Control relays
TeSys SK, K, D

Relays – TeSys SK, K - For control of TeSys K contactor coils and other devices

Relays – TeSys D - For control of TeSys D contactor coils and other devices

Control relays
Mini-control relays
TeSys CA2 SK and CA3 SK
Mini-control relay TeSys CA2 SKE with alternating contacts

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CA2 SK20●●

Mini-control relays

- Width of mini-control relays 27 mm.
- Mounting on 35 mm ⎓ rail.
- Connection by connectors.

Control circuit supply	Auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)
a.c. supply	2	–	**CA2SK20●●**
	1	1	**CA2SK11●●**
d.c. supply	2	–	**CA3SK20●●**
	1	1	**CA3SK11●●**

PF526255.tif

CA2 SKE20●●

Mini-control relay with alternating contacts

This mini-control relay with alternating contacts (see function diagram page B7/17) makes it possible to automatically split the operating time between 2 circuits of a redundant system.
By regularly energising the “safety circuits”, this device makes it possible to ensure that they are operating correctly.

- Width of mini-control relay 45 mm.
- Fixing by Ø4 screws.
- Connection by connectors.
- Cannot be fitted with front-mounted auxiliary contact block.
- Cannot be fitted with coil suppressor module.

Control circuit supply	Auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)
a.c. supply	2	–	**CA2SKE20●●**

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Mini-control relays CA2 SK and CA2 SKE

Volts ∼ 50/60 Hz	**24**	**48**	**110**	**120**	**220**	**230**	**240**	**380**	**400**
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7

Mini-control relays CA3 SK

Volts ⎓	**12**	**24**	**36**	**48**	**72**
Code	JD	BD	CD	ED	SD

Characteristics: pages B7/14 and B7/15
Dimensions: page B7/16
Schemes: page B7/17

Control relays
Mini-control relays
TeSys CA2 SK and CA3 SK
Instantaneous auxiliary contacts and coil suppressor modules

PF526256.tif

LA1 SK11

Instantaneous auxiliary contact blocks

Clip-on front mounting

For use on control relays	Maximum number of blocks per contactor	Composition		Reference
CA2SK20	1	2	–	**LA1SK20**
		–	2	**LA1SK02**
		1	1	**LA1SK11**

PF526257.tif

LA4 SK●1●

Suppressor modules

Connection without need for tools by clipping onto right-hand side of contactor

For use on control relays	Type	For voltages	Sold in lots of	Unit reference
CA2SK and **CA3SK**	Varistor (1)	∼ and ⎓ 24 V…48 V	10	**LA4SKE1E**
		∼ and ⎓ 110 V…250 V	10	**LA4SKE1U**
	Diode (2)	⎓ 24 V…250 V	10	**LA4SKC1U**

(1) Protection provided by limiting the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillating frequency.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Characteristics: pages B7/14 and B7/15
Dimensions: page B7/16
Schemes: page B7/17

Control relays

TeSys K control relays

For a.c. or d.c. control circuit

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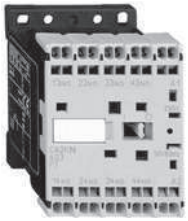
CA2 KN40●●

PF526248.tif



CA2 KN403●●

PF526249.tif

CA3 KN407●●

Control relays for a.c. control circuit

- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

Control circuit Consumption	Auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)
Screw clamp connections			
4.5 VA	4	–	**CA2KN40●●**
	3	1	**CA2KN31●●**
	2	2	**CA2KN22●●**
Spring terminal connections			
4.5 VA	4	–	**CA2KN403●●**
	3	1	**CA2KN313●●**
	2	2	**CA2KN223●●**
Faston connectors, 1 x 6.35 or 2 x 2.8			
4.5 VA	4	–	**CA2KN407●●**
	3	1	**CA2KN317●●**
	2	2	**CA2KN227●●**
Solder pins for printed circuit boards			
4.5 VA	4	–	**CA2KN405●●**
	3	1	**CA2KN315●●**
	2	2	**CA2KN225●●**

Control relays for d.c. control circuit

- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

Screw clamp connections			
3 W	4	–	**CA3KN40●●**
	3	1	**CA3KN31●●**
	2	2	**CA3KN22●●**
Spring terminal connections			
3 W	4	–	**CA3KN403●●**
	3	1	**CA3KN313●●**
	2	2	**CA3KN223●●**
Faston connectors, 1 x 6.35 or 2 x 2.8			
3 W	4	–	**CA3KN407●●**
	3	1	**CA3KN317●●**
	2	2	**CA3KN227●●**
Solder pins for printed circuit boards			
3 W	4	–	**CA3KN405●●**
	3	1	**CA3KN315●●**
	2	2	**CA3KN225●●**

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):
Control relays CA2 K (0.8...1.15 Uc) *(0.85...1.1 Uc)*

Volts ∿ 50/60 Hz	**12**	**20**	**24(2)**	**36**	**42**	**48**	**110**	**115**	**127**	**220/ 230**	**230**	**230/ 240**	**380/ 400**	**400**	**400/ 415**	**440**	**500**	**660/ 690**
Code	J7	Z7	B7	C7	D7	E7	F7	FE7	FC7	M7	P7	U7	Q7	V7	N7	R7	S7	Y7

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**
Control relays CA3 K (0.8...1.15 Uc)

Volts ⎓	**12**	**20**	**24(2)**	**36**	**48**	**60**	**72**	**100**	**110**	**125**	**200**	**220**	**230**	**240**	**250**
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

(2) When connecting an electronic sensor or timer in series with the coil of the control relay, select a 20 V coil (∿ code Z7, ⎓ code ZD) so as to compensate for the incurred voltage drop.

Characteristics: pages B7/18 and B7/19 | Dimensions: page B7/20 | Schemes: page B7/21

Control relays
TeSys K control relays
For d.c. control circuit

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CA4 KN40●●●

Low consumption control relays (d.c. control circuit)

- Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
- Screws in the open "ready-to-tighten" position.

Control circuit Consumption	Auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)
Screw clamp connections			
1.8 W	4	–	**CA4KN40●●**
	3	1	**CA4KN31●●**
	2	2	**CA4KN22●●**
Spring terminal connections			
1.8 W	4	–	**CA4KN403●●**
	3	1	**CA4KN313●●**
	2	2	**CA4KN223●●**
Faston connectors, 1 x 6.35 or 2 x 2.8			
1.8 W	4	–	**CA4KN407●●**
	3	1	**CA4KN317●●**
	2	2	**CA4KN227●●**
Solder pins for printed circuit boards			
1.8 W	4	–	**CA4KN405●●**
	3	1	**CA4KN315●●**
	2	2	**CA4KN225●●**

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Control relays CA4 K (Wide range coil: 0.7...1.3 Uc)

Volts ⎓	**12**	**20**	**24**	**48**	**72**	**110**	**120**
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

Characteristics: pages B7/18 and B7/19
Dimensions: page B7/20
Schemes: page B7/21

Control relays

TeSys K control relays

Instantaneous and time delay auxiliary contact blocks

PF526251.tif

LA1 KN20

PB111986.eps

LA1 K●●●

Instantaneous auxiliary contact blocks

Clip-on front mounting, 1 per control relay

Connection	Composition		Reference
Screw clamp terminals	2	–	**LA1KN20**
	–	2	**LA1KN02**
	1	1	**LA1KN11**
	4	–	**LA1KN40** (1)
	3	1	**LA1KN31** (1)
	2	2	**LA1KN22** (1)
	1	3	**LA1KN13** (1)
	–	4	**LA1KN04** (1)
Spring terminals	2	–	**LA1KN203**
	–	2	**LA1KN023**
	1	1	**LA1KN113**
	4	–	**LA1KN403** (1)
	3	1	**LA1KN313** (1)
	2	2	**LA1KN223** (1)
	1	3	**LA1KN133** (1)
	–	4	**LA1KN043** (1)
Faston connectors 1 x 6.35 or 2 x 2.8	2	–	**LA1KN207**
	–	2	**LA1KN027**
	1	1	**LA1KN117**
	4	–	**LA1KN407** (1)
	3	1	**LA1KN317** (1)
	2	2	**LA1KN227** (1)
	1	3	**LA1KN137** (1)
	–	4	**LA1KN047** (1)

Electronic time delay contact blocks

- Relay output with common point changeover contact, ∼ or ⎓ 240 V, 2 A maximum
- Control voltage 0.85...1.1 Uc
- Maximum switching capacity 250 VA or 150 W
- Operating temperature -10...+ 60 °C
- Reset time: 1.5 s during the time delay period 0.5 s after the time delay period

PF526253.tif

LA2 KT2●

Clip-on front mounting, 1 per control relay

Voltage	Type	Timing range	Composition	Reference
V		s		
∼ or ⎓ 24...48	On-delay	1...30	1	**LA2KT2E**
∼ 110...240	On-delay	1...30	1	**LA2KT2U**

Other versions

Electronic timers type RE4.
Please consult your Regional Sales Office.

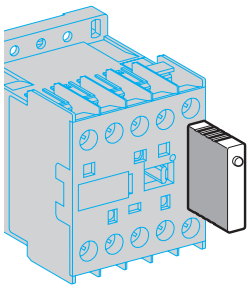
*(1) Block of 4 contacts for use on **CA2 K** and **CA3 K**.*

Characteristics : page B7/19
Dimensions : page B7/20
Schemes : page B7/21

Control relays

TeSys K control relays

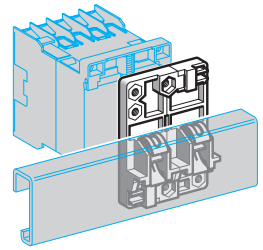
Mounting and marking accessories



LA4 K●●●

Suppressor modules incorporating LED indicator

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference
Clips onto front of relay with locating device. No tools required.	Varistor (1)	∿ and ⎓ 12...24 V	5	**LA4KE1B**
		∿ and ⎓ 32...48 V	5	**LA4KE1E**
		∿ and ⎓ 50...129 V	5	**LA4KE1FC**
		∿ and ⎓ 130...250 V	5	**LA4KE1UG**
	Diode + Zener diode (2)	⎓ 12...24 V	5	**LA4KC1B**
		⎓ 32...48 V	5	**LA4KC1E**
	RC (3)	∿ 220...250 V	5	**LA4KA1U**



LA9 D973

Mounting accessories

Description	Application		Sold in lots of	Unit reference
Mounting plates	On 1 ⊏⊐ rail	Clip-on	1	**LA9D973**
	On 2 ⊏⊐ rails	110/120 mm fixing centres	10	**DX1AP25**

Marking accessories

Description	Application		Sold in lots of	Unit reference
Marker holder	Clip-on fixing on front face	–	100	**LA9D90**
Clip-in markers	4 maximum per relay	Strips of 10 identical numbers 0 to 9	25	**AB1R●** (4)
		Strips of 10 identical capital letters A to Z	25	**AB1G●** (4)

(1) Protection provided by limiting the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillating frequency.
Polarised component.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(3) Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.
Slight increase in drop-out time (1.2 to 2 times the normal time).
(4) Complete the reference by replacing the dot with the required character.

Control relays

Dimensions : page B7/20

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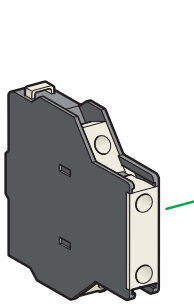
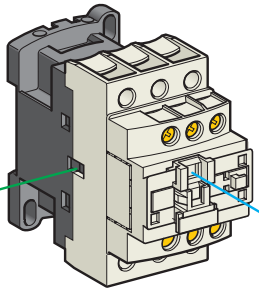
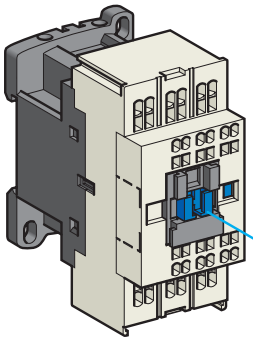


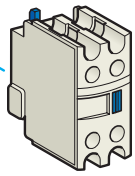
LAD 8N



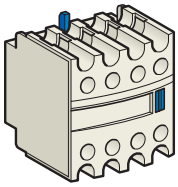
CAD ●●



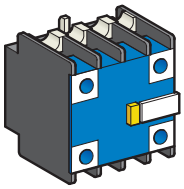
CAD ●●3



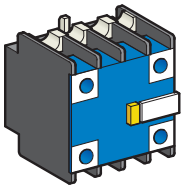
LAD N



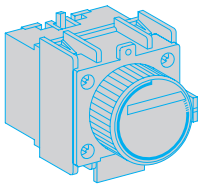
LAD N, LAD C



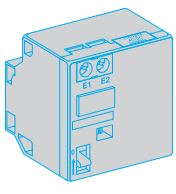
LA1 DX, DZ



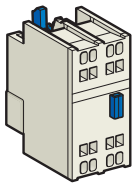
LA1 DY



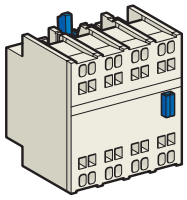
LAD T, LAD S
LAD R



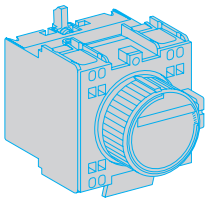
LAD 6K



LAD N●●3



LAD N●●3
LAD C●●3



LAD T●3, LAD R●3, LAD S●3

See page opposite for mounting possibilities
according to control relay type and rating

TeSys control relays

TeSys D control relays and add-on blocks

Control circuit: a.c., d.c. or low consumption

TeSys D

PF526456.tif

CAD 50●●

PF526457.tif

CAD 32●●

PF526458.tif

CAD 503●●

PF526460.tif

CAD 323●●

Control relays for connection by screw clamp terminals

Type	Number of contacts	Composition		Basic reference, to be completed by adding the control voltage code (1)
Instantaneous	5	5	–	**CAD50●●** (3)
		3	2	**CAD32●●** (3)

Control relays for connection by spring terminals

Instantaneous	5	5	–	**CAD503●●**
		3	2	**CAD323●●**

Instantaneous auxiliary contact blocks for connection by screw clamp terminals

For use in normal operating environments

Number of contacts	Maximum number per relay, Clip-on mounting: front	Maximum number per relay, Clip-on mounting: side	Composition		Reference
2	1	–	1	1	**LADN11**
	–	1 on LH side	1	1	**LAD8N11** (6)
	1	–	2	–	**LADN20**
	–	1 on LH side	2	–	**LAD8N20** (6)
	1	–	–	2	**LADN02**
	–	1 on LH side	–	2	**LAD8N02** (6)
4 (4)	1	–	2	2	**LADN22**
			1	3	**LADN13**
			4	–	**LADN40**
			–	4	**LADN04**
			3	1	**LADN31**
4 (4)	1	–	2	2	**LADC22**

Including 1 N/O and 1 N/C make before break.

With dust and damp protected contacts, for use in particularly harsh industrial environments

Number of contacts	Maximum number per relay, Front mounting	Composition: protected (5)			Composition: not protected		Reference
2	1	2	–	–	–	–	**LA1DX20**
		–	2	–	–	–	**LA1DX02**
		2	–	2	–	–	**LA1DY20**
4 (4)	1	2	–	–	2	–	**LA1DZ40**
		2	–	–	1	1	**LA1DZ31**

Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for contact blocks LAD 8 and blocks with dust and damp protected contacts.
For all other instantaneous auxiliary contact blocks, add the digit **3** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N113**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

a.c. supply												
Volts ∿	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

d.c. supply (coils with integral suppression device fitted as standard)											
Volts ⎓	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
U from 0.7 to 1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

Low consumption (coils with integral suppression device fitted as standard)								
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
Code	AL	JL	ZL	BL	EL	FL	ML	UL

(2) LC: low consumption.
*(3) To order control relays with connection by lugs, add the digit **6** to the end of the selected reference.*
Example: CAD50●● becomes CAD506●●.
(4) Blocks with 4 auxiliary contacts cannot be used on low consumption control relays.
(5) Product fitted with 4 earth screen continuity terminals.
(6) These contact blocks cannot be used on low consumption control relays.

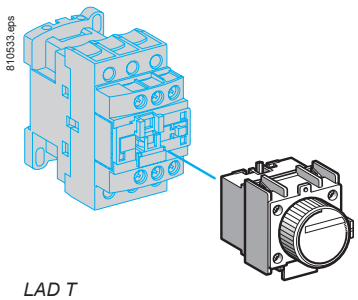
Characteristics: pages B7/22 and B7/25
Dimensions: page B7/26
Schemes: page B7/27

TeSys control relays

TeSys D control relays

Add-on blocks

TeSys D



LAD T

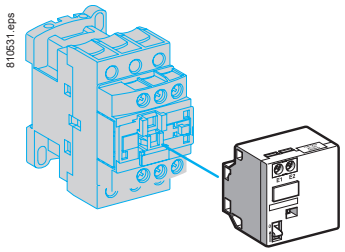
Time delay auxiliary contact blocks for connection by screw clamp terminals (1)

Number and type of contacts	Maximum number per relay	Time delay		Reference
	Front mounting	Type	Range	
1 N/C and 1 N/O	1	On-delay	0.1…3 s (2)	**LADT0**
			0.1…30 s	**LADT2**
			10…180 s	**LADT4**
			1…30 s (3)	**LADS2**
		Off-delay	0.1…3 s (2)	**LADR0**
			0.1…30 s	**LADR2**
			10…180 s	**LADR4**

(Sealing cover: see page B8/21)

Time delay auxiliary contact blocks for connection by spring terminals

Add the digit **3** to the references selected above. Example: **LAD T0** becomes **LAD T03**.



LAD 6K10

Mechanical latch blocks (4)

Unlatching control	Maximum number per relay	Basic reference to be completed (5)
	Front mounting	
Manual or electric	1	**LAD6K10●**

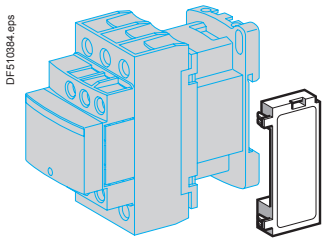
Suppressor modules

These modules clip onto the top of the control relay and the electrical connection is instantly made. Fitting of an input module is still possible.

RC circuits (Resistor-Capacitor)

- Effective protection for circuits highly sensitive to “high frequency” interference.
- Voltage limited to 3 Uc maximum and oscillating frequency limited to 400 Hz maximum.
- Slight time delay on drop-out (1.2 to 2 times the normal time).

For mounting on	Operational voltage	Reference
CAD ∿	∿ 24…48 V	**LAD4RCE**
	∿ 110…240 V	**LAD4RCU**



LAD 4●●

Varistors (peak limiting)

- Protection provided by limiting the transient voltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.
- Slight time delay on drop-out (1.1 to 1.5 times the normal time).

CAD ∿	∿ 24…48 V	**LAD4VE**
	∿ 50…127 V	**LAD4VG**
	∿ 110…250 V	**LAD4VU**

Freewheel diode

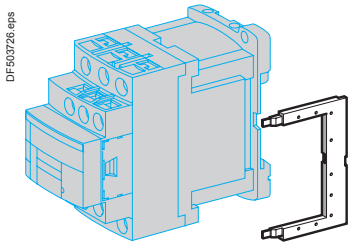
- No overvoltage or oscillating frequency.
- Increase in drop-out time (6 to 10 times the normal time).
- Polarised component.

CAD ⎓	⎓ 24…250 V	**LAD4DDL**

Bidirectional peak limiting diode (6)

- Protection provided by limiting the transient overvoltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.

CAD ∿	∿ 24 V	**LAD4TB**
	∿ 72 V	**LAD4TS**
CAD ⎓	⎓ 24 V	**LAD4TBDL**
	⎓ 72 V	**LAD4TSDL**
	⎓ 125 V	**LAD4TGDL**
	⎓ 250 V	**LAD4TUDL**
	⎓ 600 V	**LAD4TXDL**



LAD 4●●

(1) These contact blocks cannot be used on low consumption control relays.
(2) With extended scale from 0.1 to 0.6 s.
(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.
(4) Power should not be simultaneously applied or maintained to the mechanical latching block of the CAD N. The duration of the control signal to the mechanical latching block and the CAD N should be ≥ 100 ms.
(5) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

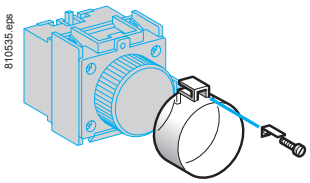
Volts ∿ and ⎓	24	32/36	42/48	60/72	100	110/127	220/240	256/277	380/415
Code	B	C	E	EN	K	F	M	U	Q

*(6) **CAD ●●** ⎓ and low consumption control relays are fitted with a built-in bi-directional peak limiting diode suppressor as standard. On control relays produced after 15th July 2004, this diode is removable. It can therefore be replaced by the user (see references **LAD4T●●●** above). It can also be replaced by a freewheel diode **LAD 4DDL** . If a d.c. or low consumption control replay is used without suppression, the standard suppressor should be replaced with a blanking plug **LAD9DL**.*

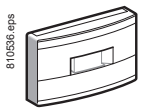
Characteristics: pages B7/22 and B7/25 | Illustrations: page B7/8 | Dimensions: page B7/26 | Schemes: page B7/27

TeSys control relays
TeSys D control relays
Accessories and spare parts

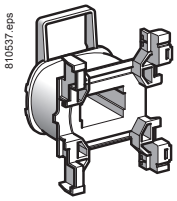
TeSys D



LA9 D901



LAD 9ET1



LXD 1

Accessories (to be ordered separately)

Description	For mounting on	Sold in lots of	Unit reference
For marking			
Sheet of 64 blank legends, self-adhesive, 8 x 33 mm	CAD, LAD (4 contacts)	10	**LAD21**
Sheet of 112 blank legends, self-adhesive, 8 x 12 mm	LAD (2 contacts), LAD T		**LAD22**
Strips of blank, self-adhesive legends for printing by plotter (4 sets of 5 strips)	All products	35	**LAD24**
"SIS Label" labelling software for legends LAD 21 and LAD 22, supplied on CD-Rom	Multi-language version: English, French, German, Italian, Spanish	1	**XBY2U**
Legend holder, snap-in, 8 x 18 mm	LC1 D09...38 LC1DT20...40 LADN (4 contacts) LAD T, LAD R	100	**LAD90**
For protection			
Sealing cover	LAD T, LAD R	1	**LA9D901**
Safety cover preventing access to the moving contact carrier	CAD	1	**LAD9ET1**
Red cover (for safety chain indication)	CAD	1	**LAD9ET1S**

Spare parts: coils

Specifications

- Average consumption at 20 °C:
  - inrush (cos φ = 0.75) 50/60 Hz: 70 VA at 50 Hz,
  - sealed (cos φ = 0.3) 50/60 Hz: 8 VA at 60 Hz,
- Operating range (θ < 60 °C): 0.85 to 1.1 Uc

Control circuit voltage Uc	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1) 50/60 Hz
V	V	H	
12	6.3	0.26	**LXD1J7**
21 (2)	5.6	0.24	**LXD1Z7**
24	6.19	0.26	**LXD1B7**
32	12.3	0.48	**LXD1C7**
36	–	–	**LXD1CC7**
42	19.15	0.77	**LXD1D7**
48	25	1	**LXD1E7**
60	–	–	**LXD1EE7**
100	–	–	**LXD1K7**
110	130	5.5	**LXD1F7**
115	–	–	**LXD1FE7**
120	159	6.7	**LXD1G7**
127	192.5	7.5	**LXD1FC7**
200	–	–	**LXD1L7**
208	417	16	**LXD1LE7**
220/230	539	22	**LXD1M7** (3)
230	595	21	**LXD1P7**
230/240	645	25	**LXD1U7** (4)
277	781	30	**LXD1W7**
380/400	1580	60	**LXD1Q7**
400	1810	64	**LXD1V7**
415	1938	74	**LXD1N7**
440	2242	79	**LXD1R7**
480	2300	85	**LXD1T7**
500	2499	–	**LXD1S7**
575	3294	–	**LXD1SC7**
600	3600	135	**LXD1X7**
690	5600	190	**LXD1Y7**

(1) The last 2 digits in the reference represent the voltage code.
(2) Voltage for special coils fitted in control relays with serial timer module with 24 V supply.
(3) This coil can be used on 240 V at 60 Hz.
(4) This coil can be used on 230/240 V at 50 Hz and on 240 V only at 60 Hz.

Characteristics: pages B7/22 and B7/25
Dimensions: page B7/26
Schemes: page B7/27

TeSys GS

Technical Data for Designers

Contents

Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

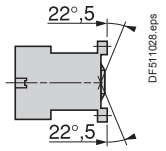
TeSys SK

Environment

Rated insulation voltage (Ui)	Conforming to IEC 60947, VDE 0110 gr C, BS 5424, CSA 22-2 n° 14, UL 508	**V**	690
Conforming to standards			IEC 60947, NF C 63-110, VDE 0660, BS 5424
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 60068 (DIN 50015)		"TC" (Klimafest, Climateproof)
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact
Ambient air temperature around the device	Storage	**°C**	-50…+70
	Operation	**°C**	-20…+50
Maximum operating altitude	Without derating	**m**	2000

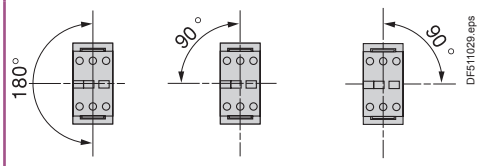
Operating position

Vertical axis



Without derating

Horizontal axis



Without derating

			Min.	Max.
Connection by connectors	Solid cable	**mm²**	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	**mm²**	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	**N.m**	0.8	
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 4 contacts	

Control circuit characteristics

Control relay			CA2 SK	CA2 SKE	CA3 SK
Rated control circuit voltage (Uc)		**V**	∿ 24…400		⎓ 12…72
Control voltage limits (≤ 50 °C)	For operation		0.85…1.1 Uc		0.85…1.1 Uc
	For drop-out		≥ 0.20 Uc		≥ 0.10 Uc
Average consumption at 20 °C and at Uc	Inrush		16 VA	23 VA	2.2 W
	Sealed		4.2 VA	4.9 VA	2.2 W
Heat dissipation		**W**	1.4	1.5	2.2
Operating time at 20 °C and at Uc	Between coil energisation and				
	opening of the N/C contacts	**ms**	8…16		10…18
	closing of the N/O contacts	**ms**	7…14		8…12
	Between coil de-energisation and				
	opening of the N/O contacts	**ms**	6…8		4…6
	closing of the N/C contacts	**ms**	8…10		6…8
Maximum operating rate	In operating cycles per hour		1200		1200
Mechanical durability at Uc in millions of operating cycles	50/60 Hz coil		10		–
	Standard ⎓ coil		–		10

References: pages B7/2 and B7/3
Dimensions: page B7/16
Schemes: page B7/17

Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

TeSys SK

Auxiliary contact characteristics of mini-control relays and instantaneous contact blocks

Rated operational voltage (Ue)		**V**	Up to 690
Rated insulation voltage (Ui)	Conforming to IEC 96047, BS 5424, VDE 0110 group C, CSA C 22-2 n° 14	**V**	690
Conventional rated thermal current (Ith)	For ambient temperature ≤ 55 °C	**A**	10
Frequency of the operational current		**Hz**	Up to 400
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gl fuse	**A**	10

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).

	V	**24**	**48**	**110/ 127**	**220/ 230**	**380/ 400**	**440**
1 million operating cycles	**VA**	48	96	240	440	800	880
3 million operating cycles	**VA**	17	34	86	158	288	317
10 million operating cycles	**VA**	7	14	36	66	120	132
Occasional making capacity	**VA**	1000	2050	5000	10000	14000	13 000

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.

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

Control relays

References: pages B7/2 and B7/3
Dimensions: page B7/16
Schemes: page B7/17

Control relays

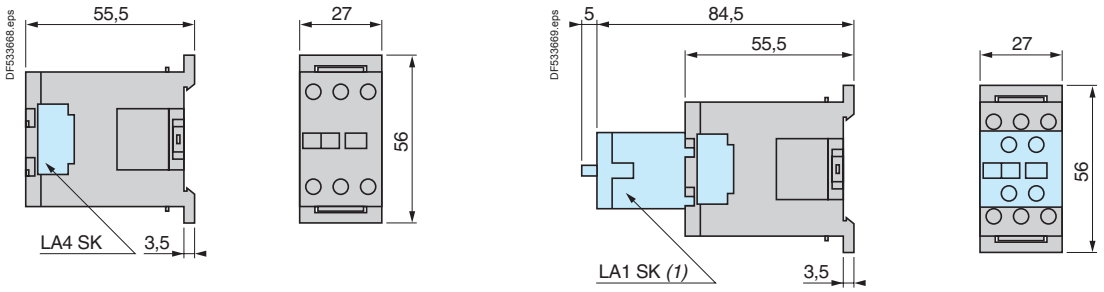
Mini-control relays TeSys CA● SK and CA2 SKE

TeSys SK

Dimensions

Mini-control relays

CA2 SK and CA3 SK



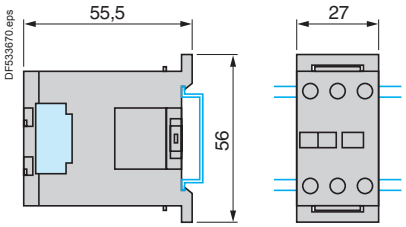
(1) Only on CA2 SK20.

Mounting

Mini-control relays

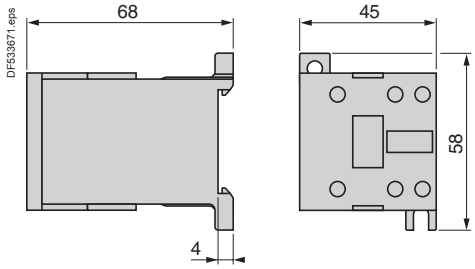
CA2 SK and CA3 SK

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



Dimensions

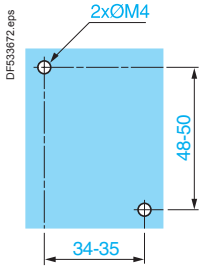
CA2 SKE



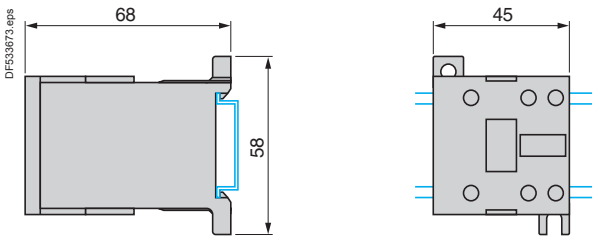
Mounting

CA2 SKE

On panel



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



References:
pages B7/2 and B7/3

Characteristics:
pages B7/14 and B7/15

Schemes:
page B7/17

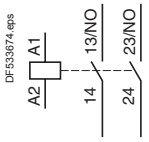
Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

Schemes

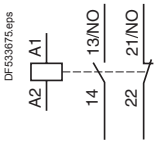
CA2 SK20, CA3 SK20

2 N/O



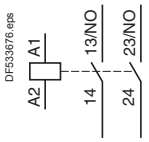
CA2 SK11, CA3 SK11

1 N/O + 1 N/C



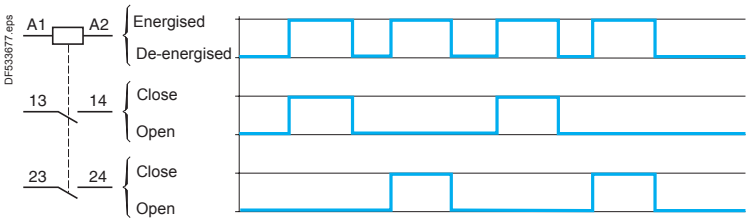
CA2 SKE

2 N/O



CA2 SKE

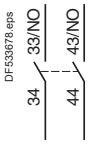
Function diagram



Instantaneous auxiliary contacts

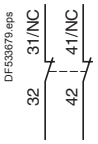
2 N/O

LA1 SK20



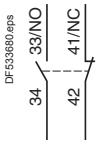
2 N/C

LA1 SK02



1 N/O + 1 N/C

LA1 SK11



Control relays

References:
pages B7/2 and B7/3

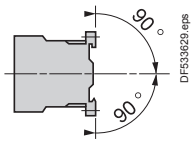
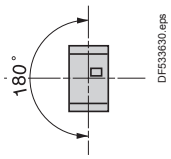
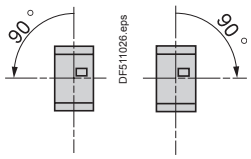
Characteristics:
pages B7/14 and B7/15

Dimensions:
page B7/16

Control relays
TeSys K control relays

TeSys K

Environment

Conforming to standards			IEC 60947, NF C 63-140, VDE 0660, BS 5424		
Product certifications			UL, CSA		
Operating positions			**Vertical axis**  Without derating	**Horizontal axis**  Without derating	 Possible positions for **CA2 K** only, with derating, please consult your Regional Sales Office.
Connection			**Min.**	**Max.**	**Max. to IEC 60947**
Screw clamp connections	Solid cable	**mm²**	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible cable without cable end	**mm²**	1 x 0.75	2 x 4	2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminals	Solid cable	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible cable without cable end	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
Faston connectors	Clip	**mm**	2 x 2.8 or 1 x 6.35		
Solder pins for printed circuit board	With locating device between power and control circuits		4 mm x 35 microns		
Tightening torque	Philips head n° 2 and Ø6	**N.m**	0.8…1.3		
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		
Protective treatment	Conf. to IEC 60068 (DIN 50016)		"TC" (Klimafest, Climateproof)		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact (devices with screw clamp terminals or pins for printed circuit board)		
Ambient air temperature around the device	Storage	**°C**	-50...+80		
	Operation	**°C**	-25...+50		
Maximum operating altitude	Without derating	**m**	2000		
Vibration resistance	Control relay open		2 gn		
5...300 Hz	Control relay closed		4 gn		
Flame resistance	Conforming to UL 94		Self-extinguishing material V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
Shock resistance (1/2 sine wave, 11 ms)	Control relay open		10 gn		
	Control relay closed		15 gn		
Safety separation of circuits	Conforming to VDE 0106 and IEC 60536		SELV (Safety Extra Low Voltage), up to 400 V		

Control circuit characteristics

Control relay type			**CA2 K**	**CA3 K**	**CA4 K**
Rated control circuit voltage (Uc)		**V**	∿ 12...690	⎓ 12...250	⎓ 12...120
Control voltage limits (y 50 °C) single voltage coil	For operation		0.8...1.15 Uc	0.8...1.15 Uc	0.7...1.3 Uc
	For drop-out		⩽ 0.2 Uc	⩽ 0.1 Uc	⩽ 0.1 Uc
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–	–
	Standard ⎓ coil		–	20	–
	Wide range, low consumption ⎓ coil		–	–	30
Maximum operating rate	In operating cycles per hour		10 000	10 000	6000
Average consumption at 20 °C and at Uc	Inrush		30 VA	3 W	1.8 W
	Sealed		4.5 VA	3 W	1.8 W
Heat dissipation		**W**	1.3	3	1.8
Operating time at 20 °C and at Uc	Between coil energisation and opening of the N/C contacts	**ms**	5...15	25...35	25...35
	closing of the N/O contacts	**ms**	10...20	30...40	30...40
	Between coil de-energisation and opening of the N/O contacts	**ms**	10...20	10	10...20
	closing of the N/C contacts	**ms**	15...25	15	15...25
Maximum immunity to microbreaks		**ms**	2	2	2

References: pages B7/4 to B7/7
Dimensions: page B7/20
Schemes: page B7/21

Control relays
TeSys K control relays

TeSys K

Contact characteristics of control relays and instantaneous contact blocks

Number of auxiliary contacts	On **CA● K**		4
	On **LA1 K**		2 or 4 for **CA2 K** and **CA3 K**, 2 for **CA4 K**
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
Insulation resistance		**MΩ**	> 10
Non-overlap distance	CA● K and LA1 K: linked contacts conforming to INRS, BIA and CNA specifications	**mm**	0.5 (see schemes page B7/21)

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)

	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.

	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

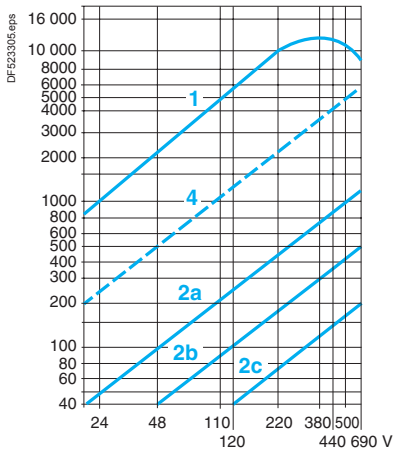
1 Breaking limit of contacts valid for:
■ maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).

2 Electrical durability of contacts for:
■ 1 million operating cycles (2a)
■ 3 million operating cycles (2b)
■ 10 million operating cycles (2c).

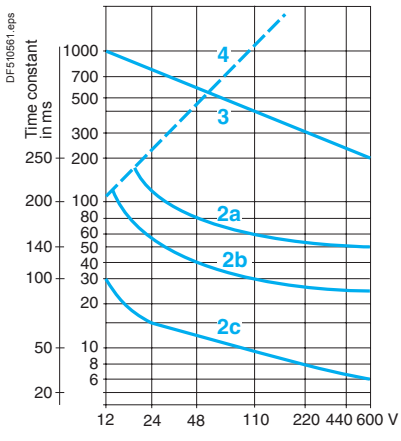
3 Breaking limit of contacts valid for:
■ maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit

Power broken in VA



Power broken in W

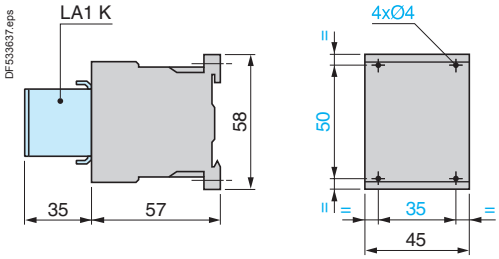


References: pages B7/4 to B7/7
Dimensions: page B7/20
Schemes: page B7/21

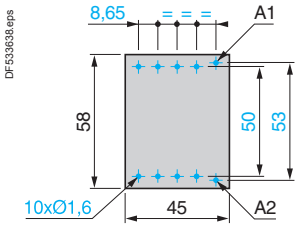
Control relays
TeSys K control relays

TeSys K

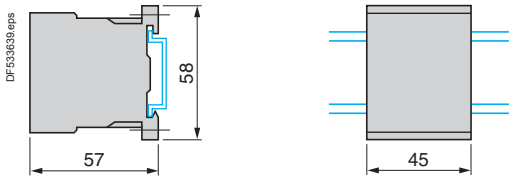
Control relays
CA2 K, CA3 K, CA4 K
On panel



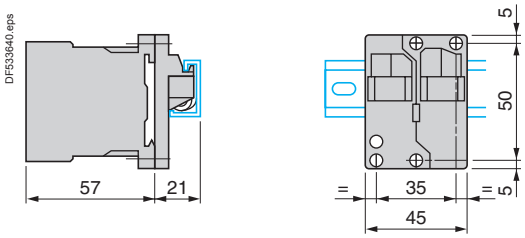
On printed circuit board



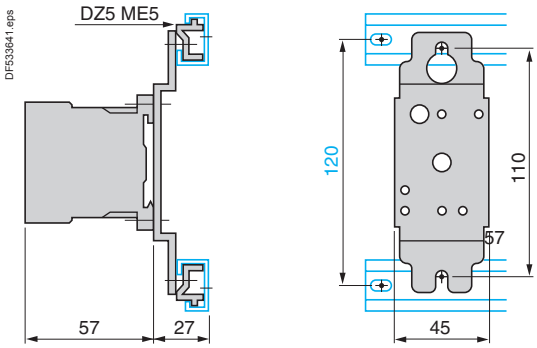
On mounting rail AM1 DP200 or AM1 DE200 (, 35 mm)



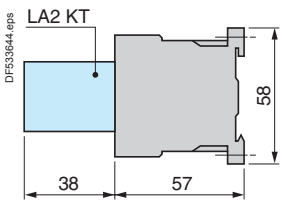
LA9 D973
On asymmetrical rail with clip-on mounting plates



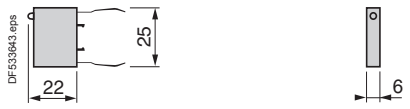
DX1 AP25
On asymmetrical rail with clip-on mounting plates

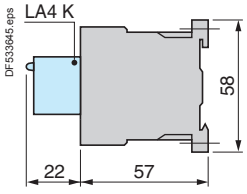


Electronic time delay contact blocks
LA2 KT
On control relay



Suppressor modules
LA4 K
On control relay



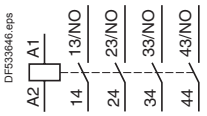


Control relays
TeSys K control relays

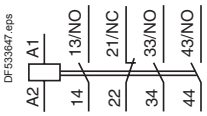
TeSys K

Control relays
CA2 K, CA3 K, CA4 K

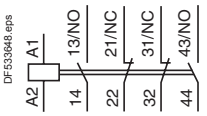
4 N/O



3 N/O + 1 N/C

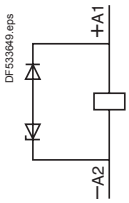


2 N/O + 2 N/C

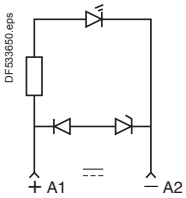


With integral suppression device

CA3 K



CA4 K



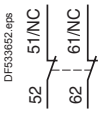
Instantaneous auxiliary contact blocks LA1 K
For CA2 K, CA3 K, CA4 K

2 N/O

LA1 KN20, LA1 KN207

2 N/C

LA1 KN02, LA1 KN027



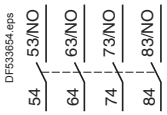
1 N/O + 1 N/C

LA1 KN11, LA1 KN117

For CA2 K, CA3 K

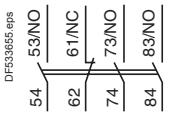
4 N/O

LA1 KN40, LA1 KN407



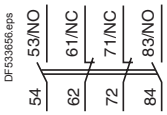
3 N/O + 1 N/C

LA1 KN31, LA1 KN317



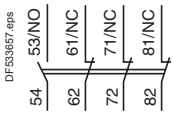
2 N/O + 2 N/C

LA1 KN22, LA1 KN227



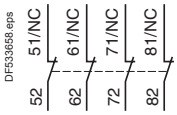
1 N/O + 3 N/C

LA1 KN13, LA1 KN137



4 N/C

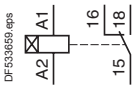
LA1 KN04, LA1 KN047



Electronic time delay contact blocks LA2 KT
For CA2 K, CA3 K, CA4 K

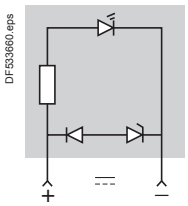
1 C/O

LA2 KT2

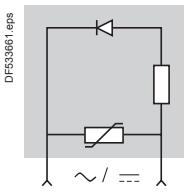


Suppressor modules

LA4 KC



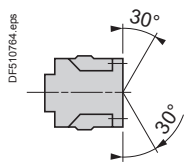
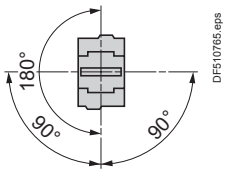
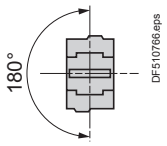
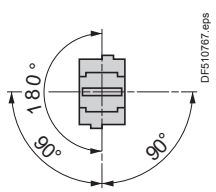
LA4 KE



Control relays

TeSys D

Environment

Control relay type				CAD ~	CAD ⎓	CAD low consumption
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1 Overvoltage category III and degree of pollution 3		**V**	690	690	690
	Conforming to UL, CSA		**V**	600	600	600
Rated impulse withstand voltage (Uimp)	Conforming to IEC 60947		**kV**	6	6	6
Separation of electrical circuits	Conforming to IEC 60536 and VDE 0106			Reinforced insulation up to 400 V		
Conforming to standards				IEC 60947-5-1, N-F C 63-140, VDE 0660, BS 4794, EN 60947-5		
Product certifications				UL, CSA		
Protective treatment	Conforming to IEC 60068			"TH"		
Degree of protection	Conforming to VDE 0106			Front face protected against direct finger contact IP 2X		Protection against direct finger contact
Ambient air temperature around the device	Storage		**°C**	-60…+80	-60…+80	-60…+80
	Operation, conforming to IEC 60255 (0.8…1.1 UC)		**°C**	-5…+60	-5…+60	-5…+60
	For operation at Uc		**°C**	-40…+70	-40…+70	-40…+70
Maximum operating altitude	Without derating		**m**	3000	3000	3000
Operating positions	Without derating in the following positions						
Shock resistance (1) half sine wave for 11ms	Control relay open			10 gn	10 gn	10 gn
	Control relay closed			15 gn	15 gn	15 gn
Vibration resistance (1) 5…300 Hz	Control relay open			2 gn	2 gn	2 gn
	Control relay closed			4 gn	4 gn	4 gn
Screw clamp connections	Flexible conductor without cable end	1 conductor	**mm²**	1…4	1…4	1…4
		2 conductors	**mm²**	1…4	1…4	1…4
	Flexible conductor with cable end	1 conductor	**mm²**	1…4	1…4	1…4
		2 conductors	**mm²**	1…2.5	1…2.5	1…2.5
	Solid conductor without cable end	1 conductor	**mm²**	1…4	1…4	1…4
		2 conductors	**mm²**	1…4	1…4	1…4
	Tightening torque		**N.m**	1.7	1.7	1.7
Spring terminal connections	1 or 2 flexible or rigid conductors without cable end		**mm²**	1…2.5	1…2.5	1…2.5

(1) In the least favourable direction, without change of contact state, with coil supplied at Uc.

