Operational		0.7 to 1.25 Uc			
	Drop-out		0.1...0.3 Uc			
Time constant (L/R)		ms	40			
Mechanical life	In millions of operating cycles		30			
Maximum operating rate	At ambient temperature ≤ 60 °C	ops/h	3600			

(1) Operating times depend on the type of contactor electromagnet and its control mode.

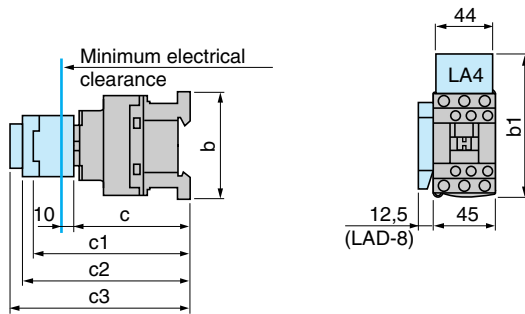
The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate.

(2) In the least favourable direction, without change of contact state.

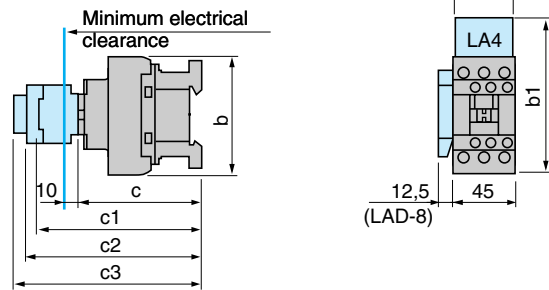
TeSys contactors

Model d contactors
Control circuit: a.c.

LC1-D09...D18 (3-pole)



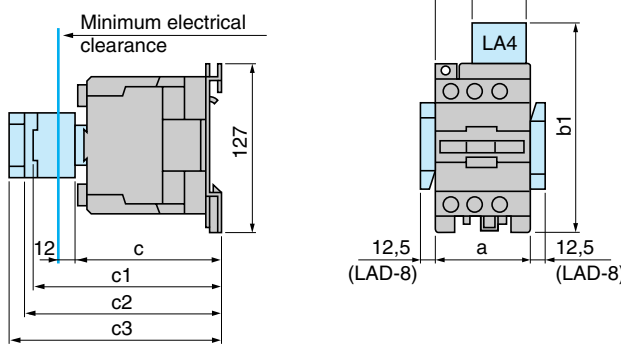
LC1-D25...D38 (3-pole)
LC1-DT20...DT60 (4-pole)



LC1-	D09... D18	D093... D183	D099... D189	D25... D38	D253 & D323	DT20 & DT25	DT203 & DT253	DT32... DT60	DT323 & DT603
b without add-on blocks	77	99	80	85	99	85	99	91	105
b1 with LAD-4BB	94	107	95.5	98	107	98	-	-	-
with LA4-D●2	110 (1)	123 (1)	111.5 (1)	114 (1)	123 (1)	114	-	-	-
with LA4-DF, DT	119 (1)	132 (1)	120.5 (1)	123 (1)	132 (1)	129	-	-	-
with LA4-DR, DW, DL	126 (1)	139 (1)	127.5 (1)	130 (1)	139 (1)	190	-	-	-
c without cover or add-on blocks	84	84	84	90	90	90	90	98	98
with cover, without add-on blocks	86	86	86	92	92	92	92	100	100
c1 with LAD-N or C (2 or 4 contacts)	117	117	117	123	123	123	123	131	131
c2 with LA6-DK10, LAD-6K10	129	129	129	135	135	135	135	143	143
c3 with LAD-T, R, S	137	137	137	143	143	143	143	151	151
with LAD-T, R, S and sealing cover	141	141	141	147	147	147	147	155	155

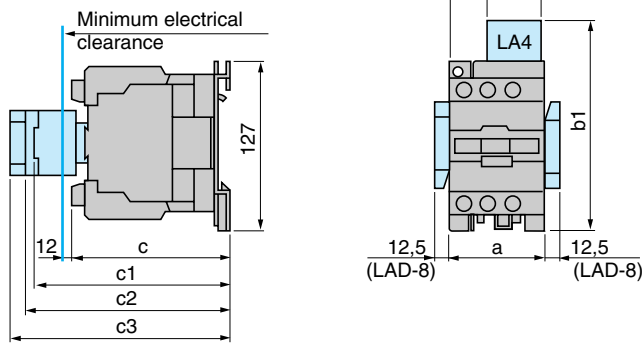
(1) Including LAD-4BB

LC1-D40...D65 (3-pole)



