

2

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)	Conforming to VDE 0106						
	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	Contacteur open	gn	10	8	8	8	6
	Contacteur closed	gn	15	15	10	10	15
Vibration resistance (2) 5...300 Hz	Contacteur open	gn	2				
	Contacteur 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: DT25)	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.

Selection:
pages 1/6 to 1/35

References:
pages 2/6 to 2/9

Dimensions:
pages 2/44 to 2/47

Schemes:
pages 2/48 and 2/49

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	690			
Frequency limits	Of the operating current	Hz	25...400	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	–
			50/60 Hz coil	VA	70
		Sealed	50 Hz coil	VA	–
			50/60 Hz coil	VA	7
	~ 60 Hz	Inrush	60 Hz coil	VA	–
			50/60 Hz coil	VA	70
		Sealed	60 Hz coil	VA	–
			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 2/33 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.

Selection:
pages 1/6 to 1/35

References:
pages 2/6 to 2/9

Dimensions:
pages 2/44 to 2/47

Schemes:
pages 2/48 and 2/49

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 0.3...0.6 Uc at 60 °C			0.8...1.1 Uc on 50 Hz and 0.85...1.1 Uc on 60 Hz at 55 °C 0.3...0.6 Uc at 55 °C				0.8...1.15 Uc on 50/60 Hz at 55 °C 0.3...0.5 Uc at 55 °C			
-			200				300			
0.75			0.75				0.8			
70			245				280...350			
-			20				22			
0.3			0.3				0.3			
7			26				2...18			
-			220				300			
0.75			0.75				0.8			
70			245				280...350			
-			22				22			
0.3			0.3				0.3			
7.5			26				2...18			
2...3			6...10				3...8			
12...22			20...26		20...26		20...35		20...50	
4...19			8...12		8...12		6...20		6...20	
-			16		16		10		8	
15			6		6		4		8	
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	W	5.4	22	22	270 to 365
		Sealed	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
			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.

Contactor integral auxiliary contact characteristics

Linked contacts conforming to draft standard IEC 947-4-5	Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder		
Mirror contact	The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module		
Rated operational voltage (Ue)	Up to	V	690
Rated insulation voltage (Ui)	Conforming to IEC 947-1	V	690
	Conforming to UL, CSA	V	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C	A	10
Operating current frequency		Hz	25...400
Minimum switching capacity $\lambda = 10^{-9}$	U min.	V	17
	I min.	mA	5
Short-circuit protection	Conforming to EN 60947-5-1		gG fuse: 10 A
Rated making capacity	Conforming to EN 60947-5-1, I rms	A	~: 140, ---: 250
Short-time rating	Permissible for	1 s	A 100
		500 ms	A 120
		100 ms	A 140
Insulation resistance		MΩ	> 10
Non-overlap time	Guaranteed between N/C and N/O contacts	ms	1.5 on energisation and on de-energisation

