TeSys contactors
Model d

Farnell Codes ; 4231855 - 4232148

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	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).

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TeSys contactors

Model d

Connections for power and control circuits

Type of contactor		LC1-	D09 & D12 DT20 & DT25	D18 (3P)	D25	D32	D38	D18 (4P) DT32…DT60	D40	D50 & D65	D80 & D95	D115 & D150
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	mm²	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	mm²	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	mm²	1…4	1…6	1…6	1…10		2.5…10	2.5…25	2.5…25	4…50	10…120
	2 conductors	mm²	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	mm²	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	mm²	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	Ø6…Ø8	Ø6…Ø8	–
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	mm²	2.5 (4: DT25)	4	4	4	–	– (10: DT32…DT60)	–	–	–	–
	2 conductors	mm²	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	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4	1…2.5
	2 conductors	mm²	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	mm²	1…4	1…4	1…4	1…4		1…4	1…2.5	1…2.5	1…2.5	1…2.5
	2 conductors	mm²	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	mm²	1…4	1…4	1…4	1…4		1…4	1…4	1…4	1…4	1…2.5
	2 conductors	mm²	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	mm²	2.5	2.5	2.5	2.5	–	–	–	–	–	–
	2 conductors	mm²	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.

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TeSys contactors
Model d

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.

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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	20…35
4…19			8…12	8…12	8…12	6…20	6…20	20…35	40…75
–			16	16	16	10	10	8	–
15			6	6	6	4	4	8	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	**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	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.

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Dimensions: pages 2/94 to 2/97
Schemes: pages 2/98 and 2/99

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 $\lambda = 10^{-8}$	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

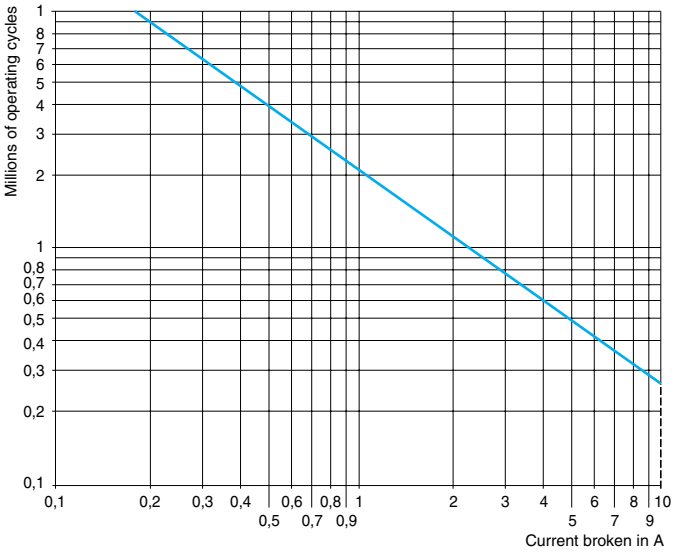
a.c. supply categories AC-14 and AC-15
Electrical life (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power (cos φ 0.7) = 10 times the power broken (cos φ 0.4).

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.

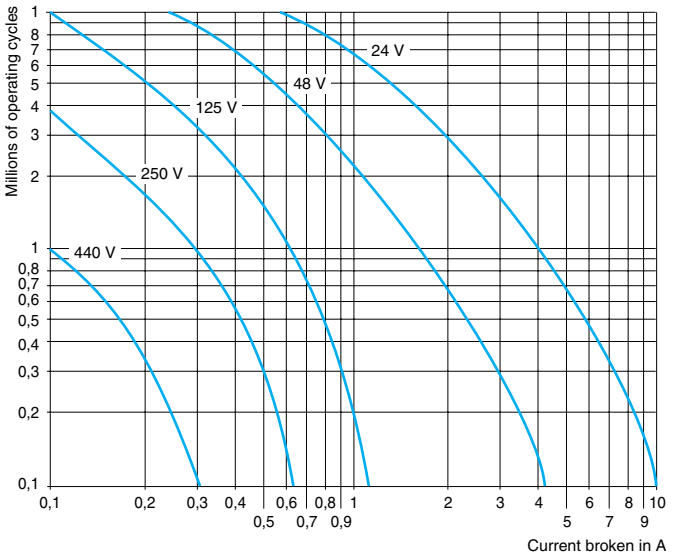
	V	**24**	**48**	**115**	**230**	**400**	**440**	**600**
1 million operating cycles	**VA**	60	120	280	560	960	1050	1440
3 million operating cycles	**VA**	16	32	80	160	280	300	420
10 million operating cycles	**VA**	4	8	20	40	70	80	100