References: pages B7/9 to B7/11
Dimensions: page B7/26
Schemes: page B7/27

TeSys D

Control circuit characteristics

Control relay type			CAD ∼	CAD ⎓	CAD low consumption
Rated control circuit voltage (Uc)		V	12…690	12…440	⎓ 5…72
Control voltage limits					
Operation	With coil 50/60 Hz		0.8…1.1 Uc at 50 Hz	–	–
			0.85…1.1 Uc at 60 Hz	–	–
	With standard coil, wide range		–	0.7…1.25 Uc	0.7…1.25 Uc
Drop-out			0.3…0.6 Uc	0.1…0.25 Uc	0.1…0.25 Uc
Average consumption at 20 °C and at Uc	∼ 50/60 Hz (at 50 Hz)	VA	Inrush: 70	–	–
			sealed: 8	–	–
	With standard coil	W	–	Inrush or sealed: 5.4	Inrush or sealed: 2.4
Operating time (at rated control circuit voltage and at 20 °C)	Between coil energisation and - opening of the N/C contacts	ms	4…19	55 ± 15 %	67 ± 15 %
	- closing of the N/O contacts	ms	12…22	63 ± 15 %	77 ± 15 %
	Between coil de-energisation and - opening of the N/O contacts	ms	4…12	20 ± 20 %	27 ± 20 %
	- closing of the N/C contacts	ms	6…17	25 ± 20 %	35 ± 20 %
Short supply failure	Maximum duration without affecting hold-in of the device	ms	2	2	2
Maximum operating rate	In operating cycles per second		3	3	3
Mechanical durability In millions of operating cycles	With coil 50/60 Hz (at 50 Hz)		30	–	–
	With standard coil ⎓ wide range		–	30	30
Time constant L/R		ms	–	28	40

Control relays

References: pages B7/9 to B7/11
Dimensions: page B7/26
Schemes: page B7/27

TeSys D

Characteristics of instantaneous contacts incorporated in the control relay

Number of contacts				5
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1		**V**	690
	Conforming to UL, CSA		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C		**A**	10
Frequency of the operational current			**Hz**	25...400
Minimum switching capacity	U min		**V**	17
	I min		**mA**	5
Short-circuit protection	Conforming to IEC 60947-5-1			gG fuse: 10 A
Rated making capacity	Conforming to IEC 60947-5-1	I rms		∼ 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)
Tightening torque	Philips head n° 2 and Ø6		**N.m**	1.2
Non-overlap distance				Linked contacts in association with auxiliary contacts LAD N
Mechanically linked contacts	Conforming to IEC 60947-5-1			The 3 N/O contacts and the 2 N/C contacts of CAD N32 are linked mechanically by one mobile contact carrier.

References:
pages B7/9 to B7/11

Dimensions:
page B7/26

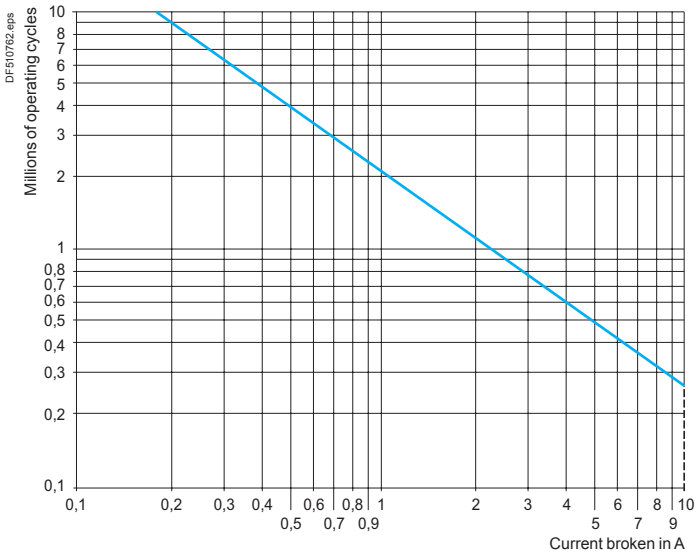
Schemes:
page B7/27

Rated operational power of contacts (conforming to IEC 60947-5-1)

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

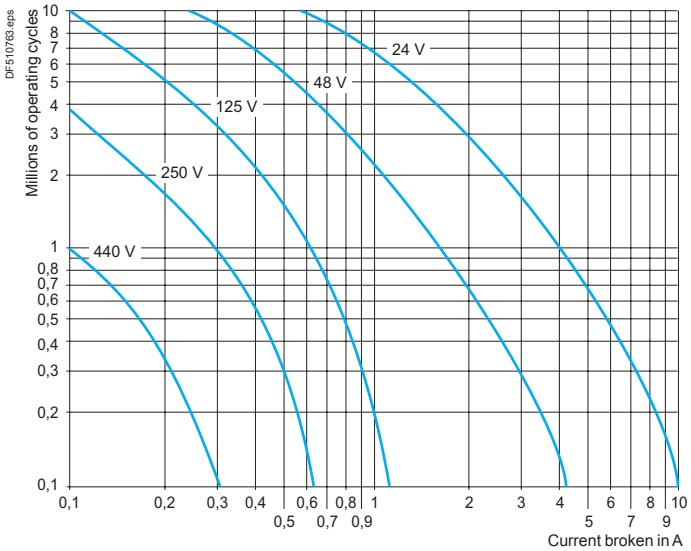
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100



d.c. supply, category DC-13

Electrical durability (valid 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 power.

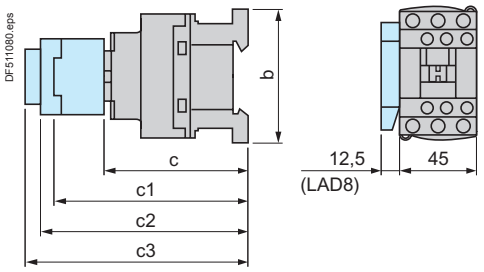
	V	24	48	125	250	440
1 million operating cycles	W	120	90	75	68	61
3 million operating cycles	W	70	50	38	33	28
10 million operating cycles	W	25	18	14	12	10



Control relays

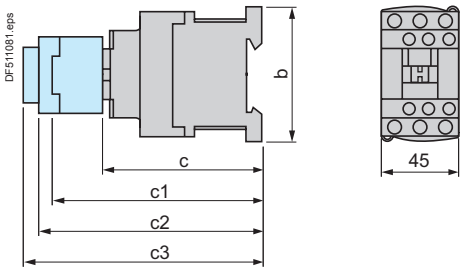
Dimensions

CAD ∼



CAD		32 50	323 503
b		77	99
c	without cover or add-on blocks	84	84
	with cover, without add-on blocks	86	86
c1	with LAD N or C (2 or 4 contacts)	117	117
c2	with LAD 6K10	129	129
c3	with LAD T, R, S	137	137
	with LAD T, R, S and sealing cover	141	141

CAD ⎓ or LC (low consumption)

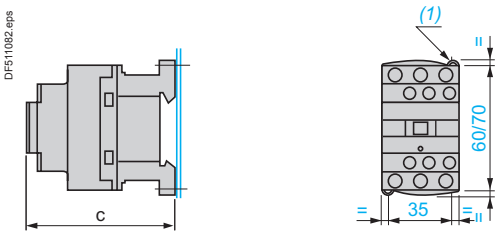


CAD		32 50	323 503
b		77	99
c	without cover or add-on blocks	93	93
	with cover, without add-on blocks	95	95
c1	with LAD N or C (2 or 4 contacts)	126	126
c2	with LAD 6K10	138	138
c3	with LAD T, R, S	146	146
	with LAD T, R, S and sealing cover	150	150

Mounting

CAD

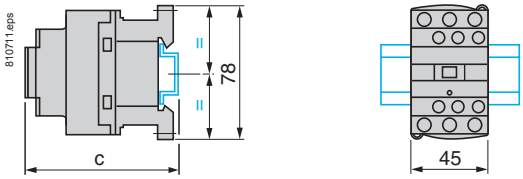
Panel mounted



		CAD ∼	CAD ⎓ or LC
c	with cover	86	95

(1) 2 elongated holes 4.5 x 9.

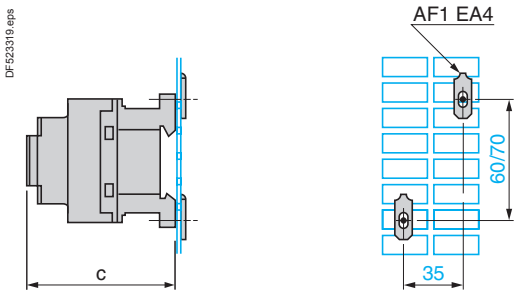
Mounted on rail AM1 DP200 or DE200



		CAD ∼	CAD ⎓ or LC
c	(AM1 DP200) (2)	88	97
c	(AM1 DP200) (2)	96	105

(2) With cover.

Mounted on plate AM1 P



		CAD ∼	CAD ⎓ or LC
c	with cover	86	95

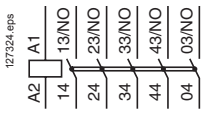
TeSys control relays
TeSys D control relays and add-on blocks

TeSys D

Instantaneous auxiliary contacts

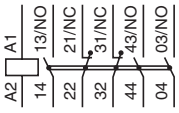
5 N/O

CAD 50



3 N/O + 2 N/C

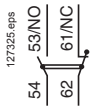
CAD 32



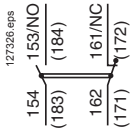
Instantaneous auxiliary contact blocks

1 N/O + 1 N/C

LAD N11

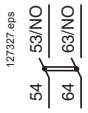


LAD 8N11 (1)

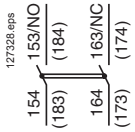


2 N/O

LAD N20

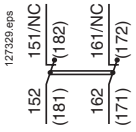


LAD 8N20 (1)

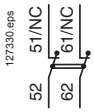


2 N/C

LAD 8N02



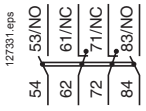
LAD N02



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

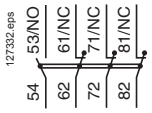
2 N/O + 2F N/C

LAD N22



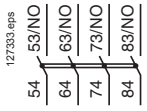
1 N/O + 3 N/C

LAD N13



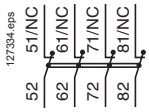
4 N/O

LAD N40



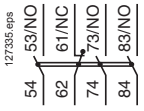
4 N/C

LAD N04



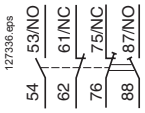
3 N/O + 1 N/C

LAD N31



2 N/O + 2 N/C including 1 N/O + 1 N/C make before break

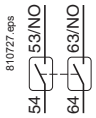
LAD C22



With dust and damp protected contacts

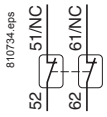
2 N/O protected

LA1 DX20



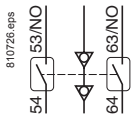
2 N/C protected

LA1 DX02



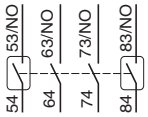
2 N/O protected (2)

LA1 DY20



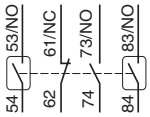
2 N/O protected + 2 N/O non protected

LA1 DZ40



2 N/O protected + 1 N/O + 1 N/C non protected

LA1 DZ31



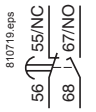
(2) Product fitted with 4 earth screen continuity terminals.

Time delay auxiliary contact blocks

On-delay 1 N/O + 1 N/C

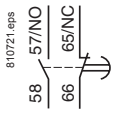
LAD T

LAD S



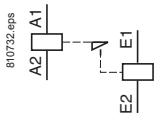
Off-delay 1 N/O + 1 N/C

LAD R



Mechanical latch blocks

LAD 6K10



Control relays

Contactors
TeSys SK, K, D, SKGC, GC, GY, GF

TeSys contactors

TeSys D contactors for motor control up to 75 kW at 400 V, in category AC-3

For connection by screw clamp terminals and lugs


PF526216R.eps

LC1 D09●●


PF526217R.eps

LC1 D25●●


PF526218R.eps

LC1 D65A●●


PF526219R.eps

LC1 D95●●


PF526220-34-MR.eps

LC1 D115●●

3-pole contactors

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		Basic reference, to be completed by adding the control voltage code [2] / Fixing [1]	Weight [3]
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V					
kW	kW	kW	kW	kW	kW	kW	A				kg
Connection by screw clamp terminals											
2.2	4	4	4	5.5	5.5	–	9	1	1	**LC1D09●●**	0.320
3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC1D12●●**	0.325
4	7.5	9	9	10	10	–	18	1	1	**LC1D18●●**	0.330
5.5	11	11	11	15	15	–	25	1	1	**LC1D25●●**	0.370
7.5	15	15	15	18.5	18.5	–	32	1	1	**LC1D32●●**	0.375
9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC1D38●●**	0.380
Power connections by EverLink® BTR screw connectors [4] and control by spring terminals											
11	18.5	22	22	22	30	–	40	1	1	**LC1D40A●●** [5]	0.850
15	22	25	30	30	33	–	50	1	1	**LC1D50A●●** [5]	0.855
18.5	30	37	37	37	37	–	65	1	1	**LC1D65A●●** [5]	0.860
Connection by screw clamp terminals or connectors											
22	37	45	45	55	45	45	80	1	1	**LC1D80●●**	1.590
25	45	45	45	55	45	45	95	1	1	**LC1D95●●**	1.610
30	55	59	59	75	80	65	115	1	1	**LC1D115●●**	2.500
40	75	80	80	90	100	75	150	1	1	**LC1D150●●**	2.500

Connection by lugs or bars

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1 D09●●** becomes **LC1 D096●●**.

Separate components

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

(1) LC1 D09 to D65A: clip-on mounting on 35 mm ⊔ rail AM1 DP or screw fixing.
LC1 D80 to D95 ∿: clip-on mounting on 35 mm ⊔ rail AM1 DP or 75 mm ⊔ rail AM1 DL or screw fixing.
LC1 D80 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.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

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 built-in suppression as standard, by bi-directional peak limiting diode).													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
LC1 D80…D115													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

d.c. supply											
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
LC1 D09…D65A (coils with integral suppression device fitted as standard)											
U 0.75…1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD
LC1 D80…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**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D38 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg from **LC1 D40A** to **D65A** and 1 kg for **LC1 D80** and **D95**.*
*(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*
*(5) For low consumption kit **LA4 DBL** (see page B8/19).*

TeSys contactors

TeSys D contactors for motor control up to 30 kW at 400 V, in category AC-3

For connection by spring terminals

PF526221R.eps

LC1 D123●●

PF526222R.eps

LC1 D65A3●●

3-pole contactors

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		Basic reference, to be completed by adding the control voltage code [2]
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V				Fixing [1]
kW	kW	kW	kW	kW	kW	kW	A			
Power and control connections by spring terminals										
2.2	4	4	4	5.5	5.5		9	1	1	**LC1D093●●**
3	5.5	5.5	5.5	7.5	7.5		12	1	1	**LC1D123●●**
4	7.5	9	9	10	10		18	1	1	**LC1D183●●**
5.5	11	11	11	15	15		25	1	1	**LC1D253●●**
7.5	15	15	15	18.5	18.5		32 [4]	1	1	**LC1D323●●**
Power connections by EverLink® BTR screw connectors [5] and control by spring terminals										
11	18.5	22	22	22	30		40	1	1	**LC1D40A3●●** [6]
15	22	25	30	30	33		50	1	1	**LC1D50A3●●** [6]
18.5	30	37	37	37	37		65	1	1	**LC1D65A3●●** [6]

Connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil and auxiliary terminals.
For contactors LC1 D09 and LC1 D12 only, replace the figure **3** with a **9** in the references selected above.
Example: **LC1 D093●●** becomes **LC1 D099●●**.

Separate components

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

(1) LC1 D09 to D32: clip-on mounting on 35 mm ⊔ rail AM1 DP or screw fixing.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply												
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
LC1 D09…D65A												
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…D65A (coils with built-in suppression as standard, by bi-directional peak limiting diode)											
U 0.75…1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

Low consumption								
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D32 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.
(3) The weights indicated are for contactors with a.c. control circuit.
*For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D32** and 0.075 kg from **LC1 D40A** to **D65A**.*
*(4) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD 331** may be used (Quickfit technology, see page B1/18). When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*
*(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*
*(6) For low consumption kit **LA4 DBL** (see page B8/19).*

TeSys contactors

TeSys D, 3-pole contactors

For control in category AC-1, from 25 to 200 A

TeSys D

PF528230R.eps

LC1 D09●●

PF526231R.eps

LC1 D65A●●

3-pole contactors

Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the control voltage code [1] / Fixing [2]	Weight [3]
A					kg
Connection by screw clamp terminals					
25	3	1	1	**LC1D09●●**	0.320
				or **LC1D12●●**	0.325
32	3	1	1	**LC1D18●●**	0.330
40	3	1	1	**LC1D25●●**	0.370
50	3	1	1	**LC1D32●●**	0.375
				or **LC1D38●●**	0.380
Connection by EverLink®, BTR screw connectors [4]					
60	3	1	1	**LC1D40A●●** [7]	0.850
80	3	1	1	**LC1D50A●●** [7]	0.855
				or **LC1D65A●●** [5][7]	0.860
Connection by screw clamp terminals or connectors					
125	3	1	1	**LC1D80●●**	1.590
				or **LC1D95●●** [5]	1.610
200	3	1	1	**LC1D115●●**	2.500
				or **LC1D150●●** [6]	2.500

3-pole contactors for connection by lugs

In the references selected above, insert a figure **6** before the voltage code.
Example: **LC1 D09●●** becomes **LC1 D096●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply													
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC1 D09...D150 (coils D115 and D150 fitted with integral suppression device as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–
LC1 D80...D150													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

d.c. supply												
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**	
LC1 D09...D65A (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 or LP1 D80 and **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**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D38 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
__LC1 D80__ and __D95__ ∿: clip-on mounting on 35 mm ⊔ rail __AM1 DP__ or 75 mm ⊔ rail __AM1 DL__ or screw fixing.
__LC1__ or __LP1 D80__ 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.

(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from __LC1 D09__ to __D38__, 0.075 kg from __LC1 D40A__ to __D65A__ and 1 kg for __LC1 D80__ and __D95__.

(4) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference __LAD ALLEN4__, see page B8/21).

(5) Selection according to the number of operating cycles, see AC-1 curve, page A5/28.

(6) 32 A with 2 x 4 mm² cables connected in parallel.

(7) For low consumption kit __LA4 DBL__ (see page B8/19).

Selection: pages A5/23 to A5/47
Characteristics: pages B8/53 to B8/58
Dimensions: pages B8/65 to B8/68
Schemes: pages B8/69 and B8/70

TeSys contactors

TeSys D, 3-pole contactors

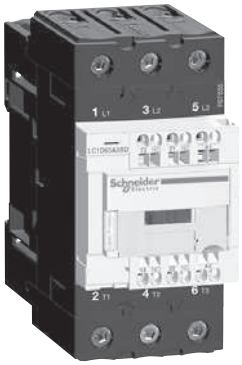
For control in category AC-1, from 25 to 200 A

TeSys D

PF526232R.eps

LC1 D123●●

PF526233R.eps



LC1 D65A3●●

3-pole contactors for connection by Faston connectors

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals. For contactors LC1 D09 and LC1 D12 only, in the references selected from the previous page, insert a figure **9** before the voltage code. Example: **LC1 D09●●** becomes **LC1 D099●●**.

3-pole contactors

Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the control voltage code (1) / Fixing (2)		Weight (3)
						
A						**kg**
Connection by spring terminals						
16	3	1	1	**LC1D093●●** (4)		0.320
				or **LC1D123●●** (4)		0.325
25	3	1	1	**LC1D183●●** (5)		0.335
				or **LC1D253●●** (6)		0.325
				or **LC1D323●●** (6)		0.325
Power connections by EverLink® BTR screw connectors (7) and control by spring terminals						
60	3	1	1	**LC1D40A3●●** (9)		0.850
80	3	1	1	**LC1D50A3●●** (8) (9)		0.855
				or **LC1D65A3●●** (8) (9)		0.860

Separate components

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply													
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC1 D09...D65A													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7

d.c. supply												
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**	
LC1 D09...D65A (coils with integral suppression device fitted as standard)												
U 0.75…1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD	

Low consumption								
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D38 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.
*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38** and 0.075 kg from **LC1 D40A** to **D65A**.*
(4) 20 A with 2 x 2.5 mm² cables connected in parallel.
(5) 32 A with 2 x 4 mm² cables connected in parallel.
(6) 40 A with 2 x 4 mm² cables connected in parallel.
*(7) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*
(8) Selection according to the number of operating cycles, see AC-1 curve, page A5/28.
*(9) For low consumption kit **LA4 DBL** (see page B8/19).*

TeSys contactors

TeSys D, 4-pole contactors

For control in category AC-1, 25 to 200 A

TeSys D

PF526227R.eps

LC1 DT20●●

PF526228R.eps

LC1 DT80A●●

PF526229R.eps

LC1 D65008●●

4-pole contactors for connection by screw clamp terminals or connectors

Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1	Number of poles		Instantaneous auxiliary contacts		Basic reference, to be completed by adding the control voltage code (1) Fixing (2)	Weight (3)
A						kg
Connection by screw clamp terminals						
20	4	–	1	1	**LC1DT20●●**	0.365
	2	2	1	1	**LC1D098●●**	0.365
25	4	–	1	1	**LC1DT25●●**	0.365
	2	2	1	1	**LC1D128●●**	0.365
32	4	–	1	1	**LC1DT32●●**	0.425
	2	2	1	1	**LC1D188●●**	0.425
40	4	–	1	1	**LC1DT40●●**	0.425
	2	2	1	1	**LC1D258●●**	0.425
Connection by EverLink®, BTR screw connectors						
60	4	–	1	1	**LC1DT60A●●**	1.090
80	4	–	1	1	**LC1DT80A●●**	1.150
Connection by screw clamp terminals or connectors						
60	2	2	–	–	**LC1D40008●●**	1.440
				or	**LP1D40008●●**	2.210
80	2	2	–	–	**LC1D65008●●**	1.450
				or	**LP1D65008●●**	2.220
125	4	–	–	–	**LC1D80004●●**	1.760
				or	**LP1D80004●●**	2.685
	2	2	–	–	**LC1D80008●●**	1.840
				or	**LP1D80008●●**	2.910
200	4	–	–	–	**LC1D115004●●**	2.860

4-pole contactors for connection by lugs or bars

In the references selected above, insert a figure 6 before the voltage code.
Example: **LC1 DT20●●** becomes **LC1 DT206●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Office):

a.c. supply													
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC1 D09...D150 and LC1 DT20...DT80A (coils D115 and D150 fitted with integral suppression device as standard)													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–
LC1 D80...D115													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

d.c. supply											
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
LC1 D09...D65A and LC1 DT20...DT80A (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 or LP1D40...D80											
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 (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**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D38 and LC1 DT20...DT40 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(2) **LC1 D09** to **D38** and **LC1 DT20** to **DT80A**: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*__LC1 D80__ ∿: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*__LC1__ or __LP1 D80__ ⎓: 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.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg from **LC1 DT60A** and **D80A** and 1 kg for **LC1 D80**.*

Selection: pages A5/23 to A5/47
Characteristics: pages B8/53 to B8/58
Dimensions: pages B8/65 to B8/68
Schemes: pages B8/69 and B8/70

TeSys contactors

TeSys D, 4-pole contactors

For control in category AC-1, 25 to 200 A

4-pole contactors

Non inductive loads maximum current ($\theta \leq 60$ °C) utilisation category AC-1	Number of poles		Instan-taneous auxiliary contacts		Basic reference, to be completed by adding the voltage code [1] / Fixing [2]	Weight [3]
A						kg
Connection by spring terminals						
20	4	–	1	1	**LC1DT203●●**	0.380
	2	2	1	1	**LC1D0983●●**	0.380
25	4	–	1	1	**LC1DT253●●**	0.380
	2	2	1	1	**LC1D1283●●**	0.380
32	4	–	1	1	**LC1DT323●●**	0.425
	2	2	1	1	**LC1D1883●●**	0.425
40	4	–	1	1	**LC1DT403●●**	0.425
	2	2	1	1	**LC1D2583●●**	0.425
Connection by EverLink®, BTR screw connectors and control circuit by spring terminals						
60	4	–	1	1	**LC1DT60A3●●**	1.090
80	4	–	1	1	**LC1DT80A3●●**	1.150

Separate components

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply												
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC1 D09...D25 and LC1 DT20...DT80A (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...D25 and LC1 DT20...DT80A (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

Low consumption								
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC1 D09...D25 and LC1 DT20...DT40 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(2) **LC1 D09** to **D38** and **LC1 DT20** to **DT80A**: clip-on mounting on 35 mm ⊥⊥ rail **AM1DP** or screw fixing.*

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.160 kg from **LC1 D09** to **D38**, 0.075 kg for **LC1 DT60A** and **DT80A**.*

TeSys contactors

For the North American market, Conforming to UL and CSA standards 25 to 160 A

TeSys D

LC1 D09●●

LC1 D25●●

LC1 D65A●●

LC1 D95●●

Contactors

Standard power ratings of motors 50/60 Hz						Associated cable type 75 °C-Cu	Continuous current	Type of contactor required Basic reference, to be completed (1)
Single-phase 1 Ø		3-phase 3 Ø						Fixing, connection (2)
115 V	230 V 240 V	200 V 208 V	230 V 240 V	460 V 480 V	575 V 600 V			
HP	HP	HP	HP	HP	HP		A	
Connection by screw clamp terminals								
1/3	1	2	2	5	7.5	AWG 18 - 10	25	**LC1D09●●**
0.5	2	3	3	7.5	10	AWG 18 - 10	25	**LC1D12●●**
1	3	5	5	10	15	AWG 18 - 8	32	**LC1D18●●**
2	3	7.5	7.5	15	20	AWG 14 - 6	40	**LC1D25●●**
2	5	10	10	20	25	AWG 14 - 6	50	**LC1D32●●**
Power connections by EverLink® BTR screw connectors (4) and control by spring terminals								
3	5	10	10	30	30	AWG 16 - 2	60	**LC1D40A●●**
3	7.5	15	15	40	40	AWG 16 - 2	70	**LC1D50A●●**
5	10	20	20	40	50	AWG 16 - 2	80	**LC1D65A●●**
Connection by screw clamp terminals or connectors								
7.5	15	25	30	60	60	AWG 10 - 2	110	**LC1D80●●**
7.5	15	25	30	60	60	AWG 10 - 2	110	**LC1D95●●**
–	–	30	40	75	100	AWG 2/0	160	**LC1D115●●**
–	–	40	50	100	125	AWG 3/0	160	**LC1D150●●**

Applications with High-Fault Short-Circuit ratings

For contactors LC1 D40A to LC1 D65A, the High-Fault Short-Circuit ratings are 50 kA at 480 V and 25 kA at 600 V.

Application example

For a 15 HP-230 V motor

Select a contactor type **LC1 D50A**.

Information: the contactor rating selected corresponds to “size 2”, the associated cable is type AWG3 75 °C-Cu.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply																	
Volts	**24**	**42**	**48**	**110**	**115**	**120**	**208**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**480**	**500**
LC1 D09…D150 (D115 and D150 coils with integral suppression device fitted as standard)																
50/60 Hz	B7	D7	E7	F7	FE7	G7	LE7	M7	P7	U7	Q7	V7	N7	R7	T7	S7
LC1 D80…D115																
50 Hz	B5	D5	E5	F5	FE5	G5	–	M5	P5	U5	Q5	V5	N5	R5	–	S5
60 Hz	B6	–	E6	F6	–	G6	L6	M6	–	U6	Q6	–	–	R6	T6	–

d.c. supply											
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
LC1 D09…D65A (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 D80 and 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**	**12**	**20**	**24**	**48**	**72**	**110**	**220**	**250**
LC1 D09…D38 (coils with integral suppression device fitted as standard)									
U 0.7…1.25 Uc	AL	JL	ZL	BL	EL	SL	FL	ML	UL

*(2) **LC1 D09** to **D65A**: clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*
__LC1 D80__ and __LC1 D95__: clip-on mounting on 35 mm ⊥ rail __AM1 DP__ or 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.

TeSys contactors

TeSys D, 3-pole reversing contactors for motor control up to 75 kW at 400 V, in category AC-3 Horizontally mounted, pre-assembled

LC2 D12●●

LC2 D65A●●

LC2 D115●●

3-pole reversing contactors for connection by screw clamp terminals

Pre-wired power connections.

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 per contactor		Contactors supplied with coil Basic reference, to be completed by adding the control voltage code [2]	Weight [3]
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V				Fixing [1]	
kW	kW	kW	kW	kW	kW	kW	A				kg
With mechanical interlock, without electrical interlocking, for connection by screw clamp terminals or connectors											
2.2	4	4	4	5.5	5.5	–	9	1	1	**LC2D09●●** [4]	0.687
3	5.5	5.5	5.5	7.5	7.5	–	12	1	1	**LC2D12●●** [4]	0.697
4	7.5	9	9	10	10	–	18	1	1	**LC2D18●●** [4]	0.707
5.5	11	11	11	15	15	–	25	1	1	**LC2D25●●** [4]	0.787
7.5	15	15	15	18.5	18.5	–	32	1	1	**LC2D32●●** [4]	0.797
9	18.5	18.5	18.5	18.5	18.5	–	38	1	1	**LC2D38●●** [4]	0.807
11	18.5	22	22	22	30	–	40	1	1	**LC2D40A●●** [5]	1.870
15	22	25	30	30	33	–	50	1	1	**LC2D50A●●** [5]	1.880
18.5	30	37	37	37	37	–	65	1	1	**LC2D65A●●** [5]	1.890
22	37	45	45	55	45	–	80	1	1	**LC2D80●●**	3.200
25	45	45	45	55	45	–	95	1	1	**LC2D95●●**	3.200
With mechanical interlock and electrical interlocking, for connection by screw clamp terminals or connectors											
30	55	59	59	75	80	65	115	1	1	**LC2D115●●**	6.350
40	75	80	80	90	100	75	150	1	1	**LC2D150●●**	6.400

Connection by lugs or bars

For reversing contactors LC2 D09 to LC2 D38, LC2 D115 and LC2 D150, in the references selected above, insert a figure **6** before the voltage code. Example: **LC2 D09●●** becomes **LC2 D096●●**.
To build a 40 to 65 A reversing contactor, for connection by lugs, order 2 contactors **LC1 D●●A6** and mechanical interlock **LAD 4CM** (see page B8/23).

Component parts

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

*(1) LC2 D09 to D65A: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*LC2 D80 and D95: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*LC2 D115 and D150: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*

(2) Standard control circuit voltages (for other voltages between 16 and 690 V, please consult your Regional Sales Office):

a.c. supply													
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC2 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	S7
LC2 D80…D115													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

d.c.supply											
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**
LC2 D09…D65A (coils with integral suppression device fitted as standard)											
U 0.75…1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD

Low consumption								
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**
LC2 D09...D38 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(3) The weights indicated are for contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2 D09** to **D38**, 0.150 kg for **LC1 D40A** to **D65A**.*

*(4) For reversing contactors with electrical interlocking pre-wired at the factory, add suffix **V** to the references selected above. Example: **LC2 D09P7** becomes **LC2 D09P7V**.*

*(5) For low consumption kit **LA4 DBL** (see page B8/19).*

***Note:** when assembling a reversing contactor, it is good practice to incorporate a 50 ms time delay.*

TeSys contactors

TeSys D, 3-pole reversing contactors for motor control up to 15 kW at 400 V, in category AC-3 Horizontally mounted, pre-assembled

DF526174R.eps

LC2 D123●●

3-pole reversing contactors, for connection by spring terminals

Pre-wired power connections.

Mechanical interlock without electrical interlocking.

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 per contactor		Contactors supplied with coil Basic reference, to be completed by adding the voltage code [2]	Weight [3]
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V				Fixing [1]	
kW	kW	kW	kW	kW	kW	A				kg
For connection by spring terminals										
2.2	4	4	4	5.5	5.5	9	1	1	**LC2D093●●**	0.687
3	5.5	5.5	5.5	7.5	7.5	12	1	1	**LC2D123●●**	0.697
4	7.5	9	9	10	10	18	1	1	**LC2D183●●**	0.707
5.5	11	11	11	15	15	25	1	1	**LC2D253●●**	0.787
7.5	15	15	15	18.5	18.5	32 [4]	1	1	**LC2D323●●**	0.797
Power connection by EverLink®, BTR screw connectors [5] and control by spring terminals										
11	18.5	22	22	22	30	40	1	1	**LC2D40A3●●** [6]	1.870
15	22	25	30	30	33	50	1	1	**LC2D50A3●●** [6]	1.880
18.5	30	37	37	37	37	65	1	1	**LC2D65A3●●** [6]	1.890
For connection by Faston connectors										

All power connections are to be made by the customer.

These contactors are fitted with Faston connectors: 2 x 6.35 mm on the power poles and 1 x 6.35 mm on the coil terminals.

For reversing contactors LC2 D09 and LC2 D12 only, in the references selected above, replace the figure **3** before the voltage code with a figure **9**.

Example: **LC2 D093●●** becomes **LC2 D099●●**.

Component parts

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

*(1) LC2 D09 to D32: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply													
Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**	**500**
LC2 D09…D65A													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	S7
d.c. supply													
Volts	**12**	**24**	**36**	**48**	**60**	**72**	**110**	**125**	**220**	**250**	**440**		
LC2 D09…D65A (coils with integral suppression device fitted as standard)													
U 0.75…1.25 Uc	JD	BD	CD	ED	ND	SD	FD	GD	MD	UD	RD		
Low consumption													
Volts ⎓	**5**	**12**	**20**	**24**	**48**	**110**	**220**	**250**					
LC2 D09...D38 (coils with integral suppression device fitted as standard)													
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL					

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(3) The weights indicated are for reversing contactors with a.c. control circuit. For d.c. or low consumption control circuit, add 0.330 kg for **LC2 D09** to **D38**, 0.150 kg for **LC1 D40A** to **D65A**.*

*(4) Must be wired with 2 x 4 mm² cables in parallel on the upstream side. On the downstream side, outgoing terminal block **LAD 331** may be used (Quickfit technology, see page B1/18).When wired with a single cable, the product is limited to 25 A (11 kW/400 V motors).*

*(5) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*

*(6) For low consumption kit **LA4 DBL** (see page B8/19).*

TeSys contactors

TeSys D, 4-pole changeover contactor pairs for control in category AC-1, 20 to 200 A

LC2 DT20●●

Pre-assembled. Pre-wired power connections

For connection by screw clamp terminals or connectors

LC2 DT20 to LC2 DT40: mechanical interlock without electrical interlocking.
LC2 D80004: order separately 2 auxiliary contact blocks LAD N●1 to obtain electrical interlocking between the 2 contactors (see page B8/15).
For electrical interlocking incorporated in the mechanical interlock, please consult your Regional Sales Office.
LC2 D115004: mechanical interlock with integral, pre-wired electrical interlocking.

Utilisation category AC-1 Non-inductive loads Maximum rated operational current ($\theta \leq 60$ °C)	Instantaneous auxiliary contacts per contactor		Contactors supplied with coil Basic reference, to be completed by adding the voltage code (1) Fixing (2)	Weight
A				kg
20	1	1	**LC2DT20●●**	0.730
25	1	1	**LC2DT25●●**	0.730
32	1	1	**LC2DT32●●**	0.850
40	1	1	**LC2DT40●●**	0.850
125	–	–	**LC2D80004●●**	3.200
200	–	–	**LC2D115004●●**	7.400
For connection by lugs or bars				
20	1	1	**LC2DT206●●**	0.730
25	1	1	**LC2DT256●●**	0.730
32	1	1	**LC2DT326●●**	0.850
40	1	1	**LC2DT406●●**	0.850

For customer assembly

For connection by screw clamp terminals or connectors

60	1	1	**LC1DT60A●●** (3)	–
80	1	1	**LC1DT80A●●** (3)	–
For connection by lugs or bars				
60	1	1	**LC1DT60A6●●** (3)	–
80	1	1	**LC1DT80A6●●** (3)	–

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

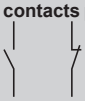
Note: when assembling changeover contactor pairs, it is good practice to incorporate a 50 ms time delay.
(1) See note (1) on next page.
*(2) **LC2 DT20** to **LC2 DT80**: clip-on mounting on 35 mm ⊔ rail **AM1 DP** or screw fixing.*
*__LC2 D80:__ clip-on mounting on 35 mm ⊔ rail **AM1 DP** or 75 mm ⊔ rail **AM1 DL** or screw fixing.*
*__LC2 D115__: clip-on mounting on 2 x 35 mm ⊔ rails **AM1 DP** or screw fixing.*
*(3) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD 4CM** (see page B8/23).*

TeSys contactors

TeSys D, 4-pole changeover contactor pairs for control in category AC-1, 20 A

Pre-assembled. Pre-wired power connections

For connection by spring terminals.

Utilisation category AC-1 Non-inductive loads Maximum rated operational current ($\theta \leq 60$ °C)	Instantaneous auxiliary contacts per contactor 		Contactors supplied with coil Basic reference, to be completed by adding the control voltage code (1) Fixing (2)
A			
20	1	1	**LC2DT203●●**

For customer assembly

Power connection by EverLink®, BTR screw connectors (3) and control by spring terminals

60	1	1	**LC1DT60A3●●** (4)
80	1	1	**LC1DT80A3●●** (4)

Separate components

Auxiliary contact blocks and add-on modules: see pages B8/15 to B8/21.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply

Volts	24	42	48	110	115	220	230	240	380	400	415	440	500
LC2 DT20…DT40, LC1 DT60…DT80													
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7	–
LC2 D80004…D115004													
50 Hz	B5	D5	E5	F5	FE5	M5	P5	U5	Q5	V5	N5	R5	S5
60 Hz	B6	–	E6	F6	–	M6	–	U6	Q6	–	–	R6	–

d.c. supply

Volts	12	24	36	48	60	72	110	125	220	250	440
LC2 DT20…DT40, LC1 DT60…DT80 (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

Low consumption

Volts ⎓	5	12	20	24	48	110	220	250
LC2 DT20...DT40 (coils with integral suppression device fitted as standard)								
U 0.8…1.25 Uc	AL	JL	ZL	BL	EL	FL	ML	UL

For other voltages between 5 and 690 V, see pages B8/25 to B8/28.

*(2) Clip-on mounting on 35 mm ⊥ rail **AM1 DP** or screw fixing.*

*(3) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*

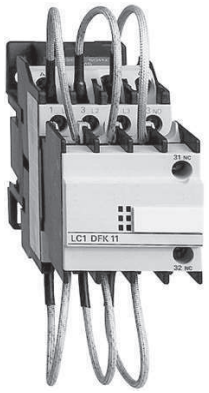
*(4) For these operational currents, order 2 identical contactors and a mechanical interlock **LAD 4CM** (see page B8/23).*

TeSys contactors

For switching 3-phase capacitor banks, used for power factor correction

Direct connection without choke inductors

PF511555.eps



LC1 DFK11●●

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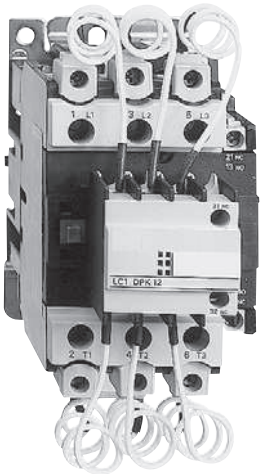


LC1 DPK12●●

Special contactors

Special contactors **LC1 D●K** are designed for switching 3-phase, single or multiple-step capacitor banks (up to 6 steps). Over 6 steps, it is recommanded to use chokes in order to limit the inrush current and thus improve the lifetime of the installation. The contactors are conform to standards IEC 60070 and 60831, UL and CSA.

Contactor applications

Specification

Contactors fitted with a block of early make poles and damping resistors, limiting the value of the current on closing to 60 In max.
This current limitation increases the life of all the components of the installation, in particular that of the fuses and capacitors.
The patented design of the add-on block (n° 90 119-20) ensures safety and long life of the installation.

Operating conditions

There is no need to use choke inductors for either single or multiple-step capacitor banks. Short-circuit protection must be provided by gl type fuses rated at 1.7…2 In.

