TeSys Switching

TeSys D, K 'S207' series
Contactors for railway applications
Catalogue 2019

Life Is On | Schneider Electric

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TeSys D, **TeSys** K contactors:
S207 series for **railway applications**

Used in heating, lighting, door control, signaling, brake and air conditioning compressors, TeSys D and TeSys K S207 series contactors are designed for all railway power switching and controlling applications, while complying with the railway European standard EN45545 R22 HL3.

Schneider Electric
load control solutions in the move

TeSys D S207, possible association with EN45545 R22 HL2 compliant TeSys components

GV2P
thermal magnetic
circuit breaker

LRD thermal
overload
relay

TeSys D, **TeSys** K contactors: S207 series fully compliant with railway standards

Shocks, vibrations requirements, according CEI 61373 standard tests

- Category 1: body mounted
- Class B: cubicles, subassemblies, equipment and components mounted directly on or under the car body.

Fire, smoke requirements, according EN 45545-2 Part 2, DIN 5510-2

Certificates of conformity available on our website:
www.se.com

European standard EN 45545-2

Published in 2013 , this new standard replaces the former regulations for railway vehicles and applies to all countries in Europe.

Fire behavior of materials and components: the new European standard defines tighter requirements.

Thus, the material used in the components must provide compliant characteristics.

Contents

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TeSys D - S207 series

Now made of new material,
fully EN 45545 R22 HL3 compliant,
with unchanged commercial reference.

Contactor types, covered applications:

- AC-3, up to 95 Amps
- AC-1, up to 125 Amps
- control circuits, up to 10 Amps.

TeSys D, the highest choice for demanding or wide power range applications

Range of 139 contactors for motors (AC-3), resistive loads (AC-1), control circuits:

3P, 4P contactors:

- AC-3 ratings / 3 poles: 9, 12, 18, 25, 32, 38, 40, 50, 65, 80, 95 A
- AC-1 ratings / 4 poles: 20, 25, 32, 40, 60,125 A
- 1 NO + 1 NC embedded auxiliary contact on all ratings (except on 60, 80, 125 A 4-pole contactors).

Contactors for control circuits:

- 5 NO or 3 NO + 2 NC
- 10 A

Common features:

- connection by lugs
- 24, 72, 96, 110 V DC coils, standard, low consumption and wide range
- Coil supply range: up to 0.7 to 1.25 Uc.

PB119242.eps

GV2P

PB108236.eps

LRD

Fully EN45545 R22 HL2 compliant motor starters

Up to 38 A AC-3, with TeSys D - S 207 associated to:
> GV2P thermal magnetic circuit breakers

Please refer to catalogue '**TeSys** Motor control and protection Components' for details.

Introduction

LP4K PB111997.eps

NEW

TeSys K - S207 series

New range of EN 45545 R22 HL3 compliant mini contactors:
- width: 45 mm
- height: 58 mm
- depth: 57 mm
- weight: 0.235 kg.

Contactor types, covered applications:

- AC-3, up to 12 Amps
- AC-1, up to 20 Amps
- control circuits, up to 10 Amps.

Simple, robust, and compact, **TeSys** K is optimized for common applications

Range of 33 contactors for motors (AC-3), resistive loads (AC-1), control circuits:

3P, 4P contactors:

- AC-3 ratings / 3 poles: 6, 9, 12 A
- AC-1 rating / 4 poles: 20 A
- 1 NO or 1 NC embedded auxiliary contact

Contactors for control circuits:

- 4 NO or 2 NO + 2 NC or 3 NO + 1 NC
- 10 A

Common features:

- connection by lugs
- 24, 72, 110 V DC low consumption coils,
- Coil supply range: up to 0.7 to 1.3 Uc from -40 °C to +70 °C.

> See TeSys K S207 contactor selection tables for available combinations of features.

TeSys Switching
TeSys D S207 - Contactors for railway applications
Product references

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LC1D096●●S207

PB119243.eps

LC1D406..S207,
LC1D506..S207,
LC1D656..S207

PB119244.eps

LC1D806..S207,
LC1D956..S207

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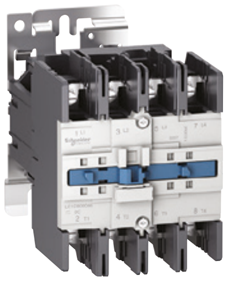
LC1DT206●●S207