Contact operating power
conforming to EN 60947-5-1

a.c. supply categories AC-14 and AC-15

Electrical life (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

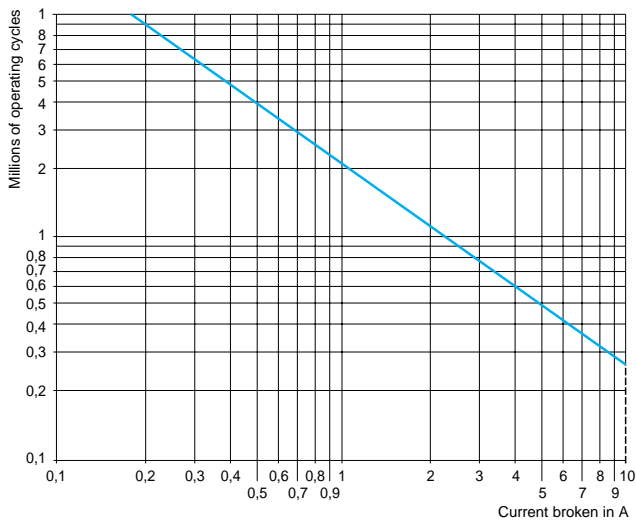
d.c. supply category DC-13

Electrical life (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

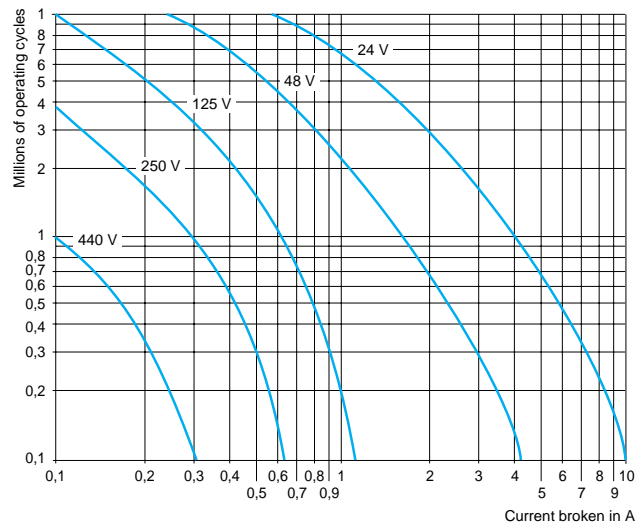
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100

	V	24	48	125	250	440
	W	96	76	76	76	44
	W	48	38	38	32	–
	W	14	12	12	–	–

AC-15



DC-13



Selection:
pages 1/6 to 1/35

References:
pages 2/6 to 2/9

Dimensions:
pages 2/44 to 2/47

Schemes:
pages 2/48 and 2/49

Contact block type			LAD-N or C	LAD-T & S	LAD-R	LAD-8
Environment						
Conforming to standards			IEC 947-5-1, NF C 63-140, VDE 0660, EN 60947-5-1			
Product certifications			UL, CSA			
Protective treatment	Conforming to IEC 68		"TH"			
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X			
Ambient air temperature around the device	Storage	°C	- 60...+ 80			
	Operation	°C	- 5...+ 60			
	Permissible for operation at U_c	°C	- 40...+ 70			
Maximum operating altitude	Without derating	m	3000			
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end	mm ²	Min.: 1 x 1; max.: 2 x 2.5			
Connection by spring terminals	Flexible or solid cable without cable end	mm ²	Max.: 2 x 2.5			
Instantaneous and time delay contact characteristics						
Number of contacts			1, 2 or 4	2	2	2
Rated operational voltage (U_e)	Up to	V	690			
Rated insulation voltage (U_i)	Conforming to EN 60947-5-1	V	690			
	Conforming to UL, CSA	V	600			
Conventional thermal current (I_{th})	For ambient temperature ≤ 60 °C	A	10			
Frequency of operational current		Hz	25...400			
Minimum switching capacity	U min.	V	17			
	I min.	mA	5			
Short-circuit protection	Conforming to EN 60947-5-1 and VDE 0660. gG fuse	A	10			
Rated making capacity	Conforming to EN 60947-5-1, I rms	A	~: 140; ---: 250			
Short-time rating	Permissible for: 1 s	A	100			
	500 ms	A	120			
	100 ms	A	140			
Insulation resistance		MΩ	> 10			
Non-overlap time	Guaranteed between N/C and N/O contacts	ms	1.5 (on energisation and on de-energisation)			
Overlap time	Guaranteed between N/C and N/O on LAD-C22	ms	1.5	–	–	–
Time delay (LAD-T, R and S contact blocks) Accuracy only valid for setting range indicated on the front face	Ambient air temperature for operation	°C	–	- 40...+ 70	- 40...+ 70	–
	Repeat accuracy		–	± 2 %	± 2 %	–
	Drift up to 0.5 million operating cycles		–	+ 15 %	+ 15 %	–
	Drift depending on ambient air temperature		–	0.25 % per °C	0.25 % per °C	–
Mechanical durability	In millions of operating cycles		30	5	5	30
Operational power of contacts			See page 2/40			

TeSys contactors

Auxiliary contact blocks with dust and damp protected contacts for model d contactors