Maximum operational power

The power values given in the selection table below are for the following operating conditions:

Prospective peak current at switch-on	LC1 D●K		200 In
Maximum operating rate	LC1 DFK, DGK, DLK, DMK, DPK		240 operating cycles/hour
	LC1 DTK, DWK		100 operating cycles/hour
Electrical durability at nominal load	All contactor ratings	400 V	300 000 operating cycles
		690 V	200 000 operating cycles

Operational power at 50/60 Hz [1] θ ≤ 55 °C [2]			Instantaneous auxiliary contacts		Tightening torque on cable end	Basic reference, to be completed by adding the voltage code [3]	Weight
220 V 240 V	400 V 440 V	660 V 690 V					
kVAR	kVAR	kVAR	N/O	N/C	N.m		kg
6.7	12.5	18	1	2	1.7	**LC1DFK●●**	0.430
8.5	16.7	24	1	2	1.7	**LC1DGK●●**	0.450
10	20	30	1	2	2.5	**LC1DLK●●**	0.600
15	25	36	1	2	2.5	**LC1DMK●●**	0.630
20	33.3	48	1	2	5	**LC1DPK●●**	1.300
25	40	58	1	2	5	**LC1DTK●●**	1.300
40	60	92	1	2	9	**LC1DWK12●●**	1.650

Switching of multiple-step capacitor banks (with equal or different power ratings)

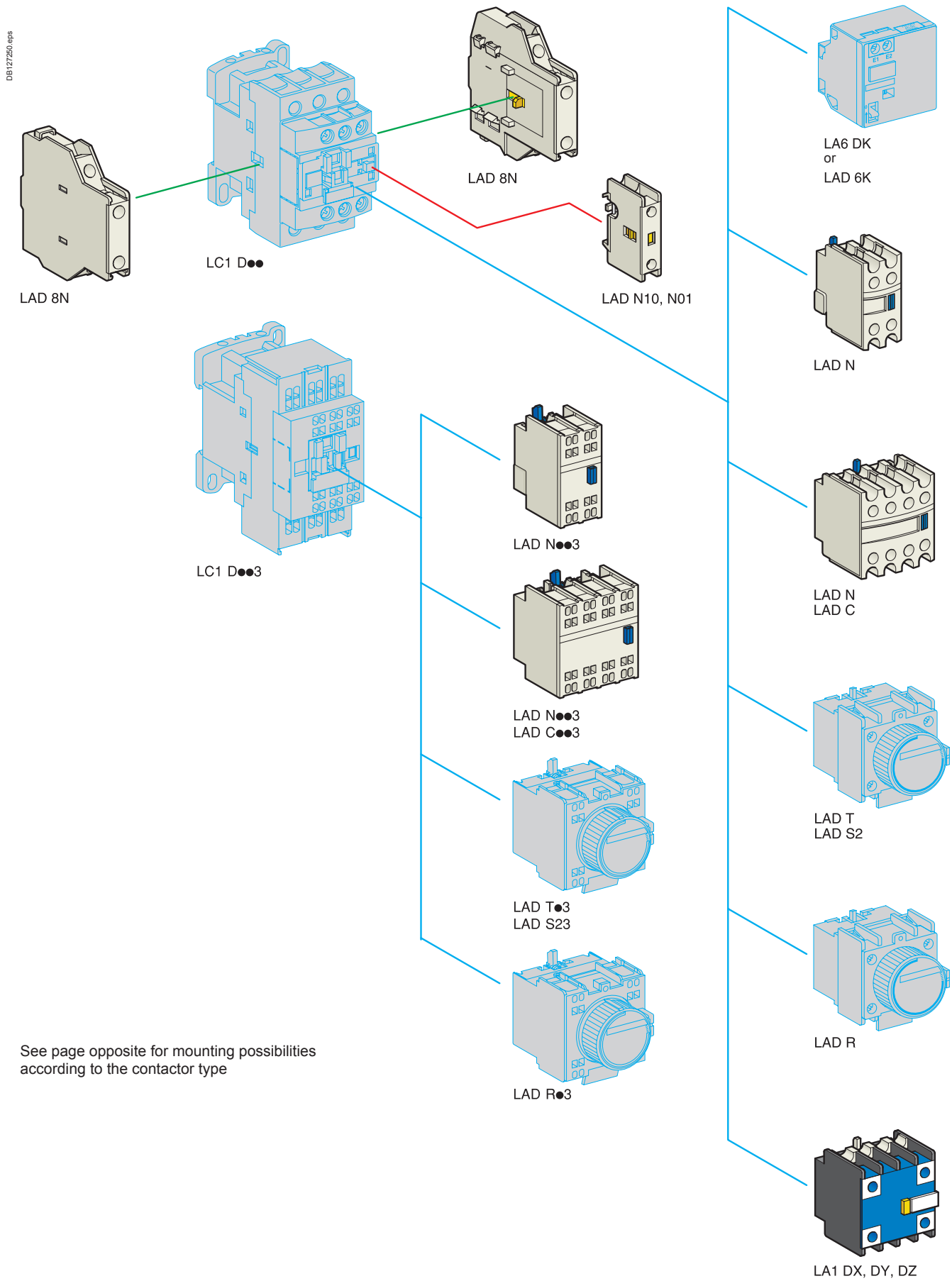
The correct contactor for each step is selected from the above table, according to the power rating of the step to be switched.
Example: 50 kVAR 3-step capacitor bank. Temperature: 50 °C and U = 400 V or 440 V.
One 25 kVAR step: contactor LC1 DMK, one 15 kVAR step: contactor LC1 DGK, and one 10 kVAR step: contactor LC1 DFK.

(1) Operational power of the contactor according to the scheme on the page opposite.
(2) The average temperature over a 24-hour period, in accordance with standards IEC 60070 and 60831 is 45 °C.
(3) Standard control circuit voltages (the delivery time is variable, please consult your Regional Sales Office):

Volts	24	48	120	220	230	240	380	400	415	440
50/60 Hz	B7	E7	G7	M7	P7	U7	Q7	V7	N7	R7

Contactors

Dimensions, schemes:
page B8/75



See page opposite for mounting possibilities according to the contactor type

TeSys contactors

TeSys D contactors and reversing contactors

Instantaneous auxiliary contact blocks

Instantaneous auxiliary contact blocks for connection by screw clamp terminals

For use in normal operating environments

In order to mount an LAD 8N on an LC1 D80 to D95, a set of shims must be ordered separately, see page B8/21.

Clip-on mounting (1)	Number of contacts per block	Composition					Reference
Front	1	–	–	–	1	–	**LADN10**
		–	–	–	–	1	**LADN01**
	2	–	–	–	1	1	**LADN11**
		–	–	–	2	–	**LADN20**
		–	–	–	–	2	**LADN02**
	4	–	–	–	2	2	**LADN22**
		–	–	–	1	3	**LADN13**
		–	–	–	4	–	**LADN40**
		–	–	–	–	4	**LADN04**
		–	–	–	3	1	**LADN31**
	4 incl. 1 N/O & 1 N/C make before break	–	–	–	2	2	**LADC22**
Side (contact blocks compatible with AC coil contactors only)	2	–	–	–	1	1	**LAD8N11**
		–	–	–	2	–	**LAD8N20**
		–	–	–	–	2	**LAD8N02**
For terminal referencing conforming to EN 50012							
Front on 3P contactors and 4P contactors 20 to 80 A	2	–	–	–	1	1	**LADN11G**
	4	–	–	–	2	2	**LADN22G**
Front on 4P contactors 125 to 200 A	2	–	–	–	1	1	**LADN11P**
	4	–	–	–	2	2	**LADN22P**
With dust and damp protected contacts, for use in particularly harsh industrial environments							
Front	2	–	2	–	–	–	**LA1DX20**
		1	1	–	–	–	**LA1DX11**
		2	–	–	–	–	**LA1DX02**
		–	2	2	–	–	**LA1DY20** (2)
	4	–	2	–	2	–	**LA1DZ40**
		–	2	–	1	1	**LA1DZ31**

Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above. Example: **LAD N11** becomes **LAD N116**.

Instantaneous auxiliary contact blocks for connection by spring terminals

This type of connection is not possible for LAD 8, LAD N with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure **3** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N113**.

Instantaneous auxiliary contact blocks for connection by Faston connectors

This type of connection is not possible for LAD 8, LAD N with 1 contact or blocks with dust and damp protected contacts. For all other contact blocks, add the figure **9** to the end of the references selected above.
Example: **LAD N11** becomes **LAD N119**.

(1) Maximum number of auxiliary contacts that can be fitted:

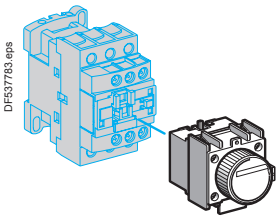
Contactors			Instantaneous auxiliary contacts					Time delay Front mounted
Type	Number of poles and size		Side mounted		Front mounted			
					1 contact	2 contacts	4 contacts	
~	3P	LC1 D09…D38	1 on LH side	and	–	1	or 1	or 1
		LC1 D40A…D65A	1 on LH or 1 on RH side	and	–	1	or 1	or 1
		LC1 D80 and D95 (50/60 Hz)	1 on each side	or	2	and 1	or 1	or 1
		LC1 D80 and D95 (50 or 60 Hz)	1 on each side	and	2	and 1	or 1	or 1
		LC1 D115 and D150	1 on LH side	and	–	1	or 1	or 1
	4P	LC1 DT20…DT40	1 on LH side	and	–	1	or 1	or 1
		LC1 DT60A and DT80A	1 on LH or 1 on RH side	and	–	1	or 1	or 1
		LC1 D40008, D65008 and D80	1 on each side	or	1	or 1	or 1	or 1
		LC1 D115	1 on each side	and	1	or 1	or 1	or 1
⎓	3P	LC1 D09…D38	–		–	1	or 1	or 1
		LC1 D40A…D65A	–		–	1	or 1	or 1
		LC1 D80 and D95	–		1	or 1	or 1	or 1
		LC1 D115 and D150	1 on LH side	and	–	1	or 1	or 1
	4P	LC1 DT20…DT40	–		–	1	or 1	or 1
		LC1 DT60A and DT80A	–		–	1	or 1	or 1
		LC1 D40008, D65008 and D80	–		2	and 1	or 1	or 1
		LC1 D115	1 on each side		–	and 1	or 1	or 1
BC (3)	3P	LC1 D09…D38	–		–	1	–	–
	4P	LC1 DT20…DT40	–		–	1	–	–

(2) Device fitted with 4 earth screen continuity terminals.
(3) LC: low consumption.

TeSys contactors

TeSys D contactors and reversing contactors

Time delay auxiliary contact blocks
Mechanical latch blocks

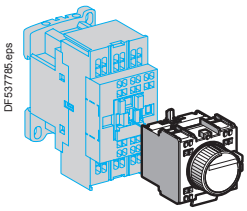


LAD T●

Time delay auxiliary contact blocks for connection by screw clamp terminals

Maximum number of auxiliary contact blocks that can be fitted per contactor, see page B8/15.
Sealing cover to be ordered separately, see page B8/21.
LAD T0 and LAD R0: with extended scale from 0.1 to 0.6 s.
LAD S2: with switching time of 40 ms ± 15 ms between opening of the N/C contact and closing of the N/O contact.

Clip-on mounting	Number of contacts	Time delay		Reference
		Type	Setting range	
Front	1 N/O + 1 N/C	On-delay	0.1…3 s	**LADT0**
			0.1…30 s	**LADT2**
			10…180 s	**LADT4**
			1…30 s	**LADS2**
		Off-delay	0.1…3 s	**LADR0**
			0.1…30 s	**LADR2**
			10…180 s	**LADR4**



LAD T●3

Time delay auxiliary contact blocks for connection by lugs

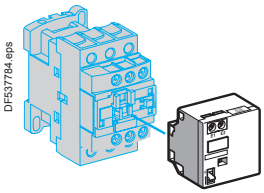
Add the figure **6** to the end of the references selected above. Example: **LAD T0** becomes **LAD T06**.

Time delay auxiliary contact blocks for connection by spring terminals

Add the figure **3** to the end of the references selected above. Example: **LAD T0** becomes **LAD T03.**

Time delay auxiliary contact blocks for connection by Faston connectors

Add the figure **9** to the end of the references selected above. Example: **LAD T0** becomes **LAD T09**.



LAD 6K10●

Mechanical latch blocks (1)

Clip-on mounting	Unlatching control	For use on contactor	Basic reference, to be completed by adding the control voltage code (2)
Front	Manual or electric	LC1 D09…D38 (∿ or ⎓) (3) LC1 DT20…DT40 (∿ or ⎓)	**LAD6K10●**
		LC1 D40A…D65A (3 P ∿ or ⎓) LC1 DT60A and DT80A (4 P ∿ or ⎓)	**LAD6K10●**
		LC1 D80…D150 (3 P ∿) LC1 D80 and D115 (3 P ⎓) LC1 D80 (4 P ∿) LC1 D80 and D115 (4 P ∿) LP1 D80 and LC1 D115 (4 P ⎓)	**LA6DK20●**

(1) The mechanical latch block must not be powered up at the same time as the contactor. The duration of the control signal for the mechanical latch block and the contactor should be:
≥ 100 ms for a contactor operating on an a.c. supply,
≥ 250 ms for a contactor operating on a d.c. supply.
Maximum impulse duration for the LAD 6K10● mechanical latch block: 10 seconds.

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts 50/60 Hz, ⎓	24	32/36	42/48	60/72	100	110/127	220/240	256/277	380/415
Code	B	C	E	EN	K	F	M	U	Q

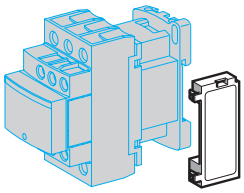
(3) The DC, low consumption contactors (coil code ●L) are not compatible with the mechanical latch blocks LAD6K10●.

Characteristics: pages B8/59 to B8/61
Dimensions: pages B8/65 to B8/68
Schemes: pages B8/69 and B8/70

TeSys contactors

TeSys D contactors and reversing contactors

Suppressor modules

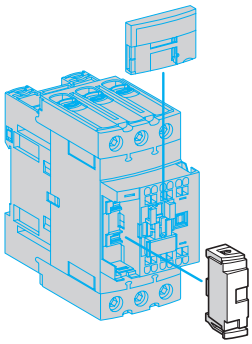


LAD 4●●

RC circuits (Resistor-Capacitor)

Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal. i.e. less than 5 % total harmonic distortion. Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max. Slight increase in drop-out time (1.2 to 2 times the normal time).

Mounting	For use with contactor (1)			Reference
	Rating	Type		
		V ∿	V ⎓	
Clip-on side mounting (3)	D09…D38 (3P) DT20…DT40	24…48	–	**LAD4RCE**
		50…127	–	**LAD4RCG**
		110…250	–	**LAD4RCU**
Clip-on front mounting (3)	D40A…D65A (3P) DT60A…DT80A (4P)	24…48	–	**LAD4RC3E**
		50…127	–	**LAD4RC3G**
		110…240	–	**LAD4RC3U**
		380…415	–	**LAD4RC3N**
Screw fixing (4)	D80…D150 (3P) D40…D115 (4P)	24…48	–	**LA4DA2E**
		50…127	–	**LA4DA2G**
		110…240	–	**LA4DA2U**
		380…415	–	**LA4DA2N**

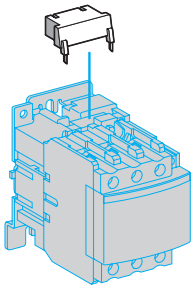


LAD 4RC3●, LAD 4V3●, LAD 4D3U, LAD 4T3●

Varistors (peak limiting)

Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Clip-on side mounting (3)	D09…D38 (3P) DT20…DT40	24…48	–	**LAD4VE**
		50…127	–	**LAD4VG**
		110…250	–	**LAD4VU**
Clip-on front mounting (3)	D40A…D65A (3P) DT60A…DT80A (4P)	24…48	24…48	**LAD4V3E**
		50…127	50…127	**LAD4V3G**
		110…250	110…250	**LAD4V3U**
Screw fixing (4)	D80…D115 (3P) D80…D115 (4P)	24…48	–	**LA4DE2E**
		50…127	–	**LA4DE2G**
		110…250	–	**LA4DE2U**
	D80…D95 (3P) D80 (4P)	–	24…48	**LA4DE3E**
		–	50…127	**LA4DE3G**
		–	110…250	**LA4DE3U**



LA4 D●●

Flywheel diodes

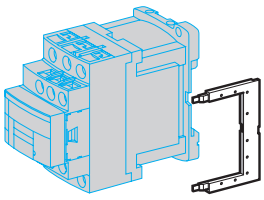
No overvoltage or oscillating frequency. Increase in drop-out time (6 to 10 times the normal time). Polarised component.

Clip-on side mounting (5)	D09…D38 (3P), DT20…DT40	–	24…250	**LAD4DDL**
Clip-on front mounting (5)	D40A…D65A (3P), DT60A…DT80A (4P)	–	24…250	**LAD4D3U**
Screw fixing (4)	D80 and D95 (3P), D40…D80 (4P)	–	24…250	**LA4DC3U**

Bidirectional peak limiting diodes

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

Clip-on side mounting (3) (5)	D09…D38 (3P) DT20…DT40 (4P) (2)	24	–	**LAD4TB**
		–	24	**LAD4TBDL**
		72	–	**LAD4TS**
		–	72	**LAD4TSDL**
		–	125	**LAD4TGDL**
		–	250	**LAD4TUDL**
		–	600	**LAD4TXDL**
Clip-on front mounting (3)	D40A…D65A (3P) DT60A…DT80A (4P) (2)	12…24	12…24	**LAD4T3B**
		25…72	25…72	**LAD4T3S**
		73…125	73…125	**LAD4T3G**
		126…250	126…250	**LAD4T3U**
		251…440	251…440	**LAD4T3R**
Screw fixing (4)	D80…D95 (3P) D40…D80 (4P)	12…24	12…24	**LA4DB2B**
		25…72	25…72	**LA4DB2S**
		–	24	**LA4DB3B**
		–	72	**LA4DB3S**



LAD 4DDL or LAD 4T●DL

(1) For satisfactory protection, a suppressor module must be fitted across the coil of each contactor.
*(2) From D09 to D65A and from LC1 DT20 to DT80A, d.c. and low consumption 3-pole contactors are fitted with a built-in bidirectional peak limiting diode suppressor as standard. This bidirectional peak limiting diode is removable and can therefore be replaced by the user. (See reference above). If a d.c. or low consumption contactor is used without suppression, the standard suppressor should be replaced with a blanking plug (reference **LAD 9DL** for LC1 D09 to D38 and LC1 DT20 to DT40; reference **LAD 9DL3** for LC1 D40A to D65A and LC1 DT60A to DT80A).*
(3) Clipping-on makes the electrical connection. The overall size of the contactor remains unchanged.
(4) Mounting at the top of the contactor on coil terminals A1 and A2.
(5) In order to install these accessories, the existing suppression device must first be removed.

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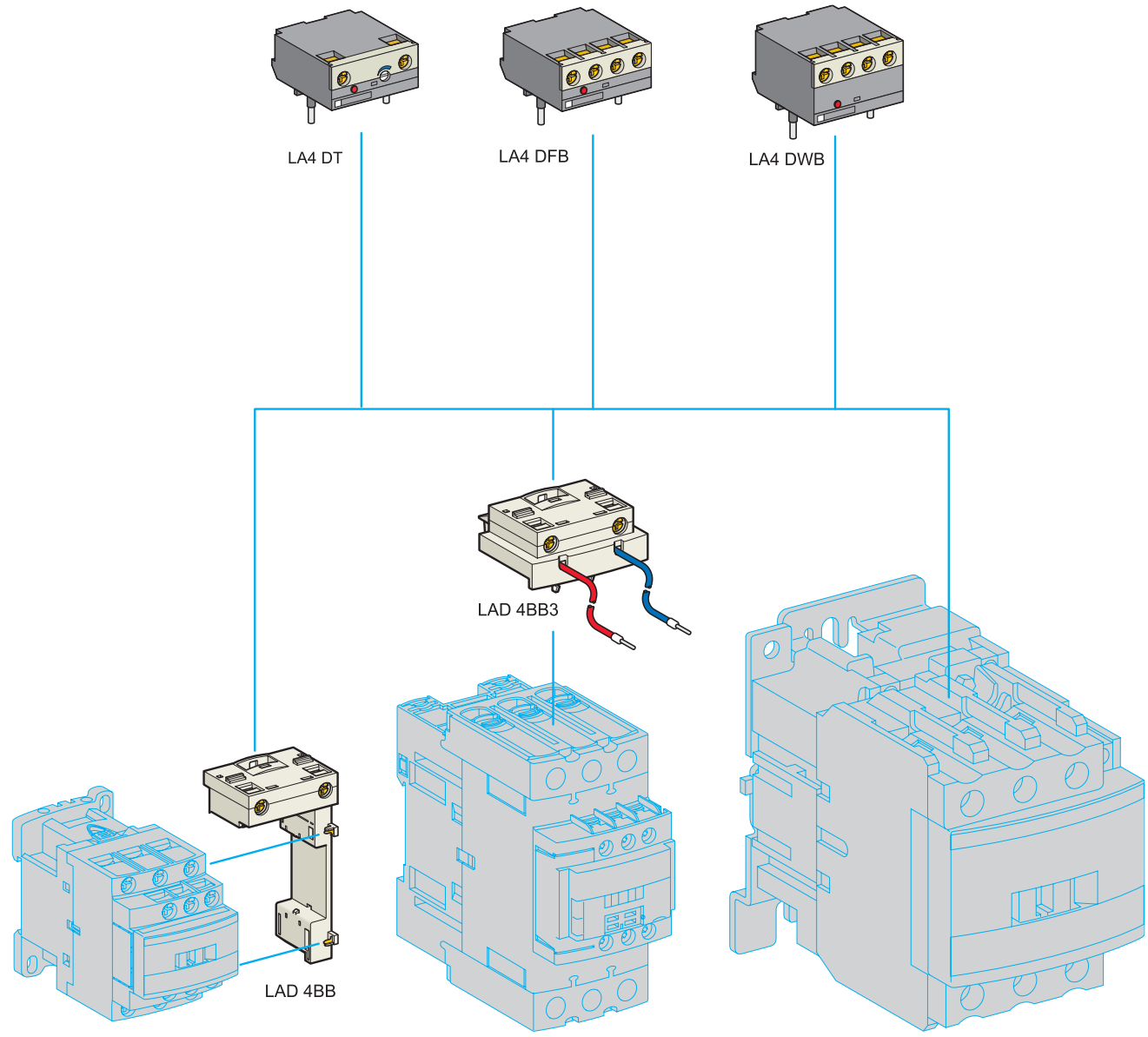


See page opposite for mounting possibilities according to the contactor type.

TeSys contactors
TeSys D contactors and reversing contactors
Accessories

Electronic serial timer modules (1)

■ 3-pole contactors LC1 D09 to D38: mounted using adapter LAD 4BB, to be ordered separately, see below.
■ 3-pole contactors LC1 D40A to D65A: mounted using adapter LAD 4BB3, to be ordered separately, see below.
■ 3-pole contactors LC1 D80 to D150 and 4-pole contactors LC1 D40 to D115: mounted directly across terminals A1 and A2 of the contactor.

On-delay type

Operational voltage ∿		Time delay	Reference
24…250 V	**100…250 V**		
LC1 D09…D65A (3P)	LC1 D80…D150 (3P)	0.1…2 s	**LA4DT0U**
		1.5…30 s	**LA4DT2U**
		25…500 s	**LA4DT4U**

Interface modules

■ 3-pole contactors LC1 D09 to D38: mounted using adapter LAD 4BB, to be ordered separately, see below.
■ 3-pole contactors LC1 D40A to D65A: mounted using adapter LAD4 BB3, to be ordered separately, see below.

Relay interface

Operational voltage ∿	Supply voltage E1-E2 (⎓)	Reference
24…250 V		
LC1 D09…D150 (3P)	24 V	**LA4DFB**

Relay interface with "AUTO-I" manual override switch (output forced “ON”), solid state type

Operational voltage ∿		Supply voltage E1-E2 (⎓)	Reference
24…250 V	**100…250 V**		
LC1 D09…D65A (3P)	LC1 D80…D115 (3P)	24 V	**LA4DWB**

Low consumption kit

For use on contactors	Composition	Reference
LC1 D40A…D65A (3P) (2)	Kit comprising: ■ a retrofit coil LAD 4BB3 ■ a relay interface module LA4 DFB.	**LA4DBL**

Retrofit: coil for 3-pole contactor

For adapting existing wiring to a new product

For use on contactors			Reference
LC1 D09…D38	Without coil suppression		**LAD4BB**
	With coil suppression	∿ 24…48 V	**LAD4BBVE**
		∿ 50…127 V	**LAD4BBVG**
		∿ 110…250 V	**LAD4BBVU**
LC1 D40A…65A	Without coil suppression		**LAD4BB3**

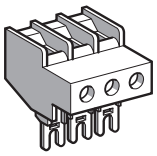
(1) For 24 V operation, the contactor must be fitted with a 21 V coil (code Z).
See pages B8/25 to B8/28.
(2) The kit is compatible with a coil voltage of ∿ 24 V to ∿ 250 V (B7 to U7) and ⎓ 24 V to ⎓ 250 V (BD to UD).

Characteristics: pages B8/62 to B8/64
Dimensions: pages B8/65 to B8/68
Schemes: pages B8/69 and B8/70

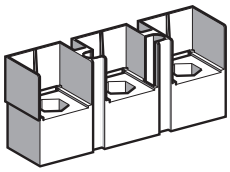
TeSys contactors

TeSys D contactors and reversing contactors

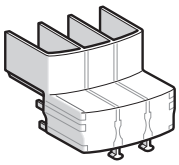
Accessories



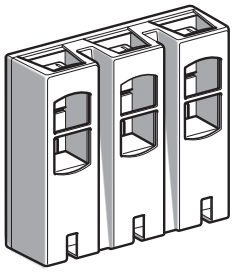
LA9 D3260



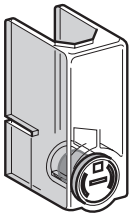
LA9 D11550●



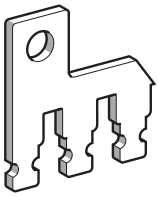
LAD 96570



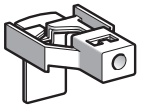
LA9 D11560●



LA9 D11570●



LA9 D80962



LA9 D11567

Accessories for main pole and control connections

Description		For use with contactors LC1 ~	For use with contactors LC1 ⎓	Sold in lots of	Unit reference
Connectors for cable, size (1 connector)	4-pole 10 mm²	DT20, DT25	DT20, DT25	1	**LAD92560**
	3-pole 25 mm²	D09…D38	D09…D38	1	**LA9D3260**
EverLink® terminal block	3-pole	D40A…D65A	D40A…D65A	1	**LAD96560**
Connectors for cables (2 connectors)	3-pole 120 mm²	D115, D150	D115, D150	1	**LA9D115603**
	4-pole 120 mm²	D115	D115	1	**LA9D115604**
Connectors for lug type terminals (2 connectors)	3-pole	D1156, D1506	D1156, D1506	1	**LA9D115503**
	4-pole	D1156	D1156	1	**LA9D115504**
Protective covers for connectors for lug type terminals	3-pole	D40A6…D65A6	D40A6…D65A6	1	**LAD96570**
		D1156, D1506	D1156, D1506	1	**LA9D115703** (1)
	4-pole	D60A6…D80A6	D60A6…D80A6	1	**LAD96580**
		D1156, D1506	D1156, D1506	1	**LA9D115704**
IP 20 covers for lug type terminals (for mounting with circuit breakers GV3 P●●6 and GV3 L●●6)	3 poles	D40A6…D65A6	D40A6…D65A6	1	**LAD96575**
Links for parallel connection of	2 poles	D09…D38	D09…D38	10	**LA9D2561**
		DT20, DT25 (4P)	DT20, DT25 (4P)	10	**LA9D1261**
		DT32, DT40 (4P)	DT32, DT40 (4P)	10	**LAD96061**
		D40A…D65A	D40A…D65A	1	**LAD9P32**
		D80, D95	D80	2	**LA9D80961**
	3 poles	D09…D38	D09…D38	10	**LAD9P3** (2)
		D40A…D65A	D40A…D65A	1	**LAD9P33**
		D80, D95	D80, D95	1	**LA9D80962**
	4 poles	DT20, DT25	DT20, DT25	2	**LA9D1263**
		D80, D95	D80	2	**LA9D80963**
Staggered coil connection		–	D80	10	**LA9D09966**
Control circuit take-off from main pole		D80, D95	D80, D95	10	**LA9D8067**
		D115, D150	D115, D150	10	**LA9D11567**
Spreaders for increasing the pole pitch to 45 mm		D115, D150	D115, D150	3	**GV7AC03**

(1) For 3-pole contactors: 1 set of 6 covers, for 4-pole contactors: 1 set of 8 covers.
(2) Separate connecting bar for connecting 2 poles in parallel.

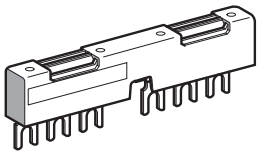
Dimensions:
pages B8/65 to B8/68

Schemes:
pages B8/69 and B8/70

TeSys contactors

TeSys D contactors and reversing contactors

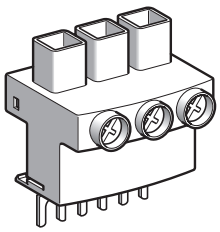
Accessories



GV2 G245

Sets of contacts and arc chambers

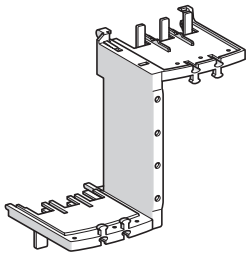
Description	For contactor		Reference
Sets of contacts	3-pole	LC1 D115	**LA5D1158031**
		LC1 D150	**LA5D150803**
	4-pole	LC1 D115004	**LA5D115804**
Arc chambers	3-pole	LC1 D115	**LA5D11550**
		LC1 D150	**LA5D15050**
	4-pole	LC1 D115004	**LA5D115450**



GV1 G09

Power connection accessories

Terminal block	For supply to one or more GV2 G busbar sets	**GV1G09**
Set of 63 A busbars for parallelling of contactors	2 contactors LC1 D09…D18 or D25…D38	**GV2G245**
	4 contactors LC1 D09…D18 or D25…D38	**GV2G445**
Set of 115 A busbars for parallelling of contactors	2 contactors LC1 D40A…D65A	**GV3G264**
	3 contactors LC1 D40A…D65A	**GV3G364** (1)
Set of S-shape busbars	For circuit breakers GV3 P●● and GV3 L●● and contactors LC1 D40A…D65A	**GV3S**



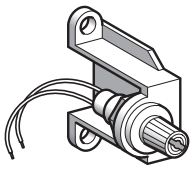
GV3 S

Protection accessories

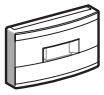
Description	Use	Sold in lots of	Reference
Miniature control circuit fuse holder	5 x 20 with 4 A-250 V fuse	1	**LA9D941**
Sealing cover	For LAD T, LAD R	1	**LA9D901**
Safety cover preventing access to the moving contact carrier	LC1 D09…D65A and DT20…DT80A	1	**LAD9ET1**
	Red cover (for safety chain indication)	1	**LAD9ET1S**
	LC1 D80 and D95	1	**LAD9ET3**
	Red cover (for safety chain indication)	1	**LAD9ET3S**
	LC1 D115 and D150	1	**LAD9ET4**
	Red cover (for safety chain indication)	1	**LAD9ET4S**

Marking accessories

Description	Use	Sold in lots of	Unit reference
Sheet of 64 blank legends, self-adhesive, 8 x 33 mm (2)	Contactors (except 4P) LC1 D80…D115, LAD N (4 contacts), LA6 DK	10	**LAD21**
Sheet of 112 blank legends, self-adhesive, 8 x 12 mm (2)	LAD N (2 contacts), LAD T, LAD R, LRD	10	**LAD22**
Sheet of 64 blank legends for marking using plotter or 8 x 33 mm engraver	Contactors (except 4P) LC1 D80…D115, LAD (4 contacts), LA6 DK	10	**LAD23**
Sheet of 440 blank legends for marking using plotter or 8 x 12 mm engraver	All products	35	**LAD24**
Marker holder snap-in, 8 x 22 mm	4-pole contactors, LC1 D80...D115, LA6 DK	100	**LA9D92**
Marker holder snap-in, 8 x 18 mm	LC1 D09...D65A, LC1 DT20...DT80A, LAD N (4 contacts), LAD T, LAD R	100	**LAD90**
Bag of 300 blank legends self-adhesive, 7 x 21 mm	On holder LA9 D92	1	**LA9D93**
"SIS Label" labelling software supplied on CD-Rom	Multi-language version: English, French, German, Italian, Spanish	1	**XBY2U**



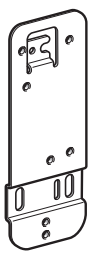
LA9 D941



LAD 9ET●

Mounting accessories

Retrofit plate for screw fixing	For replacement of LC1 D40 to D65 with LC1 D40A to D65A	1	**LAD7X3**
Mounting plate	For replacement of LC1 F115 or F150 with LC1 D115 or D150	1	**LA9D730**
Set of shims	For fitting side mounting blocks LAD 8N on LC1 D80 and D95	1	**LA9D511**
Size 4 Allen key, insulated, 1000 V	For use on contactors LC1 D40A to LC1 D150	5	**LADALLEN4**



LAD 7X3

(1) With this set of busbars, any one contactor can be supplied directly by its EverLink® double cage power terminal block. The other two contactors are supplied by the busbar set. The 115 A limitation is therefore applied to these two contactors. Example: 1 LC1 D65A supplied directly + 1 contactor LC1 D65A and 1 contactor LC1 D50 A supplied via the busbar set = 115 A. This combination is compatible with busbar set GV3 G364.

(2) These legends are for sticking onto the safety cover of the contactors or add-on block, if fitted.

TeSys contactors

Capacitive delayed opening devices

For TeSys D contactors

LAZ R90F

LAZ R91F

References

These devices prevent inadvertent opening of a contactor in the event of a brief volt drop or momentary supply failure.

Control circuit: d.c. supply

For use with contactor		Corresponding delayed opening device		
Type (1)	Contactor reference to be completed (2)	Supply voltage 50/60 Hz	Non-adjustable delay time (Tr)	Reference
		V	s	
LC1 D09, LC1 D12, LC1 D18, LC1 D25, LC1 D32 or LC1 D38	**LC1 D●●PD**	110…115	1.5…5	**LAZR90F**
	LC1 D●●QD	120…127	2.5…5	**LAZR90F**
	LC1 D●●TD	220	4…8	**LAZR90M**
	LC1 D●●VD	240	5…10	**LAZR90M**
	LC1 D●●WD	380	4…8	**LAZR90Q**
	LC1 D●●XD	415…440	5.5…13	**LAZR90Q**
LC1 D40, LC1 D50 or LC1 D65	**LC1 D●●PD**	110…115	0.5…1	**LAZR90F**
	LC1 D●●QD	120…127	0.5…1.5	**LAZR90F**
	LC1 D●●TD	220…240	1…2.5	**LAZR90M**
	LC1 D●●WD	380	1…2.5	**LAZR90Q**
	LC1 D●●XD	415…440	1…3	**LAZR90Q**
LC1 D80	**LC1 D●●PD**	110…120	0.4…1	**LAZR90F**
	LC1 D●●QD	120…127	0.5…1	**LAZR90F**
	LC1 D●●TD	220	0.5…2	**LAZR90M**
	LC1 D●●VD	240	1…2.5	**LAZR90M**
	LC1 D●●WD	380	1…2	**LAZR90Q**
	LC1 D●●XD	415…440	1…2.5	**LAZR90Q**

Add-on blocks for delayed opening devices

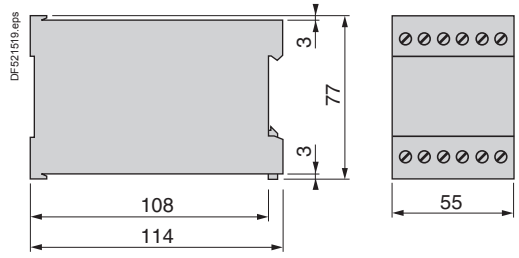
Application	For use with delayed opening device	Operational voltage	Non-adjustable delay time	Reference
		V	s	
To double the delay time	LAZ R90F	110…127	Tr x 2	**LAZR91F**
	LAZ R90M	220…240	Tr x 2	**LAZR91M**
	LAZ R90Q	380…440	Tr x 2	**LAZR91Q**

(1) These contactors can be supplied as standard for this application or can be adapted by replacing the coil (except for contactors LC1 D09●●●● to LC1 D38●●●● on which the coil is not replaceable).

(2) Reference to be completed: see page B8/2.

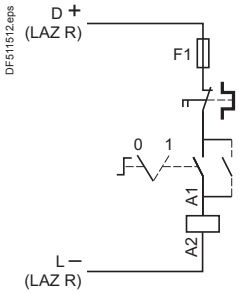
Dimensions

LAZ R9●●



Schemes

LAZ R9●● + LC1 D



Other versions

Delayed opening devices for use with other types of contactor. Please consult your Regional Sales Office.

TeSys contactors

Component parts for assembling reversing contactors for motor control, low-speed/high-speed starters and star-delta starters

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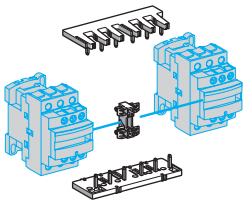

LAD 9R1

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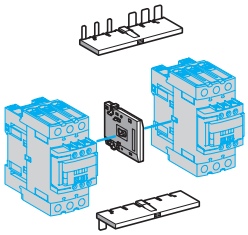

LAD 9R3

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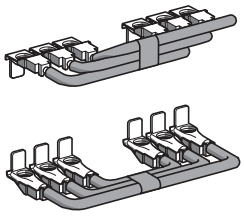

LA9 D8069

For 3-pole reversing contactors for motor control

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

Description	For contactors (1) (2 identical contactors)	Reference
Kits for assembly of reversing contactors		
Kit comprising: ■ a mechanical interlock **LAD 9V2** with electrical interlocking **LAD 9V1** ■ a set of power connections LAD 9V5 (parallel) and **LAD 9V6** (reversing).	LC1 D09 to D38	**LAD9R1V**
Kit comprising: ■ a mechanical interlock **LAD 9V2** without electrical interlocking ■ a set of power connections **LAD 9V5** (parallel) and **LAD 9V6** (reversing).	LC1 D09 to D38	**LAD9R1**
Kit comprising: ■ a mechanical interlock **LAD 4CM** ■ a set of power connections **LA9 D65A69**.	LC1 D40A to D65A	**LAD9R3**
Mechanical interlocks		
Mechanical interlock with integral electrical interlocking	LC1 D80 and D95 (~)	**LA9D4002**
	LC1 D80 and D95 (⎓)	**LA9D8002**
	LC1 D115 and D150	**LA9D11502**
Mechanical interlock without integral electrical interlocking	LC1 D09 to D38	**LAD9V2**
	LC1 D40A to D65A	**LAD4CM**
	LC1 D80 and D95 (~)	**LA9D50978**
	LC1 D80 and D95 (⎓)	**LA9D80978**
Sets of power connections		
Comprising: ■ a set of parallel bars ■ a set of reverser bars.	LC1 D09 to D38 with screw clamp terminals or connectors	**LAD9V5** + **LAD9V6**
	LC1 D09…D32 with spring terminal connections	**LAD9V12** + **LAD9V13** (2)
	LC1 D40A to D65A	**LA9D65A69**
	LC1 D80 and D95 (~)	**LA9D8069**
	LC1 D80 and D95 (⎓)	**LA9D8069**
	LC1 D115 and D150	**LA9D11569**

For low-speed/high-speed starter

Description	For contactors with connection type	Reference
Connection kit enabling reversing of low and high speed directions using a reversing contactor and a 2N/O + 2N/C main pole contactor	Screw clamps or connectors	**LAD9PVGV**

For star-delta starter

Description	For contactors	Reference
Mounting kit comprising: ■ 1 time delay contact block **LAD S2** (**LC1 D09…D80**), ■ power circuit connections (**LC1 D09…D80**), ■ hardware required for fixing the contactors onto the mounting plate (**LC1 D80**).	LC1 D09 and D12	**LAD91217**
	LC1 D18 to D32	**LAD93217**
	LC1 D40A and D50A	**LAD9SD3**
	LC1 D80	**LA9D8017**
Equipment mounting plates	LC1 D09, D12 and D18	**LA9D12974**
	LC1 D32	**LA9D32974**
	LC1 D40A and D50A	**–**
	LC1 D80	**LA9D80973**

(1) To order the 2 contactors: see pages B8/3 and B8/9.

(2) To assemble a reversing contactor with spring terminal connections, the following components must be ordered:
*- 1 mechanical interlock **LAD 9V2**,*
- 1 upstream power connection kit and 1 downstream power connection kit.
*Upstream power connection kit **LAD 9V10**: installed in the Quickfit system with power connection module **LAD 34**.*
*(If module **LAD 34** is not used, replace **LAD 9V10** with **LAD 9V12**).*
*Downstream power connection kit **LAD 9V11**: installed in the Quickfit system with outgoing terminal block **LAD 331**.*
*(If **LAD 331** is not used, replace **LAD 9V11** with **LAD 9V13**).*

TeSys contactors
Component parts for assembling changeover contactor pairs

TeSys D

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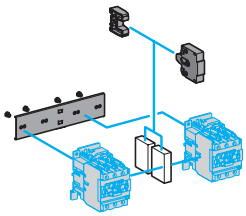

LA9 D50978

For 4-pole changeover contactor pairs (3-phase distribution + neutral)

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

Description	For contactors [1] (2 identical contactors)	Reference
Kits for assembly of changeover contactor pairs		
Kit comprising: ■ a mechanical interlock LAD 9V2 with electrical interlocking LAD 9V1, ■ a set of power connections (changeover) LAD 9V7.	LC1 DT20 to DT40 with screw clamps or connectors	**LADT9R1V**
Kit comprising: ■ a mechanical interlock LAD 9V2 without electrical interlocking, ■ a set of power connections (changeover) LAD 9V7.	LC1 DT20 to DT40 with screw clamps or connectors	**LADT9R1**
Mechanical interlocks		
With integral electrical interlocking	LC1 D80004	**LA9D4002**
	LP1 D80004	**LA9D8002**
	LC1 D115004	**LA9D11502**
Without integral electrical interlocking	LC1 DT20 to DT40 with screw clamps or connectors	**LAD9V2** [2]
	LC1 DT203 to DT403 with spring terminals	**LAD9V2** [2]
	LC1 DT60A and DT80A	**LAD4CM**
	LC1 D80004	**LA9D50978**
	LP1 D80004	**LA9D80978**
Sets of power connections		
Comprising a set of parallel bars	LC1 D80004	**LA9D8070**
	LP1 D80004	**LA9D8070**
	LC1 D115004	**LA9D11570**
	LC1 DT203 to DT403 with spring terminals	**LAD9V9**
	LC1 D80004	**LA9D8070** [2]
	LP1 D80004	**LA9D8070** [2]

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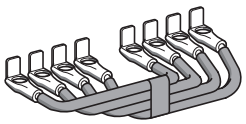


LA9 D8070

For 3-pole changeover contactor pairs

Contactors with screw clamp terminals or connectors. Horizontally mounted, assembled by customer.

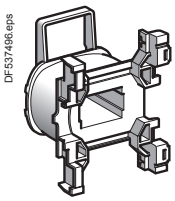
Description	For contactors [1] (2 identical contactors)	Reference
Mechanical interlocks		
Without integral electrical interlocking	LC1 D40A…D65A	**LAD9R3S**
With integral electrical interlocking	LC1 D115 and D150	**LA9D11502**
Sets of power connections		
Comprising a set of parallel bars	LC1 D115 and D150	**LA9D11571**

(1) To order the 2 contactors: see pages B8/3 and B8/9.
*(2) Order 2 contact blocks **LAD N●1** to build the electrical interlock, see page B8/15.*

TeSys contactors

a.c. coils for TeSys D, 3 or 4-pole contactors

TeSys D



LXD 1●●

For ∿ contactors LC1 D09...D38 and LC1 DT20…DT40

Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 70 VA,
- sealed (cos φ = 0.3) 50 Hz: 7 VA, 60 Hz: 7.5 VA.