PB119245.eps

LC1D4000●6●●S207

PB119246.eps

LC1D8000●6●●S207

3-pole contactors for Motor control - connection by lugs

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3 (θ ⩽ 60 °C)							Rated operational current in AC-3 440 V up to	Instantaneous auxiliary contacts		Commercial reference Replace dots by coil voltage code (see chart below)		Weight
220 V 230 V	380 V 415 V	415 V	440 V	500 V	660 V 690 V	1000 V				coil with surge suppressor (1)	Coil without surge suppressor	
kW	kW	kW	kW	kW	kW	kW	A					kg
2.2	4	4	4	5.5	5.5	–	9	1	1	LC1D096●●S207		0.320
3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	LC1D126●●S207		0.325
4	7.5	9	9	10	10	–	18	1	1	LC1D186●●S207		0.330
5.5	11	11	11	15	15	–	25	1	1	LC1D256●●S207		0.370
7.5	15	15	15	18.5	18.5	–	32	1	1	LC1D326●●S207		0.375
9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	LC1D386●●S207		0.380
11	18.5	22	22	22	30	22	40	1	1	–	LC1D406●●S207	2.185
15	22	25	30	30	33	30	50	1	1	–	LC1D506●●S207	2.185
18.5	30	37	37	37	37	37	65	1	1	–	LC1D656●●S207	2.185
22	37	45	45	55	45	45	80	1	1	–	LC1D806●●S207	2.59
25	45	45	45	55	45	45	95	1	1	–	LC1D956●●S207	2.61

4-pole contactors for Resistive load control - connection by lugs

Non inductive loads maximum current (θ ⩽ 60 °C) utilisation category AC-1	Number of poles		Instantaneous auxiliary contacts		Commercial reference Replace dots by coil voltage code (see chart below)		Weight
					coil with surge suppressor (1)	Coil without surge suppressor	
A							kg
20	4	–	1	1	LC1DT206●●S207		0.365
	2	2	1	1	LC1D0986●●S207		0.365
25	4	–	1	1	LC1DT256●●S207		0.365
	2	2	1	1	LC1D1286●●S207		0.365
32	4	–	1	1	LC1DT326●●S207		0.425
	2	2	1	1	LC1D1886●●S207		0.425
40	4	–	1	1	LC1DT406●●S207		0.425
	2	2	1	1	LC1D2586●●S207		0.425
60	4	–	–	–	–	LC1D400046●●S207	2.210
	2	2	–	–	–	LC1D400086●●S207	2.210
125	4	–	–	–	–	LC1D800046●●S207	2.685
	2	2	–	–	–	LC1D800086●●S207	2.910

(1) A suppressor diode (Transil TM) in parallel with the coil helps to prevent upstream sensitive components from damage by high transient voltage during the coil switching.

Coil voltage codes

DC Volts	24	72	96	110
Standard coils for LC1D096 ... D386, LC1DT206...DT406, LC1D2586				
U 0.7…1.25 Uc	BD	SD	-	FD
Low consumption coils for LC1D096 ... D386, LC1DT206...DT406, LC1D2586				
U 0.7…1.25 Uc	BL	SL	DL	FL
Wide voltage range coils for LC1D406 ...956, LC1D400046 800086				
U 0.7…1.25 Uc	BW	SW	-	FW

Characteristics:
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Dimensions, schemes:
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Product references

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CAD326●●

Contactors for control circuit - connection by lugs

Rated max operating current (Ie)	Composition		Commercial reference Replace dots by coil voltage code (see chart below) coil with surge suppressor
A			
5-pole contactors for control circuits			
10	3	2	**CAD326●●S207**
	5	–	**CAD506●●S207**

Coil voltage codes

DC Volts	24	72	96	110
Standard coils for CAD326, CAD506				
U 0.7…1.25 Uc	BD	SD		FD
Low consumption coils for CAD326, CAD506				
U 0.7…1.25 Uc	BL	SL	DL	FL

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LADN●●●

Instantaneous auxiliary contact blocks for connection by lugs (1)

Clip-on mounting (2)	Number of contacts per block	Composition		Reference
Front	2	1	1	**LADN116**
		2	–	**LADN206**
		–	2	**LADN026**
	4	2	2	**LADN226**
		1	3	**LADN136**
		4	–	**LADN406**
		–	4	**LADN046**
		3	1	**LADN316**

Maximum number of auxiliary contacts that can be fitted

Contactors			Instantaneous auxiliary contact blocks		
Type	Number of poles and size		Side mounted	Front mounted	
				2 contacts	4 contacts
⎓	3P	LC1 D09…D38	–	1	or 1
		LC1 D80	–	or 1	or 1
	4P	LC1 DT20…DT40	–	1	or 1
		LC1 D80	–	and 1	or 1
LC (3)	3P	LC1 D09…D38	–	1	–
	4P	LC1 DT20…DT40	–	1	–

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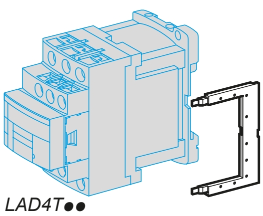

LAD4T●●

Bidirectional peak limiting diodes (1)

Protection provided by limiting the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.

Mounting	For use with contactor Rating	Type V ⎓	Reference
Clip-on side mounting (2)	D09…D38 (3P) DT20…DT40 (4P)	24	**LAD4TBDL**
		72	**LAD4TSDL**
		125	**LAD4TGDL**

(1) Add on auxiliary contacts and bidirectional peak limiting diodes compliancy level to EN 45545 is R22HL3.
(2) In order to install these accessories, the existing suppression device must first be removed. Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.
(3) LC: low comsumption.