Contact block type			LA1-DX	LA1-DX		LA1-DY	
				protected	non protected		
Environment							
Conforming to standards			IEC 947-5-1, VDE 0660				
Product certifications			UL, CSA				
Protective treatment	Conforming to IEC 68		"TH"				
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X				
Ambient air temperature	Storage and operation	°C	- 25...+ 70				
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end	mm ²	Min.: 1 x 1 Max.: 2 x 2.5				
Number of contacts			2	2	2	2	
Contact characteristics							
Rated operational voltage (Ue)	Up to	V	50	50	690	24	
Rated insulation voltage (Ui)	Conforming to IEC 947-5-1	V	250	250	690	250	
	Conforming to UL, CSA	V	–	–	600	–	
Conventional thermal current (Ith)	For ambient temperature ≤ 40 °C	A	–	–	10	–	
Maximum operational current (Ie)		mA	50	50	10	50	
Frequency of operational current		Hz	–	–	25...400	–	
Minimum switching capacity	U min.	V	3	3	17	3	
	I min.	mA	0.3	0.3	5	0.3	
Short-circuit protection	Conforming to EN 60947-5-1. gG fuse	A	–	–	10	–	
Rated making capacity	Conforming to EN 60947-5-1, I rms	A	–	–	~: 140; ∴: 250	–	
Short-time rating	Permissible for:	1 s	A	–	–	100	–
		500 ms	A	–	–	120	–
		100 ms	A	–	–	140	–
Insulation resistance		MΩ	> 10	> 10	> 10	> 10	
Mechanical durability	In millions of operating cycles		5	5	30	5	
Materials and technology used for dust and damp protected contacts			Gold - Single break with crossed bars	Gold - Single break with crossed bars	–	Gold - Single break with crossed bars	

TeSys contactors

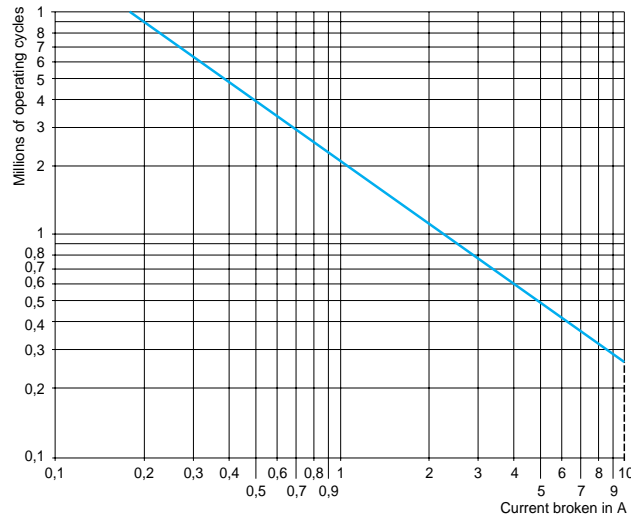
Auxiliary contact blocks with dust and damp protected contacts for model d contactors

Operational power of contacts (conforming to EN 60947-5-1)

a.c. supply, categories AC-14 and AC-15

Electrical durability (valid up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power ($\cos \varphi 0.7$) = 10 times the power broken ($\cos \varphi 0.4$).

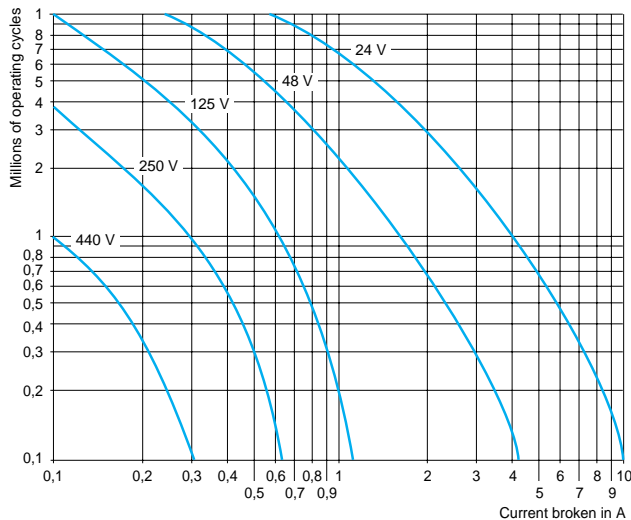
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100



d.c. supply, category DC-13

Electrical durability (valid up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