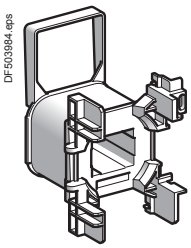
Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)
V	Ω	H	
			50/60 Hz
12	1.33	0.05	**LXD1J7**
21 (2)	4.17	0.17	**LXD1Z7**
24	5.37	0.22	**LXD1B7**
32	10.1	0.39	**LXD1C7**
36	12.8	0.49	**LXD1CC7**
42	17	0.67	**LXD1D7**
48	21.7	0.87	**LXD1E7**
60	34.6	1.4	**LXD1EE7**
100	100.4	3.8	**LXD1K7**
110	124.1	4.6	**LXD1F7**
115	129.8	5	**LXD1FE7**
120	150.6	5.4	**LXD1G7**
127	158.5	6.1	**LXD1FC7**
200	410.7	15	**LXD1L7**
208	430.4	16	**LXD1LE7**
220	515.4	18	**LXD1M7** (3)
230	538.6	20	**LXD1P7**
240	562.3	22	**LXD1U7**
277	800.7	29	**LXD1W7**
380	1551	55	**LXD1Q7** (4)
400	1633	60	**LXD1V7**
415	1694	65	**LXD1N7**
440	1993	73	**LXD1R7**
480	2398	87	**LXD1T7**
500	2499	95	**LXD1S7**
575	3294	125	**LXD1SC7**
600	3810	136	**LXD1X7**
660	4656	165	**LXD1YC7**
690	5020	180	**LXD1Y7**

(1) The last 2 digits in the reference represent the voltage code.
(2) Voltage for special coils fitted in contactors with serial timer modules, with 24 V supply.
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/54 and B8/66).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/54 and B8/66).*

TeSys contactors

a.c. coils for TeSys D, 3 or 4-pole contactors



LXD 3●●

For ∼ contactors LC1 D40A…D65A, LC1 DT60A and LC1 DT80A

Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 160 VA,
- sealed (cos φ = 0.3) 50 Hz: 15 VA, 60 Hz: 15 VA.

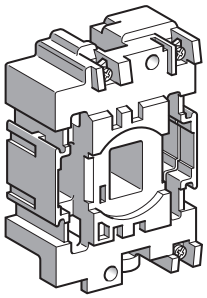
Operating range (θ ≤ 60 °C): 50 Hz: 0.8…1.1 Uc, 60 Hz: 0.85…1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C ±10%	Inductance of closed circuit	Reference [1]
V	Ω	H	
			50/60 Hz
12	0.49	0.03	**LXD3J5** [2]
24	1.98	0.12	**LXD3B7**
32	3.76	0.22	**LXD3C7**
42	6.18	0.37	**LXD3D7**
48	7.97	0.48	**LXD3E7**
100	37.63	2.07	**LXD3K7**
110	42.28	2.50	**LXD3F7**
115	48.76	2.74	**LXD3FE7**
120	37.63	2.07	**LXD3G7**
127	60.29	3.34	**LXD3FC7**
200	149	8.27	**LXD3L7**
208	105	6.22	**LXD3LE7**
220	182	10	**LXD3M7** [3]
230	192	10.9	**LXD3P7**
240	202	11.9	**LXD3U7**
277	193	11	**LXD3W7**
380	512	29.9	**LXD3Q7** [4]
400	607	33.1	**LXD3V7**
415	635	35.6	**LXD3N7**
440	682	40.1	**LXD3R7**
480	607	33.1	**LXD3T7**
500	878	51.7	**LXD3S7**
575	1238	68.4	**LXD3SC7**
600	1304	74.5	**LXD3X7**
660	1593	90.1	**LXD3YC7**
690	1683	98.5	**LXD3Y7**

(1) The last 2 digits in the reference represent the voltage code.
(2) This coil can only be used on 50 Hz.
*(3) Suitable for use on **230 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/54 and B8/66).*
*(4) Suitable for use on **400 V** / 50 Hz. In this case, apply a coefficient of 0.6 to the mechanical durability of the contactor (see page B8/54 and B8/66).*

TeSys contactors

a.c. coils for TeSys D, 3 or 4-pole contactors



LX1 D6●●

For 3 or 4-pole contactors LC1D40, D50, D65, D80, D95

Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 50 Hz: 200 VA, 60 Hz: 220 VA
- sealed (cos φ = 0.3) 50 Hz: 20 VA, 60 Hz: 22 VA.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

Control circuit voltage Uc	Average resistance at 20°C ±10 %	Inductance of closed circuit	Reference (1)	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)
V	Ω	H		Ω	H	
			50 Hz			60 Hz
24	1.4	0.09	**LX1D6B5**	1.05	0.06	**LX1D6B6**
32	2.6	0.16	**LX1D6C5**	–	–	–
42	4.4	0.27	**LX1D6D5**	–	–	–
48	5.5	0.35	**LX1D6E5**	4.2	0.23	**LX1D6E6**
110	31	1.9	**LX1D6F5**	22	1.2	**LX1D6F6**
115	31	1.9	**LX1D6FE5**	–	–	–
120	–	–	–	28	1.5	**LX1D6G6**
127	41	2.4	**LX1D6G5**	–	–	–
208	–	–	–	86	4.3	**LX1D6L6**
220	–	–	–	98	4.8	**LX1D6M6**
220/230	127	7.5	**LX1D6M5**	–	–	–
230	133	8.1	**LX1D6P5**	–	–	–
240	152	8.7	**LX1D6U5**	120	5.7	**LX1D6U6**
256	166	10	**LX1D6W5**	–	–	–
277	–	–	–	157	8	**LX1D6W6**
380	–	–	–	300	14	**LX1D6Q6**
380/400	381	22	**LX1D6Q5**	–	–	–
400	411	25	**LX1D6V5**	–	–	–
415	463	26	**LX1D6N5**	–	–	–
440	513	30	**LX1D6R5**	392	19	**LX1D6R6**
480	–	–	–	480	23	**LX1D6T6**
500	668	38	**LX1D6S5**	–	–	–
575	–	–	–	675	33	**LX1D6S6**
600	–	–	–	775	36	**LX1D6X6**
660	1220	67	**LX1D6Y5**	–	–	–

Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.75) 50/60 Hz: 245 VA at 50 Hz
- sealed (cos φ = 0.3) 50/60 Hz: 26 VA at 50 Hz.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

						50/60 Hz
24	–	–	–	1.22	0.08	**LX1D6B7**
42	–	–	–	3.5	0.25	**LX1D6D7**
48	–	–	–	5	0.32	**LX1D6E7**
110	–	–	–	26	1.7	**LX1D6F7**
115	–	–	–	–	–	**LX1D6FE7**
120	–	–	–	32	2	**LX1D6G7**
220/230 (2)	–	–	–	102	6.7	**LX1D6M7**
230	–	–	–	115	7.7	**LX1D6P7**
230/240 (3)	–	–	–	131	8.3	**LX1D6U7**
380/400 (4)	–	–	–	310	20	**LX1D6Q7**
400	–	–	–	349	23	**LX1D6V7**
415	–	–	–	390	24	**LX1D6N7**
440	–	–	–	410	27	**LX1D6R7**

(1) The last 2 digits in the reference represent the voltage code.
*(2) For use on **230 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/54 and B8/66. This coil can be used on 240 V at 60 Hz.*
(3) This coil can be used on 220/240 V at 50 Hz and on 240 V only at 60 Hz.
*(4) For use on **400 V** / 50 Hz, apply a coefficient of 0.6 to the mechanical durability of the contactor, see page B8/54 and B8/66.*

TeSys contactors

a.c. coils for TeSys D, 3 or 4-pole contactors

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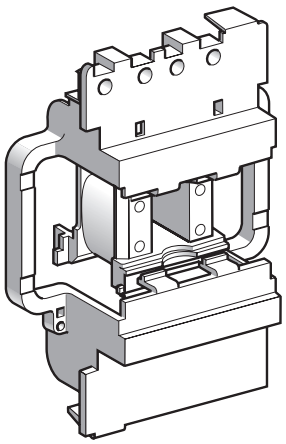


LX1 D8●●

For 3 or 4-pole contactors LC1 D115

Specifications

Average consumption at 20 °C:
- inrush (cos φ = 0.8) 50 or 60 Hz: 300 VA
- sealed (cos φ = 0.3) 50 or 60 Hz: 22 VA.

Operating range (θ ≤ 55 °C): 0.85…1.1 Uc.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)
V	Ω	H		Ω	H	
			50 Hz			60 Hz
24	1.24	0.09	**LX1D8B5**	0.87	0.07	**LX1D8B6**
32	2.14	0.17	**LX1D8C5**	–	–	–
42	3.91	0.28	**LX1D8D5**	–	–	–
48	4.51	0.36	**LX1D8E5**	3.91	0.28	**LX1D8E6**
110	26.53	2.00	**LX1D8F5**	19.97	1.45	**LX1D8F6**
115	26.53	2.00	**LX1D8FE5**	–	–	–
120	–	–	–	24.02	1.70	**LX1D8G6**
127	32.75	2.44	**LX1D8FC5**	–	–	–
208	–	–	–	67.92	5.06	**LX1D8L6**
220	104.77	7.65	**LX1D8M5**	79.61	5.69	**LX1D8M6**
230	104.77	8.29	**LX1D8P5**	–	–	–
240	125.25	8.89	**LX1D8U5**	97.04	6.75	**LX1D8U6**
277	–	–	–	125.75	8.89	**LX1D8W6**
380	338.51	22.26	**LX1D8Q5**	243.07	17.04	**LX1D8Q6**
400	368.43	25.55	**LX1D8V5**	–	–	–
415	368.43	27.65	**LX1D8N5**	–	–	–
440	441.56	30.34	**LX1D8R5**	338.51	22.26	**LX1D8R6**
480	–	–	–	368.43	25.55	**LX1D8T6**
500	566.62	38.12	**LX1D8S5**	–	–	–

For 3 or 4-pole contactors LC1 D115, LC1 D150

Specifications

Average consumption at 20 °C:
- inrush: cos φ = 0.9 - 280 to 350 VA
- sealed: cos φ = 0.9 - 2 to 18 VA.

Operating range (θ ≤ 55 °C): 0.8…1.15 Uc.

Coils with integral suppression device fitted as standard, class B.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Reference (1)
V	Ω	H		Ω	H	
						50/60 Hz
24	–	–	–	147	3.03	**LX1D8B7**
32	–	–	–	301	8.28	**LX1D8C7**
42	–	–	–	498	13.32	**LX1D8D7**
48	–	–	–	1061	24.19	**LX1D8E7**
110	–	–	–	4377	109.69	**LX1D8F7**
115	–	–	–	4377	109.69	**LX1D8FE7**
120	–	–	–	4377	109.69	**LX1D8G7**
127	–	–	–	6586	152.65	**LX1D8FC7**
208	–	–	–	10 895	260.15	**LX1D8LE7**
220	–	–	–	9895	210.72	**LX1D8M7**
230	–	–	–	9895	210.72	**LX1D8P7**
240	–	–	–	9895	210.72	**LX1D8U7**
277	–	–	–	21 988	533.17	**LX1D8UE7**
380	–	–	–	21 011	482.42	**LX1D8Q7**
400	–	–	–	21 011	482.42	**LX1D8V7**
415	–	–	–	21 011	482.42	**LX1D8N7**
440	–	–	–	21 501	507.47	**LX1D8R7**
480	–	–	–	32 249	938.41	**LX1D8T7**
500	–	–	–	32 249	938.41	**LX1D8S7**

(1) The last 2 digits in the reference represent the voltage code.

TeSys contactors

Mini-contactors TeSys LC1 SK and LP1 SK

TeSys SK

PF511131R.eps

LC1 SK06

- Width of contactor 27 mm.
- Mounting on 35 mm ⎓ rail.
- Screw clamp terminals.

Mini-contactors for motor in category AC-3

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 [1]			Rated operational voltage in AC-3 up to 400 V	Number of poles	Instantaneous auxiliary contacts		Basic reference. Complete with code indicating control circuit voltage [2]
220 V 230 V	380 V 415 V	660 V 690 V					
kW	kW	kW	A				
1.1	2.2	2.2	6	2	–	–	**LC1SK0600●●**

Mini-contactors for motor in category AC-1

Non inductive loads maximum current (θ ≤ 55 °C) utilisation category AC-1	Control circuit supply	Number of poles	Instantaneous auxiliary contacts		Basic reference. Complete with code indicating control circuit voltage [2]
A					
12	a.c.	2	–	–	**LC1SK0600●●**
	d.c.	2	–	–	**LP1SK0600●●**

PF511132R.eps

LA1 SK10

Add-on block with 1 power pole (for 3-phase circuits)

For use on contactor	Number of poles	Instantaneous auxiliary contacts		Reference
LC1 SK06 clip-on front mounting	1	1	–	**LA1SK10**
	1	–	1	**LA1SK01**

Note: *Auxiliary contact blocks and coil suppressor module, see next page.*

(1) For use in AC-3 category and 3-phase circuits, an LA1 SK●● auxiliary contact block should be ordered separately for mounting on the contactor.

(2) Standard control circuit voltages (variable delivery times, please consult your Regional Sales Office):

Mini-contactors LC1 SK									
Volts ∼ 50/60 Hz	**24**	**48**	**110**	**120**	**220**	**230**	**240**	**380**	**400**
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7
Mini-contactors LP1 SK									
Volts ⎓	**12**	**24**	**36**	**48**	**72**				
Code	JD	BD	CD	ED	SD				

Characteristics: pages B8/76 to B8/79
Dimensions, schemes: page B8/80

TeSys contactors

Mini-contactors TeSys LC1 SK and LP1 SK

Instantaneous auxiliary contacts and coil suppressor modules

PF511133R.eps

LA1 SK11

Instantaneous auxiliary contact blocks

Clip-on front mounting

For use on contactor	Maximum number of blocks per contactor	Composition		Reference
LC1 SK06	1	2	–	**LA1SK20**
		–	2	**LA1SK02**
		1	1	**LA1SK11**

PF511134R.eps

LA4 SK●1●

Coil suppressor modules

Clip-on fixing and electrical connection on right-hand side, without use of tools

For use on contactors	Type	For voltages	Sold in lots of	Unit reference
LC1 SK06 and LP1 SK06	Varistor (1)	∼ and ⎓ 24 V…48 V	10	**LA4SKE1E**
		∼ and ⎓ 110 V…250 V	10	**LA4SKE1U**
	Diode (2)	⎓ 24 V…250 V	10	**LA4SKC1U**

(1) Protection provided by limiting the transient voltage to 2 Uc max. Maximum reduction of transient voltage peaks. Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillating frequency. Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Characteristics: pages B8/76 to B8/79
Dimensions, schemes: page B8/80

TeSys contactors

Contactors for motor control, 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4

Control circuit: a.c.

LC1 K0910●●

LC1 K09103●●

LC1 K09107●●

LC1 K09105●●

LC7 K0910●●

Contactor selection according to utilisation category, see pages A5/23 to A5/27 and A5/30 to A5/33.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3-pole contactors for standard applications

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1) (2)
220 V 230 V	380 V 415 V	440/500 V 660/690 V				
kW	kW	kW	A			
Screw clamp connections						
1.5	2.2	3	**6**	1	-	**LC1K0610●●**
				-	1	**LC1K0601●●**
2.2	4	4	**9**	1	-	**LC1K0910●●**
				-	1	**LC1K0901●●**
3	5.5	4 (> 440)	**12**	1	-	**LC1K1210●●**
		5.5 (440)		-	1	**LC1K1201●●**
4	7.5	4 (> 440)	**16**	1	-	**LC1K1610●●**
		5.5 (440)		-	1	**LC1K1601●●**

Spring terminal connections

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06103●●.**

Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06107●●**.

Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC1 K0610●●** becomes **LC1 K06105●●**.

3-pole silent contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

Screw clamp connections						
1.5	2.2	3	**6**	1	-	**LC7K0610●●**
				-	1	**LC7K0601●●**
2.2	4	4	**9**	1	-	**LC7K0910●●**
				-	1	**LC7K0901●●**
3	5.5	4 (> 440)	**12**	1	-	**LC7K1210●●**
		5.5 (440)		-	1	**LC7K1201●●**

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7 K0610●●** becomes **LC7 K06107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7 K0610●●** becomes **LC7 K06105●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply

Contactors LC1 K (0.8…1.15 Uc) *(0.85…1.1 Uc)*

Volts	**12**	**20**	**24** (2)	**36**	**42**	**48**	**110**	**115**	**120**	**127**	**200/208**		***220/230***	***230***	***230/240***
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7		*M7*	*P7*	*U7*
Volts	**256**	**277**	***380/400***		**400**	***400/415***		**440**	**480**	**500**	**575**	**600**	**660/690**		
50/60 Hz	W7	UE7	*Q7*	–	V7	*N7*		R7	T7	S7	SC7	X7	*Y7*	–	–

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

Contactors LC7 K (0.85…1.1 Uc)

Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230/240**
50/60 Hz	B7	D7	E7	F7	FE7	M7	U7

(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page B8/42

TeSys contactors

Contactors for motor control, 6 to 12 A in categories AC-3 and AC-4

Control circuit: d.c. or low consumption

TeSys K

LP1 K0910●●

LP1 K09103●●

LP1 K09107●●

LP1 K09105●●

LP4 K0910●●

Contactor selection according to utilisation category, see pages A5/23 to A5/27 and A5/30 to A5/33.
Mounting on 35 mm ⎍ rail or Ø4 screw fixing.
Screws in the open “ready-to-tighten” position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3-pole contactors, d.c. supply

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1) (2)
220 V 230 V	380 V 415 V	440/500 V 660/690 V	up to			
kW	kW	kW	A			
Screw clamp connections						
1.5	2.2	3	**6**	1	–	**LP1K0610●●**
				–	1	**LP1K0601●●**
2.2	4	4	**9**	1	–	**LP1K0910●●**
				–	1	**LP1K0901●●**
3	5.5	4 (> 440)	**12**	1	–	**LP1K1210●●**
		5.5 (440)		–	1	**LP1K1201●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP1 K0610●●** becomes **LP1 K06105●●**.

3-pole low consumption contactors

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

Screw clamp connections						
1.5	2.2	3	**6**	1	–	**LP4K0610●●**
				–	1	**LP4K0601●●**
2.2	4	4	**9**	1	–	**LP4K0910●●**
				–	1	**LP4K0901●●**
3	5.5	4 (> 440)	**12**	1	–	**LP4K1210●●**
		5.5 (440)		–	1	**LP4K1201●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP4 K0610●●** becomes **LP4 K06105●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

d.c. supply (contactors LP1 K: 0.8...1.15 Uc)

Volts	12	20	24 (2)	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**

Low consumption (contactors LP4 K: 0.7...130 Uc)

Volts	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

(2) For LP1 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∼ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

Selection: pages A5/23 and A5/27 | Characteristics: pages B8/81 to B8/84 | Dimensions: page B8/85 | Schemes: page B8/86

TeSys contactors

Contactors for control in category AC-1, 20 A
Control circuit: a.c.

Contactor selection according to utilisation category, see pages A5/28 and A5/29.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open “ready-to-tighten” position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

LC1 K09004●●

LC1 K09103●●

LC1 K09107●●

LC1 K09004●●

3 or 4-pole contactors for standard applications (1)

Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C	Number of poles		Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (2) (3)
A					
Screw clamp connections					
20	3	–	1	–	**LC1K0910●●**
					or **LC1K1210●●**
	3	–	–	1	**LC1K0901●●**
					or **LC1K1201●●**
	4	–	–	–	**LC1K09004●●**
					or **LC1K12004●●**
	2	2	–	–	**LC1K09008●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC1 K0910●●** becomes **LC1 K09105●●**.

3 or 4-pole silent contactors (1)

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

Screw clamp connections					
20	3	–	1	–	**LC7K0910●●**
					or **LC7K1210●●**
	3	–	–	1	**LC7K0901●●**
					or **LC7K1201●●**
	4	–	–	–	**LC7K09004●●**
					or **LC7K12004●●**
	2	2	–	–	**LC7K09008●●**

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC7 K0910●●** becomes **LC7 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC7 K0910●●** becomes **LC7 K09105●●**.

(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/28.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply

Contactors LC1 K (0.8…1.15 Uc) *(0.85…1.1 Uc)*

Volts	**12**	**20**	**24** (3)	**36**	**42**	**48**	**110**	**115**	**120**	**127**	**200/208**		***220/230***	**230**	***230/240***
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7		*M7*	P7	*U7*
Volts	**256**	**277**	***380/400***		**400**	***400/415***		**440**	**480**	**500**	**575**	**600**	***660/690***		
50/60 Hz	W7	UE7	*Q7*		V7	*N7*		R7	T7	S7	SC7	X7	*Y7*		

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72.**

Contactors LC7 K (0.8…1.1 Uc)

Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230/240**
50/60 Hz	B7	D7	E7	F7	FE7	M7	U7

(3) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page B8/42.

TeSys contactors

Contactors for control in category AC-1, 20 A

Control circuit: d.c. or low consumption

PF511142R.eps

LC1 K09004●●

PF511143R.eps

LC1 K09103●●

PF511144R.eps

LC1 K09105●●

PF511141R.eps

LC1 K09004●●

Contactor selection according to utilisation category, see pages A5/28 and A5/29.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3 and 4-pole contactors, d.c. supply (1)

Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C	Number of poles		Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (2) (3)
A					
Screw clamp connections					
20	3	–	1	–	**LP1K0910●●**
					or **LP1K1210●●**
	3	–	–	1	**LP1K0901●●**
					or **LP1K1201●●**
	4	–	–	–	**LP1K09004●●**
					or **LP1K12004●●**
	2	2	–	–	**LP1K09008●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP1 K0910●●** becomes **LP1 K09105●●**.

3 or 4-pole low consumption contactors (1)

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

Screw clamp connections					
20	3	–	1	–	**LP4K0910●●●**
					or **LP4K1210●●●**
	3	–	–	1	**LP4K0901●●●**
					or **LP4K1201●●●**
	4	–	–	–	**LP4K09004●●●**
					or **LP4K12004●●●**
	2	2	–	–	**LP4K09008●●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP4 K0910●●** becomes **LP4 K09105●●**.

(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/28.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

d.c. supply (contactors LP1 K: 0.8...1.15 Uc)

Volts ⎓	12	20	24 (3)	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3.**

Low consumption (contactors LP4 K: 0.7...130 Uc)

Volts ⎓	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

(3) For LP1 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

TeSys contactors

Reversing contactors for motor control, 6 to 16 A in category AC-3 and 6 to 12 A in category AC-4

Control circuit: a.c.

Reversing contactor selection according to utilisation category, see pages A5/23 to A5/27 and A5/30 to A5/33.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing. Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

PF511147R.eps

LC2 K0910●●

PF511148R.eps

LC2 K09105●●

3-pole reversing contactors for standard applications

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts per contactor		Basic reference, to be completed by adding the voltage code (1) (2)
220 V 230 V	380 V 415 V	440/500 V 660/690 V				
kW	kW	kW	A			
Screw clamp connections						
1.5	2.2	3	**6**	1	–	**LC2K0610●●**
				–	1	**LC2K0601●●**
2.2	4	4	**9**	1	–	**LC2K0910●●**
				–	1	**LC2K0901●●**
3	5.5	4 (> 440)	**12**	1	–	**LC2K1210●●**
		5.5 (440)		–	1	**LC2K1201●●**
4	7.5	4 (> 440)	**16**	1	–	**LC2K1610●●**
		5.5 (440)		–	1	**LC2K1601●●**

Spring terminal connections

For 6 to 12 A ratings only, in the references selected above, insert a figure **3** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

For 6 to 16 A ratings, in the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06107●●**.

Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06105●●**.

3-pole silent reversing contactors

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

Screw clamp connections						
1.5	2.2	3	**6**	1	–	**LC8K0610●●**
				–	1	**LC8K0601●●**
2.2	4	4	**9**	1	–	**LC8K0910●●**
				–	1	**LC8K0901●●**
3	5.5	4 (> 440)	**12**	1	–	**LC8K1210●●**
		5.5 (440)		–	1	**LC8K1201●●**

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC8 K0610●●** becomes **LC8 K06107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LC8 K0610●●** becomes **LC8 K06105●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply

Reversing contactors LC2 K (0.8…1.15 Uc) *(0.85…1.1 Uc)*

Volts	**12**	**20**	**24** (2)	**36**	**42**	**48**	**110**	**115**	**120**	**127**	**200/208**		***220/230***	**230**	***230/240***
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7		*M7*	P7	U7
Volts	**256**	**277**	***380/400***		**400**	***400/415***		**440**	**480**	**500**	**575**	**600**	***660/690***		
50/60 Hz	W7	UE7	Q7		V7	*N7*		R7	T7	S7	SC7	X7	*Y7*		

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72.**

Reversing contactors LC8 K (0.8…1.1 Uc)

Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230/240**
50/60 Hz	B7	D7	E7	F7	FE7	M7	U7

(2) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page B8/42.

Contactors

TeSys contactors

Reversing contactors for motor control, 6 to 12 A in categories AC-3 and AC-4

Control circuit: d.c. or low consumption

Reversing contactor selection according to utilisation category, see pages A5/23 to A5/27 and A5/30 to A5/33.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Pre-wired power circuit connections as standard on screw clamp versions.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3-pole reversing contactors, d.c. supply

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3			Rated operational current in category AC-3 440 V up to	Instantaneous auxiliary contacts per contactor		Basic reference, to be completed by adding the voltage code (1) (2)
220 V 230 V	380 V 415 V	440/500 V 660/690 V				
kW	kW	kW	A			
Screw clamp connections						
1.5	2.2	3	6	1	–	**LP2K0610●●**
				–	1	**LP2K0601●●**
2.2	4	4	9	1	–	**LP2K0910●●**
				–	1	**LP2K0901●●**
3	5.5	4 (> 440)	12	1	–	**LP2K1210●●**
		5.5 (440)		–	1	**LP2K1201●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2 K0610●●** becomes **LP2 K06103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06107●●**.

Solder pins for printed circuit boards

For 6 to 16 A ratings, in the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0610●●** becomes **LC2 K06105●●**.

3-pole low consumption reversing contactors

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

Screw clamp connections						
1.5	2.2	3	6	1	–	**LP5K0610●●**
				–	1	**LP5K0601●●**
2.2	4	4	9	1	–	**LP5K0910●●**
				–	1	**LP5K0901●●**
3	5.5	4 (> 440)	12	1	–	**LP5K1210●●**
		5.5 (440)		–	1	**LP5K1201●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5 K0610●●** becomes **LP5 K06105●●**.

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

d.c. supply

Reversing contactors LP2 K (0.8…1.15 Uc)

Volts	12	20	24 (2)	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

Low consumption

Reversing contactors LP5 K (0.7…1.30 Uc)

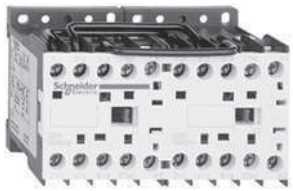
Volts	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

(2) For LP2 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.

TeSys contactors

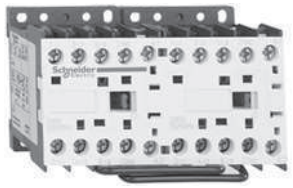
Reversing contactors for control in category AC-1, 20 A

Control circuit: a.c.



LC2 K0910●●

LC2 K09105●●



LC2 K09004●●

Warning: reversing contactors LC2 K0910●● and LC2 K0901●● are pre-wired for reverse motor operation as standard.
Reversing contactor selection according to utilisation category, see pages A5/28 and A5/29.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open “ready-to-tighten” position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3 or 4-pole reversing contactors for standard applications (1)

Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C	Number of poles		Instantaneous auxiliary contacts per contactor			Basic reference, to be completed by adding the voltage code (2) (3)
						
A						
Screw clamp connections						
20	3	–	1	–		**LC2K0910●●**
					or	**LC2K1210●●**
	3	–	–	1		**LC2K0901●●**
					or	**LC2K1201●●**
	4	–	–	–		**LC2K09004●●**
					or	**LC2K12004●●**

Spring terminal connections
In the references selected above, insert a figure **3** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8
In the references selected above, insert a figure **7** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09107●●**.

Solder pins for printed circuit boards
In the references selected above, insert a figure **5** before the voltage code.
Example: **LC2 K0910●●** becomes **LC2 K09105●●**.

3 or 4-pole silent reversing contactors (1)

Recommended for use in areas sensitive to noise, high interference mains supplies, etc.
Coil with rectifier incorporated, suppressor fitted as standard.

Screw clamp connections						
20	3	–	1	–		**LC8K0910●●**
					or	**LC8K1210●●**
	3	–	–	1		**LC8K0901●●**
					or	**LC8K1201●●**
	4	–	–	–		**LC8K09004●●**
					or	**LC8K12004●●**

Faston connectors, 1 x 6.35 or 2 x 2.8
In the references selected above, insert a figure **7** before the voltage code.
Example: **LC8 K0910●●** becomes **LC8 K09107●●**.

Solder pins for printed circuit boards
In the references selected above, insert a figure **5** before the voltage code.
Example: **LC8 K0910●●** becomes **LC8 K09105●●**.

(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/28.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

a.c. supply

Reversing contactors LC2 K (0.8…1.15 Uc) *(0.85…1.1 Uc)*

Volts	**12**	**20**	**24** (3)	**36**	**42**	**48**	**110**	**115**	**120**	**127**	**200/208**		***220/230***	***230***	***230/240***
50/60 Hz	J7	Z7	B7	C7	D7	E7	F7	FE7	G7	FC7	L7		*M7*	*P7*	*U7*
Volts	**256**	**277**	***380/400***		**400**	***400/415***		**440**	**480**	**500**	**575**	**600**	***660/690***		
50/60 Hz	W7	UE7	*Q7*		V7	*N7*		R7	T7	S7	SC7	X7	Y7		

Up to and including 240 V, coil with integral suppression device available: add **2** to the code required. Example: **J72**.

Reversing contactors LC8 K (0.8…1.1 Uc)

Volts	**24**	**42**	**48**	**110**	**115**	**220**	**230/240**
50/60 Hz	B7	D7	E7	F7	FE7	M7	U7

(3) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page B8/42.

Contactors

TeSys contactors

Reversing contactors for control in category AC-1, 20 A

Control circuit: d.c. or low consumption

Warning: reversing contactors LP2 K0910●● and LP2 K0901●● are pre-wired for reverse motor operation as standard.
Reversing contactor selection according to utilisation category, see pages A5/28 and A5/29.
Integral mechanical interlock.
It is essential to link the contacts of the electrical interlock.
Mounting on 35 mm ⎓ rail or Ø4 screw fixing.
Screws in the open "ready-to-tighten" position.
Add-on auxiliary contact blocks and accessories, see pages B8/40 to B8/43.

3 or 4-pole reversing contactors, d.c. supply (1)

Non-inductive loads Category AC-1 Maximum current at θ ≤ 50 °C	Number of poles		Instantaneous auxiliary contacts per contactor			Basic reference, to be completed by adding the voltage code (2) (3)
						
A						
Screw clamp connections						
20	3	–	1	–		**LP2K0910●●**
					or	**LP2K1210●●**
	3	–	–	1		**LP2K0901●●**
					or	**LP2K1201●●**
	4	–	–	–		**LP2K09004●●**
					or	**LP2K12004●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP2 K0910●●** becomes **LP2 K09105●●**.

3 or 4-pole low consumption reversing contactors (1)

Compatible with programmable controller outputs.
Wide range coil (0.7…1.30 Uc), suppressor fitted as standard, consumption 1.8 W.

Screw clamp connections

20	3	–	1	–		**LP5K0910●●●**
					or	**LP5K1210●●●**
	3	–	–	1		**LP5K0901●●●**
					or	**LP5K1201●●●**
	4	–	–	–		**LP5K09004●●●**
					or	**LP5K12004●●●**

Spring terminal connections

In the references selected above, insert a figure **3** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09103●●**.

Faston connectors, 1 x 6.35 or 2 x 2.8

In the references selected above, insert a figure **7** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09107●●**.

Solder pins for printed circuit boards

In the references selected above, insert a figure **5** before the voltage code.
Example: **LP5 K0910●●** becomes **LP5 K09105●●**.

(1) Selection between 9 and 12 A ratings according to number of operating cycles, see AC-1 curve on page A5/28.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

d.c. supply (reversing contactors LP2 K: 0.8…1.15 Uc)

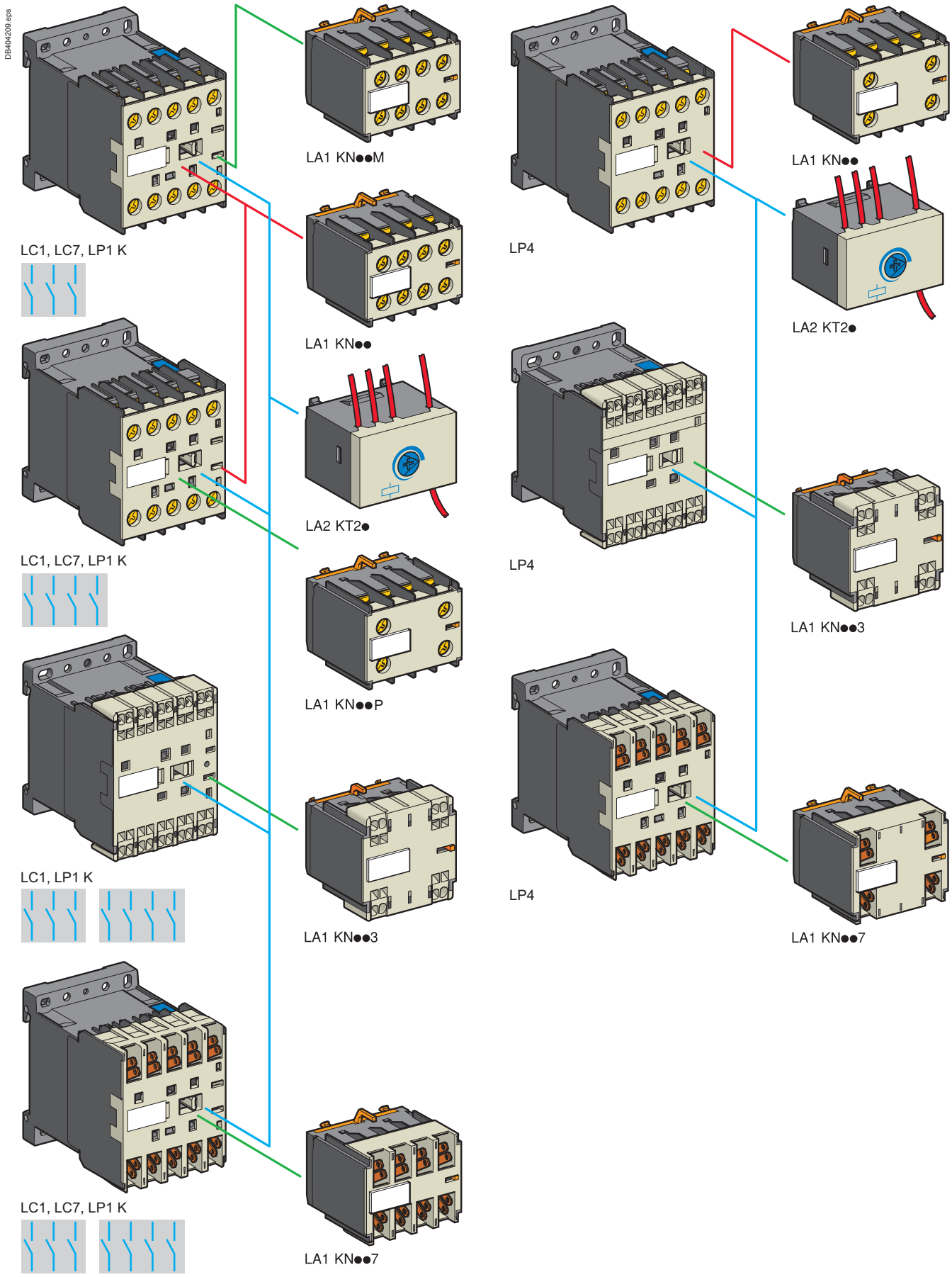
Volts ⎓	12	20	24 (3)	36	48	60	72	100	110	125	155	174	200	220	230	240	250
Code	JD	ZD	BD	CD	ED	ND	SD	KD	FD	GD	PD	QD	LD	MD	MPD	MUD	UD

Coil with integral suppression device available: add **3** to the code required. Example: **JD3**.

Low consumption (reversing contactors LP5 K: 0.7…130 Uc)

Volts ⎓	12	20	24	48	72	110	120
Code	JW3	ZW3	BW3	EW3	SW3	FW3	GW3

(3) For LP2 K only, when connecting an electronic sensor or timer in series with the contactor coil, select a 20 V coil (∿ control circuit voltage code Z7, ⎓ control circuit voltage code ZD) so as to compensate for the incurred voltage drop.


DB404209.eps
LC1, LC7, LP1 K
LA1 KN●●M
LA1 KN●●
LP4
LA1 KN●●
LA2 KT2●
LC1, LC7, LP1 K
LA2 KT2●
LP4
LA1 KN●●3
LA1 KN●●P
LC1, LP1 K
LA1 KN●●3
LP4
LA1 KN●●7
LC1, LC7, LP1 K
LA1 KN●●7

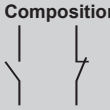
TeSys contactors

TeSys K contactors and reversing contactors

Auxiliary contact blocks

Instantaneous auxiliary contact blocks

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

Connection	For use on contactors	Composition		Reference
				
Screw clamp terminals	All products with screw clamp terminals	2	–	**LA1KN20**
		–	2	**LA1KN02**
		1	1	**LA1KN11**
	All products with screw clamp terminals except low consumption	4	–	**LA1KN40**
		3	1	**LA1KN31**
		2	2	**LA1KN22**
		1	3	**LA1KN13**
		–	4	**LA1KN04**
Spring terminals	All products with spring terminals	2	–	**LA1KN203**
		–	2	**LA1KN023**
		1	1	**LA1KN113**
	All products with spring terminals except low consumption	4	–	**LA1KN403**
		3	1	**LA1KN313**
		2	2	**LA1KN223**
		1	3	**LA1KN133**
		–	4	**LA1KN043**
Faston connectors, 1 x 6.35 or 2 x 2.8	All products with Faston connectors	2	–	**LA1KN207**
		–	2	**LA1KN027**
		1	1	**LA1KN117**
	All products with Faston connectors except low consumption	4	–	**LA1KN407**
		3	1	**LA1KN317**
		2	2	**LA1KN227**
		1	3	**LA1KN137**
		–	4	**LA1KN047**

With terminal referencing to standard EN 50012. Clip-on front mounting, 1 block per contactor

Screw clamp terminals with referencing conforming to standard EN 50012	All 3-pole + N/O products with screw clamp terminals except LP4 and LP5 K12	–	2	**LA1KN02M**
		1	1	**LA1KN11M**
	All 3-pole + N/O products with screw clamp terminals except LP4 or LP5 K06, K09 and K12	3	1	**LA1KN31M**
		2	2	**LA1KN22M**
		1	3	**LA1KN13M**
	All 4-pole products with screw clamp terminals except LP4 or LP5 K12	1	1	**LA1KN11P**
	All 4-pole products with screw clamp terminals except LP4 or LP5 K09 and K12	2	2	**LA1KN22P**

Electronic time delay auxiliary contact blocks

Relay output with common point changeover contact, ∼ or ⎓ 240 V, 2 A maximum.
Control voltage 0.85…1.1 Uc.
Maximum switching capacity 250 VA or 150 W.
Operating temperature -10…+60 °C.
Reset time: 1.5 s during the time delay period, 0.5 s after the time delay period.

Clip-on front mounting, 1 block per contactor

Voltage	Type	Timing range	Composition	Reference
				
V		s		
∼ or ⎓ 24…48	On-delay	1…30	1	**LA2KT2E**
∼ 110…240	On-delay	1…30	1	**LA2KT2U**

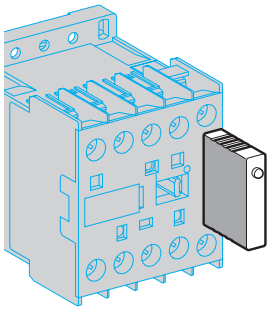
Characteristics: page B8/84
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

TeSys contactors

TeSys K contactors and reversing contactors

Suppressor modules incorporating LED indicator

DF565018.eps



LA4 K●●●

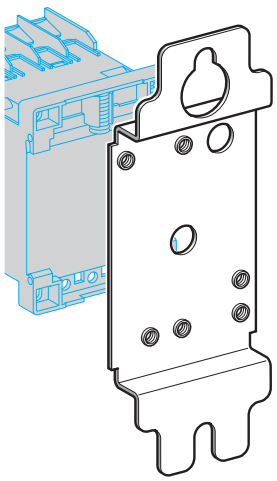
References

Mounting and connection	Type	For voltages	Sold in lots of	Unit reference
Clip-on fixing on the front of contactors LC1 and LP1, with locating device. No tools required.	Varistor (1)	~ and ⎓ 12…24 V	5	**LA4KE1B**
		~ and ⎓ 32…48 V	5	**LA4KE1E**
		~ and ⎓ 50…129 V	5	**LA4KE1FC**
		~ and ⎓ 130…250 V	5	**LA4KE1UG**
	Diode + Zener diode (2)	⎓ 12…24 V	5	**LA4KC1B**
		⎓ 32…48 V	5	**LA4KC1E**
	RC (3)	~ 110…250 V	5	**LA4KA1U**

(1) Protection provided by limiting the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillating frequency.
Polarised component.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(3) Protection by limiting the transient voltage to 3 Uc max. and limitation of the oscillating frequency.
Slight increase in drop-out time (1.2 to 2 times the normal time).

Characteristics: page B8/84
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

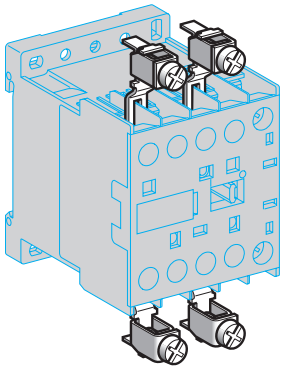
TeSys contactors
TeSys K contactors and reversing contactors
Accessories



DX1 AP25

Mounting and marking accessories

Description	Application		Sold in lots of	Unit reference
Mounting plates (1)	For fixing on 1 ⊔ rail	Clip-on	1	**LA9D973**
	For fixing on 2 ⊔ rails	110/120 mm fixing centres	10	**DX1AP25**
Marker holder	Clip-on	Onto front of contactor	100	**LA9D90**
Clip-in markers	4 maximum per contactor	Strips of 10 identical numbers 0…9	25	**AB1R●** (2)
		Strips of 10 identical letters A…Z	25	**AB1G●** (2)



LA9 E01

Connection accessories

Description	Application		Sold in lots of	Unit preference
Paralleling links	For 2 poles	With screw clamps	4	**LA9E01**
	For 4 poles	With screw clamps	2	**LA9E02**
Set of 6 power connections	For 3-pole reversing contactors for motor control	For contactors with screw clamp terminals	100	**LA9K0969**
Set of 4 power connections	For 4-pole changeover contactor pairs	For contactors with screw clamp terminals	100	**LA9K0970**

(1) Order 1 mounting plate for fixing a contactor and 2 mounting plates for fixing a reversing contactor.
(2) Complete the reference by replacing the dot with the required character.

TeSys contactors

Mini-contactors TeSys LC1 SKGC, for use in modular panels

TeSys SKGC

- Mounting on 35 mm ⎓ rail or fixing by four Ø4 screws, except for LC1 SKGC200.
- Connection by connectors.
- Mini-contactor fitted with transparent, sealable protective cover to prevent front face access.