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Product references


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LC1K12016●●

3-pole contactors for Motor control - connection by lugs

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in AC-3 440 V up to	Instantaneous auxiliary contacts		Commercial reference Replace dots by coil voltage code (see chart below)	Weight
220 V 230 V	380 V 415 V	440/500 V 660/690 V					
kW	kW	kW	A				kg
1.5	2.2	3	**6**	1	–	**LC1K06106●●S207**	0.235
				–	1	**LC1K06016●●S207**	0.235
2.2	4	4	**9**	1	–	**LC1K09106●●S207**	0.235
				–	1	**LC1K09016●●S207**	0.235
3	5.5	5.5 (⩽ 440)	**12**	1	–	**LC1K12106●●S207**	0.235
		4 (⩾ 480)		–	1	**LC1K12016●●S207**	0.235


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LC1KT

4-pole contactors - connection by lugs

Non inductive loads Category AC-1 Maximum current at (θ ⩽ 50 °C)	Number of poles		Instantaneous auxiliary contacts		Commercial reference Replace dots by coil voltage code (see chart below)	
A						
20	4	–	–	–	**LC1KT206●●S207**	0.235
	2	2	–	–	**LC1K0986●●S207**	0.235


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CAK

4-pole contactors for Control circuit - connection by lugs

Control circuit consumption	Auxiliary contacts		Commercial reference Replace dots by coil voltage code (see chart below)	
Ith = 10 A	4	–	**CAK406●●S207**	0.235
	3	1	**CAK316●●S207**	0.235
	2	2	**CAK226●●S207**	0.235

Low consumption coil voltage code

Volts DC	24	72	110
U 0.7 .....1.3 Uc	BL	SL	FL


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LA1KN●●

Instantaneous auxiliary contact blocks (1)

Recommended for standard applications, Clip-on front mounting, 1 block per contactor

Connection	Composition		Reference
Screw clamp terminals	2	–	**LA1KN20**
	–	2	**LA1KN02**
	1	1	**LA1KN11**

(1) Add on auxiliary contacts compliancy level to EN 45545 is R22HL3.

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TeSys D, K contactors

Technical Data for Designers

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Characteristics

3-pole contactor characteristics

Contactor type			LC1D096	LC1D126	LC1D186	LC1D256	LC1D326	LC1D386	LC1D406	LC1D506	LC1D656	LC1D806	LC1D956
Rated operational current (Ie) (Ue ⩽ 440 V)	In AC-3, θ ⩽ 60 °C	**A**	9	12	18	25	32	38	40	50	65	80	95
	In AC-1, θ ⩽ 60 °C	**A**	25	25	32	40	50	50	60	80	80	125	125
Rated operational voltage (Ue)	Up to	**V**	690	690	690	690	690	690	1000	1000	1000	1000	1000
Frequency limits	Of the operational current	**Hz**	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400
Conventional thermal current (Ith)	θ ⩽ 60 °C	**A**	25	25	32	40	50	50	60	80	80	125	125
Rated making capacity (440 V)	Conforming to IEC 60947	**A**	250	250	300	450	550	550	800	900	1000	1100	1100
Rated breaking capacity (440 V)	Conforming to IEC 60947	**A**	250	250	300	450	550	550	800	900	1000	1100	1100
Permissible short time rating No current flowing for preceding 15 minutes with θ ⩽ 40 °C	For 1 s	**A**	210	210	240	380	430	430	720	810	900	990	1100
	For 10 s	**A**	105	105	145	240	260	310	320	400	520	640	800
	For 1 min	**A**	61	61	84	120	138	150	165	208	260	320	400
	For 10 min	**A**	30	30	40	50	60	60	72	84	110	135	135
Fuse protection against short-circuits (U ⩽ 690 V)	Without thermal overload relay, gG fuse – type 1	**A**	25	40	50	63	63	63	80	100	160	200	200
	type 2	**A**	20	25	35	40	63	63	80	100	125	160	160
Average impedance per pole	At Ith and 50 Hz	**mΩ**	2.5	2.5	2.5	2	2	2	1.5	1.5	1	0,8	0.8
Power dissipation per pole for the above operational currents	AC-3	**W**	0.20	0.36	0.8	1.25	2	3	2.4	3.7	4.2	5.1	7.2
	AC-1	**W**	1.56	1.56	2.5	3.2	5	5	5.4	9.6	6.4	12.5	12.5

Characteristics

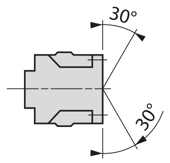
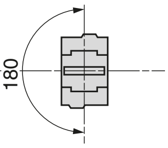
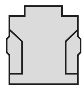
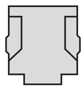
4-pole contactor characteristics