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



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TeSys contactors

Auxiliary contact blocks without dust and damp protected contacts for model d contactors

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 Uc	**˚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	**mm²**	Min.: 1 x 1; max.: 2 x 2.5			
Connection by spring terminals	Flexible or solid cable without cable end	**mm²**	Max.: 2 x 2.5			
Instantaneous and time delay contact characteristics						
Number of contacts			1, 2 or 4	2	2	2
Rated operational voltage (Ue)	Up to	**V**	690			
Rated insulation voltage (Ui)	Conforming to EN 60947-5-1	**V**	690			
	Conforming to UL, CSA	**V**	600			
Conventional thermal current (Ith)	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 2/70			

References: pages 2/85 and 2/86
Dimensions: pages 2/94 and 2/95
Schemes: pages 2/98 and 2/99

TeSys contactors

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

Contact block type			LA1-DX	LA1-DZ		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	**mm²**	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

References: page 2/85
Dimensions: pages 2/94 and 2/95
Schemes: pages 2/98 and 2/99

TeSys contactors

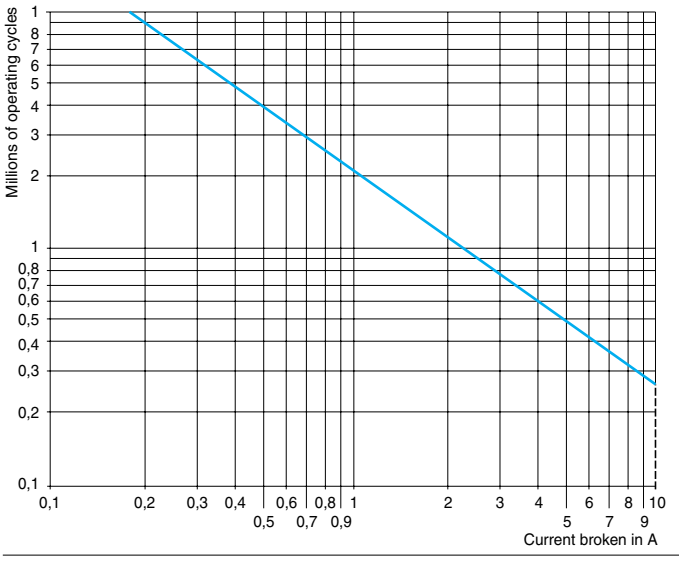
Auxiliary contact blocks with
dust and damp protected contacts
for model d contactors

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 φ 0.7) = 10 times the power broken (cos φ 0.4).