PF511135R.eps

LC1 SKGC200

Mini-contactors, width 27 mm

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in AC-3 up to 400 V	Non inductive loads category AC-1 maximum current θ ≤ 50 °C	No. of poles			Basic reference, to be completed by adding the voltage code (1)
220 V 230 V	380 V 415 V	660 V 690 V						
kW	kW	kW	A	A				
–	–	–	5	20	2	–	–	**LC1SKGC200●●**

PF511136R.eps

LC1 SKGC400

Mini-contactors, width 45 mm

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3			Rated operational current in AC-3 up to 400 V	Non inductive loads category AC-1 maximum current θ ≤ 50 °C	No. of poles			Basic reference, to be completed by adding the voltage code (1)
220 V 230 V	380 V 415 V	660 V 690 V						
kW	kW	kW	A	A				
1.1	4	4	9	20	3	1	–	**LC1SKGC310●●**
					3	–	1	**LC1SKGC301●●**
					4	–	–	**LC1SKGC400●●**

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts ∿ 50/60 Hz	24	48	110	120	220	230	240	380	400
Code	B7	E7	F7	G7	M7	P7	U7	Q7	V7

Characteristics: pages B8/89 to B8/92
Dimensions, schemes: page B8/93

TeSys contactors

Mini-contactors TeSys LC1 SKGC, for use in modular panels

Suppressor modules

PF511134R.eps

LA4 SK●1●

Suppressor modules

Connection without need for tools by clipping onto right-hand side of contactor

For use on contactors	Type	For voltages	Sold in lots of	Unit reference
LC1SKGC	Varistor (1)	∼ and ⎓ 24…48 V	10	**LA4SKE1E**
		∼ and ⎓ 110…250 V	10	**LA4SKE1U**
	Diode (2)	⎓ 24…250 V	10	**LA4SKC1U**

(1) Protection provided by limiting the transient voltage to 2 Uc max.
Maximum reduction of transient voltage peaks.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).
(2) No overvoltage or oscillating frequency.
Slight increase in drop-out time (1.1 to 1.5 times the normal time).

Characteristics: pages B8/89 to B8/92
Dimensions, schemes: page B8/93

Modular equipment
Standard contactors TeSys GC

TeSys GC

PB113075_12.eps

GC 2520

PB113078_18.eps

GC 4040

PB113079_24.eps

GC 10020

Standard contactors, TeSys GC

No. of poles		Number of 17.5 mm modules	Commercial reference 50 Hz coil - different voltages					Sold in lots of
			12 V	24 V	48 V	110 V	220/240 V	
Maximum current rating category AC-7a - 16 A								
1	–	1	**GC1610J5**	**GC1610B5**	**GC1610E5**	**GC1610F5**	**GC1610M5** ★	12
1	1	1	**GC1611J5**	**GC1611B5**	–	**GC1611F5**	**GC1611M5** ★	12
2	–	1	**GC1620J5**	**GC1620B5**	**GC1620E5**	**GC1620F5** ★	**GC1620M5** ★	12
2	2	2	–	**GC1622B5**	**GC1622E5**	**GC1622F5** ★	**GC1622M5**	6
3	–	2	–	–	–	–	**GC1630B5** **GC1630M5** ★	6
4	–	2	–	**GC1640B5**	–	**GC1640F5**	**GC1640M5** ★	6
Maximum current rating category AC-7a - 25 A								
–	2	1	–	**GC2502B5**	**GC2502E5**	★	**GC2502M5** ★	12
–	4	2	–	**GC2504B5**	**GC2504E5**	★	**GC2504M5** ★	6
1	–	1	–	**GC2510B5**	–	–	**GC2510M5** ★	12
1	1	1	–	**GC2511B5**	–	**GC2511F5**	**GC2511M5** ★	12
2	–	1	**GC2520J5**	**GC2520B5**	**GC2520E5**	**GC2520F5** ★	**GC2520M5** ★	12
2	2	2	–	**GC2522B5**	**GC2522E5**	**GC2522F5**	**GC2522M5** ★	6
3	–	2	–	**GC2530B5**	–	**GC2530F5**	**GC2530M5** ★	6
3	2	1	–	–	–	–	**GC2531M5**	6
4	–	2	**GC2540J5**	**GC2540B5**	**GC2540E5**	**GC2540F5** ★	**GC2540M5** ★	6
Maximum current rating category AC-7a - 40 A								
–	2	2	–	**GC4002B5**	–	–	**GC4002M5** ★	6
–	4	3	–	**GC4004B5**	–	**GC4004F5** ★	**GC4004M5**	4
1	1	2	–	**GC4011B5**	–	–	**GC4011M5** ★	6
2	–	2	–	**GC4020B5**	–	**GC4020F5** ★	**GC4020M5** ★	6
2	2	3	–	–	–	–	**GC4022M5**	4
3	–	3	–	**GC4030B5**	–	**GC4030F5**	**GC4030M5** ★	4
4	–	3	–	**GC4040B5**	**GC4040E5**	**GC4040F5** ★	**GC4040M5** ★	4
Maximum current rating category AC-7a - 63 A								
–	2	2	–	–	–	–	**GC6302M5**	6
–	4	3	–	**GC6304B5**	–	–	**GC6304M5**	4
1	1	2	–	–	–	–	**GC6311M5**	6
2	–	2	–	–	–	–	**GC6320M5**	6
2	2	3	–	–	–	**GC6322F5**	**GC6322M5**	4
3	–	3	–	**GC6330B5**	–	**GC6330F5**	**GC6330M5** ★	4
4	–	3		**GC6340B5**	**GC6340E5**	**GC6340F5** ★	**GC6340M5** ★	4
Maximum current rating category AC-7a - 100 A								
2	–	3	–	–	–	–	**GC10020M5**	4
4	–	6	–	**GC10040B5**	–	–	**GC10040M5** ★	2

★ *for 60 Hz coil replace last figure 5 by 6.*

Selection: pages B8/96 to B8/99
Characteristics: pages B8/100 and B8/101
Dimensions, schemes: pages B8/102 and B8/103

Modular equipment
TeSys GY "dual tariff" contactors

TeSys GY

PB113083_13.eps

GY 2520M5

PB113087_26.eps

GY 6340M5

TeSys GY "dual tariff" contactors

No. of poles		Number of 17.5 mm modules	Commercial reference 50 Hz coil - different voltages					Sold in lots of
			12 V	24 V	48 V	110 V	220/240 V	
Maximum current rating category AC-7a - 16 A								
2	–	1	–	**GY1620B5**		–	**GY1620M5**	12
4	–	2	–	–	–	–	**GY1640M5**	6
Maximum current rating category AC-7a - 25 A								
2	–	1	–	**GY2520B5**	–	–	**GY2520M5** ★	12
3	–	2	–	–	–	–	**GY2530M5**	6
4	–	2	–	**GY2540B5**	–	–	**GY2540M5**	6
Maximum current rating category AC-7a - 40 A								
2	–	2	–	–	–	–	**GY4020M5**	6
3	–	3	–	–	–	–	**GY4030M5**	4
4	–	3	–	**GY4040B5**	–	–	**GY4040M5**	4
Maximum current rating category AC-7a - 63 A								
2	–	2	–	–	–	–	**GY6320M5**	6
4	–	3	–	**GY6340B5**	–	–	**GY6340M5**	4

★ *for 60 Hz coil replace last figure 5 by 6.*

Modular equipment
TeSys GF impulse relays

TeSys GF

PF5282284R.eps

GF 1611M7

TeSys GF impulse relays

Maximum current rating category AC-1	Composition		Coil voltages ~ 50/60 Hz	Coil voltages ⎓	Sold in lots of	Unit reference
A			V	V		
16	1	–	12	6	12	**GF1610J7**
			24	12	12	**GF1610B7**
			48	24	12	**GF1610E7**
			110	48	12	**GF1610F7**
			220	–	12	**GF1610M7**
			230/240	110	12	**GF1610U7**
	2	–	12	6	12	**GF1620J7**
			24	12	12	**GF1620B7**
			48	24	12	**GF1620E7**
			110	48	12	**GF1620F7**
			220	–	12	**GF1620M7**
			230/240	110	12	**GF1620U7**
	1	1	12	6	12	**GF1611J7**
			24	12	12	**GF1611B7**
			48	24	12	**GF1611E7**
			110	48	12	**GF1611F7**
			220	–	12	**GF1611M7**
			230/240	110	12	**GF1611U7**

Modular equipment
TeSys GC, GY accessories

TeSys GC, GY

PB113093_13.eps

GAP 23

PB104483-40.eps

GAC 5

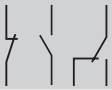
PB104486_34.eps

A9A15922

PB104487_49.eps

A9A15923

Instantaneous auxiliary contact blocks

Number of contacts	Number of poles			Reference
				
2	1	1	–	**GAC0521**
	–	2	–	**GAC0531**
	–	–	1	**GAC0511**

Accessories

Description	For use on contactor	Number of modules	Operational voltage in V	Sold in lots of	Unit reference
Coil suppression blocks comprising 2 RC circuits	–	1	12…48	1	**GAP21**
			110…240	1	**GAP23**
Ventilation 1/2 module clips onto ⊥ rail	–	1/2	–	10	**GAC5**
Set of screw shields (10 top parts + 10 bottom parts)	40 or 63 A 2 contacts	2	–	1	**A9A15922**
	40 or 63 A 3 or 4 contacts	3	–	1	**A9A15923**

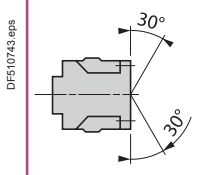
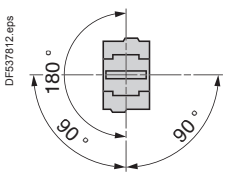
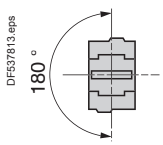
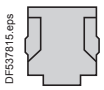
TeSys D, SK, K, SKGC, GC, GY, GF

Technical Data for Designers

Contents

TeSys D

Environment

Contactor type LC1			D09…D18 DT20 and DT25	D25…D38 DT32 and DT40	D40A…D65A DT60A and DT80A	D80…D95	D115 and D150
Rated insulation voltage (Ui)	Conforming to IEC 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 IEC 60947	**kV**	6			8	
Conforming to standards			IEC/EN 60947-4-1, IEC/EN 60947-5-1, UL 508, CSA C22.2 n°14.				
Product certifications			UL, CSA (1), CCC, GOST GL, DNV, RINA, BV, LROS				
Degree of protection (2) (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**	-5…+60				
	Permissible	**°C**	-40…+70, for operation at Uc				
Maximum operating altitude	Without derating	**m**	3000				
Operating positions (3)	Without derating in the following positions		~/⎓  ~  ⎓ 				
	Positions that are not permissible		For ⎓ contactors LC1 D09 to LC1 D65A.  				
Flame resistance	Conforming to UL 94		V1				
	Conforming to IEC 60695-2-1	**°C**	850				
Shock resistance (4) 1/2 sine wave = 11 ms	Contactor open		10 gn	8 gn	10 gn	8 gn	6 gn
	Contactor closed		15 gn	15 gn	15 gn	10 gn	15 gn
Vibration resistance (4) 5…300 Hz	Contactor open		2 gn				
	Contactor closed		4 gn	4 gn	4 gn	3 gn	4 gn

(1) Contactor LC1 D95 with d.c. coil is not UL/CSA certified.
(2) Protection provided for the cabling c.s.a.'s indicated on the next page and for connection by cable. For lug type: add a protective cover.
(3) When mounting on a vertical rail, use a stop.
(4) Without modifying the contact states, in the most unfavourable direction (coil energised at Ue).

TeSys contactors
TeSys D contactors

TeSys D

Pole characteristics

Contactor type		LC1		D09 (3P)	DT20 D098	D12 (3P)	DT25 D128	D18 (3P)	DT32 D188	D25 (3P)	DT40 D258
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 (1)	20	25 (1)	25	32 (1)	32	40 (1)	40
Rated operational voltage (Ue)	Up to		**V**	690		690		690		690	
Frequency limits	Of the operational current		**Hz**	25…400		25…400		25…400		25…400	
Conventional thermal current (Ith)	θ ≤ 60 °C		**A**	25 (1)	20	25 (1)	25	32 (1)	32	40 (1)	40
Rated making capacity (440 V)	Conforming to IEC 60947		**A**	250		250		300		450	
Rated breaking capacity (440 V)	Conforming to IEC 60947		**A**	250		250		300		450	
Permissible short time rating No current flowing for preceding 15 minutes with 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	
Fuse protection against short-circuits (U ≤ 690 V)	Without thermal overload relay, gG fuse	type 1	**A**	25		40		50		63	
		type 2	**A**	20		25		35		40	
	With thermal overload relay		**A**	See pages B11/4 and B11/5, 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 operational currents	AC-3		**W**	0.20		0.36		0.8		1.25	
	AC-1		**W**	1.56		1.56		2.5		3.2	

Control circuit characteristics, a.c. supply

Rated control circuit voltage (Uc)			50/60 Hz	**V**	12…690	
Control voltage limits						
	50 or 60 Hz coils	Operation			–	
		Drop-out			–	
	50/60 Hz coils	Operation			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 (2)		Closing "C"		**ms**	12…22	
		Opening "O"		**ms**	4…19	
Mechanical durability 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) Versions with spring terminal connections:
*16 A for **LC1 D093** and **LC1 D123** (20 A possible with 2 x 2.5 mm² in parallel),*
*25 A for **LC1 D183** to **LC1 D323** (32 A possible for **LC1 D183** connected with 2 x 4 mm² cables in parallel; 40 A possible for **LC1 D253** and **LC1 D323** connected with 2 x 4 mm² in parallel).*

(2) The closing time "C" is measured from the moment the coil supply is switched on to closure 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	D38	D40A	DT60A	D50A	D65A	DT80A	D80	D95	D115	D150
32	38	40	–	50	65	–	80	95	115	150
50 (1)	50	60	60	80	80	80	125	125	200	200
690	690	690	690	690	690	690	1000	1000	1000	1000
25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400	25…400
50	50	60	60	80	80	80	125	125	200	200
550	550	800	800	900	1000	1000	1100	1100	1260	1660
550	550	800	800	900	1000	1000	1100	1100	1100	1400
430	430	720	720	810	900	900	990	1100	1100	1400
260	310	320	320	400	520	520	640	800	950	1200
138	150	165	165	208	260	260	320	400	550	580
60	60	72	72	84	110	110	135	135	250	250
63	63	80	80	100	125	125	200	200	250	315
63	63	80	80	100	125	125	160	160	200	250
See pages B11/4 and B11/5 for aM or gG fuse ratings corresponding to the associated thermal overload relay										
2	2	1.5	1.6	1.5	1.5	1.6	0.8	0.8	0.6	0.6
2	3	2.4	–	3.7	6.3	–	5.1	7.2	7.9	13.5
5	5	5.4	5.8	9.6	9.6	10.2	12.5	12.5	24	24
12…690	12…690								24…500	
–	–						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 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 60 °C						0.3…0.6 Uc at 55 °C		0.3…0.5 Uc at 55 °C	
–	–						200		300	–
0.75	0.75						0.75		0.8	0.9
70	160						245		280…350	280…350
–	–						20		22	–
0.3	0.3						0.3		0.3	0.9
7	15						26		2…18	2…18
–	–						220		300	–
0.75	0.75						0.75		0.8	0.9
70	140						245		280…350	280…350
–	–						22		22	–
0.3	0.3						0.3		0.3	0.9
7.5	13						26		2…18	2…18
2…3	4…5						6…10		3…8	3…4.5
12…22	12…26	12…26	12…26	12…26	12…26		20…35	20…35	20…50	20…35
4…19	4…19	4…19	4…19	4…19	4…19		6…20	6…20	6…20	40…75
–	–	–	–	–	–		10	10	8	–
15	6	6	6	6	6		4	4	8	8
3600	3600	3600	3600	3600	3600		3600	3600	2400	1200

TeSys D

Power circuit connections

Screw clamp terminal connections

Contactor type		LC1		D09 and D12 DT20 and DT25	D18 (3P)	D25 (3P)	D32	D38	D18 and D25 (4P) DT32 and DT40	D40A to D65A DT60A and DT80A (1)	D80 and D95	D115 and D150
Tightening				Screw clamp terminals					Connector 2 inputs	Screw clamp terminals	Connector 1 input	Connector 2 inputs
Flexible cable without cable end	1 conductor		mm²	1…4	1.5…6	2.5…10			2.5…10	1…35	4…50	10…120
	2 conductors		mm²	1…4	1.5…6	2.5…10			2.5…10	1…25 and 1…35	4…25	10…120 + 10…50
Flexible cable with cable end	1 conductor		mm²	1…4	1…6	1…10			2.5…10	1…35	4…50	10…120
	2 conductors		mm²	1…2.5	1…4	1.5…6			2.5…10	1…25 and 1…35	4…16	10…120 + 10…50
Solid cable without cable end	1 conductor		mm²	1…4	1.5…6	1.5…10			2.5…16	1…35	4…50	10…120
	2 conductors		mm²	1…4	1.5…6	2.5…10			2.5…16	1…25 and 1…35	6…25	10…120 + 10…50
Screwdriver	Philips			N° 2	N° 2	N° 2			N° 2	–	–	–
	Flat screwdriver Ø			Ø6	Ø6	Ø6			Ø6	–	Ø6…Ø8	–
Hexagonal key				–	–	–			–	4	4	4
Tightening torque			N.m	1.7	1.7	2.5			1.8	5: ⩽ 25 mm² 8: 35 mm²	9	12
Spring terminal connections (2)												
Flexible cable without cable end	1 conductor		mm²	2.5 (4: DT25)	4	4	4	–	10	–	–	
	2 conductors		mm²	2.5 (except DT25)	4	4	4	–	–	–	–	
Connection by bars or lugs												
Bar c.s.a.				–	–	–	–		–	–	3 x 16	5 x 25
Lug external Ø			mm	8	8	10	10		8	16.5	17	25
Ø of screw			mm	M3.5	M3.5	M4	M4		M3.5	M6	M6	M8
Screwdriver	Philips			N° 2	N° 2	N° 2	N° 2		N° 2	–	–	–
	Flat screwdriver Ø			Ø6	Ø6	Ø6	Ø6		Ø6	–	Ø8	–
Key for hexagonal headed screw				–	–	–	–		–	10	10	13
Tightening torque			N.m	1.7	1.7	2.5	2.5		1.8	6	9	12

Control circuit connections

Connection by 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…2.5
	2 conductors		mm²	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…4	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
Solid cable without cable end	1 conductor		mm²	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…2.5
Screwdriver	Philips			N° 2	N° 2	N° 2	N° 2		N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø			Ø6	Ø6	Ø6	Ø6		Ø6	Ø6	Ø6	Ø6
Tightening torque			N.m	1.7	1.7	1.7	1.7		1.7	1.7	1.7	1.2
Spring terminal connections (2)												
Flexible cable without cable end	1 conductor		mm²	2.5	2.5	2.5	2.5	–	2.5	0.75…2.5	–	–
	2 conductors		mm²	2.5	2.5	2.5	2.5	–	2.5	0.75…2.5	–	–
Connection by bars or lugs												
Lug external Ø			mm	8	8	8	8		8	8	8	8
Ø of screw			mm	M3.5	M3.5	M3.5	M3.5		M3.5	M3.5	M3.5	M3.5
Screwdriver	Philips			N° 2	N° 2	N° 2	N° 2		N° 2	N° 2	N° 2	N° 2
	Flat screwdriver Ø			Ø6	Ø6	Ø6	Ø6		Ø6	Ø6	Ø6	Ø6
Tightening torque			N.m	1.7	1.7	1.7	1.7		1.7	1.7	1.7	1.2

*(1) BTR screws: hexagon socket head. In accordance with local electrical wiring regulations, a size 4 insulated Allen key must be used (reference **LAD ALLEN4**, see page B8/21).*
(2) If cable ends are used, choose the next size down (example: for 2.5 mm², use 1.5 mm²) and square crimp the cable ends using a special tool.

TeSys D

d.c. control circuit characteristics

Contactor type				LC1 D09…D38 LC1 DT20…DT40	LC1 D40A…D65A LC1 DT60A and DT80A	LC1 or LP1 D80 LC1 D95	LC1 D115 and LC1 D150
Rated control circuit voltage (Uc)	⎓		V	12…440	12…440		24…440
Rated insulation voltage	Conforming to IEC 60947-1		V	690			
	Conforming to UL, CSA		V	600			
Control voltage limits	Operation	Standard coil		0.7…1.25 Uc at 60 °C	0.75…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 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	19	22	270…365
		Sealed	W	5.4	7.4	22	2.4…5.1
Operating time (1) average at Uc	Closing	"C"	ms	63 ±15 %	50 ±15%	95…130	20…35
	Opening	"O"	ms	20 ±20 %	20 ±20%	20…35	40…75
				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	34	75	25
Mechanical durability at Uc	In millions of operating cycles			30	10	10	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 IEC 60947-1		V	690	–
	Conforming to UL, CSA		V	600	–
Maximum voltage	Of the control circuit on ⎓		V	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	77 ±15 %	–
	Opening	"O"	ms	25 ±20 %	–
Voltage limits (θ ⩽ 60 °C) of the control circuit	Operation			0.8 to 1.25 Uc	–
	Drop-out			0.1…0.3 Uc	–
Time constant (L/R)			ms	40	–
Mechanical durability	In millions of operating cycles			30	–
Maximum operating rate at ambient temperature ⩽ 60 °C	In operating cycles per hour			3600	–

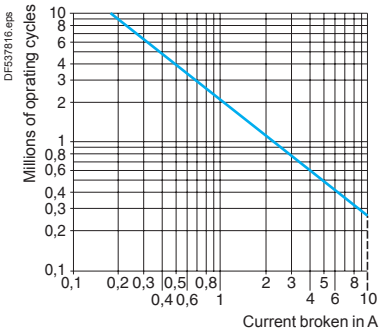
(1) The operating times depend on the type of contactor electromagnet and its control mode.
The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles.
The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

Contactors

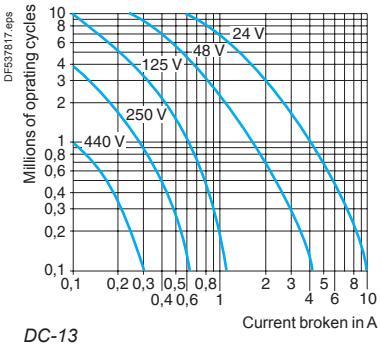
TeSys D

Characteristics of auxiliary contacts incorporated in the contactor

Mechanically linked contacts	Conforming to IEC 60947-5-1			Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder
Mirror contact	Conforming to IEC 60947-4-1			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 60947-1		**V**	690
	Conforming to UL, CSA		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C		**A**	10
Frequency of the operational current			**Hz**	25…400
Minimum switching capacity $\lambda = 10^{-8}$	U min		**V**	17
	I min		**mA**	5
Short-circuit protection	Conforming to IEC 60947-5-1			gG fuse: 10 A
Rated making capacity	Conforming to IEC 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)



AC-15



DC-13

Operational power of contacts conforming to IEC 60947-5-1

a.c. supply, categories AC-14 and 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	115	230	400	440	600
1 million	**VA**	60	120	280	560	960	1050	1440
3 million	**VA**	16	32	80	160	280	300	420
10 million	**VA**	4	8	20	40	70	80	100

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	125	250	440
1 million	**W**	96	76	76	76	44
3 million	**W**	48	38	38	32	–
10 million	**W**	14	12	12	–	–

TeSys contactors

Auxiliary contact blocks without dust and damp protected contacts for TeSys D contactors

Environment

Contact block type				LAD N or LAD C	LAD T and LAD S	LAD R	LAD 8
Conforming to standards				IEC 60947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1			
Product certifications				UL, CSA			
Protective treatment	Conforming to IEC 60068			"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			
Connection by cable	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end		mm²	Min: 1 x 1; max: 2 x 2.5			
Spring terminal connections	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 IEC 60947-5-1		V	690			
	Conforming to UL, CSA		V	600			
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C		A	10			
Frequency of the operational current			Hz	25…400			
Minimum switching capacity		U min	V	17			
		I min	mA	5			
Short-circuit protection	Conforming to IEC 60947-5-1 and VDE 0660. gG fuse		A	10			
Rated making capacity	Conforming to IEC 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 contacts on LAD C22		ms	1.5	–	–	–
Time delay (LADT, 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 B8/61			

Contactors

References: pages B8/15 and B8/16
Dimensions: pages B8/65 and B8/66
Schemes: pages B8/69 and B8/70

TeSys contactors

Auxiliary contact blocks without dust and damp protected contacts for TeSys D contactors

Environment

Contact block type				LA1 DX	LA1 DZ		LA1 DY
					Protected	Non protected	
Conforming to standards				IEC 60947-5-1, VDE 0660			
Product certifications				UL, CSA			
Protective treatment	Conforming to IEC 60068			"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 Ø6 mm Flexible or solid conductor 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 60947-5-1		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	500	500	–	50
Frequency of the 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 IEC 609475-1 gG fuse		A	–	–	10	–
Rated making capacity	Conforming to IEC 609475-1	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				Silver - Single break	Silver - Single break	–	Gold - Single break with crossed bars

References: pages B8/15 and B8/16
Dimensions: pages B8/65 and B8/66
Schemes: pages B8/69 and B8/70

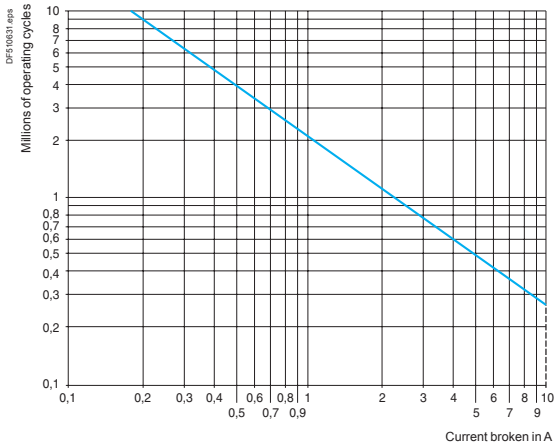
TeSys contactors
Auxiliary contact blocks with dust and damp protected contacts for TeSys D contactors

Rated operational power of contacts (conforming to IEC 60947-5-1)

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

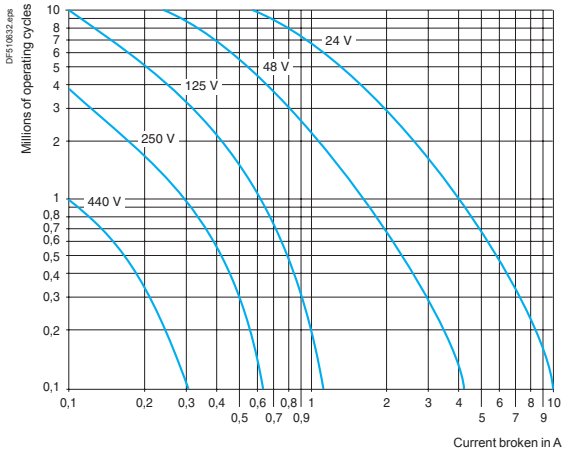
Operating cycles	V	24	48	115	230	400	440	600
1 million	VA	60	120	280	560	960	1050	1440
3 million	VA	16	32	80	160	280	300	420
10 million	VA	4	8	20	40	70	80	100



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.

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



References:
pages B8/15 and B8/16

Dimensions:
pages B8/65 and B8/66

Schemes:
pages B8/69 and B8/70

TeSys contactors

Control modules, coil suppressor modules and mechanical latch blocks for TeSys D contactors

Environment

Conforming to standards			IEC 60947-5-1
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 60068		"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

Suppressor modules

Module type			LA4 DA, LAD 4RC, LAD 4RC3	LA4 DB, LAD 4T, LAD 4T3	LA4 DC, LAD 4D3	LA4 DE, LAD 4V, LAD 4V3
Type of protection			RC circuit	Bidirectional peak limiting diode	Diode	Varistor
Rated control circuit voltage (Uc)		V	∼ 24…415	∼ or ⎓ 24…440	⎓ 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 (1)

Mechanical latch block type				LAD 6K10	LA6 DK20
For use on contactor				LC1 D09…D65A DT20…DT80A	LC1 D80…D150 LP1 D80 and LC1 D115
Product certifications				UL, CSA	UL, CSA
Rated insulation voltage	Conforming to IEC 60947-5-1		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

(1) Unlatching can be manually operated or electrically controlled (pulsed).
*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 B8/15 and B8/16

Dimensions:
pages B8/65 and B8/66

Schemes:
pages B8/69 and B8/70

TeSys contactors
Electronic serial timer module for TeSys D contactors

TeSys D

Environment

Module type			**LA4 DT** (On-delay)
Conforming to standards			IEC 60255-5
Product certifications			UL, CSA
Protective treatment	Conforming to IEC 60068		"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 IEC 60947-1	**V**	250
Cabling	Phillips n° 2 and Ø6 mm Flexible or solid conductor with or without cable end	**mm²**	Min: 1 x 1; max: 2 x 2.5

Control circuit characteristics

Built-in protection	Of the input		By varistor
	Contactor coil suppression		By varistor
Rated control circuit voltage (Uc)		**V**	∿ or ⎓: 24…250
Permissible variation			0.8…1.1 Uc
Type of control			By mechanical contact only

Timing characteristics

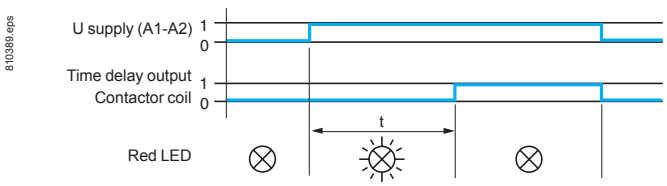
Timing ranges		**s**	0.1…2; 1.5…30; 25…500
Repeat accuracy	0…40 °C		±3 % (10 ms minimum)
Reset time	During time delay period	**ms**	150
	After time delay period	**ms**	50
Immunity to microbreaks	During time delay period	**ms**	10
	After time delay period	**ms**	2
Minimum control pulse duration		**ms**	–
Time delay signalling	By LED		Illuminates during time delay period

Switching characteristics (solid state type)

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

Function diagram

Electronic on-delay timer LA4 DT



References: page B8/19
Dimensions: pages B8/65 and B8/66
Schemes: pages B8/69 and B8/70

TeSys contactors
Interface modules for TeSys D contactors

TeSys D

Environment

Conforming to standards				IEC 60255-5
Product certifications				UL, CSA
Protective treatment	Conforming to IEC 60068			"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 DFB With relay	LA4 DWB Solid state
Conventional thermal current (Ith)	For ambient temperature ≤ 50 °C		A	8	
Rated insulation voltage	Conforming to IEC 60947-5-1		V	250	
Rated operational voltage	Conforming to IEC 60947-5-1		V	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
	Permissible variation		V	17…30	5…30
	Current consumption at 20 °C		mA	25	8.5 for 5 V 15 for 24 V
	State "0" guaranteed for	U	V	< 2.4	< 2.4
		I	mA	< 2	< 2
	State "1" guaranteed for	U	V	17	5
Built-in protection	Against reversed polarity			By diode	By diode
	Of the input			By diode	By diode
Electrical durability at 220 A/240 V	In millions of operating cycles			10	20
Maximum immunity to microbreaks			ms	4	1
Power dissipated	At 20 °C		W	0.6	0.4
Direct mounting on contactor	With coil	∿ 24…250 V		**LC1 D80…D150**	–
		∿ 100…250 V		–	**LC1 D80…D115**
		∿ 380…415 V		–	–
Mounting with cabling adapter LAD 4BB	With coil	∿ 24…250 V		**LC1 D09…D38, LC1 DT20…DT40**	**LC1 D09…D38, LC1 DT20…DT40**
		∿ 380…415 V		–	–
Mounting with cabling adapter LAD 4BB3	With coil	∿ 24…250 V		**LC1 D40A…D65A**	**LC1 D40A…D65A**
		∿ 380…415 V		**LC1 D40A…D65A**	**LC1 D40A…D65A**

Total operating time at Uc (of the contactor)

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.

				LC1 D09…D38, LC1 DT20…DT40	LC1 D40A…D65A	LC1 D80 and D95
With **LA4 DFB**		"C"	ms	20…30	28…34	28…43
		"O"	ms	16…24	20…24	18…32

Cabling	Phillips n° 2 and Ø6 mm Flexible or solid cable with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5

References: page B8/19
Dimensions: pages B8/65 and B8/66
Schemes: pages B8/69 and B8/70

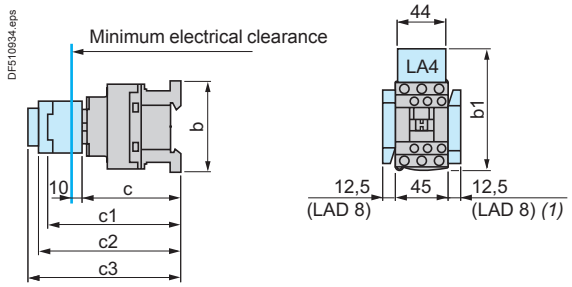
TeSys contactors

TeSys D contactors

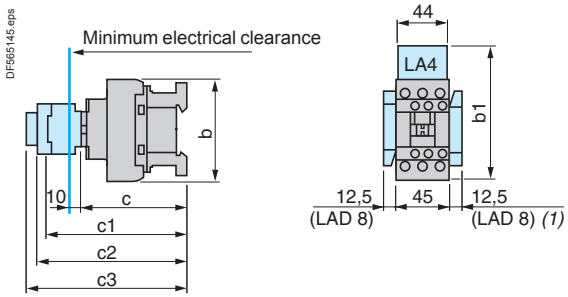
Control circuit: a.c.

TeSys D

LC1 D09…D18 (3-pole)



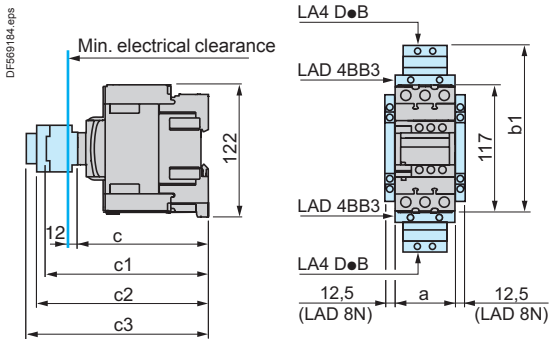
LC1 D25…D38 (3-pole), LC1 DT20…DT40 (4-pole)



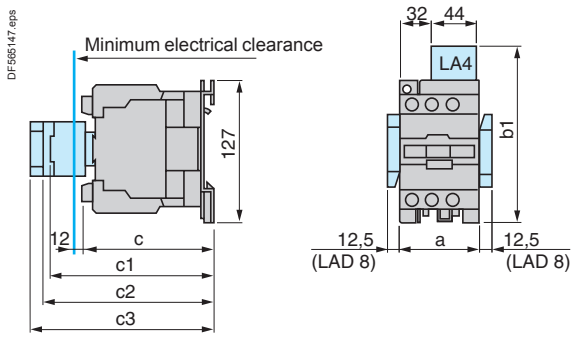
LC1		D09…D18	D093… D123	D099… D129	D25… D38	D183… D323	D098, D128, DT20 and DT25	DT203 and DT253	DT32 and DT40	D188, D258, DT323 and DT403
b	without add-on blocks	77	99	80	85	99	85	99	91	105
b1	with LAD 4BB	94	107	95,5	98	107	98	–	–	–
	with LA4 D●2	110 (1)	123 (1)	111.5 (1)	114 (1)	123 (1)	114	–	–	–
	with LA4 DF, DT	119 (1)	132 (1)	120.5 (1)	123 (1)	132 (1)	129	–	–	–
	with LA4 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	97	97
	with cover, without add-on blocks	86	86	86	92	92	92	92	99	99
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 D40A…D65A (3-pole), LC1 DT60A…DT80A (4-pole)



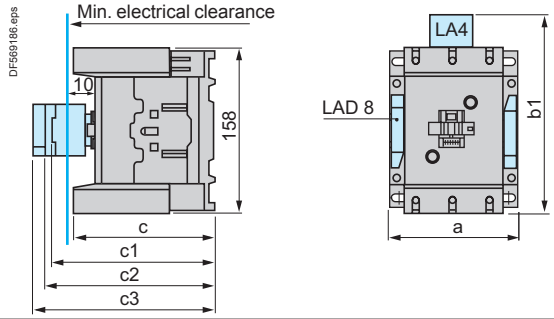
LC1 D80 and D95 (3-pole), LC1 D80004 and D80008 (4-pole), D40008 and D65008 (4-pole)



LC1		D40A…D65A	DT60A…DT80A	D40008	D80	D95, D65008	D80004	D80008
a		55	70	85	85	85	96	96
b1	with LA4 D●2	–	–	135	135	135	135	135
	with LA4 DB3 or LAD 4BB3	136	–	–	135	–	–	–
	with LA4 DF, DT	157	–	142	142	142	142	142
	with LA4 DM, DW, DL	166	–	150	150	150	150	150
c	without cover or add-on blocks	118	118	125	125	125	125	140
	with cover, without add-on blocks	120	120	–	130	130	–	–
c1	with LAD N (1 contact)	–	–	139	150	150	150	150
	with LAD N or C (2 or 4 contacts)	150	150	147	158	158	158	158
c2	with LAD 6K10 or LA6 DK	163	163	159	170	170	170	170
c3	with LAD T, R, S	171	171	167	178	178	178	178
	with LAD T, R, S and sealing cover	175	175	171	182	182	182	182

LC1 D115 and D150 (3-pole), LC1 D115004 (4-pole)

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



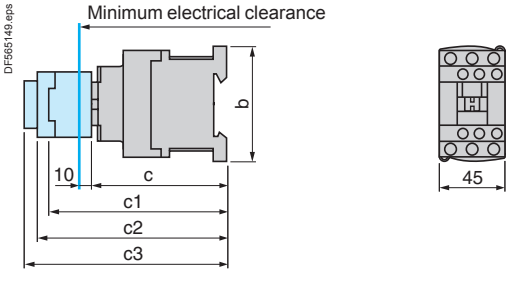
TeSys contactors

TeSys D contactors

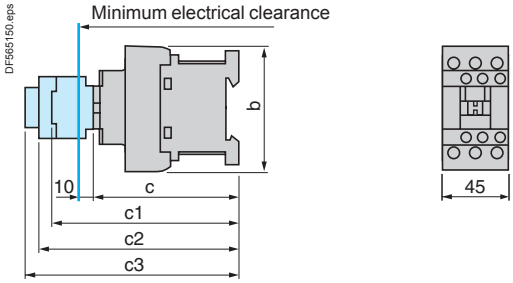
Control circuit: d.c. or low consumption

TeSys D

LC1 D09…D18 (3-pole)

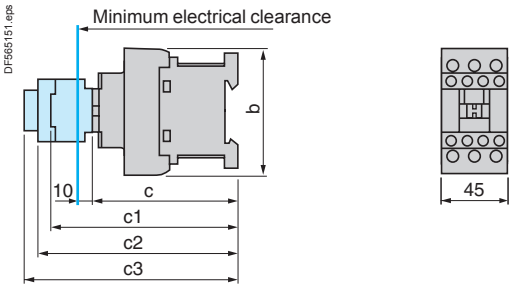


LC1 D25…D38 (3-pole)



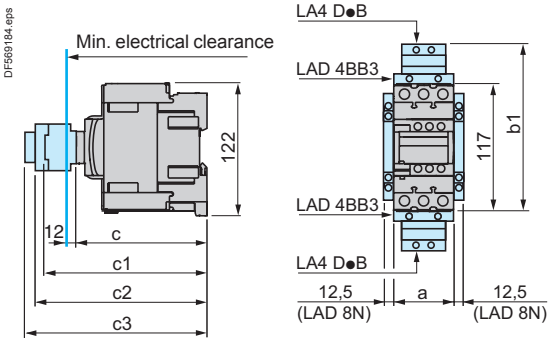
LC1		**D09…D18**	**D093…D123**	**D099…D129**	**D25…D38**	**D183…D323**
b		77	99	80	85	99
c	without cover or add-on blocks	93	93	93	99	99
	with cover, without add-on blocks	95	95	95	101	101
c1	with LAD N or C (2 or 4 contacts)	126	126	126	132	132
c2	with LA6 DK10	138	138	138	144	144
c3	with LAD T, R, S	146	146	146	152	152
	with LAD T, R, S and sealing cover	150	150	150	156	156

LC1 DT20…DT40 (4-pole)

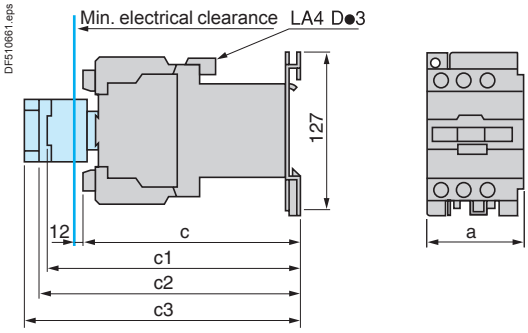


LC1		**DT20** and **DT25** **D098** and **D128**	**DT203** and **DT253** **D0983** and **D1283**	**DT32** and **DT40** **D188…D258**	**DT323** and **DT403** **D1883** and **D2583**
b		85	99	91	105
c	with cover	99	99	107	107
c1	with LAD N or C (2 or 4 contacts)	123	123	131	131
c2	with LA6 DK10	135	135	143	143
c3	with LAD T, R, S	143	143	151	151
	with LAD T, R, S and sealing cover	147	147	155	155

LC1 D40A…D65A (3-pole), **LC1 DT60A…DT80A** (4-pole)



LC1 D80 and **D95** (3-pole), **LP1 D80004, LP1 D80008** (4-pole), **LP1 D40008** and **D65008** (4-pole)



		LC1 D40A … D65A	**LC1 DT60A…DT80A**	**LP1 D40008** and **D65008**	**LC1 D80** and **D95**	**LP1 D80004**	**LP1 D80008**
a		55	72	85	85	96	96
b1	with LAD 4BB3	136	136	–	–	–	–
	with LA4 DF, DT	157	157	–	–	–	–
c	without cover or add-on blocks	118	118	182	181	181	196
	with cover, without add-on blocks	120	120	–	186	–	–
c1	with LAD N (1 contact)	–	–	196	204	204	204
	with LAD N or C (2 or 4 contacts)	150	150	202	210	210	210
c2	with LA6 DK10	163	163	213	221	221	221
c3	with LAD T, R, S	171	171	221	229	229	229
	with LAD T, R, S and sealing cover	175	175	225	233	233	233

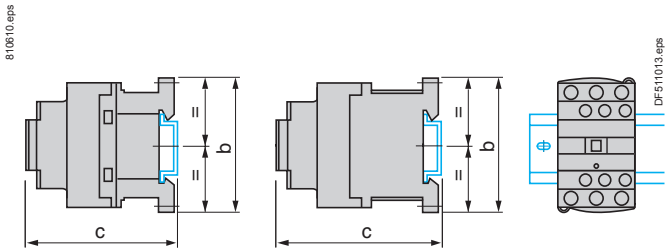
LC1 D115●●● and **LC1 D150●●●** with ⎓ coil: see page B8/65.

TeSys contactors
TeSys D contactors

TeSys D

LC1 D09…D38, DT20…DT40

On mounting rail AM1 DP200, DR200 or AM1 DE200 (width 35 mm)



Control circuit: a.c.

LC1	D09… D18	D25… D38	DT20 and DT25	DT32 and DT40
b	77	85	85	100
c (AM1 DP200 or DR200) (1)	88	94	94	109
c (AM1 DE200) (1)	96	102	102	117

Control circuit: d.c.

LC1	D09… D18	D25… D38	DT20 and DT25	DT32 and DT40
b	77	85	94	109
c (AM1 DP200 or DR200) (1)	97	103	103	118
c (AM1 DE200) (1)	105	110	111	1236

(1) With safety cover.