Contactor type			LC1D0986 LC1DT206	LC1D1286 LC1DT256	LC1D1886 LC1DT326	LC1D2586 LC1DT406	LC1D400046 LC1D400086	LC1D800046 LC1D800086
Rated operational current (Ie) (Ue ⩽ 440 V)	In AC-3, θ ⩽ 60 °C	**A**	9	12	18	25	40 (1)	80 (2)
	In AC-1, θ ⩽ 60 °C	**A**	20	25	32	40	60	125
Rated operational voltage (Ue)	Up to	**V**	690	690	690	690	690	1000
Frequency limits	Of the operational current	**Hz**	25…400	25…400	25…400	25…400	25…400	25…400
Conventional thermal current (Ith)	θ ⩽ 60 °C	**A**	20	25	32	40	60	125
Rated making capacity (440 V)	Conforming to IEC 60947	**A**	250	250	300	450	800	1100
Rated breaking capacity (440 V)	Conforming to IEC 60947	**A**	250	250	300	450	800	1100
Permissible short time rating No current flowing for preceding 15 minutes with θ ⩽ 40 °C	For 1 s	**A**	210	210	240	380	720	990
	For 10 s	**A**	105	105	145	240	320	640
	For 1 min	**A**	61	61	84	120	165	320
	For 10 min	**A**	30	30	40	50	72	135
Fuse protection against short-circuits (U ⩽ 690 V)	Without thermal overload relay, gG fuse — type 1	**A**	25	40	50	63	80	200
	type 2	**A**	20	25	35	40	80	160
Average impedance per pole	At Ith and 50 Hz	**mΩ**	2.5	2.5	2.5	2	1.5	0,8
Power dissipation per pole for the above operational currents	AC-3	**W**	0.20	0.36	0.8	1.25	2.4	5.1
	AC-1	**W**	1.56	1.56	2.5	3.2	5.4	12.5

(1) For LC1D400046 only, no AC-3 for LC1D400086.
(2) For LC1D800046 only, no AC-3 for LC1D800086.

Characteristics

Environment

Contactor type			**LC1D096…D186, LC1DT206 and LC1DT256**	**LC1D256…D386, LC1DT326 and LC1DT406**	**LC1D406..D956, LC1D400046, LC1D400086, LC1D650046, LC1D650086, LC1D800046, LC1D800086**
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1, overvoltage category III, degree of pollution: 3	**V**	690		1000
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947	**kV**	6		8
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, EN45545 R22HL3, EN45545 R26HL3, DIN5510		
Product certifications			IEC, CCC, EAC, UA, TR		IEC, CCC
Degree of protection (front face)	Conforming to IEC 60529 Power circuit connections		Protection against direct finger contact IP20		
	Coil connection		Protection against direct finger contact IP20		
Protective treatment	Conforming to IEC 60068-2-30		“TH”		
Ambient air temperature around the device	Storage	**°C**	-60…+80		
	Operation	**°C**	-40…+70		-25...+70
Maximum operating altitude	Without derating	**m**	3000		
Operating positions [(1)]	Without derating in the following positions (other positions: please contact us).		⎓ DF510743.eps  30° 30°	DB436105.eps  180	
	Positions that are not permissible		For ⎓ contactors LC1 D09 to LC1 D95. DF537814.eps 	DF537815.eps 	
Flame resistance	Conforming to UL 94		V0		
	Conforming to IEC 60695-2-1	**°C**	850		
Shock resistance [(2)] 1/2 sine wave = 11 ms	Contactor open		10 gn	8 gn	8 gn
	Contactor closed		15 gn	15 gn	10 gn
Vibration resistance [(2)] 5…300 Hz	Contactor open		2 gn		
	Contactor closed		4 gn	4 gn	3 gn

(1) When mounting on a vertical rail, use a stop.
(2) Without modification of power contact states, in the most unfavourable direction (coil energised at Ue).

Characteristics

Power circuit connections

Contactor type			LC1D096, LC1D126, LC1D186, LC1DT206, LC1DT256	LC1D1886 LC1DT326	LC1D256 LC1D326 LC1D386	LC1D2586 LC1DT406	LC1D406, LC1D4000	LC1D506 LC1D656 LC1D6500	LC1D806 LC1D956 LC1D800046 LC1D800086
Connection by bars or lugs									
Lug external Ø		mm	8	9	12	9	13	16	17
Ø of screw		mm	M3.5		M4	M3.5	M5	M6	M6
Screwdriver	Philips		N° 2		N° 2	N° 2	N° 2	N° 3	–
	Flat screwdriver Ø		Ø6		Ø6	Ø6	Ø8	Ø8	Ø8
Key for hexagonal headed screw			–		–	–	–	–	10
Tightening torque		N.m	1.7		2.5	1.8	2.5	2.5	5