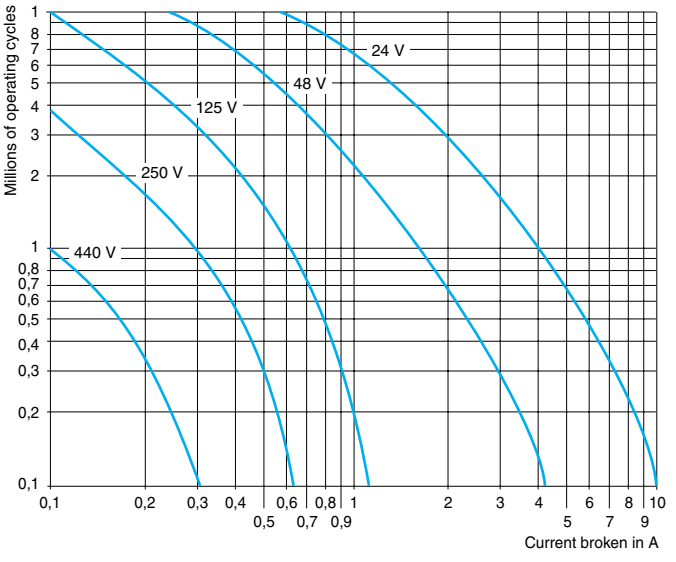
	V	24	48	115	230	400	440	600
1 million operating cycles	**VA**	60	120	280	560	960	1050	1440
3 million operating cycles	**VA**	16	32	80	160	280	300	420
10 million operating cycles	**VA**	4	8	20	40	70	80	100



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



References:
pages 2/85 and 2/86

Dimensions:
pages 2/94 and 2/95

Schemes:
pages 2/98 and 2/99

TeSys contactors

Control modules, coil suppressor modules
and mechanical latch blocks
for model d contactors

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				**LA6-DK10**	**LAD-6K10**	**LA6-DK20**
For mounting on contactor				**LC1D40…D65, LP1-D65**	**LC1-D09…D38, DT20…DT60**	**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		25
		⎓	W	30		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.

References: pages 2/85 and 2/86
Dimensions: pages 2/94 and 2/95
Schemes: pages 2/98 and 2/99

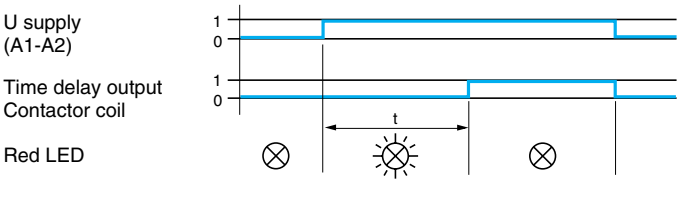
TeSys contactors

Electronic serial timer modules
for model d contactors

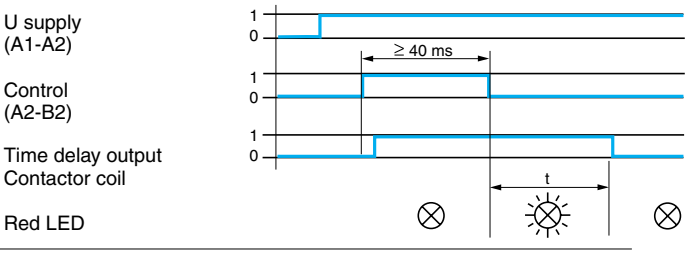
Module type			LA4-DT (On-delay)	LA4-DR (Off-delay) for LC1-D
Environment				
Conforming to standards			IEC 255-5	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 68		"TH"	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 2X	
Ambient air temperature around the device	Storage	°C	- 40…+ 80	
	Operation	°C	- 25…+ 55	
	For operation at Uc	°C	- 25…+ 70	
Rated insulation voltage (Ui)	Conforming to EN 60947-5-1	V	250	
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	
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 (Uc)		V	∼ or ⎓ 24…250	∼ 24…250
Permissible variation			0.8…1.1 Uc	0.8…1.1 Uc
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 2/94 and 2/95

Schemes:
pages 2/98 and 2/99

TeSys contactors
Interface modules
for model d contactors

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** With relay	**LA4-DFB** With relay	**LA4-DFE** With relay	**LA4-DLB** With relay + override	**LA4-DLE**	**LA4-DWB** 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	**mm²**	Min.: 1 x 1
	Flexible or solid cable with or without cable end	**mm²**	Min.: 2 x 2.5

References: page 2/89
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