LC1 D40A…D65A, LC1 DT60A and DT80A, LC1 D80 and D95, LC1 D40008 and D65008

On mounting rail AM1 DL200 or DL201 (width 75 mm) (2)
On mounting rail AM1 ED●●● or AM1 DE200 (width 35 mm)

Control circuit: a.c.

LC1	D40A…D65A DT60A…DT80A	D80 and D95	D40008 and D65008
b	122	127	127
c (AM1 DL200) (1)	–	147	143
c (AM1 DL201) (1)	–	137	133
c (AM1 ED●●● or DE200) (1)	128	137	133

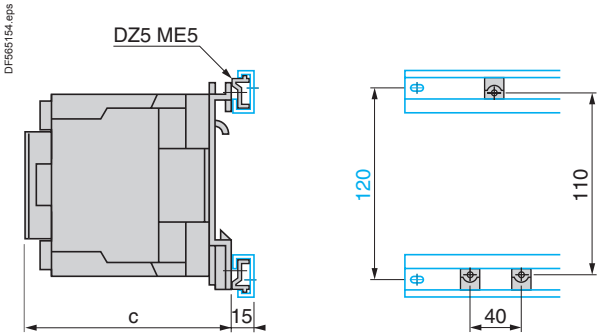
Control circuit: d.c.

LC1	D40A…D65A DT60A…DT80A	D80 and D95	D40008 and D65008
c (AM1 DL200) (1)	–	205	200
c (AM1 DL201) (1)	–	195	190
c (AM1 ED●●● or DE200) (1)	128	128	190

(1) With safety cover.
(2) Except for LC1 D40A…D65A, LC1 DT60A and DT80A.

LC1 D80 and D95, LP1 D80

On 2 mounting rails DZ5 MB on 120 mm centres



Control circuit: a.c.

LC1	D80 and D95
c with cover	130

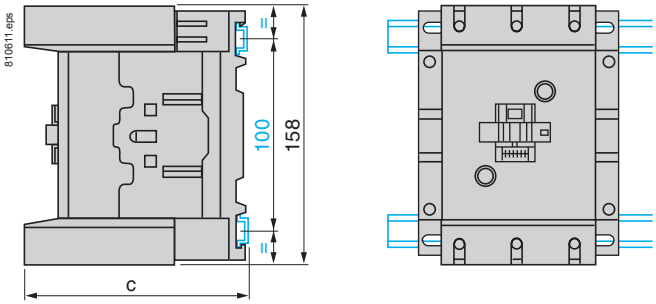
Control circuit: d.c.

LC1	D80 and D95
c with cover	186

LP1	D80
c	181

LC1 D115, D150

On 2 mounting rails DZ5 MB on 120 mm centres



Control circuit: a.c. or d.c.

LC1	D115 and D150	D1156 and D1506
c (AM1 DP200 or DR200)	134.5	117.5
c (AM1 DE200 or ED●●●)	142.5	125.5

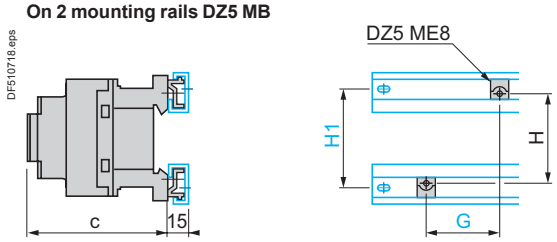
Contactors

TeSys contactors
TeSys D contactors

TeSys D

LC1 D09…D38 and LC1 DT20…DT40

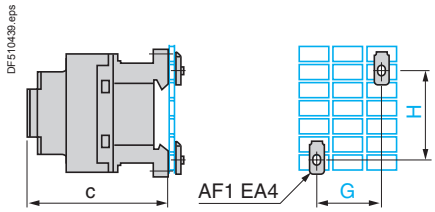
On 2 mounting rails DZ5 MB



Control circuit:	a.c.		d.c.	
LC1	D09…D18	D25…D38	D09…D18	D25…D38
c with cover	86	92	95	101
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70
4-pole contactors				
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c	92	100	101	109
G	35	35	35	35
H	60	60	70	70
H1	70	70	70	70

LC1 D09…D38 and LC1 DT20…DT40

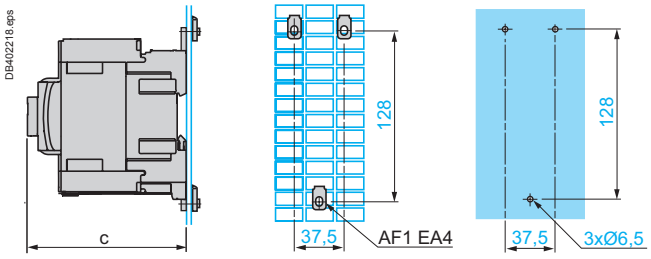
On pre-slotted mounting plate AM1 PA, PB, PC



Control circuit:	a.c		d.c	
LC1	D09…D18	D25…D38	D09…D18	D25…D38
c with cover	86	92	95	101
G	35	35	35	35
H	60/70	60/70	70	70
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c with cover	80	93	118	132
G	35	35	35	35
H	60	60	70	70

LC1 D40A…D65A, LC1 DT60A…DT80A

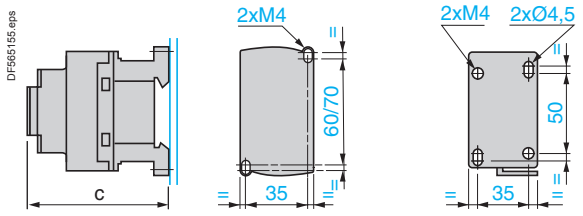
On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



Control circuit:	a.c	d.c.
LC1	D40A…65A , DT60A…DT80A	D40A…65A , DT60A…DT80A
c with cover	120	120

LC1 D09…D38, LC1 DT20…DT40

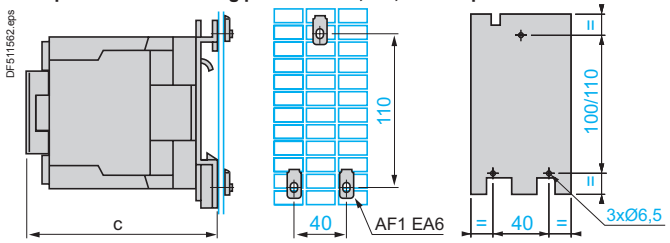
Panel mounted



Control circuit:	a.c		d.c	
LC1	D09…D18	D25…D38	D09…D18	D25…D38
c with cover	86	92	95	101
4-pole contactors				
LC1	DT20 and DT25	DT32 and DT40	DT20 and DT25	DT32 and DT40
c with cover	90	98	90	98

LC1 D80 and D95, LC1 D40008 and D65008, LP1 D80

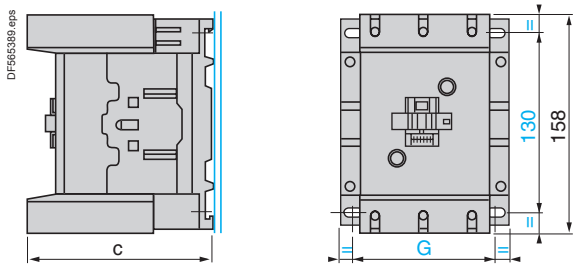
On pre-slotted mounting plate AM1 PA, PB, PC and panel mounted



Control circuit:	a.c		d.c.
LC1	D80 and D95, D40008 and D65008		D80 and D95 D40008 and D65008
c with cover	130		186
LP1	–	–	D80
c without cover	–	–	181

LC1 D115, D150

Panel mounted



LC1	D115	D1156	D150	D1506
c	132	115	132	115
G (3-pole)	96/110	96/110	96/110	96/110
G (4-pole)	130/144	130/144	–	–

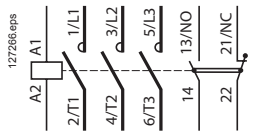
Selection: pages A5/23 to A5/47
Characteristics: pages B8/53 to B8/58
References: pages B8/2 to B8/5
Schemes: pages B8/69 to B8/70

TeSys D

Contactors

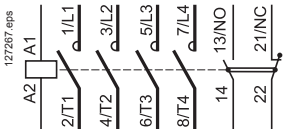
3-pole contactors (References: pages B8/2 to B8/5)

LC1 D09 to D150

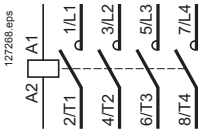


4-pole contactors (References: pages B8/6 and B8/7)

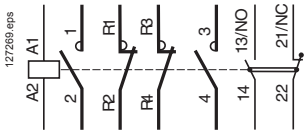
LC1 DT20 to DT80A



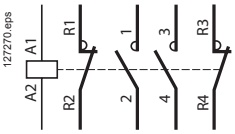
LC1 D115004



LC1 D098 to D258



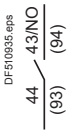
LC1 and LP1 D40008 to D80008



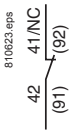
Front mounting add-on contact blocks

Instantaneous auxiliary contacts (References: page B8/41)

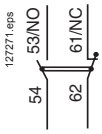
1 N/O LAD N10 (1)



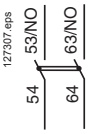
1 N/C LAD N01 (1)



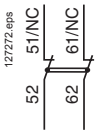
1 N/O + 1 N/C LAD N11



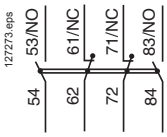
2 N/O LAD N20



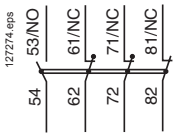
2 N/C LAD N02



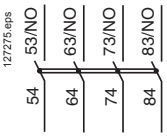
2 N/O + 2 N/C LAD N22



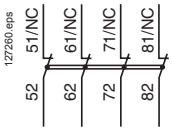
1 N/O + 3 N/C LAD N13



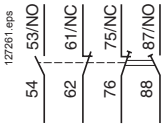
4 N/O LAD N40



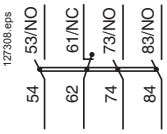
4 N/C LAD N04



2 N/O + 2 N/C including 1 N/O + 1 N/C make before break LAD C22

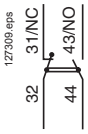


3 N/O + 1 N/C LAD N31

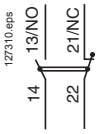


Instantaneous auxiliary contacts conforming to standard EN 50012 (References: page B8/41)

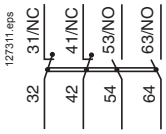
1 N/O + 1 N/C LAD N11G



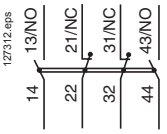
1 N/O + 1 N/C LAD N11P



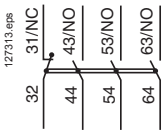
2 N/O + 2 N/C LAD N22G



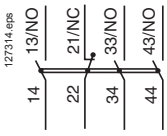
2 N/O + 2 N/C LAD N22P



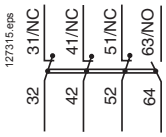
3 N/O + 1 N/C LAD N31G



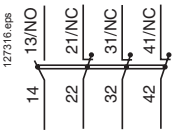
3 N/O + 1 N/C LADN31P



1 N/O + 3 N/C LAD N13G



1 N/O + 3 N/C LAD N13P



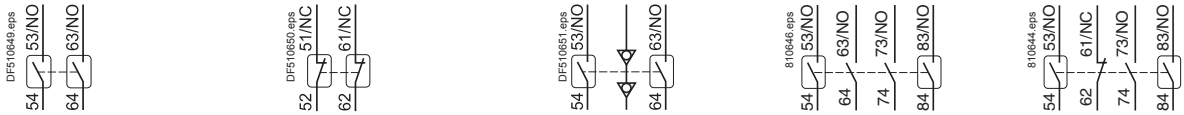
(1) Items in brackets refer to blocks mounted on right-hand side of contactor.

TeSys D

Front mounting add-on contact blocks

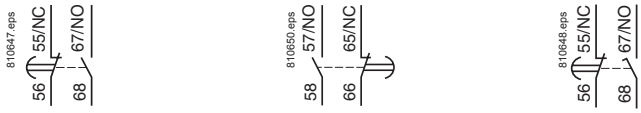
Dust and damp protected instantaneous auxiliary contacts (References: page B8/41)

2 N/O (24-50 V) LA1 DX20	2 N/C (24-50 V) LA1 DX02	2 N/O (5-24 V) LA1 DY20	2 N/O protected (24-50 V) 2 N/O standard LA1 DZ40	2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard LA1 DZ31



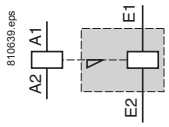
Time delay auxiliary contacts (References: page B8/16)

On-delay 1 N/O + 1 N/C LAD T	Off-delay 1 N/O + 1 N/C LAD R	On-delay 1 N/C + 1 N/O break before make LAD S



Mechanical latch blocks (References: page B8/16)

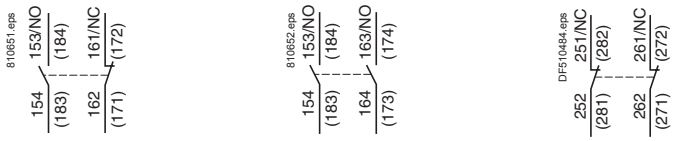
LAD 6K10 and LA6 DK20



Side mounting add-on contact blocks

Instantaneous auxiliary contacts (References: page B8/41)

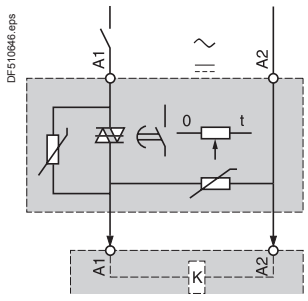
1 N/O + 1 N/C LAD 8N11 (1)	2 N/O LAD 8N20 (1)	2 N/O LAD 8N02 (1)



(1) Items in brackets refer to blocks mounted on right-hand side of contactor.

Electronic serial timer modules

On-delay LA4 DT•U



Interface modules

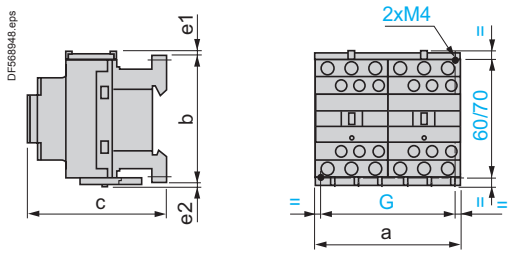
Relay output LA4 DFB	Solid state LA4 DWB

References: page B8/85.

TeSys D

LC2 D09 to D38

2 x **LC1 D09 to D38**



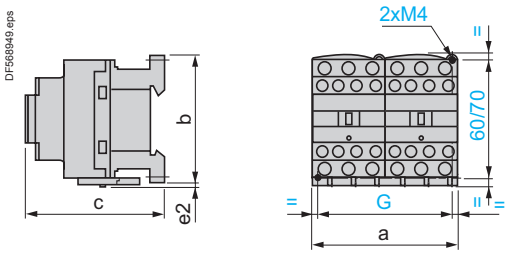
LC2 or 2 x LC1	a	b	c (1)	e1	e2	G
D09 to D18 ∼	90	77	86	4	1.5	**80**
D093 to D123 ∼	90	99	86	–	–	**80**
D09 to D18 ⎓	90	77	95	4	1.5	**80**
D093 to D123 ⎓	90	99	95	–	–	**80**
D25 to D38 ∼	90	85	92	9	5	**80**
D183 to D383 ∼	90	99	92	–	–	**80**
D25 to D32 ⎓	90	85	101	9	5	**80**
D183 to D383 ⎓	90	99	101	–	–	**80**

e1 and e2: including cabling.

(1) With safety cover, without add-on block.

LC2 DT20 to DT40

2 x **LC1 DT20 to DT40**

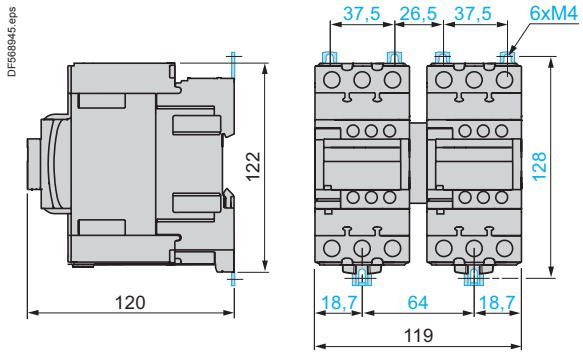


LC2 or 2 x LC1	a	b	c	G
DT20 and DT25 ∼	90	85	92	**80**
DT32 and DT40 ∼	90	91	99	**80**
DT20 and DT25 ⎓	90	85	102	**80**
DT32 and DT40 ⎓	90	91	109	**80**

c, e: including cabling.

LC2 D40A to D65A

2 x **LC1 D40A to D65A**



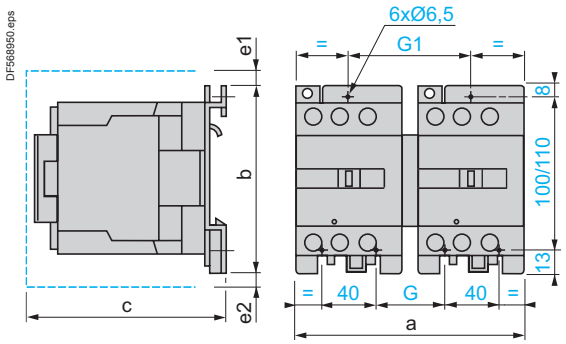
Contactors

TeSys contactors
TeSys D reversing contactors

TeSys D

LC2 D80 and D95

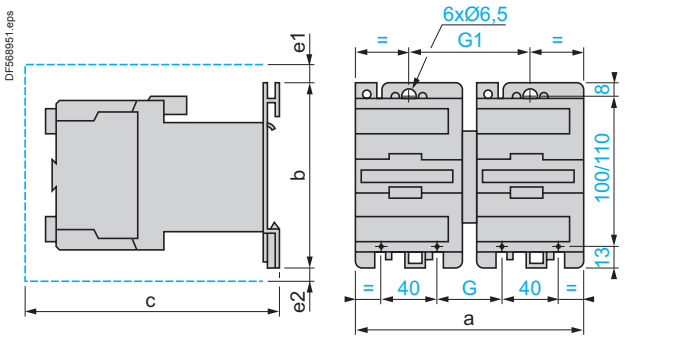
2 x **LC1 D80 and D95** ∼



LC2 or 2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95 ∼	182	127	158	13	–	57	96
D80004 ∼	207	127	158	–	20	71	111

c, e1 and e2: including cabling.

2 x **LC1 D80 and D95** ⎓

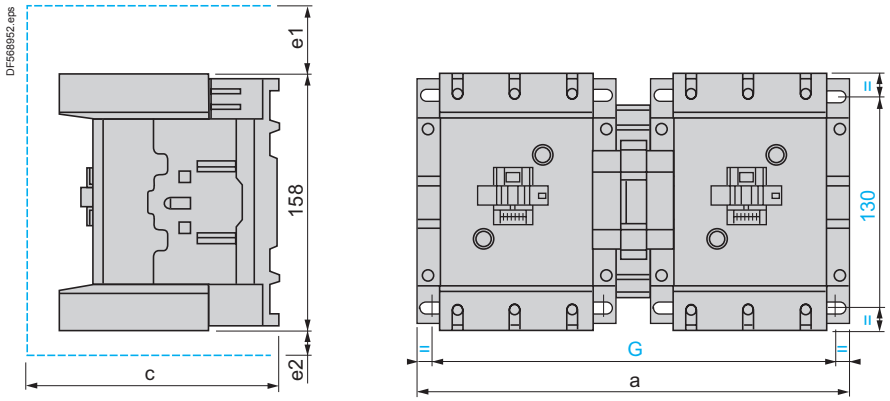


2 x LC1	a	b	c	e1	e2	G	G1
D80 and D95	207	127	215	13	20	96	111

c, e1 and e2: including cabling.

LC2 D115 and D150

2 x **LC1 D115 and D150**



LC2 or 2 x LC1	a	c	e1	e2	G
D115 and D150	266	148	56	18	242/256
D115004	334	148	–	60	310/324

c, e1 and e2: including cabling.

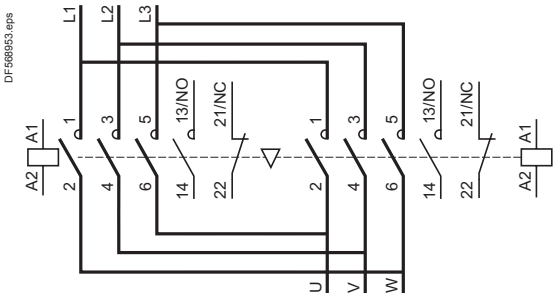
TeSys contactors
TeSys D reversing contactors

TeSys D

Reversing contactors for motor control

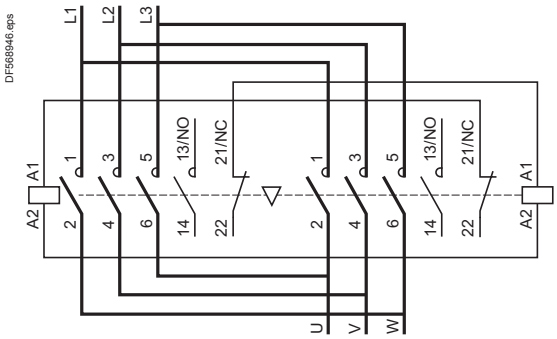
LC2 D09…D150

Horizontally mounted



LAD 9R1V

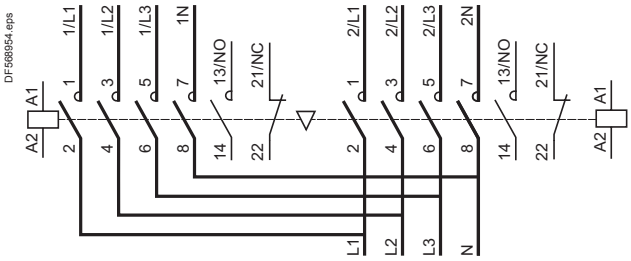
With integral electrical interlocking



Changeover contactor pairs

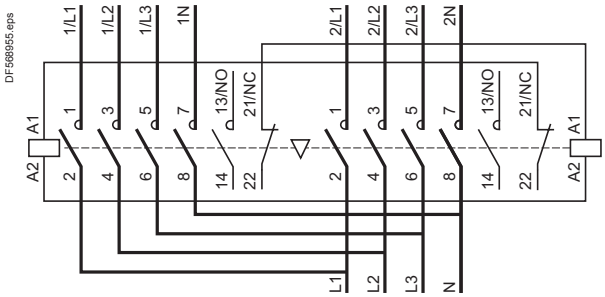
LC2 DT20…DT40

Horizontally mounted



LAD T9R1V

With integral electrical interlocking

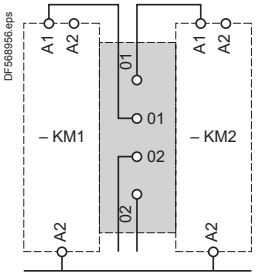


TeSys contactors
TeSys D reversing contactors

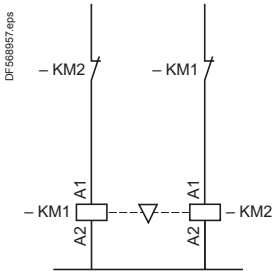
TeSys D

Electrical interlocking of reversing contactors fitted with:

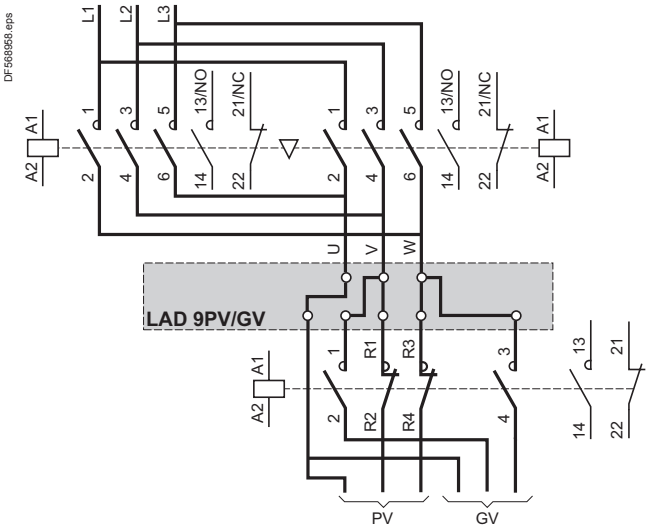
Mechanical interlock with integral electrical contacts
LA9 D4002, LA9 D8002 and LA9 D11502



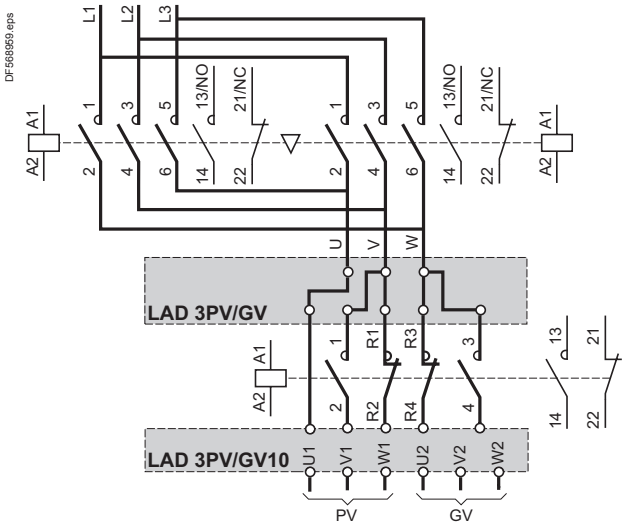
Mechanical interlock without integral electrical contacts
LAD 9V2, LAD 4CM, LA9 D50978 and LA9 D80978



Low speed - High speed cabling kit, screw clamp terminals



Low speed - High speed cabling kit, spring terminals

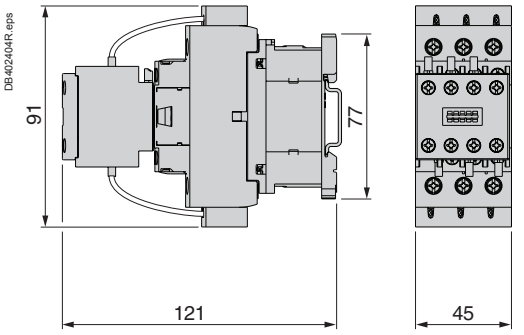


TeSys contactors

For switching 3-phase capacitor banks, used for power factor correction

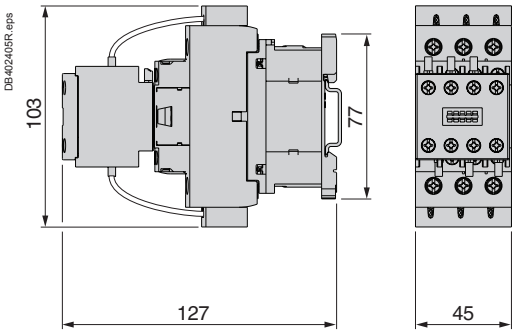
Dimensions

LC1 DFK, DGK



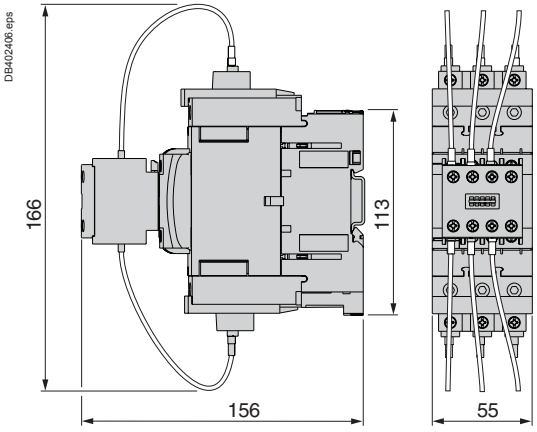
LC1	Type of fixing	
DFK	LC1 D18	See pages B8/67 and B8/68
DGK	LC1 D18	See pages B8/67 and B8/68

LC1 DLK, DMK



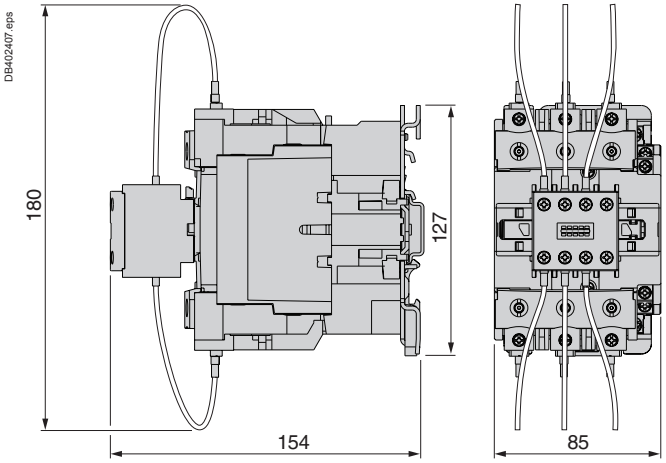
LC1	Type of fixing	
DLK	LC1 D25	See pages B8/67 and B8/68
DMK	LC1 D32	See pages B8/67 and B8/68

LC1 DPK, DTK



LC1	Type of fixing	
DPK	LC1 D40A	See pages B8/67 and B8/68
DTK	LC1 D65A	See pages B8/67 and B8/68

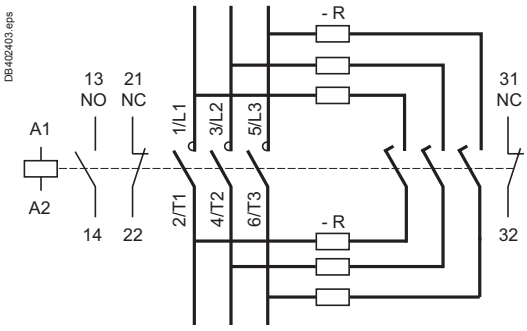
LC1 DWK



LC1	Type of fixing	
DWK	LC1 D80	See pages B8/67 and B8/68

Schemes

LC1 D●K



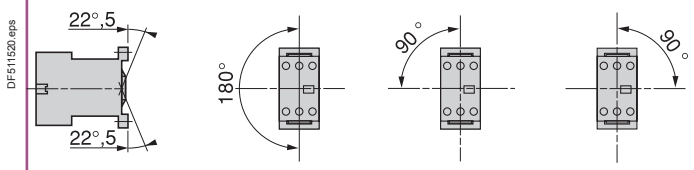
R = Pre-wired resistor connections.

References:
page B8/13

TeSys contactors
Mini-contactors TeSys LC1 SK and LP1 SK

TeSys SK

Environment

Rated insulation voltage (Ui)	Conforming to 60947, VDE 0110 gr C,BS 5424, CSA 22-2 n° 14, UL 508	**V**	690	
Conforming to standards			IEC 60947, NF C 63-110, VDE 0660, BS 5424	
Approvals			UL, CSA	
Protective treatment	Conforming to IEC 60068 (DIN 50015)		"TC" (Klimafest, Climateproof)	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact	
Ambient air temperature around the device	Storage	**°C**	-50…+70	
	Operation	**°C**	-20…+50	
Maximum operating altitude	Without derating	**m**	2000	
Operating position			**Vertical axis**	**Horizontal axis**
				
			Without derating	Without derating
Cabling, screw clamp terminals			Min	Max
	Solid conductor	**mm²**	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	**mm²**	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	**N.m**	0.8	
Terminal referencing			Conforming to standards En 50005	

References: pages B8/29 and B8/30
Dimensions: page B8/80
Schemes: page B8/80

Pole characteristics

Conventional thermal current (Ith)	For ambient temperature ⩽ 55 °C	**A**	12
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**	66
Rated breaking capacity (for Ue ⩽ 400 V)	Conforming to NF C 63-110 and IEC 60947 (I rms)	**A**	52
Short time rating	In free air for a time "t" from cold state (θ ⩽ 55 °C)	**A**	50
Short-circuit protection	gl fuse U ⩽ 440 V	**A**	16
Average impedance per pole	At Ith and 50 Hz	**mΩ**	4
Maximum rated operational current			
For a temperature ⩽ 55 °C	AC-3 (1) (Ue ⩽ 400 V)	**A**	6
	AC-1	**A**	12
Utilisation in category AC-1 resistive circuits, heating, lighting (Ue ⩽ 440 V)	Increase in operational current by paralleling of poles	**A**	20

Auxiliary contact characteristics of add-on blocks

Rated operational voltage (Ue)	Up to	**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947, BS 5424, VDE 0110 group C, CSA C 22-2 n° 14	**V**	690
Conventional thermal current (Ith)	For ambiant temperature ⩽ 55 °C	**A**	10
Frequency of operational current		**Hz**	Up to 400
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gl fuse	**A**	10

Operational power of contacts conforming to IEC 60947

a.c. supply, category AC-15

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

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

d.c. supply, category DC-13

Electrical durability (valid up to 1200 operating cycles per 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	110	220	440	440
1 million operating cycles	**W**	120	80	60	52	51	880
3 million operating cycles	**W**	55	38	30	28	26	317
10 million operating cycles	**W**	15	11	9	8	7	132
Occasional making capacity	**W**	720	600	400	300	230	13000

(1) For LC1 contactors.

References: pages B8/29 and B8/30
Dimensions: page B8/80
Schemes: page B8/80

TeSys contactors

Mini-contactors TeSys LC1 SK and LP1 SK

TeSys SK

Control circuit characteristics

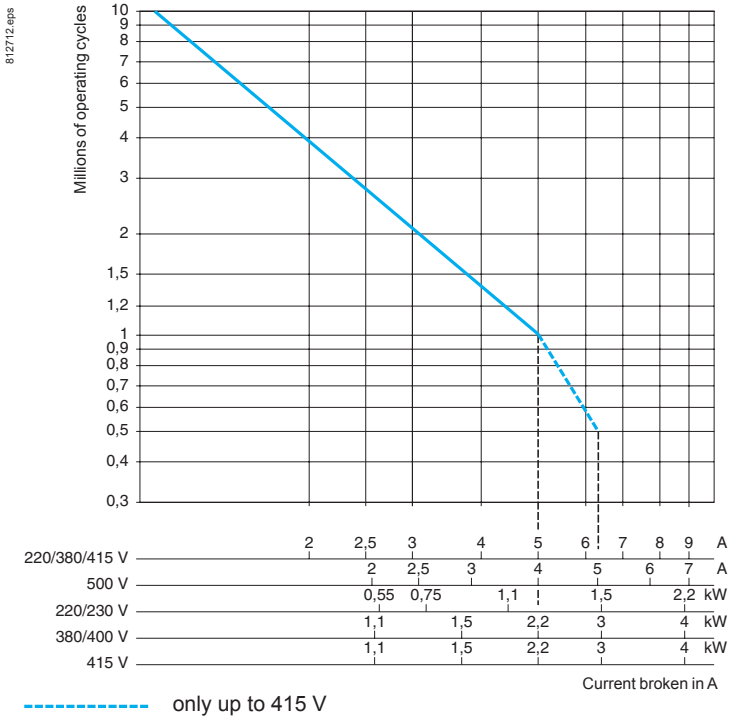
Type			LC1 SK06	LP1 SK06
Rated control circuit voltage (Uc)		V	∼ 24…400	⎓ 12…72
Control voltage limits ($\theta \leq 50$ °C)	For operation		0.85…1.1 Uc	0.85…1.1 Uc
	For drop-out		⩾ 0.20 Uc	⩾ 0.10 Uc
Average coil consumption at 20 °C and at Uc	Inrush		16 VA	2.2 W
	Sealed		4.2 VA	2.2 W
Heat dissipation		W	1.4	2.2
Operating time at 20 °C and at Uc				
Between coil energisation and	opening of the N/C contacts	ms	8…16	10…18
	closing of the N/O contacts	ms	7…14	8…12
Between coil de-energisation and	opening of the N/O contacts	ms	6…8	4…6
	closing of the N/C contacts	ms	8…10	6…8
Maximum operating rate	In operating cycles per hour		1200	1200
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	–
	⎓ coil		–	10

References: pages B8/29 and B8/30
Dimensions: page B8/80
Schemes: page B8/80

TeSys contactors
Mini-contactors TeSys LC1 SK and LP1 SK

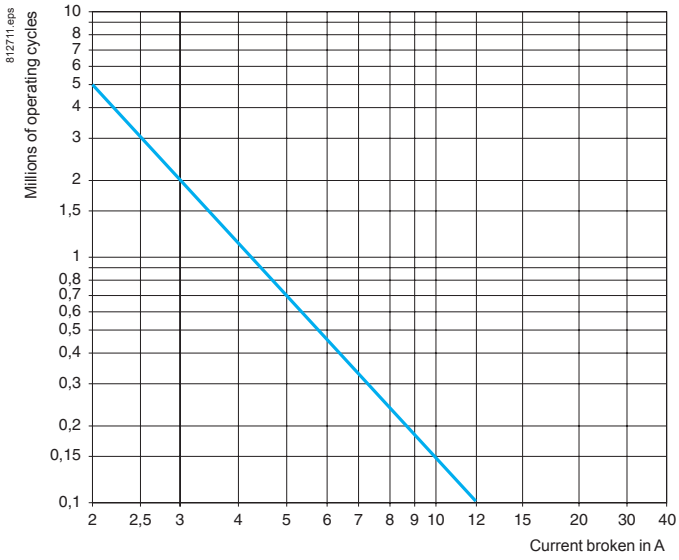
Use in category AC-3 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current (Ie) of the motor.



Use in category AC-1 (Ue ⩽ 440 V)

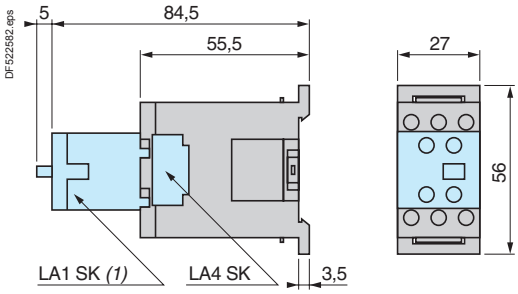
Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.



Contactors

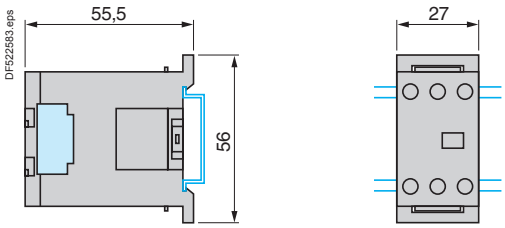
TeSys contactors
Mini-contactors TeSys LC1 SK and LP1 SK

Dimensions
Mini-contactors
LC1 and LP1 SK06

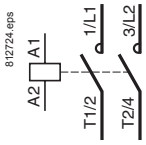


(1) Only on LC1 SK06.

Mounting
Mini-contactors
LC1 and LP1 SK06
On mounting rail AM1 DP200 or AM1 DE200 (ـــ 35 mm)



Schemes
2-pole mini-contactors
LC1 and LP1 SK06

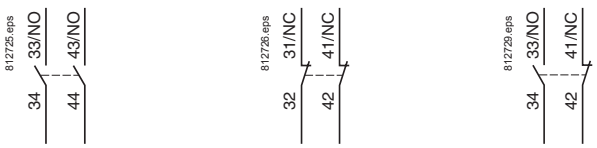


Add-on power pole block

1 pole + 1 “N/O” aux.	1 pole + 1 “N/C” aux.
LA1 SK10	**LA1 SK01**

Instantaneous auxiliary contacts

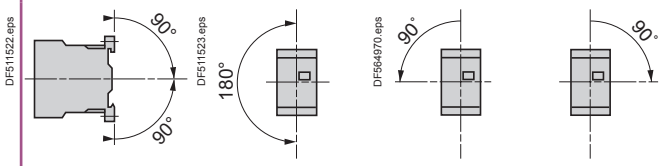
2 “N/O”	2 “N/C”	1 “N/O” + 1 “N/C”
LA1 SK20	**LA1 SK02**	**LA1 SK11**



Characteristics:
pages B8/76 to B8/79

References:
pages B8/29 and B8/30

Environment characteristics

Conforming to standards			IEC 60947, NF C 63-110, VDE 0660, BS 5424		
Product certifications	LC● and LP● K06 to K12		UL, CSA		
Operating positions			Vertical axis / Horizontal axis  *Without derating* / *Without derating* / *Possible positions for* **LC● K** *only. Contactor pull-in voltage: 0.85 Uc*		
Connection			**Min.**	**Max.**	**Max. to IEC 60947**
Screw clamp terminals	Solid conductor	**mm²**	1 x 1.5	2 x 4	1 x 4 + 1 x 2.5
	Flexible conductor without cable end	**mm²**	1 x 0.75	2 x 4	2 x 2.5
	Flexible conductor with cable end	**mm²**	1 x 0.34	1 x 1.5 + 1 x 2.5	1 x 1.5 + 1 x 2.5
Spring terminals	Solid conductor	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
	Flexible conductor without cable end	**mm²**	1 x 0.75	1 x 1.5	2 x 1.5
Faston connectors	Clip	**mm**	2 x 2.8 or 1 x 6.35		
Solder pins for printed circuit board	With locating device between power and control circuits		4 mm x 35 microns		
Tightening torque	Philips head n° 2 and Ø6	**N.m**	0.8		
Terminal referencing	Conforming to standards EN 50005 and EN 50012		Up to 5 contacts, depending on model		
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		
	Conforming to CSA 22-2 n° 14, UL 508	**V**	600		
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		
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		Self-extinguishing materials V1		
	Conforming to NF F 16-101 and 16-102		Conforming to requirement 2		
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		
Safe separation of circuits	Conforming to VDE 0106 and IEC 60536		SELV (Safety Extra Low Voltage), up to 400 V		

Contactors

References: pages B8/31 to B8/38
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

TeSys contactors

TeSys K contactors and reversing contactors

TeSys K

Pole characteristics

Type		LC● or LP●		K06	K09	K12	K16
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	160
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	110
		500 V	A	80	80	80	80
		660/690 V	A	70	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	115
		5 s	A	85	85	105	105
		10 s	A	80	80	100	100
		30 s	A	60	60	75	75
		1 min	A	45	45	55	55
		3 min	A	40	40	50	50
		≥ 15 min	A	20	20	25	25
Short-circuit protection	gG fuse U ≤ 440 V (aM fuse, see page 22009/2)		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 %	60 % 30 %
			A	300 operating cycles/hour		13	15 18
			A	120 operating cycles/hour		15	18 19
			A	30 operating cycles/hour		19	20 20
	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	4
		380/415 V 3-ph.	kW	2.2	4	5.5	7.5
		440/480 V 3-ph.	kW	3	4	5.5/4 (480)	5.5/4 (480)
		500/600 V 3-ph.	kW	3	4	4	4
		660/690 V 3-ph.	kW	3	4	4	4
	Maximum operating rate (in operating cycles/hour in relation to % of rated power)			Op. cycles/h		600	900 1200
				Power		100 %	75 % 50 %

References: pages B8/31 to B8/38
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

TeSys contactors

TeSys K contactors and reversing contactors

TeSys K

Control circuit characteristics

Type			LC1	LC2	LC7	LC8	LP1	LP2	LP4	LP5
Rated control circuit voltage (Uc)		V	∼ 12…690 (1)		∼ 24…240 (1)		⎓ 12…250 (1)		⎓ 12…120	
Control voltage limits (≤ 50 °C) single voltage coil	Operation		0.8…1.15 Uc (2)		0.85…1.1 Uc		0.8…1.15 Uc		0.7…1.30 Uc	
	Drop-out		≥ 0.20 Uc		≥ 0.10 Uc		≥ 0.10 Uc		≥ 0.10 Uc	
Average consumption at 20 °C and at Uc	Inrush		30 VA		3 VA		3 W		1.8 W	
	Sealed		4.5 VA		3 VA		3 W		1.8 W	
Heat dissipation		W	1.3		3		3		1.8	
Operating time at 20 °C and at Uc										
Between coil energisation and:	- opening of the N/C contacts	ms	5…15		25…35		25…35		25…35	
	- closing of the N/O contacts	ms	10…20		30…40		30…40		30…40	
Between coil de-energisation and:	- opening of the N/O contacts	ms	10…20		30		10		10…20	
	- closing of the N/C contacts	ms	15…25		40		15		15…25	
Maximum immunity to microbreaks		ms	2		2		2		2	
Maximum operating rate	In operating cycles per hour		3600		3600		3600		3600	
Mechanical durability at Uc In millions of operating cycles	50/60 Hz coil		10	5	10	5	–	–	–	–
	⎓ coil		–	–	–	–	10	5	–	–
	Wide range coil, Low consumption		–	–	–	–	–	–	30	5

(1) For mains supplies with a high level of interference (voltage surge > 800 V), use a suppressor module LA4 KE1FC (50…129 V) or LA4 KE1UG (130…250 V), see page B8/42.