Control circuit connections

Connection by bars or lugs			
Lug external Ø		mm	8
Ø of screw		mm	M3.5
Screwdriver	Philips		N° 2
	Flat screwdriver Ø		Ø6
Tightening torque		N.m	1.7

d.c. control circuit characteristics

Compatible contactor types			Standard coil	Low consumption coil	Wide range coil
			LC1D096...D386 LC1DT206...DT406 LC1D2586	LC1D096...D386 LC1DT206...DT406 LC1D2586	LC1D406...956 LC1D400046....LC1D800086
Rated insulation voltage	Conforming to IEC 60947-1	V	690		
Operating ranges from -40 to +70°C	Side by side mounting		0.7...1.1 Uc	0.7...1.25 Uc	Uc
	With 8 mm spacing		0.7...1.25 Uc	-	-
Operating ranges from -25 to +50°C	Side by side mounting		0.7...1.25 Uc	-	0.7 ... 1.25 Uc
Average consumption at 20 °C and at Uc	⎓	W	5.4	4	22
Operating time [(1)] average at Uc	Closing of NO contacts "C"	ms	55 to 75	55 to 75	95 to 130
	Opening of NC contacts	ms	45 to 65	45 to 65	-
	Opening of NO contacts "O"	ms	16 to 32 (12 to 22 ms without diode)	16 to 32 (12 to 22 ms without diode)	20 to 35
	Closing of NC contacts	ms	27 to 42 (18 to 28 ms without diode)	27 to 42 (18 to 28 ms without diode)	-
			Note: The arcing time depends on the circuit switched by the poles. For all normal 3-phase applications, the arcing time is 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	37	75
Mechanical durability at Uc	In millions of operating cycles		30	30	10
Maximum operating rate at ambient temperature ≤ 60 °C	In operating cycles per hour		3600	3600	3600

(1) The 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.

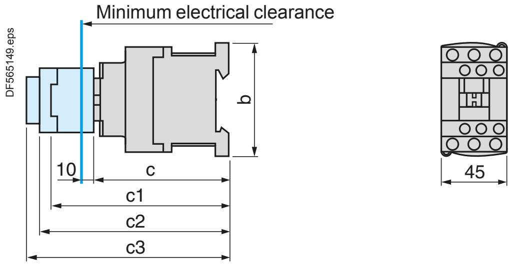
Characteristics of auxiliary contacts incorporated in the contactor

Mechanically linked contacts	Conforming to IEC 60947-5-1		Each TeSys D NO/NC embedded auxilliary contacts are certified 'mechanicaly linked'.
Mirror contact	Conforming to IEC 60947-4-1		All TeSys D NC auxilliary contacts are 'miror' certified and can be connected to a safety module.
Rated operational voltage (Ue)	Up to	V	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C	A	10

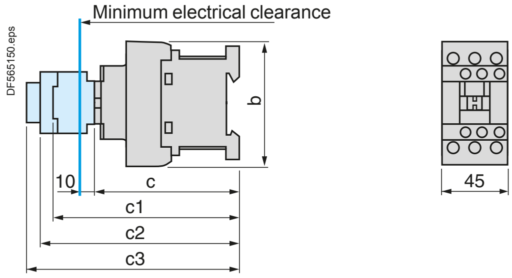
TeSys Switching
TeSys D S207 - Contactors for railway applications

Dimensions

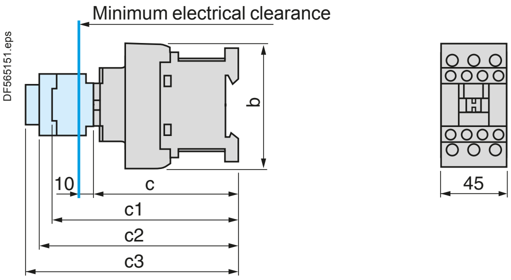
LC1D09…D18 (3-pole)



LC1D25…D38 (3-pole)

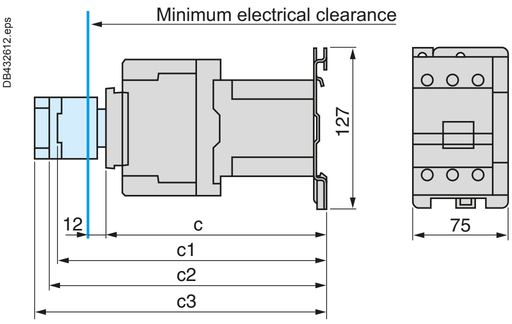


LC1DT20....DT40, LC1D098, D128, D188, D258 (4-poles)

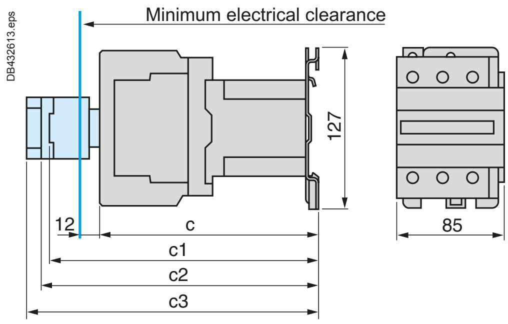


	LC1	**D09…D18**	**D25…D38**	**DT20** and **DT25** **D098** and **D128**	**DT32** and **DT40** **D188** and **D258**
b	without add-on blocks	77	85	85	91
c	without cover or add-on blocks	93	99	–	–
	with cover, without add-on blocks	95	101	99	107
c1	with LAD N or C (2 or 4 contacts)	126	132	123	131
c2	with LA6 DK10, LAD 6K10	138	144	135	143
c3	with LAD T, R, S	146	152	143	151
	with LAD T, R, S and sealing cover	150	156	147	155