	V	24	48	125	250	440
1 million operating cycles	W	120	90	75	68	61
3 million operating cycles	W	70	50	38	33	28
10 million operating cycles	W	25	18	14	12	10



Environment

Conforming to standards			IEC 947-5-1
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 68		"TH"
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	°C	- 40...+ 80
	Operation	°C	- 25...+ 55
	Permissible for operation at Uc	°C	- 25...+ 70

"Auto - Man - Stop" control modules

Recommendation	The Auto - Man selector switch must only be operated with the Start - Stop ("O" "I") switch in position "O"		
Rated insulation voltage	Conforming to EN 60947-5-1	V	250
Rated operational voltage	Conforming to EN 60947-5-1	V	250
Protection	Against electric shocks	kV	2
Built-in protection	Contactor coil suppression		By varistor
Indication	By integral LED		Illuminates when the contactor coil is energised
Electrical durability	In operating cycles		20,000

Coil suppressor modules

Module type			LA4-DA LAD-4RC	LA4-DB LAD-4T	LA4-DC	LA4-DE LAD-4V
Type of protection			RC circuit	Bidirectional peak limiting diode	Diode	Varistor
Rated control circuit voltage (Uc)		V	~ 24...415	~ or --- 24...72	--- 12...250	~ or --- 24...250
Maximum peak voltage			3 Uc	2 Uc	Uc	2 Uc
Natural RC frequency	24/48 V	Hz	400	-	-	-
	50/127 V	Hz	200	-	-	-
	110/240 V	Hz	100	-	-	-
	380/415 V	Hz	150	-	-	-

Mechanical latch blocks

Mechanical latch block type For mounting on contactor			LA6-DK10 LC1D40...D65, LP1-D65	LAD-6K10 LC1-D09...D38, DT20...DT60	LA6-DK20 LC1-D80...D150 LP1-D80 and LC1-D115
Certification			UL, CSA		UL, CSA
Rated insulation voltage	Conforming to IEC 947-5-1	V	690		690
Rated control circuit voltage	~ 50/60 Hz and ---	V	24...415		24...415
Power required	For unlatching	~	VA		25
		---	W		30
Maximum operating rate	In operating cycles/hour		1200		1200
On-load factor			10 %		10 %
Mechanical durability at Uc	In millions of operating cycles		0.5		0.5

Unlatching can be manually operated locally or electrically controlled for remote operation.
The LA6-DK or LAD-6K latch coil and the LC1-D operating coil must not be energised simultaneously. The duration of the LA6-DK or LAD-6K and LC1-D control signals must be ≥ 100 ms.

Module type			LA4-DT (On-delay)	LA4-DR (Off-delay) for LC1-D
Environment				
Conforming to standards			IEC 255-5	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 68		"TH"	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	°C	- 40...+ 80	
	Operation	°C	- 25...+ 55	
	For operation at U _c	°C	- 25...+ 70	
Rated insulation voltage (U_i)	Conforming to EN 60947-5-1	V	250	
Cabling	Phillips N° 2 and Ø 6 mm	mm²	Min.: 1 x 1	
	Flexible or solid cable with or without cable end		Max.: 2 x 2.5	

Control circuit characteristics

Built-in protection	On input		By varistor	By varistor
	Suppression of contactor		By varistor	By bidirectional peak limiting diode
Rated control circuit voltage (U_c)		V	~ or = 24...250	~ 24...250
Permissible variation			0.8...1.1 U _c	0.8...1.1 U _c
Type of control			By mechanical contact only	By mechanical contact only, connecting cable < 10 m

Time delay characteristics

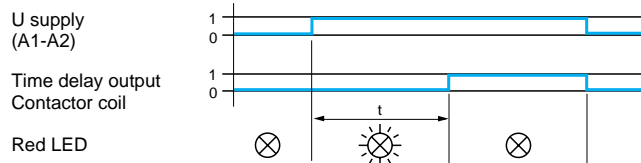
Timing ranges		s	0.1...2; 1.5...30; 25...500	0.1...2; 1.5...30; 25...500
Repeat accuracy	0...40 °C		± 3 % (10 ms minimum)	± 3 % (10 ms minimum)
Reset time	During the time delay period	ms	150	225
	After the time delay period	ms	50	–
Immunity to micro-breaks	During the time delay period	ms	10	20
	After the time delay period	ms	2	–
Minimum control pulse duration		ms	–	40
Indication of time delay	By LED		Illuminates during time delay period	Illuminates during time delay period