(2) LC1 K16: 0.85…1.15 Uc.

References: pages B8/31 to B8/38
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

TeSys contactors

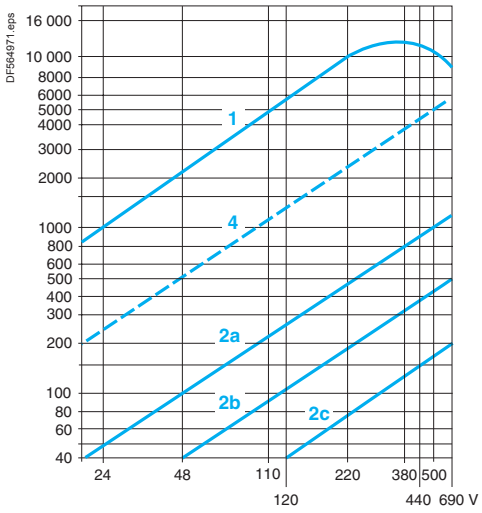
TeSys K contactors and reversing contactors

TeSys K

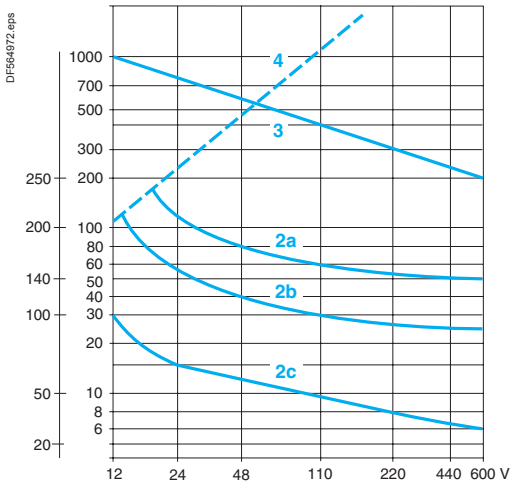
Auxiliary contact characteristics of contactors and instantaneous contact blocks

Number of auxiliary contacts	On LC● K or LP● K 3-pole			1
	On LA1 K			2 or 4
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
Insulation resistance			**MΩ**	> 10
Non-overlap distance	LA1 K: linked contacts conforming to INRS, BIA and CNA specifications		**mm**	0.5 (see schemes pages B8/86 and B8/88)

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.

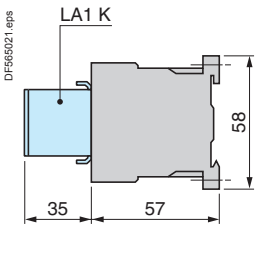
References: pages B8/31 to B8/38
Dimensions: pages B8/85 and B8/87
Schemes: pages B8/86 and B8/88

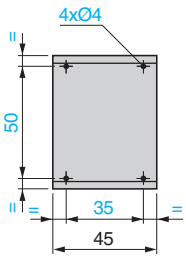
TeSys K

Contactors

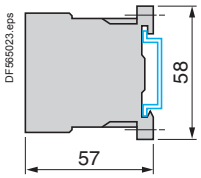
LC1 K, LC7 K, LP1 K, LP4 K

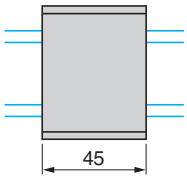
On panel





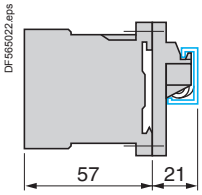
On mounting rail AM1 DP200 or AM1 DE200 (, 35 mm)

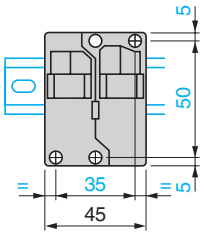




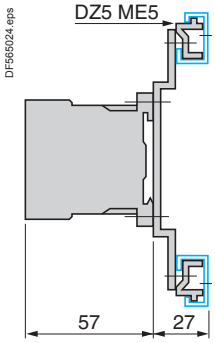
LA9 D973

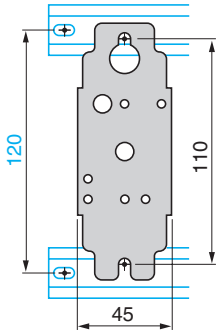
On one asymmetrical rail DZ5 MB with clip-on mounting plates



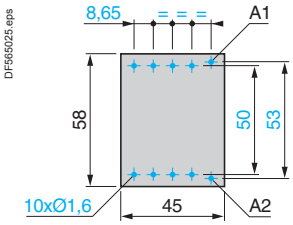


DX1 AP25





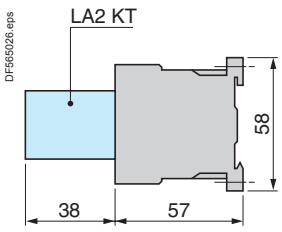
On printed circuit board



Electronic time delay contact blocks

LA2 KT

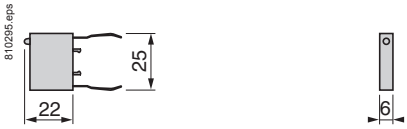
On contactor

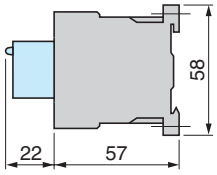


Suppressor modules

LA4 K●

On contactor LC1 K or LP1 K





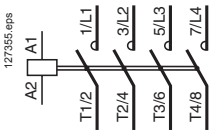
Contactors

TeSys contactors
TeSys K reversing contactors

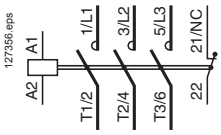
TeSys K

3-pole contactors

3 P + N/O

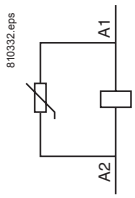


3 P + N/C

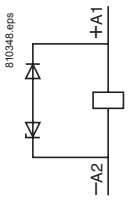


With integral suppression device

LC7 K

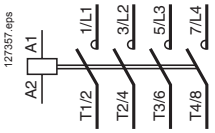


LP4 K

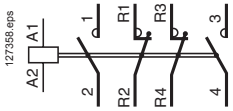


4-pole contactors

4 P

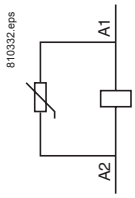


2 P N/O + 2 P N/C

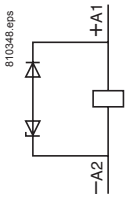


With integral suppression device

LC7 K



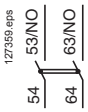
LP4 K



Instantaneous auxiliary contacts LA1 K

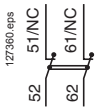
LA1 KN20, KN207, KN203

2 N/O



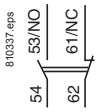
LA1 KN02, KN027, KN023

2 N/C



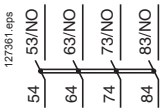
LA1 KN11, KN117, KN113

1 N/O + 1 N/C



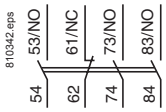
LA1 KN40, KN407, KN403

4 N/O



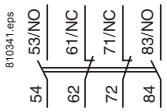
LA1 KN31, KN317, KN313

3 N/O + 1 N/C



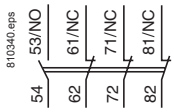
LA1 KN22, KN227, KN223

2 N/O + 2 N/C



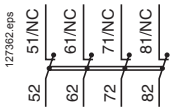
LA1 KN13, KN137, KN133

1 N/O + 3 N/C



LA1 KN04, KN047, KN043

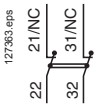
4 N/C



Terminal referencing conforming to standard EN 50012

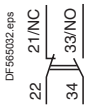
LA1 KN02M

2 N/C



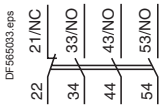
LA1 KN11M

1 N/O + 1 N/C



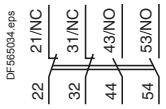
LA1 KN31M

3 N/O + 1 N/C



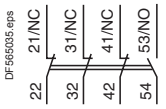
LA1 KN22M

2 N/O + 2 N/C



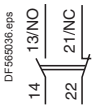
LA1 KN13M

1 N/O + 3 N/C



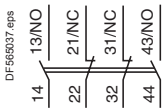
LA1 KN11P

1 N/O + 1 N/C



LA1 KN22P

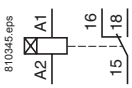
2 N/O + 2 N/C



Electronic time delay contact blocks

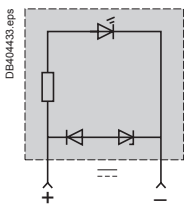
LA2 KT

1 C/O

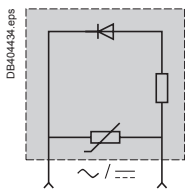


Suppressor modules

LA4 KC



LA4 KE



Characteristics:
pages B8/81 to B8/84

References:
pages B8/31 to B8/34

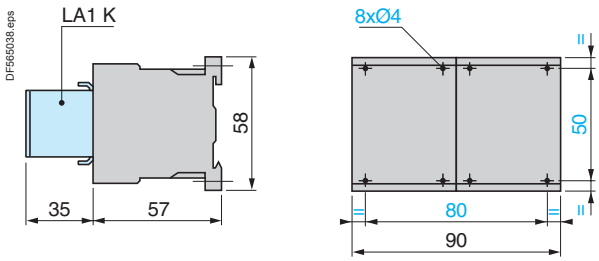
Dimensions:
page B8/85

TeSys K

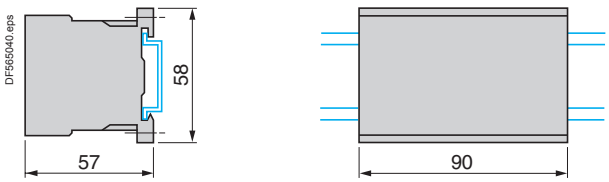
Reversing contactors

LC2 K, LC8 K, LP2 K, LP5 K

On panel



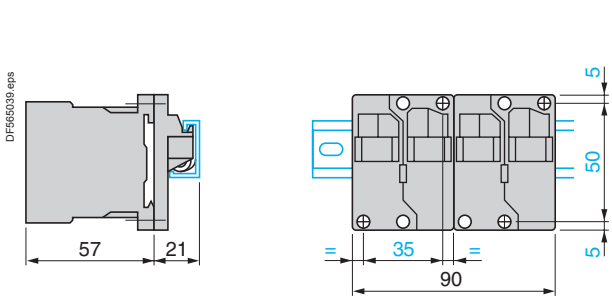
On mounting rail AM1 DP200 or AM1 DE200 (ـــ 35 mm)

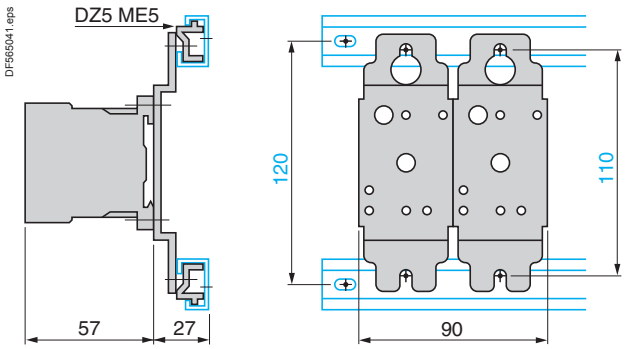


2 x LA9 D973

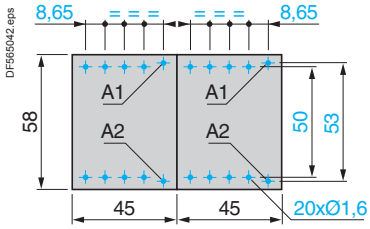
2 x DX1 AP25

On one asymmetrical mounting rail DZ5 MB with 2 clip-on mounting plates LA9 D973 or on 2 mounting plates DX1 AP25.





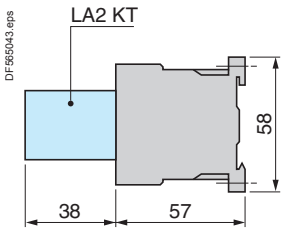
On printed circuit board for reversing contactors or 2 contactors mounted side by side.



Electronic time delay contact blocks

LA2 KT

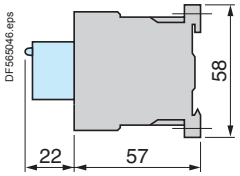
On reversing contactors



Suppressor modules

LA4 K●

On reversing contactors LC2 K or LP2 K



Contactors

TeSys contactors
TeSys K reversing contactors

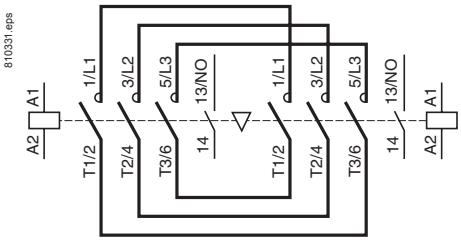
TeSys K

3-pole reversing contactors

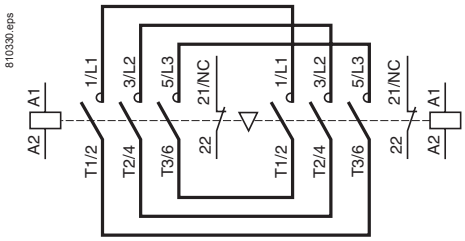
With integral suppression device

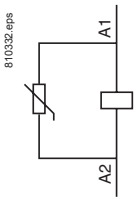
With screw clamp connections — **LC8 K** — **LP5 K**

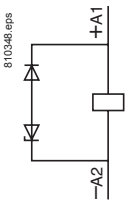
3 P + N/O



3 P + N/C

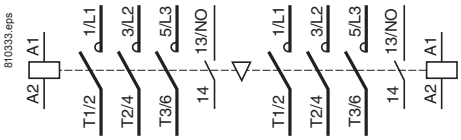




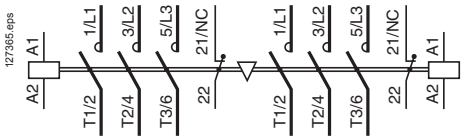


With Faston connectors or solder pins (printed circuit board)

3 P + N/O



3 P + N/C

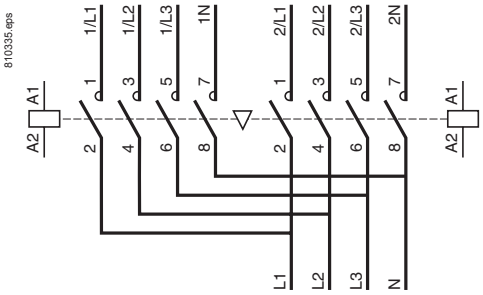


4-pole reversing contactors

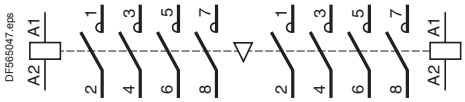
Integral suppression device

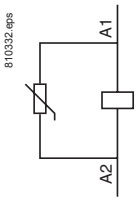
With screw clamp connections — **With Faston connectors or solder pins (printed circuit board)** — **LC8 K** — **LP5 K**

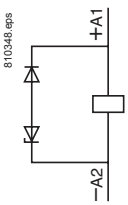
4 P



4 P



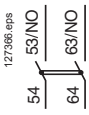


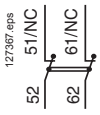


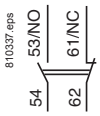
Instantaneous auxiliary contacts LA1 K

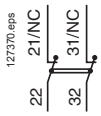
Terminal referencing conforming to standard EN 50012

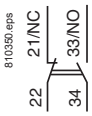
LA1 KN20, KN207, KN203	LA1 KN02, KN027, KN023	LA1 KN11, KN117, KN113	LA KN02M	LA1 KN11M	LA1 KN11P
2 N/O	2 N/C	1 N/O + 1 N/C	2 N/C	1 N/O + 1 N/C	1 N/O + 1 N/C

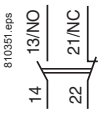




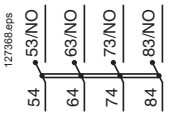


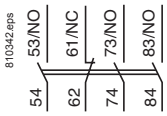


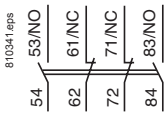


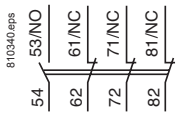


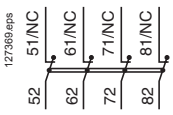
LA1 KN40, KN407, KN403	LA1 KN31, KN317, KN313	LA1 KN22, KN227, KN223	LA KN13, KN137, KN133	LA1 KN04, KN047, KN043
4 N/O	3 N/O + 1 N/C	2 N/O + 2 N/C	1 N/O + 3 N/C	4 N/C







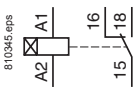




Electronic time delay contact blocks

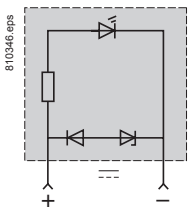
LA2 KT

1 C/O

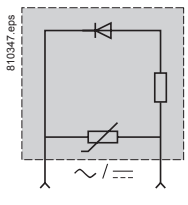


Suppressor modules

LA4 KC



LA4 KE



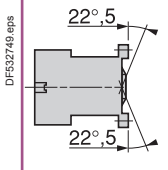
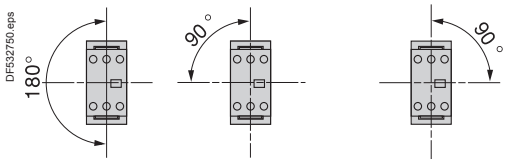
Characteristics: pages B8/81 to B8/84
References: pages B8/35 to B8/38
Dimensions: page B8/87

TeSys contactors

Mini-contactors TeSys LC1SKGC, for use in modular panels

TeSys SKGC

Environment

Rated insulation voltage (Ui)	Conforming to IEC 60947, VDE 0110 gr C, BS 5424, CSA 22-2 n° 14, UL 508	**V**	690	
Conforming to standards			IEC 60947, NF C 63-110, VDE 0660, BS 5424	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 60068 (DIN 50015)		"TC" (Klimafest, Climateproof)	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact	
Ambient air temperature around the device				
	Storage	**°C**	-50…+70	
	Operation	**°C**	-20…+50	
Maximum operating altitude	Without derating	**m**	2000	
Operating position			**Vertical axis**	**Horizontal axis**
			 Without derating	 Without derating
Cabling, connectors			Min.	Max.
	Solid conductor	**mm²**	1 x 1.5 or 2 x 1.5	1 x 6 or 2 x 4
	Flexible cable without cable end	**mm²**	1 x 0.5 or 2 x 0.35	1 x 6 or 2 x 2.5
	Flexible cable with cable end	**mm²**	1 x 0.35 or 2 x 0.35	1 x 6 or 2 x 1.5
Tightening torque	Pozidriv n° 1 head	**N.m**	0.8	
Terminal referencing			Conforming to standards EN 50005	

References: pages B8/44 and B8/45
Dimensions, schemes: page B8/93

TeSys contactors

Mini-contactors TeSys LC1SKGC, for use in modular panels

TeSys SKGC

Pole characteristics

Mini-contactor type				LC1 SKGC2	LC1 SKGC3 and LC1 SKGC4
Conventional thermal current (Ith)	For ambient temperature ≤ 55 °C		**A**	20	20
Rated operational frequency			**Hz**	50/60	
Frequency limit 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**	50	85
Rated breaking capacity (for Ue ≤ 400 V)	Conforming to NF C 63-110 and IEC 60947 (I rms)		**A**	40	68
Permissible short time rating	In free air for a time "t" from cold state (θ ≤ 55 °C)		**A**	40	60
Short-circuit protection	gl fuse U ≤ 440 V		**A**	20	20
Average impedance per pole	At Ith and 50 Hz		**mΩ**	4	4
Maximum rated operational current	For temperature ≤ 55 °C	AC-3 (Ue ≤ 400 V)	**A**	5	9
		AC-1	**A**	20	20
Use in category AC-1 resistive circuits, heating, lighting (Ue ≤ 440 V)	Increase in rated operational current by paralleling of 2 poles		**A**	32	32

Auxiliary contact characteristics of mini-contactors

Rated operational voltage (Ue)	Up to	**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947, BS 5424, VDE 0110 group C, CSA C 22-2 n° 14	**V**	690
Conventional thermal current (Ith)	For ambient temperature ≤ 55 °C	**A**	10
Frequency of the operational current		**Hz**	Up to 400
Short-circuit protection	Conforming to IEC 60947 and VDE 0660, gl fuse	**A**	10

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).

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

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.

	V	24	48	110	220	440	440
1 million operating cycles	**W**	120	80	60	52	51	880
3 million operating cycles	**W**	55	38	30	28	26	317
10 million operating cycles	**W**	15	11	9	8	7	132
Occasional making capacity	**W**	720	600	400	300	230	13000

References: pages B8/44 and B8/45
Dimensions, schemes: page B8/93

TeSys contactors

Mini-contactors TeSys LC1SKGC, for use in modular panels

Control circuit characteristics

Mini-contactor type			LC1 SKGC2	LC1 SKGC3 and LC1 SKGC4
Rated control circuit voltage (Uc)		**V**	∼ 24…400	
Control voltage limits ($\theta \leq 55$ °C)	Operation		0.85…1.1 Uc	
	For drop-out		≥ 0.20 Uc	
Average coil consumption at 20 °C and at Uc				
	Inrush	**VA**	16	23
	Sealed	**VA**	4.2	4.9
Heat dissipation		**W**	1.4	1.5
Operating time at 20 °C and at Uc				
Between coil energisation and	opening of the N/C contacts	**ms**	8…16	
	closing of the N/O contacts	**ms**	7…14	
Between coil de-energisation and	opening of the N/O contacts	**ms**	6…8	
	closing of the N/C contacts	**ms**	8…10	
Maximum operating rate	In operating cycles per hour		1200	
Mechanical durability at Uc in millions of operating cycles	50/60 Hz coil		10	

References:
pages B8/44 and B8/45

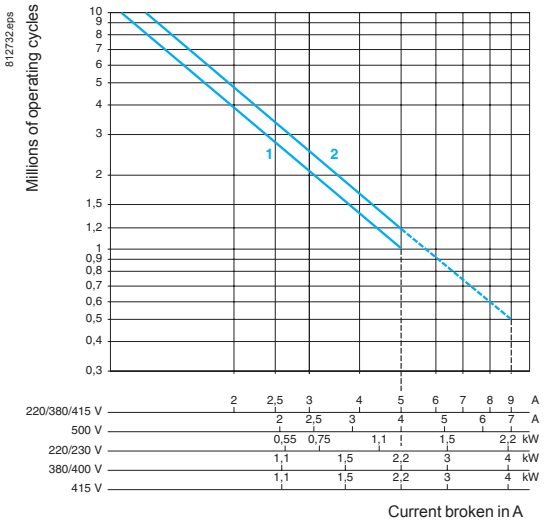
Dimensions, schemes:
page B8/93

TeSys contactors

Mini-contactors TeSys LC1SKGC, for use in modular panels

Use in category AC-3 (Ue ⩽ 440 V)

Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ic) in category AC-3 is equal to the rated operational current of the motor.

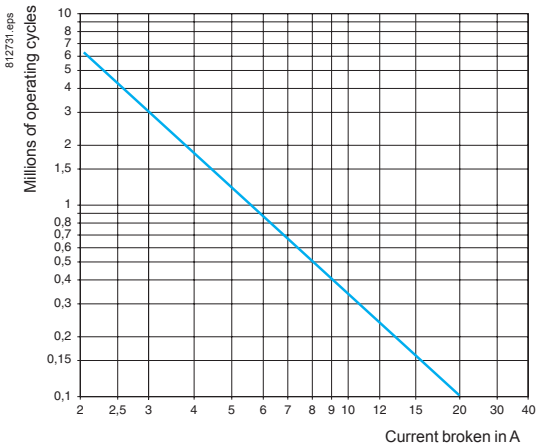


1. LC1 SKGC2
2. LC1 SKGC3 and SKGC4

- - - - - only up to 415 V

Use in category AC-1 (Ue ⩽ 440 V)

Control of resistive circuits (cos φ ⩾ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.



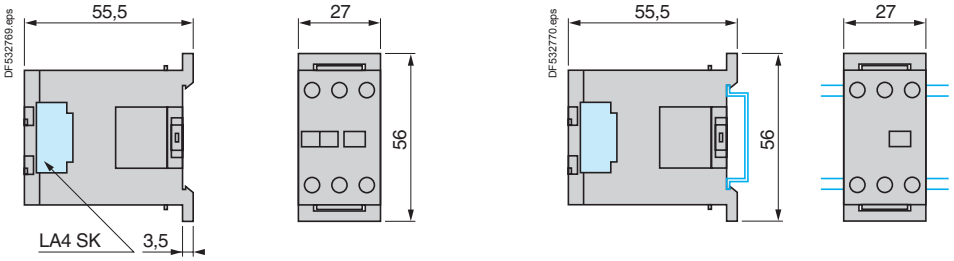
References:
pages B8/44 and B8/45

Dimensions, schemes:
page B8/93

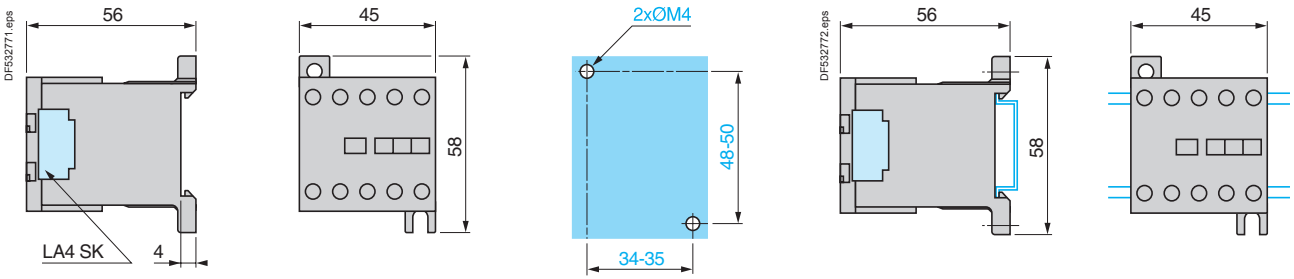
TeSys contactors

Mini-contactors TeSys LC1SKGC, for use in modular panels

Dimensions	Mounting
Mini-contactors LC1 SKGC2	On mounting rail AM1 DP200 or AM1 DE200 (⎓ 35 mm)

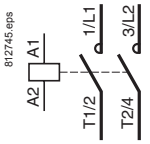


Dimensions	Mounting	
Mini-contactors LC1 SKGC3 and SKGC4	On panel	On mounting rail AM1 DP200 or AM1 DE200 (⎓ 35 mm)



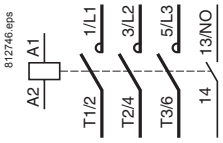
2-pole mini-contactors

LC1 SKGC2

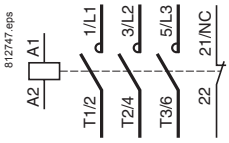


3-pole mini-contactors

LC1 SKGC310

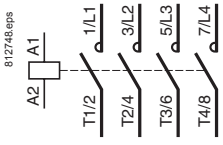


LC1 SKGC301



4-pole mini-contactors

LC1 SKGC400



References:
pages B8/44 and B8/45

Characteristics:
pages B8/89 to B8/92

Modular equipment
Standard contactors TeSys GC

TeSys GC

PB113076_13.eps

GC 25

Presentation

TeSys GC contactors are designed for use in modular panels and enclosures.
These contactors feature:

■ **Easy installation:**
□ quick clip-on fixing and locking onto 35 mm omega rail
□ easy connection by means of ready-to-tighten, captive, pozidrive screw terminals.

■ **Compact size:**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).

■ **User safety:**
□ use of materials conforming to strictest fire safety standards
□ live parts protected against direct finger contact
□ completely safe operation
□ state indication on front panel.

Standards

This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to “Electromagnetic contactors for domestic and similar use”.
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in “premises and areas accessible to the public”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

Applications

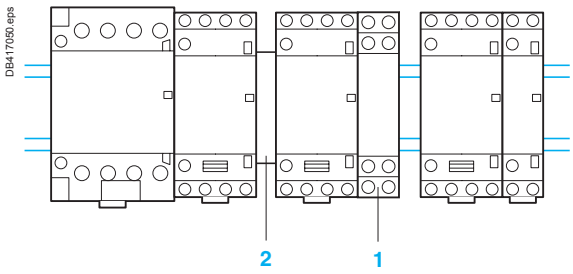
TeSys GC modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 100 A.

Power switching

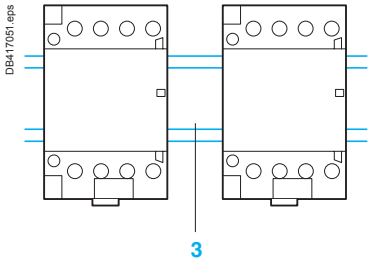
These contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
■ lighting
■ heating
■ ventilation
■ motorised shutters or gates.

Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block 1 (GAP 21 or 23) across the coil terminals y 250 V.
When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module 2 must be fitted every 2 contactors.



It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space 3 equal to one module, or by 2 ventilation 1/2 modules (GAC 5).



Derating of contactors mounted in a modular enclosure if the temperature within the enclosure is > 40 °C.

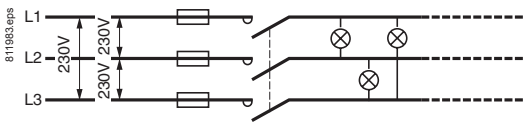
Contactor rating	40 °C	50 °C	60 °C (1)
16 A	16 A	14 A	13 A
25 A	25 A	22 A	20 A
40 A	40 A	36 A	32 A
63 A	63 A	57 A	50 A
100 A	100 A	87 A	80 A

(1) Ventilation 1/2 module must be fitted.

Lighting (Maximum number of lamps depending on the power of each unit) Presentation of installations according to type of supply

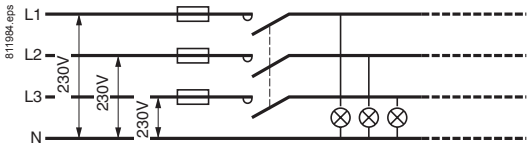
■ Single-phase circuit, 230 V

■ 3-phase circuit, 230 V



The maximum number of lamps which can be operated per phase is equal to the number of lamps in the “single phase 230 V” table divided by $\sqrt{3}$.

■ 3-phase circuit, 400 V (with neutral)



The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the “single-phase 230 V” table.

Contactor rating for a single-phase 230 V circuit (single-pole)

Fluorescent lamps with starter

Single fitting	Non corrected					With parallel correction					Contactor rating
P (W)	20	40	50	80	110	20	40	58	80	110	–
I_B (A)	0.39	0.43	0.70	0.80	1.2	0.19	0.29	0.46	0.57	0.79	–
C (µF)	–	–	–	–	–	5	5	7	7	16	–
Maximum number of lamps	22	20	13	10	7	15	15	10	10	5	**16 A**
	30	28	17	15	10	20	20	15	15	7	**25 A**
	70	60	35	30	20	40	40	30	30	14	**40 A**
	100	90	56	48	32	60	60	43	43	20	**63 A**
Twin fitting	**Non corrected**					**With series correction**					**Contactor rating**
P (W)	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	–
I_B (A)	0.44	0.82	1.34	1.64	2.2	0.26	0.48	0.78	0.96	1.3	–
C (µF)	–	–	–	–	–	3.5	4.5	7	9	18	–
Maximum number of lamps	20	11	7	5	4	30	17	10	9	6	**16 A**
	30	16	10	8	6	46	25	16	13	10	**25 A**
	50	26	16	13	10	80	43	27	22	16	**40 A**
	75	42	25	21	16	123	67	42	34	25	**63 A**

High pressure mercury vapour lamps

	Non corrected						With parallel correction							Contactor rating
P (W)	50	80	125	250	400	700	50	80	125	250	400	700	1000	–
I_B (A)	0.6	0.8	1.15	2.15	3.25	5.4	0.35	0.50	0.7	1.5	2.4	4	5.7	–
C (µF)	–	–	–	–	–	–	7	8	10	18	25	40	60	–
Maximum number of lamps	15	10	8	4	2	1	10	9	9	4	3	2	–	**16 A**
	20	15	10	6	4	2	15	13	10	6	4	2	1	**25 A**
	34	27	20	10	6	4	28	25	20	11	8	5	3	**40 A**
	53	40	28	15	10	6	43	38	30	17	12	7	5	**63 A**

I_B: *value of current drawn by each lamp at its rated voltage.*
C*: unit capacitance for each lamp.*
I_B *and* ***C*** *correspond to values normally quoted by lamp manufacturers*

Characteristics: pages B8/100 and B8/101
References: page B8/46
Dimensions, schemes: pages B8/102 and B8/103

Contactor rating for a single-phase 230 V circuit (single-pole) (continued)

Low pressure sodium vapour lamps

	Non corrected						With parallel correction						Contactor rating
P (W)	18	35	55	90	135	180	18	35	55	90	135	180	–
I_B (A)	0.35	1.4	1.4	2.1	3.1	3.1	0.35	0.6	0.6	0.9	0.9	0.9	–
C (µF)	–	–	–	–	–	–	5	20	20	26	45	40	–
Maximum number of lamps	18	4	5	3	2	2	14	3	3	2	1	1	**16 A**
	34	9	9	6	4	4	21	5	5	4	2	2	**25 A**
	57	14	14	9	6	6	40	10	10	8	4	5	**40 A**
	91	24	24	19	10	10	60	15	15	11	6	7	**63 A**

High pressure sodium vapour lamps

	Non corrected					With parallel correction					Contactor rating
P (W)	70	150	250	400	1000	70	150	250	400	1000	–
I_B (A)	1	1.8	3	4.4	10.3	0.6	0.7	1.5	2.5	6	–
C (µF)	–	–	–	–	–	12	20	32	45	100	–
Maximum number of lamps	8	4	2	1	–	6	6	2	2	1	**16 A**
	12	7	4	3	1	9	9	3	4	2	**25 A**
	20	13	8	5	2	18	18	6	8	4	**40 A**
	32	18	11	8	3	25	25	9	12	6	**63 A**

Metal iodine or halogen vapour lamps

	Non corrected						With parallel correction							Contactor rating
P (W)	35	70	150	250	400	1000	39	70	150	250	400	1000	2000	–
I_B (A)	0.3	0.5	1	1.5	2.5	6	0.3	0.5	1	1.5	2.5	6	5.5	–
C (µF)	–	–	–	–	–	–	6	12	20	32	45	85	60	–
Maximum number of lamps	27	16	8	5	3	1	12	6	4	3	2	–	1	**16 A**
	40	24	12	8	5	2	18	9	6	4	3	1	2	**25 A**
	68	42	20	14	8	4	31	16	10	7	5	3	3	**40 A**
	106	64	32	21	13	5	50	25	15	10	7	4	5	**63 A**

Incandescent and halogen lamps

									Contactor rating
P (W)	60	75	100	150	200	300	500	1000	–
I_B (A)	0.26	0.32	0.44	0.65	0.87	1.3	2.17	4.4	–
Maximum number of lamps	30	25	19	12	10	7	4	2	**16 A**
	45	38	28	18	14	10	6	3	**25 A**
	85	70	50	35	26	18	10	6	**40 A**
	125	100	73	50	37	25	15	8	**63 A**

Halogen lamps used with transformer

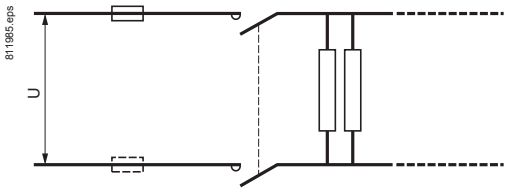
					Contactor rating
P (W)	60	80	105	150	–
I_B (A)	0.26	0.35	0.45	0.65	–
Maximum of lamps	9	8	6	4	**16 A**
	14	12	9	6	**25 A**
	27	23	18	13	**40 A**
	40	35	27	19	**63 A**

I_B: value of current drawn by each lamp at its rated voltage.
***C**: unit capacitance for each lamp.*
*I_B and **C** correspond to values normally quoted by lamp manufacturers*

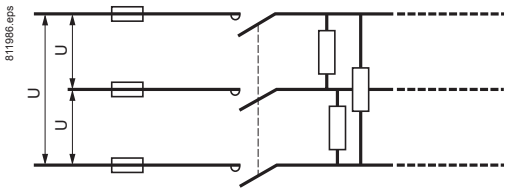
Characteristics: pages B8/100 and B8/101
References: page B8/46
Dimensions, schemes: pages B8/102 and B8/103

Heating (AC-7a)

Single-phase, 2-pole switching



3-phase switching



Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 In at the moment of switch-on.