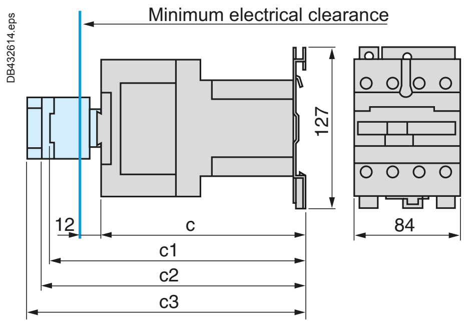
LC1D406..S207, LC1D506..S207, LC1D656..S207 (3-pole)



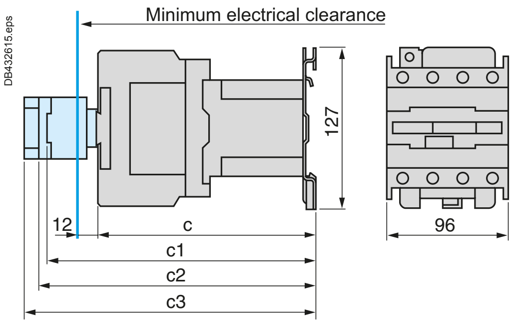
LC1D806..S207, LC1D956..S207 (3-pole)



LC1D400046..S207 (3-pole), **LC1D400086..S207** (4-pole)



LC1D8000046..S207, LC1D800086..S207 (4-pole)



		LC1D406..S207, LC1D506..S207, LC1D656..S207	**LC1D806..S207, LC1D956..S207**	**LC1D400046..S207**	**LC1D400086..S207**	**LC1D800046**	**LC1D800086**
c	without cover or add-on blocks	171	181	171	182	181	196
	with cover, without add-on blocks	176	186	–	–	–	–
c1	with LAD N (1 contact)	196	204	196	196	204	204
	with LAD N or C (2 or 4 contacts)	202	210	202	202	210	210
c2	with LA6 DK10	213	221	213	213	221	221
c3	with LAD T, R, S	221	229	221	221	229	229
	with LAD T, R, S and sealing cover	225	233	225	225	233	233

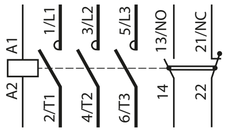
Schemes

Contactors

3-pole contactors

LC1D096 ... LC1D956

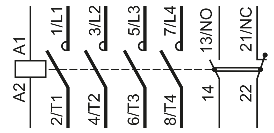
127266.eps



4-pole contactors

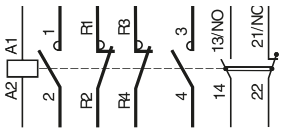
LC1DT206... DT406

127267.eps



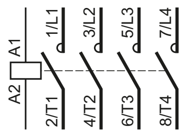
LC1D0986....D2586

127269.eps



LC1D400046, LC1D800046

127268.eps



LC1D400086, LC1D800086

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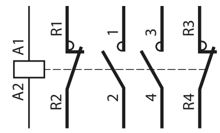
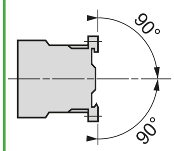
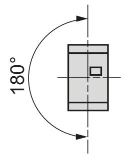


Characteristics

Environment characteristics

Contactor type LC1K			
Conforming to standards			IEC 60947, NF C 63-110, VDE 0660, BS 5424
Authorized operating positions			Vertical axis: DF511522.eps  *Without derating* Horizontal axis: DF511523.eps  *Without derating*
Rated insulation voltage (Ui)	Conforming to IEC 60947	**V**	690
	Conforming to VDE 0110 gr C	**V**	750
	Conforming to BS 5424, NF C 20-040	**V**	690
Rated impulse withstand voltage (Uimp)		**kV**	8
Protective treatment	Conforming to IEC 60068 (DIN 50016)		“TC” (Klimafest, Climateproof)
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact
Ambient air temperature around the device	Storage	**°C**	-50…+80
	Operation	**°C**	-25…+50
	Permissible	**°C**	-40…+70, for operation at Uc
Maximum operating altitude	Without derating	**m**	2000
Vibration resistance 5 ... 300 Hz	Contactor open		2 gn
	Contactor closed		4 gn
Flame resistance	Conforming to UL 94		V0
Shock resistance (1/2 sine wave, 11 ms)	Contactor open		On X axis: 6 gn On Y and Z axes: 10 gn
	Contactor closed		On X axis: 10 gn On Y and Z axes: 15 gn
Connection by lugs			
Lug external Ø		**mm**	7
Ø of screw		**mm**	3.2
Screwdriver	Philips		N° 2
	Flat screwdriver Ø	**mm**	6
Tightening torque		**N.m**	1.1 recommended, 1.3 max

TeSys Switching
TeSys K S207 - Contactors for railway applications
Characteristics