Switching characteristics (solid state type)

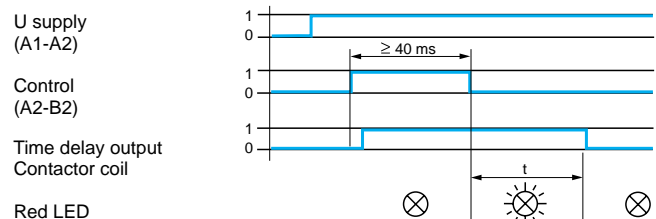
Maximum power dissipated		W	2	3.5
Leakage current		mA	< 5	< 5
Residual voltage		V	3.3	3.3
Overvoltage protection			3 kV; 0.5 joule	3 kV; 0.5 joule
Electrical durability	In millions of operating cycles		30	30

Operating diagrams

LA4-DT "On-delay" electronic timers



LA4-DR "Off-delay" electronic timers



References:
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Dimensions:
pages 2/44 and 2/45

Schemes:
pages 2/48 and 2/49

Environment									
Conforming to standards			IEC 255-5						
Product certifications			UL, CSA						
Protective treatment	Conforming to IEC 68		"TH"						
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X						
Ambient air temperature around the device	Storage	°C	- 40...+ 80						
	Operation	°C	- 25...+ 55						
	Permissible for operation at Uc	°C	- 25...+ 70						
Other characteristics									
Module type			LA4-DFBQ	LA4-DFB	LA4-DFE	LA4-DLB	LA4-DLE	LA4-DWB	
			With relay	With relay	With relay	With relay + override	Solid state		
Rated insulation voltage	Conforming to EN 60947-5-1	V	5	250					
Rated operational voltage	Conforming to EN 60947-5-1	V	415	250					
Indication of input state	By integral LED which illuminates when the contactor coil is energised								
Input signals	Control voltage (E1-E2)	V	~ 24	~ 24	~ 48	~ 24	~ 48	~ 24	
	Permissible variation	V	17...30	17...30	33...60	17...30	33...60	5...30	
	Current consumption at 20 °C	mA	25	25	15	25	15	8,5 for 5 V 15 for 24 V	
	State "0" guaranteed for	U	V	< 2.4	< 2.4	< 4.8	< 2.4	< 4.8	< 2.4
		I	mA	< 2	< 2	< 1.3	< 2	< 1.3	< 2
State "1" guaranteed for	U	V	17	17	33	17	33	5	
Built-in protection	Against reverse polarity		By diode						
	Of the input		By diode						
Electrical durability at 220/240 V	In millions of operating cycles		3	10	10	3	3	20	
Maximum immunity time to micro-breaks		ms	4	4	4	4	4	1	
Power dissipated	At 20 °C	W	0.6	0.6	0.6	0.6	0.6	0.4	
Direct mounting without contactor	With coil: ~ 24...250 V		-	LC1-D40...D150				-	
	~ 100...250 V		-					LC1-D40...D115	
	~ 380...415 V		LC1-D40...D150					-	
Mounting with cabling adaptor LAD-4BB	With coil: ~ 24...250 V		-	LC1-D09...D38, DT20...DT60				LC1-D09...D38, DT20...DT60	
	~ 380...415 V		LC1-D09...D38, DT20...DT60					-	
Total operating time at Uc (of the contactor)	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.								
				LC1-D09...D38, DT20...DT60		LC1-D40...D65		LC1-D80 and D95	
	With LA4-DF, DL	N/O	ms	20...30		28...34		28...43	
		N/C	ms	16...24		20...24		18...32	
Cabling	Phillips N° 2 and Ø 6 mm Flexible or solid cable with or without cable end	mm ²	Min.: 1 x 1						
		mm ²	Min.: 2 x 2,5						