LC1-D80 and D95 (3-pole)

LC1-D8004 and D8008 (4-pole)

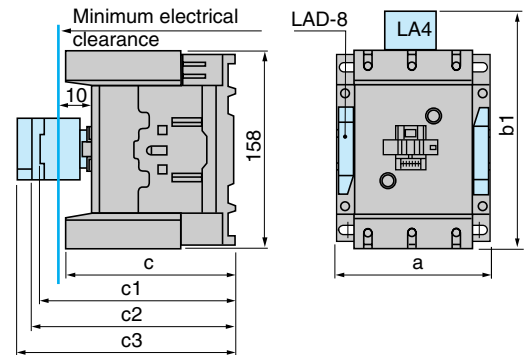


LC1-	D40...D65	D4008	D80 D65004	D95 D65008	D8004	D8008
a	75	85	85	85	96	96
b1 with LA4-D●2	135	135	135	135	135	135
with LA4-DB3	-	-	135	-	-	-
with LA4-DF, DT	142	142	142	142	142	142
with LA4-DM, DR, DW, DL	150	150	150	150	150	150
c without cover or add-on blocks	114	125	125	125	125	140
with cover, without add-on blocks	119	-	130	130	-	-
c1 with LAD-N (1 contact)	139	139	150	150	150	150
with LAD-N or C (2 or 4 contacts)	147	147	158	158	158	158
c2 with LA6-DK	159	159	170	170	170	170
c3 with LAD-T, R, S	167	167	178	178	178	178
with LAD-T, R, S and sealing cover	171	171	182	182	182	182

LC1-D115 and D150 (3-pole)

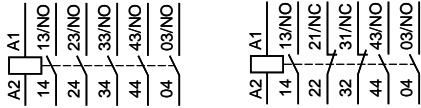
LC1-D115004 (4-pole)

LC1-	D115 D150	D115004	D115006	D150006	D1150046
a	120	150	120	120	155
b1 with LA4-DA2	174	174	174	174	174
with LA4-DF, DT	185	185	185	185	185
with LA4-DM, DR, DL	188	188	188	188	188
with LA4-DW	188	188	188	-	188
c without cover or add-on blocks	132	132	115	115	115
with cover, without add-on blocks	136	-	-	-	-
c1 with LAD-N or C (2 or 4 contacts)	150	150	150	150	150
c2 with LA6-DK20	155	155	155	155	155
c3 with LAD-T, R, S	168	168	168	168	168
with LAD-T, R, S and sealing cover	172	172	172	172	172



Instantaneous auxiliary contacts

5 N/O	3 N/O + 2 N/C
CAD 50	CAD 32



Instantaneous auxiliary contact blocks

1 N/O + 1 N/C	2 N/O	2 N/C
LAD N11	LAD 8N11 (1)	LAD 8N02
	LAD N20	LAD 8N20 (1)
		LAD N02

(1) The figures in brackets are for the device mounted on the RH side of the control relay.

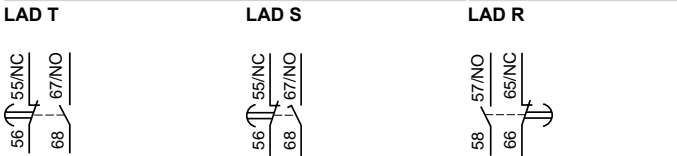
2 N/O + 2F N/C	1 N/O + 3 N/C	4 N/O	4 N/C	3 N/O + 1 N/C
LAD N22	LAD N13	LAD N40	LAD N04	LAD N31

2 N/O + 2 N/C including 1 N/O + 1 N/C make before break	With dust and damp protected contacts		2 N/O protected (2)	2 N/O protected + 2 N/O non protected	2 N/O protected + 1 N/O + 1 N/C non protected
LAD C22	LA1 DX20	LA1 DX02	LA1 DY20	LA1 DZ40	LA1 DZ31

(2) Product fitted with 4 earth screen continuity terminals.

Time delay auxiliary contact blocks

On-delay 1 N/O + 1 N/C	Off-delay 1 N/O + 1 N/C
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Mechanical latch blocks