Pole characteristics

Type				LC1K06	LC1K09, LC1KT09, LC1KT20	LC1K12
Conventional thermal current (Ith)	For ambient temperature ⩽ 50 °C		**A**	20		
Rated operational frequency			**Hz**	50/60		
Frequency limits of the operational current			**Hz**	Up to 400		
Rated operational voltage (Ue)			**V**	690		
Rated making capacity	I rms conforming to NF C 63 110 and IEC 60947		**A**	110	110	144
Rated breaking capacity	I rms conforming to NF C 63 110 and IEC 60947	220/230 V	**A**	110	110	–
		380/400 V	**A**	110	110	–
		415 V	**A**	110	110	–
		440 V	**A**	110	110	110
		500 V	**A**	80	80	80
		660/690 V	**A**	70	70	70
Permissible short time rating	In free air for a time "t" from cold state (θ ⩽ 50 °C)	1 s	**A**	90	90	115
		5 s	**A**	85	85	105
		10 s	**A**	80	80	100
		30 s	**A**	60	60	75
		1 min	**A**	45	45	55
		3 min	**A**	40	40	50
		⩾ 15 min	**A**	20	20	25
Short-circuit protection	gG fuse U ⩽ 440 V		**A**	25		
Average impedance per pole	At Ith and 50 Hz		**mΩ**	3		
Use in category AC-1 resistive circuits, heating, lighting (Ue ⩽ 440 V)	Maximum rated operational current for a temperature ⩽ 50 °C		**A**	20		
	Maximum rated operational current for a temperature ⩽ 70 °C		**A**	16 for Ue only		
	Rated operational current limits in relation to the on-load factor and operating frequency			On-load factor		90 %
			A	300 operating cycles/hour		13
			A	120 operating cycles/hour		15
			A	30 operating cycles/hour		19
	Increase in rated operational current by paralleling of poles			Apply the following coefficients to the above currents; these coefficients take into account an often unbalanced distribution of current between the poles		
				2 poles in parallel: K = 1.60		
				3 poles in parallel: K = 2.25		
				4 poles in parallel: K = 2.80		
Use in category AC-3 squirrel cage motors	Operational power according to the voltage. Voltage 50 or 60 Hz	115 V single-ph.	**kW**	0.37	0.55	–
		220 V single-ph.	**kW**	0.75	1.1	–
		220/230 V 3-ph.	**kW**	1.5	2.2	3
		380/415 V 3-ph.	**kW**	2.2	4	5.5
		440/480 V 3-ph.	**kW**	3	4	5.5/4 (480)
		500/600 V 3-ph.	**kW**	3	4	4
		660/690 V 3-ph.	**kW**	3	4	4
	Maximum operating rate (in operating cycles/hour in relation to % of rated power)			Op. cycles/h		600
				Power		100 %

Characteristics

Control circuit characteristics

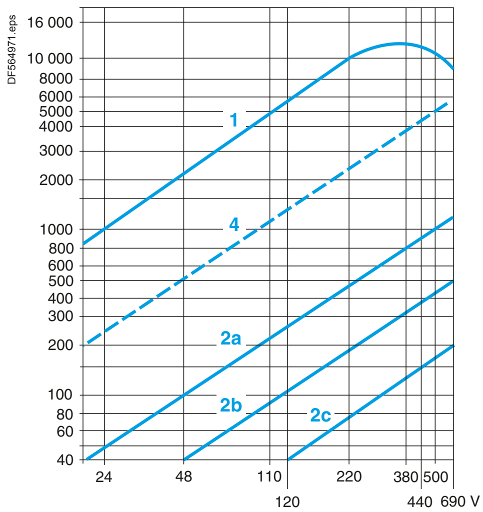
Type			LC1K, LC1KT	CAK
Rated control circuit voltage (Uc)		V DC	24...110	24...110
Control voltage limits (⩽ 50 °C) single voltage coil	Operation		0.7…1.30 Uc	0.7...1.3 Uc
	Drop-out		⩾ 0.10 Uc	⩽ 0.1 Uc
Average consumption at 20 °C and at Uc	Inrush		1.8 W	1.8 W
	Sealed		1.8 W	1.8 W
Heat dissipation		W	1.8	1.8
Operating time at 20 °C and at Uc				
Between coil energisation and:	opening of the N/C contacts	ms	25…35	25...35
	closing of the N/O contacts	ms	30…40	30...40
Between coil de-energisation and:	opening of the N/O contacts	ms	10…20	10...20
	closing of the N/C contacts	ms	15…25	15...25
Maximum immunity to microbreaks		ms	2	2
Maximum operating rate	In operating cycles per hour		3600	6000
Mechanical durability at Uc In millions of operating cycles			30	30

Characteristics

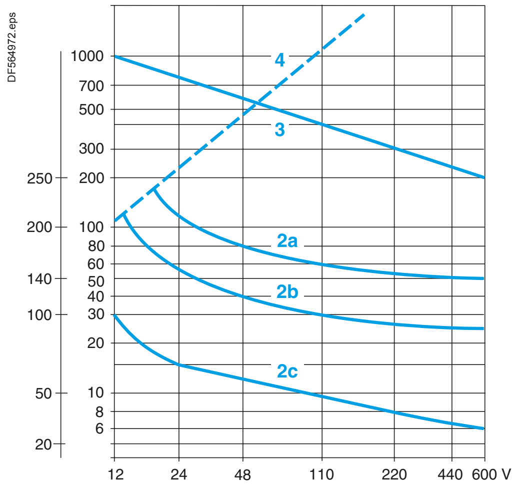
LC1K auxiliary contacts, CAK

Number of auxiliary contacts	On LP● K 3-pole			1
Rated operational voltage (Ue)	Up to		V	690
Rated insulation voltage (Ui)	Conforming to BS 5424		V	690
	Conforming to IEC 60947		V	690
	Conforming to VDE 0110 group C		V	750
	Conforming to CSA C 22-2 n° 14		V	600
Conventional thermal current (Ith)	For ambient temperature ⩽ 50 °C		A	10
Frequency of the operational current			Hz	Up to 400
Minimum switching capacity	U min (DIN 19 240)		V	17
	I min		mA	5
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gG fuse		A	10
Rated making capacity	Conforming to IEC 60947	I rms	A	110
Short-time rating	Permissible for	1 s	A	80
		500 ms	A	90
		100 ms	A	110

Power broken in VA



Power broken in W



Operational power of contacts conforming to IEC 60947

a.c. supply, category AC-15

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

Operating cycles	V	24	48	110/ 127	220/ 230	380/ 400	440	600/ 690
1 million operating cycles	VA	48	96	240	440	800	880	1200
3 million operating cycles	VA	17	34	86	158	288	317	500
10 million operating cycles	VA	7	14	36	66	120	132	200
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000	9000

d.c. supply, category DC-13

Electrical durability (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.

Operating cycles	V	24	48	110	220	440	600
1 million operating cycles	W	120	80	60	52	51	50
3 million operating cycles	W	55	38	30	28	26	25
10 million operating cycles	W	15	11	9	8	7	6
Occasional making capacity	W	720	600	400	300	230	200

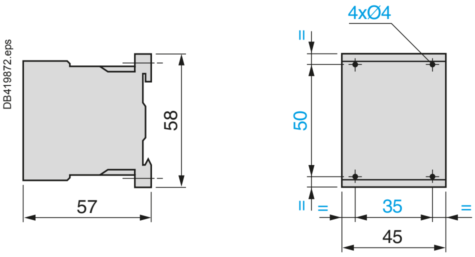
1. Breaking limit of contacts valid for:
   - maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).
2. Electrical durability of contacts for:
   - 1 million operating cycles (2a)
   - 3 million operating cycles (2b)
   - 10 million operating cycles (2c).
3. Breaking limit of contacts valid for:
   - maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.
4. Thermal limit.

Dimensions and schemes

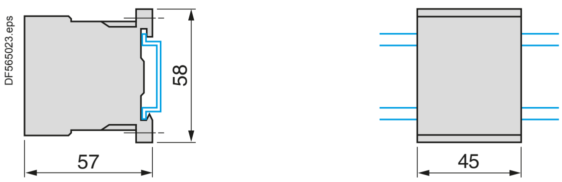
Contactors

LC1K, LC1KT, CAK

On panel

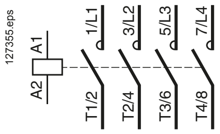


On mounting rail AM1 DP200 or AM1 DE200 (7 35 mm)

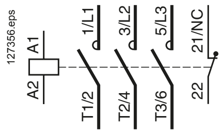


3-pole contactors

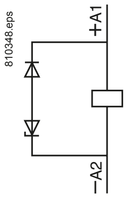
3 P + N/O



3 P + N/C

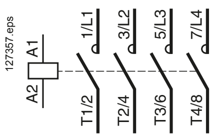


Coil diagram with integral suppression device LC1K, LC1KT

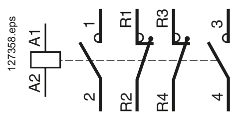


4-pole contactors

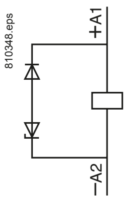
4 P



2 P N/O + 2 P N/C

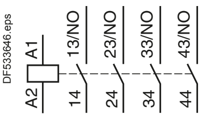


Coil diagram with integral suppression device LC1K, LC1KT

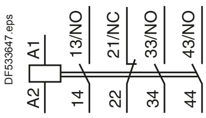


CAK - 4 poles contactors for control circuits

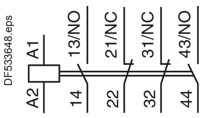
4 N/O



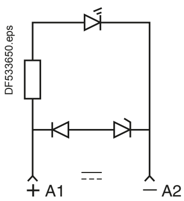
3 N/O + 1 N/C



2 N/O + 2 N/C



Coil diagram - with suppression device CAK



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More than 75% of our product sales offer superior transparency on the material content, regulatory information and environmental impact of our products:

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November, 2019

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