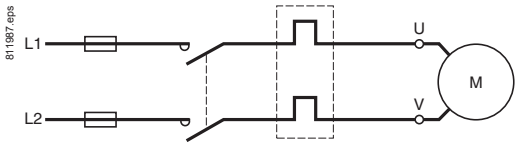
Contactor selection according to power and required electrical life

Electrical durability (in operating cycles)	Maximum power (kW)					Contactor rating
	100×10^3	150×10^3	200×10^3	500×10^3	10^6	
Single-phase switching 230 V (2-pole)	3.5	3	2.2	1	0.8	**16 A**
	5.4	4.6	3.5	1.6	1.2	**25 A**
	8.6	7.4	5.6	2.6	1.9	**40 A**
	13.6	11.6	8.8	4	3	**63 A**
	21.6	18.4	14	6.4	4.8	**100 A**
3-phase switching 400 V (3-pole)	10	9	6.5	3.2	2.2	**16 A**
	16	14	10	5	3.5	**25 A**
	26	22	17	7.5	6	**40 A**
	41	35	26.5	12	9	**63 A**
	64.8	55.2	42	19.2	14.4	**100 A**

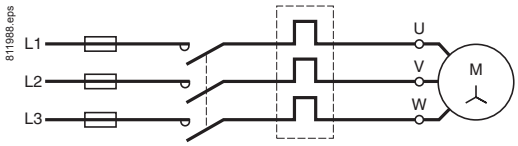
Characteristics: pages B8/100 and B8/101
References: page B8/46
Dimensions, schemes: pages B8/102 and B8/103

Motor control (AC-7b)

Single-phase circuit, 230 V



3-phase circuit, 400 V



Contactor selection according to maximum power in kW

230 V single-phase capacitor motor (2-pole)	400 V 3-phase motor	Contactor rating (Ith)
0.55	2.2	**16 A**
1.1	4	**25 A**
2.2	7.5	**40 A**
4	11	**63 A**

Modular equipment
TeSys GC standard contactors

TeSys GC

Environment

Contactor type			GC16	GC25	GC40	GC63	GC100
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500				
	Conforming to VDE 0110	V	500				
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure				
Conforming to standards			IEC 61095, VDE 0637-3 and IEC 60947-5 for auxiliary contacts				
Product certifications			NF- USE, VDE, CEBEC, ÖVE				
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact (IP 20 open, IP 40 in enclosure)				
Protective treatment	Standard version		"TC"				
Ambient air temperature around the device	Storage	°C	-40…+70				
	Operation	°C	-5…+50 (0.85…1.1 Uc)				
Maximum operating altitude	Without derating	m	3000				
Operating positions	Without derating		±30° in relation to normal vertical mounting plane				
Shock resistance 1/2 sine wave = 10 ms	Contactor open		10 gn				
	Contactor closed		15 gn				
Vibration resistance 5…300 Hz	Contactor open		2 gn				
	Contactor closed		3 gn				
Flame resistance			Conforming to IEC 61095				

Pole characteristics

Number of poles			2, 3 or 4				
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63	100
	In AC-7b (motor control)	A	5	8.5	15	25	–
Rated operational voltage (Ue)	Up to	V	250 two-pole contactors, 415 three and four-pole contactors				
Frequency limits	Of the operating current	Hz	400				
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63	100
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200	–
Permissible short time rating no current flowing for preceding 15 minutes with θ ≤ 40 °C	For 10 s	A	128	200	320	504	800
	For 30 s	A	40	62	100	157	250
Short-circuit protection by fuse or circuit breaker U ≤ 440 V	gl fuse	A	16	25	40	63	100
	Circuit breaker I²t 230 V (at 3 kA rms prospective)	A²s	5000	10000	16000	18000	–
	Circuit breaker I²t 400 V (at 3 kA rms prospective)	A²s	9000	14000	17500	20000	–
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000	30000
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2	1
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8	10
Maximum cabling c.s.a. Flexible cable without cable end	1 conductor	mm²	6	6	25	25	35
	2 conductors	mm²	4	4	16	16	–
Flexible cable with cable end	1 conductor	mm²	6	6	16	16	35
	2 conductors	mm²	1.5	1.5	4	4	–
Solid cable without cable end	1 conductor	mm²	6	6	25	25	35
	2 conductors	mm²	4	4	6	6	10
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5	3.5

Selection: pages B8/96 to B8/99
References: page B8/46
Dimensions, schemes: pages B8/102 and B8/103

TeSys GC

Control circuit characteristics

Contactor type				GC16, GC25 single or 2-pole	GC16, GC25 3 or 4-pole **GC40, GC63** 2-pole	GC40, GC63 3 or 4-pole **GC100** 2-pole	GC100 4-pole
Rated control circuit voltage (Uc)		50 or 60 Hz	**V**	12…240 V, for other voltages, please consult your Regional Sales Office			
Control voltage limits ($\theta \leq 50$ °C)	50 Hz coils	Operational		0.85…1.1 Uc			
		Drop-out		0.2…0.75 Uc			
Average coil consumption at 20 °C and at Uc	∼ 50 Hz	Inrush	**VA**	15	34	53	106
		Sealed	**VA**	3.8	4.6	6.5	13
Maximum heat dissipation		50/60 Hz	**W**	1.3	1.6	2.1	4.2
Operating time		Closing “C”	**ms**	10…30			
		Opening “O”	**ms**	10…25			
Mechanical durability		In operating cycles		10^6			
Maximum operating rate at ambient temperature ≤ 50 °C		In operating cycles per hour		300			
Maximum cabling c.s.a.	Flexible cable without cable end	1 or 2 conductors	**mm²**	2.5			
	Flexible cable with cable end	1 conductor	**mm²**	2.5			
		2 conductors	**mm²**	1.5			
	Solid cable without cable end	1 or 2 conductors	**mm²**	1.5			
Tightening torque			**N.m**	0.8			

Instantaneous auxiliary contact characteristics

Rated operational voltage (Ue)	Up to	**V**	250
Rated insulation voltage (Ui)	Conforming to IEC 60947-5	**V**	500
	Conforming to VDE 0110	**V**	500
Conventional thermal current (Ith)	For ambient $\theta \leq 50$ °C	**A**	5
Mechanical durability	Operating cycles		10^6
Maximum cabling c.s.a.	Flexible or solid conductor	**mm²**	2.5
Tightening torque		**N.m**	0.8

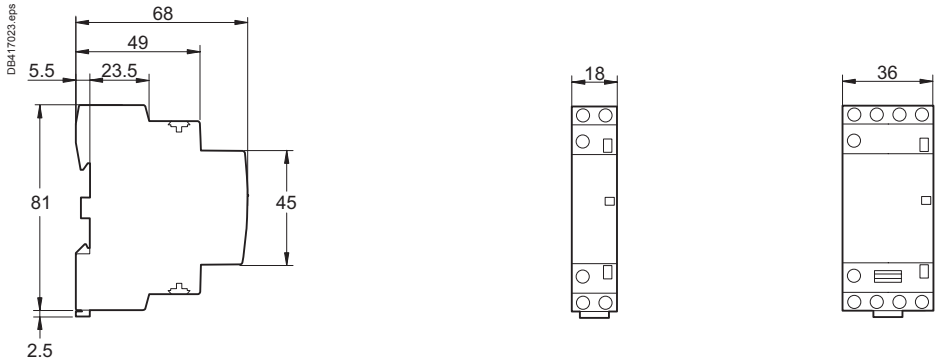
Selection: pages B8/96 to B8/99
References: page B8/46
Dimensions, schemes: pages B8/102 and B8/103

TeSys GC

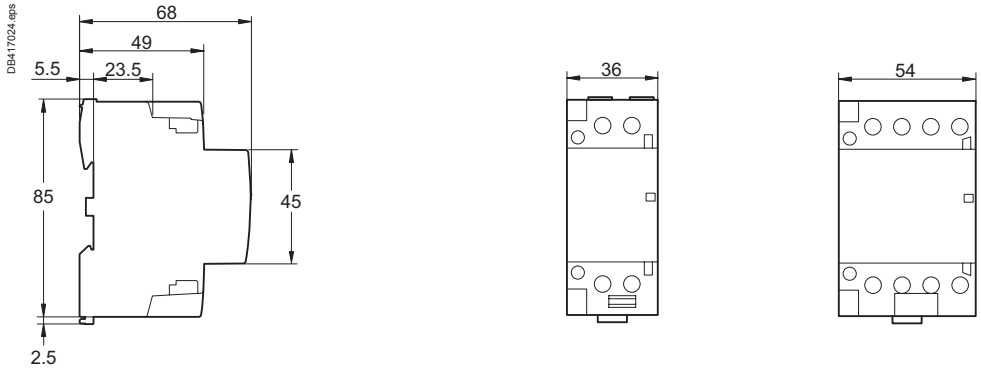
Dimensions

Contactors

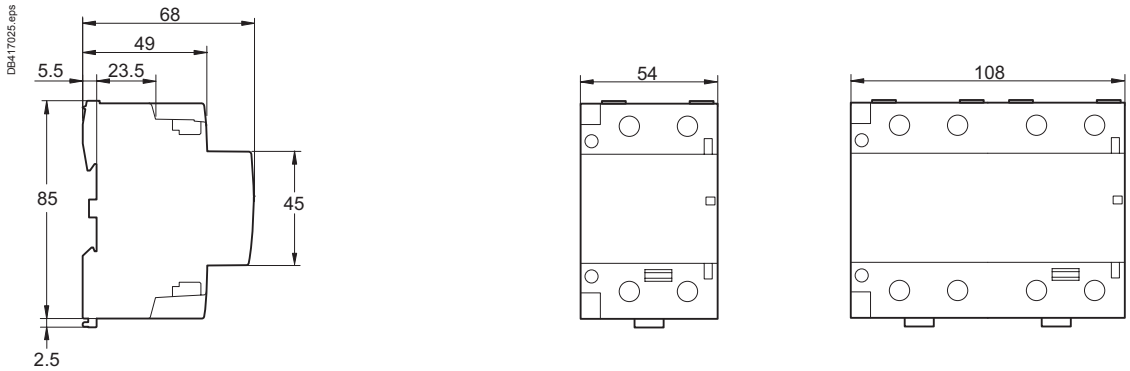
Common side view	GC 1610, 1611, 1620 GC 2502, 2510, 2511, 2520	GC 1622, 1640 GC 2504, 2522, 2530, 2540
	1 module	2 modules



Common side view	GC 4002, 4011, 4020 GC 6302, 6311, 6320	GC 4004, 4022, 4030, 4040 GC 6304, 6322, 6330, 6340
	2 modules	3 modules



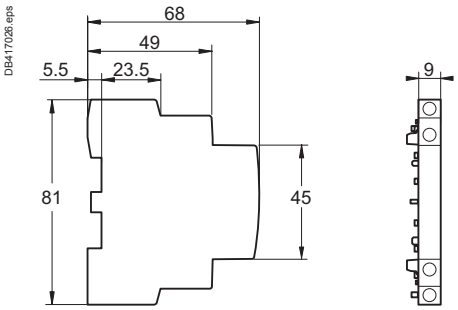
Common side view	GC 10020	GC 10040
	3 modules	6 modules



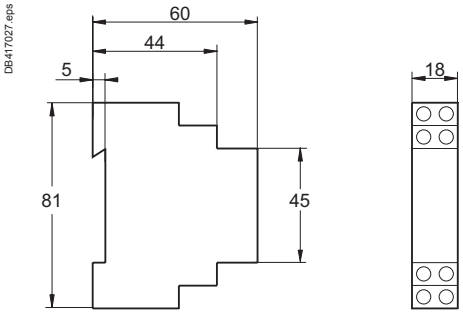
TeSys GC

Dimensions

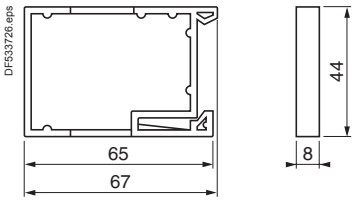
Auxiliary contacts
GAC 0511, 0531 and 0521



Coil suppression blocks
GAP 21 and 23



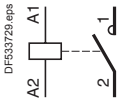
Clip-on ventilation 1/2 module
GAC 5



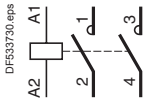
Schemes

Contactors

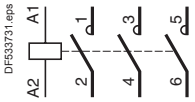
GC ●●10



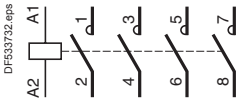
GC ●●20



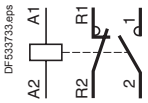
GC ●●30



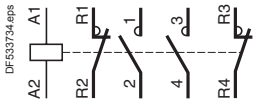
GC ●●40



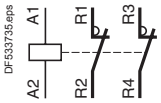
GC ●●11



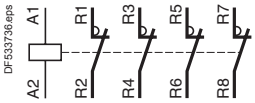
GC ●●22



GC ●●02

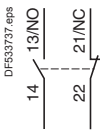


GC ●●04

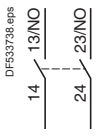


Auxiliary contacts

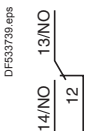
GAC 0521



GAC 0531



GAC 0511



Contactors

Modular equipment
TeSys GY "dual tariff" contactors

PB113083_13.eps

GY 25

Presentation

TeSys GY "dual tariff" contactors are designed for use in modular panels and enclosures.
These contactors feature:
■ **Easy installation:**
□ quick clip-on fixing and locking onto 35 mm omega rail
□ easy connection by means of ready-to-tighten captive, pozidrive screw terminals.
■ **Compact size**
All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module: 17.5 mm).
■ **User safety:**
□ use of materials conforming to strictest fire safety standards
□ live parts protected against direct finger contact
□ completely safe operation
□ state indication on front panel.
"Dual tariff" contactors are designed for use with Electricity Supply Authority dual tariffs.
They have a 4-position selector switch on the front panel:

"Stop" (O)	For switching off the load, e.g. for prolonged periods of absence.
"Off peak" Automatic start (A)	The contactor switches automatically during "off peak" hours as set by the Supply Authority remote control and thus supplies the load, (washing machine, dishwasher, convector heater, water heater) during this period, at an economy rate to the user.
"Peak time" Manual start (I)	In this position, the contactor supplies the load to cater for additional requirements for hot water, heating, etc., but at the standard rate. The contactor returns automatically to the "off-peak" position at the start of the "off-peak" period.
"Peak time" Manual override with lock	Facility for setting the contactor to continuous manual operation, ignoring the automation system and the Supply Authority control; setting and locking is achieved by means of a tool, with manual return to the "AUTO" position.

Standards

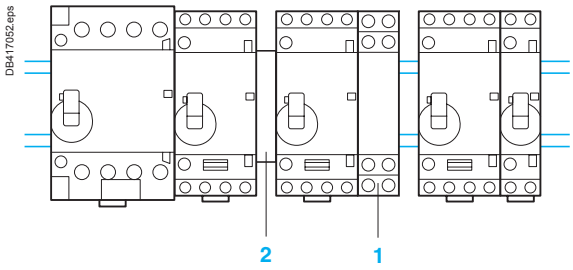
This range of modular contactors has been designed taking into account the requirements of international standard IEC 61095.
This standard is specific to "Electromagnetic contactors for domestic and similar use".
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in "premises and areas accessible to the public".
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

"Dual tariff" modular contactors are designed for switching all single-phase, 3-phase or 4-phase loads up to 63 A.

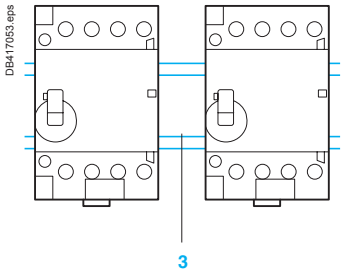
TeSys GY contactors have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required:
■ lighting,
■ heating, ventilation,
■ motorised shutters or gates.

Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block 1 (GAP 21 or 23) across the coil terminals ≤ 250 V.
When several contactors which operate at the same time are mounted side by side, a GAC 5 ventilation 1/2 module 2 must be fitted every 2 contactors.



It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module 3 or by 2 ventilation 1/2 modules GAC 5.



Derating of contactors mounted in a modular enclosure if the temperature within the enclosure is > 40 °C.

Contactor rating	40 °C	50 °C	60 °C (1)
16 A	16 A	14 A	13 A
25 A	25 A	22 A	20 A
40 A	40 A	36 A	32 A
63 A	63 A	57 A	50 A

(1) Ventilation 1/2 module must be fitted.

Modular equipment
TeSys GY "dual tariff" contactors

TeSys GY

Environment

Type			GY 16	GY 25	GY 40	GY 63
Rated insulation voltage (Ui)	Conforming to IEC 61095	V	500			
	Conforming to VDE 0110	V	500			
Rated impulse withstand voltage (Uimp)		kV	4 in enclosure			
Conforming to standards			IEC 61095, VDE 0637-3 and IEC 60947-5 for auxiliary contacts			
Product certifications			NF-USE, VDE, CEBEC, ÖVE			
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 20 open, IP 40 in enclosure			
Protective treatment	Standard version		"TC"			
Ambient air temperature around the device	Storage	°C	-40…+70			
	Operation	°C	-5…+50 (0.85…1.1 Uc)			
Maximum operating altitude	Without derating	m	3000			
Operating positions	Without derating		±30° in relation to normal vertical mounting plane			
Shock resistance 1/2 sine wave = 11 ms	Contactor open		10 gn			
	Contactor closed		15 gn			
Vibration resistance 5…300 Hz	Contactor open		2 gn			
	Contactor closed		3 gn			
Flame resistance			Conforming to IEC 61095			

Pole characteristics

Number of poles			2, 3 or 4			
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	A	16	25	40	63
	In AC-7b (motor control)	A	5	8.5	15	25
Rated operational voltage (Ue)	Up to	V	250 - 2-pole contactors, 415 - 3 and 4-pole contactors			
Frequency limits	Of the operating current	Hz	400			
Conventional thermal current (Ith)	θ ≤ 50 °C	A	16	25	40	63
Rated breaking and making capacity	Conforming to IEC 61095 (AC-7b) I rms 400 V 3-phase	A	40	68	120	200
Short time rating with no current flow for the previous previous 15 minutes with θ ≤ 40 °C	For 10 s	A	128	200	320	504
	For 30 s	A	40	62	100	157
Short-circuit protection by fuse or circuit breaker U ≤ 440 V						
gI fuse		A	16	25	40	63
Circuit breaker I^2t (at 3 kA rms prospective)	230V	A^2s	5000	10000	16000	18000
	400V	A^2s	9000	14000	17500	20000
Electrical durability in operating cycles	AC-7a, AC-7b		100000	100000	100000	100000
Average impedance per pole	At Ith and 50 Hz	mΩ	2.5	2.5	2	2
Power dissipated per pole	For the above operational currents	W	0.65	1.6	3.2	8
Maximum cabling c.s.a.						
Flexible cable without cable end	1 conductor	mm^2	6	6	25	25
	2 conductors	mm^2	4	4	16	16
Flexible cable with cable end	1 conductor	mm^2	6	6	16	16
	2 conductors	mm^2	1.5	1.5	4	4
Solid cable without cable end	1 conductor	mm^2	6	6	25	25
	2 conductors	mm^2	4	4	6	6
Tightening torque	Power circuit connections	N.m	0.8	0.8	3.5	3.5

Selection: pages B8/96 to B8/99
References: page B8/47
Dimensions and schemes: pages B8/108 and B8/109

TeSys GY

Control circuit characteristics

Type			GY 16, GY 25 single or 2-pole	GY 16, GY 25 3 or 4-pole / GY 40, GY 63 2-pole	GY 40, GY 63 3 or 4-pole
Rated control circuit voltage (Uc)	50 or 60 Hz	V	12…240 V, for other voltages, please consult your Regional Sales Office		
Control voltage limits (θ ≤ 50 °C)					
50 Hz coils	Operational		0.85…1.1 Uc		
	Drop-out		0.2…0.75 Uc		
Average consumption at 20 °C and at Uc					
∼ 50 Hz	Inrush	VA	15	34	53
	Sealed	VA	3.8	4.6	6.5
Heat dissipation	50/60 Hz	W	1.3	1.6	2.1
Operating time	Closing "C"	ms	10 ... 30		
	Opening "O"	ms	10 ... 25		
Mechanical durability	In operating cycles		10^6		
Maximum operating rate at ambient temperature ≤ 50 °C	In operating cycles per hour		300		
Maximum cabling c.s.a.					
Flexible cable without cable end	1 or 2 conductors	mm^2	2.5		
Flexible cable with cable end	1 conductor	mm^2	2.5		
	2 conductors	mm^2	1.5		
Solid cable without cable end	1 or 2 conductors	mm^2	1.5		
Tightening torque		N.m	0.8		

Instantaneous auxiliary contact characteristics

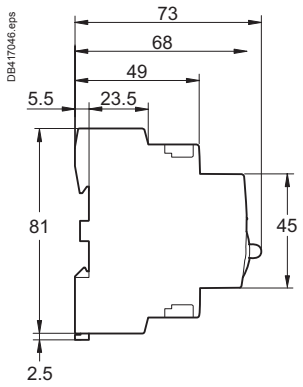
Rated operational voltage (Ue)	Up to	V	250
Rated insulation voltage (Ui)	Conforming to IEC 60947-5	V	500
	Conforming to VDE 0110	V	500
Conventional thermal current (Ith)	For ambient θ ≤ 50 °C	A	5
Mechanical durability	In operating cycles		10^6
Maximum cabling c.s.a.	Flexible or solid conductor	mm^2	2.5
Tightening torque		N.m	0.8

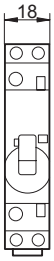
Modular equipment
TeSys GY "dual tariff" contactors

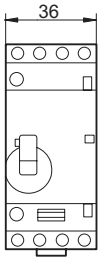
Dimensions

"Dual tariff" contactors

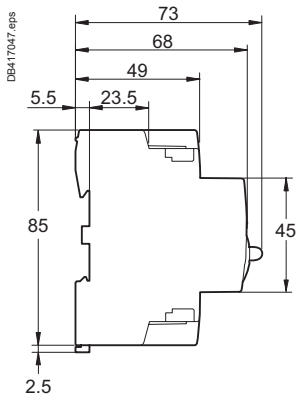
Common side view	GY 1620 GY 2520	GY 2530, 2540
	1 module	2 modules

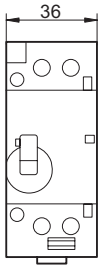


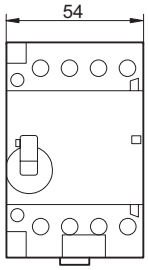




Common side view	GY 4020 GY 6320	GY 4030, 4040 GY 6330, 6340
	2 modules	3 modules







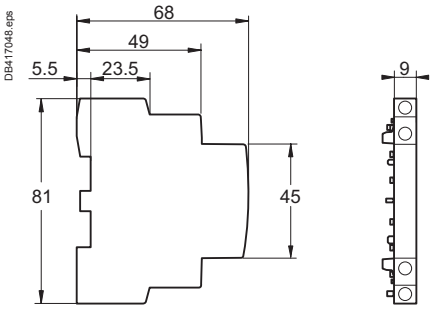
Modular equipment
TeSys GY "dual tariff" contactors

TeSys GY

Dimensions

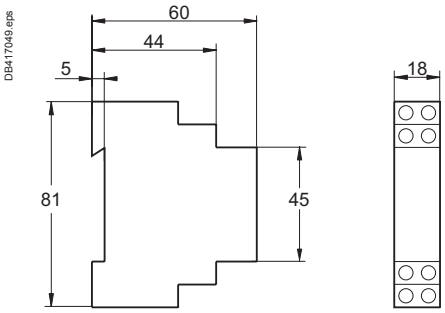
Auxiliary contacts
GAC 0511, 0531 and 0521

DB417048.eps



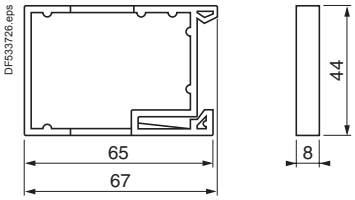
Coil suppression block
GAP 21 and 23

DB417049.eps



Clip-on ventilation 1/2 module
GAC 5

DF533726.eps

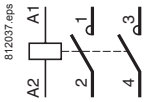


Schemes

Contactors

GY ●●20

812037.eps



GY ●●30

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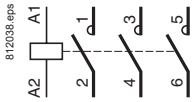

GY ●●40

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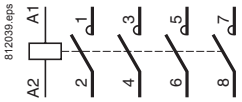

GY ●●11

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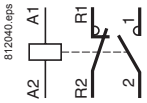
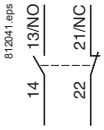


Auxiliary contacts

GAC 0521

812041.eps



GAC 0531

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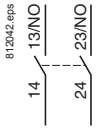

GAC 0511

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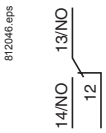

Contactors

Modular equipment
TeSys GF impulse relays

TeSys GF

PF526284R.eps

GF 1611M7

Presentation

TeSys GF impulse relays are designed for use in modular enclosures.
They feature:

■ **Easy installation:**
- □ quick clip-on fixing and locking onto 35 mm omega rail
- □ easy connection by means of ready-to-tighten captive, pozidrive screw terminals.

■ **Compact size**

Units have a common depth of 60 mm and width of 18 mm.

■ **User safety:**
- □ live parts protected against direct finger contact
- □ completely safe operation
- □ state indication on front panel.

Standards

This range of modular impulse relays has been designed taking into account the requirements of international standard IEC 60669-2.
This standard is specific to “Impulse relays”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC, etc.

Functions

Modular impulse relays are designed for opening and closing of circuits which are remotely controlled by impulses. The position is mechanically maintained.
These impulse relays are used in lighting circuits when there are more than two switching points.

Power switching

TeSys GF impulse relays have multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific lighting supply is required.

Characteristics:
pages B8/112 and B8/113

References:
page B8/48

Dimensions, schemes:
page B8/114

Lighting circuits

Fluorescent lamps with starter

Single fitting	Non corrected			With parallel correction		
Power in W	18	36	58	18	36	58
Number of lamps	70	35	21	50	25	16

Twin fitting	With series correction		
Power in W	2 x 18	2 x 36	2 x 58
Number of lamps	56	28	17

Incandescent lamps: filament lamps

Power in W	40	60	75	100	200
Number of lamps	40	25	20	16	8

Incandescent lamps: halogen lamps

Power in W	300	500	1000	1500
Number of lamps	5	3	1	1

Incandescent lamps: very low voltage halogen lamps

Power in W	20	50	75	100
Number of lamps	70	28	19	4

Low pressure sodium vapour lamps

	Non corrected			
Power in W	55	90	135	180
Number of lamps	24	15	10	7

High pressure sodium vapour lamps

	Non corrected		
Power in W	250	400	1000
Number of lamps	5	3	1

Heating circuits

Single-phase 230 V, 2-pole

Power in kW	3.6

Characteristics: pages B8/112 and B8/113
References: page B8/48
Dimensions, schemes: page B8/114

Modular equipment
TeSys GF impulse relays

TeSys GF

Environment

Rated insulation voltage (Ui)	Conforming to IEC 60947-1-5	**V**	400
	Conforming to VDE 0110	**V**	400
Rated impulse withstand voltage (Uimp)		**kV**	4 in enclosure
Conforming to standards			IEC 60669-1 and 60669-2, NF C 61-112
Product certifications			NF-USE, CEBEC, ASE, KEMA, N, S, D, FI, VDE
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP 20 open, IP 40 in enclosure
Protective treatment	Standard version		"TC"
Ambient air temperature around the device	Storage	**°C**	-40…+80
	Operation	**°C**	-20…+50
Maximum operating altitude	Without derating	**m**	2000
Operating positions	Without derating		±90° in relation to normal vertical mounting plane
Shock resistance 1/2 sine wave = 10 ms	Impulse relay open		Please consult your Regional Sales Office
	Impulse relay closed		Please consult your Regional Sales Office
Vibration resistance 5…300 Hz	Impulse relay open		4 gn
	Impulse relay closed		4 gn

Pole characteristics

Number of poles				1 or 2	
Rated operational current (Ie) (Ue ≤ 250 V)	In AC-7a (heating)		**A**	16	
Rated operational voltage			**V**	250	
Conventional thermal current (Ith)	θ ≤ 50 °C		**A**	16	
Permissible short time rating no current flowing for preceding 15 minutes with θ ≤ 40 °C	For 1 s		**A**	320	
	For 10 s		**A**	96	
	For 30 s		**A**	48	
Short-circuit protection by fuse or circuit breaker	gl fuse		**A**	16	
	Circuit breaker I^2t (at 3 kA rms prospective)		**A^2s**	5000	
Average impedance per pole	At Ith and 50 Hz		**mΩ**	4	
Power dissipated per pole			**W**	1	
Maximum cabling c.s.a.				**Min.**	**Max.**
	Flexible cable without cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4
	Flexible cable with cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4
	Solid cable without cable end	1 conductor	**mm^2**	0.5	6
		2 conductors	**mm^2**	0.5	4
Tightening torque	Power circuit connections		**N.m**	0.8	

Presentation: page B8/110 | Selection: page B8/111 | References: page B8/48 | Dimensions, schemes: page B8/114

TeSys GF

Control circuit characteristics

Rated control circuit voltage (Uc)			**V**	12…240 V, for other voltages, please consult your Regional Sales Office
Control voltage limits (θ < 50 °C)		Operating threshold, dual frequency 50/60 Hz	**V**	0.85…1.1 Uc
Average consumption at 20 °C and at Uc		Inrush at 50 Hz	**VA**	19
Operating time		Closing “C”	**ms**	70
		Opening “O”	**ms**	70
Minimum impulse time			**ms**	70
Mechanical durability				10^6 operating cycles
Electrical durability				
		AC-21		200000 operating cycles
		AC-22		100000 operating cycles
Maximum operating rate		Operating cycles per hour		900
Maximum cabling c.s.a.				
	Flexible cable without cable end	1 or 2 conductors	**mm²**	2.5
	Flexible cable with cable end	1 conductor	**mm²**	2.5
		2 conductors	**mm²**	1.5
	Solid cable without cable end	1 or 2 conductors	**mm²**	1.5
Tightening torque			**N.m**	0.8

Modular equipment
TeSys GF impulse relays

Dimensions

GF 1610, GF 1611, GF 1620

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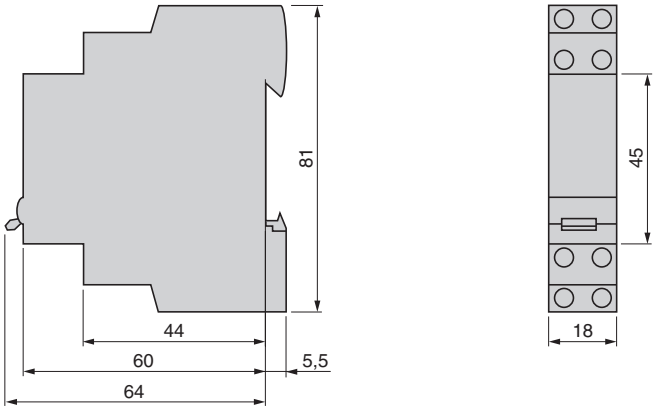
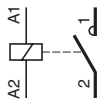


Schemes

GF 1610

DF534008.eps



GF 1611

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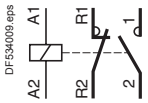

GF 1620

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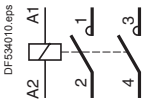


Technical information

Tests according to standard utilisation categories conforming to IEC 60947-4-1 and 5-1

Contactors

a.c. supply

Typical applications	Utilisation category	Electrical durability: making and breaking conditions: Making I	U	cos φ	Breaking I	U	cos φ	Occasional duty: making and breaking conditions: Making I	U	cos φ	Breaking I	U	cos φ
Resistors, non inductive or slightly inductive loads	**AC-1**	Ie	Ue	0.95	Ie	Ue	0.95	1.5 Ie	1.05 Ue	0.8	1.5 Ie	1.05 Ue	0.8
Motors													
Slip ring motors: starting, breaking.	**AC-2**	2.5 Ie	Ue	0.65	2.5 Ie	Ue	0.65	4 Ie	1.05 Ue	0.65	4 Ie	1.05 Ue	0.65
Squirrel cage motors: starting, breaking whilst motor running.	**AC-3**												
	Ie ≤ (1)	6 Ie	Ue	0.65	1 Ie	0.17 Ue	0.65	10 Ie	1.05 Ue	0.45	8 Ie	1.05 Ue	0.45
	Ie > (2)	6 Ie	Ue	0.35	1 Ie	0.17 Ue	0.35	10 Ie	1.05 Ue	0.35	8 Ie	1.05 Ue	0.35
Squirrel cage motors: starting, reversing, inching	**AC-4**												
	Ie ≤ (1)	6 Ie	Ue	0.65	6 Ie	Ue	0.65	12 Ie	1.05 Ue	0.45	10 Ie	1.05 Ue	0.45
	Ie > (2)	6 Ie	Ue	0.35	6 Ie	Ue	0.35	12 Ie	1.05 Ue	0.35	10 Ie	1.05 Ue	0.35

d.c. supply

Typical applications	Utilisation category	Making I	U	L/R (ms)	Breaking I	U	L/R (ms)	Making I	U	L/R (ms)	Breaking I	U	L/R (ms)
Resistors, non inductive or slightly inductive loads	**DC-1**	Ie	Ue	1	Ie	Ue	1	1.5 Ie	1.05 Ue	1	1.5 Ie	1.05 Ue	1
Shunt wound motors: starting, reversing, inching	**DC-3**	2.5 Ie	Ue	2	2.5 Ie	Ue	2	4 Ie	1.05 Ue	2.5	4 Ie	1.05 Ue	2.5
Series wound motors: starting, reversing, inching	**DC-5**	2.5 Ie	Ue	7.5	2.5 Ie	Ue	7.5	4 Ie	1.05 Ue	15	4 Ie	1.05 Ue	15

Control relays and auxiliary contacts

a.c. supply

Typical applications	Utilisation category	Electrical durability: making and breaking conditions: Making I	U	cos φ	Breaking I	U	cos φ	Occasional duty: making and breaking conditions: Making I	U	cos φ	Breaking I	U	cos φ
Electromagnets													
≤ 72 VA	**AC-14**	-	-	-	-	-	-	6 Ie	1.1 Ue	0.7	6 Ie	1.1 Ue	0.7
> 72 VA	**AC-15**	10 Ie	Ue	0.7	Ie	Ue	0.4	10 Ie	1.1 Ue	0.3	10 Ie	1.1 Ue	0.3

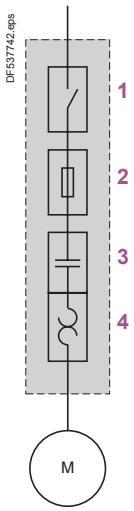
d.c. supply

Typical applications	Utilisation category	Making I	U	L/R (ms)	Breaking I	U	L/R (ms)	Making I	U	L/R (ms)	Breaking I	U	L/R (ms)
Electromagnets	**DC-13**	Ie	Ue	6 P (3)	Ie	Ue	6 P (3)	1.1 Ie	1.1 Ue	6 P (3)	1.1 Ie	1.1 Ue	6 P (3)

(1) Ie ≤ 17 A for electrical durability, Ie ≤ 100 A for occasional duty.
(2) Ie > 17 A for electrical durability, Ie > 100 A for occasional duty.
(3) The value 6 P (in watts) is based on practical observations and is considered to represent the majority of d.c. magnetic loads up to the maximum limit of P = 50 W i.e. 6 P = 300 ms = L/R.
Above this, the loads are made up of smaller loads in parallel. The value 300 ms is therefore a maximum limit whatever the value of current drawn.

TeSys contactors
For the North American market
Conforming to UL and CSA

TeSys SK, K, D, GC, GY, GF



1 Motor Disconnect (Disconnect switch)
2 Motor Branch Circuit Protection (Short-circuit protection)
3 Motor Controller (Contactor)
4 Motor Overload Protection (Thermal overload relay)

Starters for the North American market

In recent years, the North American market has started to harmonise UL, CSA and ANCE standards, as well as the industrial installation codes provided by national regulations (NEC for the United States, CEC for Canada and MEC for Mexico). (1) Major improvements, carried out by the Canena (2) are aimed at harmonising product requirements based on IEC (3) standards.
However, the North American codes use specific terminology for defining the functions of a starter.
These functions can be fulfilled by standard IEC products, accompanied by appropriate certifications.

Combination Starters

Combination Starters are the most common type of packaged motor starter. They are called "Combination" because of their structure and their combined functions. The figure opposite shows the four combined functions that constitute a complete motor starter circuit, defined as a “Motor branch circuit” by the NEC (US National Electric Code) in article 430. Standard UL508 currently gives different types of combination starter that meet the requirements of a "Motor branch circuit".

Type E, called “**self-protected combination starter**”, covers all these functions and can be controlled manually (thermal-magnetic circuit breaker) or remotely (starter-controller). Type E starters withstand faults within their declared nominal rating without sustaining damage, after which they can be put back into service. In addition, they can withstand more severe short-circuit and durability performance tests without welding or excessive wear of the contact tips.

Type F, called “**Combination motor starter**”, consists of a type E manual starter (thermal-magnetic circuit breaker) combined with a contactor.
These starters are evaluated by means of basic short-circuit tests, but are not considered as “self-protected”.

For this combination, the type E starter must be marked “Combination Motor Controller when used with ...”, followed by the reference of the load side contactor.

(1) ***UL****: Underwriters Laboratories,* ***CSA****: Canadian Standards Association,* ***ACNE****: Association of Standardization and Certification,* ***NEC****: National Electric Code,* ***CEC****: Canadian Electrical Code,* ***MEC****: Mexican Electrical Code.*
(2) ***Canena****: Council for Harmonization of Electrotechnical Standardization of North America.*
(3) ***IEC****: International Electrotechnical Commission.*

Control panels

To help users properly coordinate their motor control equipment with their distribution system in the event of a fault, article 409 of the 2005 NEC requires panel builders to list the short-circuit withstand rating of their motor control panels.
According to standard UL508A, manufacturers must use the short-circuit withstand value of the lowest rated device as the nominal withstand rating of the panel, unless the devices have been tested together for a higher coordinated rating.
The minimum "**short-circuit current rating**" (SCCR), on motor control components for horsepower ratings of 50 hp or below is 5000 A.

Using a **type E** or **type F** combination starter eliminates the coordination problems of using individual components for the "motor branch circuit protection", "motor controller" and "motor overload protection" functions.
The panel builder uses the declared short-circuit current rating for the combination starter. This value is generally higher than 5000 A.
This makes it easier to list the short-circuit current ratings and to check the compatibility of a UL508A motor control panel within a given distribution system.

Group protection

Article 430.53 of the NEC allows a single short-circuit protection device to be used for more than one motor circuit if the components used are marked and listed for such use.
Components suitable for use in group protection, known as "**motor group installations**", can be marked in one of the following two ways:

Case n° 1

The contactor and the motor overload relay are both listed as suitable for group installation.
An inverse time circuit breaker can be used as the short-circuit protection device if it is also listed as suitable for group installation.
The panel builder must therefore make sure that the short-circuit protection device selected (fuses or inverse time circuit breaker) does not exceed the value allowed by article 430.40 for the smallest overload relay used in the circuit.
Once these conditions have been met, the panel builder can reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one third of the size of the upstream circuit conductor supplying the protection device.
The panel builder must limit the length of the motor starter conductor (connecting the short-circuit protection device to the motor contactor/overload relay) to a maximum of 7.6 m (25 feet).

Case n° 2

The motor contactor and overload relay are listed as suitable for "**tap conductor protection**" in group installations.
This category allows the panel designer to reduce the size of the conductor connecting the short-circuit protection device to the individual motor contactor/overload relay, to one tenth of the size of the upstream circuit conductor supplying the protection device.
The designer must limit the length of this conductor to a maximum of 3.05 m (10 feet).
In both cases, the supply circuits must not be less than 125 % of the connected motor FLA (Full Load Amps) rating.
For panel builders, using **type F** combination starters in group installations simplifies group motor considerations.
Each starter is a fully coordinated motor branch circuit.
The panel builder follows the same NEC requirements for sizing the supply conductors as those required for single motor branch circuits.
The size of the supply conductors can be reduced in accordance with the specifications of article 430.28.
This allows the same flexibility in conductor sizing as that offered in article 430.53 (D), without a requirement to check the short-circuit protection rating marked on the components and the overload relay limit.
A UL508A panel does not need a short-circuit protection device when each motor starter installed is a **type F**.
The upstream short-circuit protection device supplying the starter protects the panel. The panel builder only has to consider the panel/enclosure disconnect requirements specified by the NEC or local codes.

High power contactors
TeSys F

Contactors – TeSys F, V, FG, CR1F

Technical Data for Designers B9/45

TeSys contactors

TeSys F contactors for motor control in utilisation category AC-3 (115 to 800 A)

Control circuit: a.c. or d.c.

DF5260091R.eps

LC1 F225

DF526092R.eps

LC1 F630

3-pole contactors

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Rated operational current in AC-3	Basic reference, to be completed by adding the voltage code (2)	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V	440 V up to	Screw fixing, cabling (1)	
kW	kW	kW	kW	kW	kW	kW	A		kg
30	55	59	59	75	80	65	115	**LC1F115●●**	3.430
40	75	80	80	90	100	65	150	**LC1F150●●**	3.430
55	90	100	100	110	110	100	185	**LC1F185●●**	4.650
63	110	110	110	129	129	100	225	**LC1F225●●**	4.750
75	132	140	140	160	160	147	265	**LC1F265●●**	7.440
100	160	180	200	200	220	160	330	**LC1F330●●**	8.600
110	200	220	250	257	280	185	400	**LC1F400●●**	9.100
147	250	280	295	355	335	335	500	**LC1F500●●**	11.350
200	335	375	400	400	450	450	630	**LC1F630●●**	18.600
220	400	425	425	450	475	450	780	**LC1F780●●**	39.500
250	450	450	450	450	475	450	800	**LC1F800●●**	18.750

Note: *auxiliary contact blocks, modules and accessories: see pages B9/10 to B9/27.*

(1) Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, except on contactors LC1 F780 (see page B9/14).

(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts ∼	24	48	110	115	120	208	220	230	240	380	400	415	440
LC1 F115…F225													
50 Hz (coil LX1)	B5	E5	F5	FE5	–	–	M5	P5	U5	Q5	V5	N5	–
60 Hz (coil LX1)	–	E6	F6	–	G6	L6	M6	–	U6	Q6	–	–	R6
40…400 Hz (coil LX9)	–	E7	F7	FE7	G7	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 F265…F330													
40…400 Hz (coil LX1)	B7	E7	F7	FE7	G7	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 F400…F630													
40…400 Hz (coil LX1)	–	E7	F7	FE7	G7 (3)	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 F780													
40…400 Hz (coil LX1)	–	–	F7	FE7	F7	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 F800													
40…400 Hz (coil LX4) (4)	–	–	FW	FW	FW	–	MW	MW	MW	QW	QW	QW	–

Volts ⎓	24	48	110	125	220	230	250	400	440
LC1 F115…F330									
(coil LX4 F)	BD	ED	FD	GD	MD	MD	UD	–	RD
LC1 F400…F630									
(coil LX4 F)	–	ED	FD	GD	MD	–	UD	–	RD
LC1 F780									
(coil LX4 F)	–	–	FD	GD	MD	–	UD	–	RD
LC1 F800									
(coil LX4 F)	–	–	FW	FW	MW	MW	–	QW	–

*(3) F7 for **LC1F630**.*

(4) Coil LX4 F8●● + rectifier DR5TE●●.

TeSys contactors

TeSys F contactors for motor control in utilisation category AC-3 (115 to 2100 A)

Control circuit: a.c. or d.c.

DF526093R.eps

LC1 F1854

DF526094R.eps

LC1 F4004

DF526095R.eps

LC1 F6304

DF526096R.eps

LC1 F1700

DF526097R.eps

LC1 F2100

2, 3 or 4-pole contactors

Maximum current in AC-1 (θ ≤ 40 °C)	Number of poles	Basic reference, to be completed by adding the voltage code [2] / Screw fixing, cabling [1]	Weight
A			kg
200	3	**LC1F115●●**	3.430
	4	**LC1F1154●●**	3.830
250	3	**LC1F150●●**	3.430
	4	**LC1F1504●●**	3.830
275	3	**LC1F185●●**	4.650
	4	**LC1F1854●●**	5.450
315	3	**LC1F225●●**	4.750
	4	**LC1F2254●●**	5.550
350	3	**LC1F265●●**	7.440
	4	**LC1F2654●●**	8.540
400	3	**LC1F330●●**	8.600
	4	**LC1F3304●●**	9.500
500	2	**LC1F4002●●**	8.000
	3	**LC1F400●●**	9.100
	4	**LC1F4004●●**	10.200
700	2	**LC1F5002●●**	9.750
	3	**LC1F500●●**	11.350
	4	**LC1F5004●●**	12.950
1000	2	**LC1F6302●●**	15.500
	3	**LC1F630●●**	18.600
	4	**LC1F6304●●**	21.500
1260	3	**LC1F1250●●**	19.000
1400	3	**LC1F1400●●**	29.000
1600	3	**LC1F780●●**	39.500
	4	**LC1F7804●●**	48.000
1700	3	**LC1F1700●●**	30.000
2100 [3]	3	**LC1F2100●●**	31.000

Note: *auxiliary contact blocks, modules and accessories: see pages B9/10 to B9/27.*

*(1) Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately (except **LC1 F780, LC1 F1250, LC1 F1400, LC1 F1700 and LC1 F2100**), see page "TeSys contactors", page B9/14.*

(2) Standard control circuit voltages, see previous page.

*(3) With set of right-angled connectors **LA9 F2100** (see page "References", page B9/16).*

TeSys contactors

3-pole vacuum contactors and reversing contactors

Power and control circuits a.c. supply

PF526336R.eps

LC1 V320

Vacuum contactors

Standard power ratings 50/60 Hz in category AC-3					Rated operational current Ie		Instantaneous auxiliary contacts		Control circuit voltage (50/60 Hz)	Basic reference (1)	Weight
230 V	400 V	525 V	690 V	1000 V	AC-3	AC-1					
kW	kW	kW	kW	kW	A	A					kg
45	75	110	150	200	160	160	2	1	(1)	**LC1V160●●**	3.800
90	160	220	280	400	320	320	1	1	(1)	**LC1V320●●**	10.500
160	300	400	560	800	610	630	1	1	(1)	**LC1V610●●**	13.000

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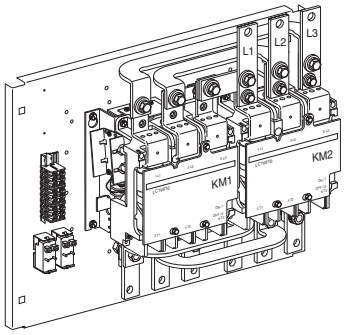

LC2 V610

Reversing vacuum contactors

The reversing contactor range comprises :

- for 160 A rating, a kit with set of power connections allowing assembly of the starter
- for 320 and 610 A ratings, a complete starter, ready for use.

Standard power ratings 50/60 Hz in category AC-3					Rated operational current Ie		Instantaneous auxiliary contacts		Control circuit voltage (50/60 Hz)	Basic reference (1)	Weight
230 V	400 V	525 V	690 V	1000 V	AC-3	AC-1					
kW	kW	kW	kW	kW	A	A					kg
45	75	110	150	200	160	160	2	1	–	**LA9V974** (2)	1.200
90	160	220	280	400	320	320	1	1	110-120 V	**LC2V320FE7**	30
									220-240 V	**LC2V320P7**	30
									380-415 V	**LC2V320V7**	30
160	300	400	560	800	610	630	1	1	110-120 V	**LC2V610FE7**	36
									220-240 V	**LC2V610P7**	36

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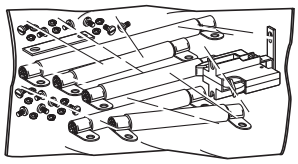


LA9 V974

(1) Basic reference; add code indicating control circuit voltage.
Standard control circuit voltages:

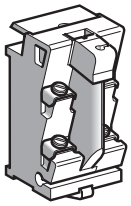
Volts 50/60 Hz	110…120	220…240	380…415	440…480	550…600
Item	FE7	P7	V7	R7	X7

(2) Kit containing a mechanical interlock, a set of power connections and a fixing plate.
To build a complete reversing contactor, order contactors LC1 V160●● separately.

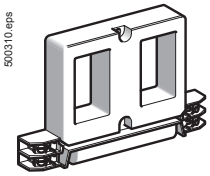
TeSys contactors

3-pole vacuum contactors and reversing contactors

Power and control circuits a.c. supply



LA1 VN11



LX1 V320●●

Instantaneous auxiliary contact blocks (1)

Number of contacts	Maximum number of blocks per contactor	Auxiliary contacts		Reference
2	4	1	1	**LA1VN11**
		–	2	**LA1VN02**
		2	–	**LA1VN20**
		1	1	**LA1VN11X** (2)

50/60 Hz coils

Rated voltage V	Voltage code	Reference
For contactors LC1 V160		
110…120	FE7	**LX1V160FE7**
220…240	P7	**LX1V160P7**
380…415	V7	**LX1V160V7**
440…480	R7	**LX1V160R7**
550…600	X7	**LX1V160X7**
For contactors LC1 V320		
110…120	FE7	**LX1V320FE7**
220…240	P7	**LX1V320P7**
380…415	V7	**LX1V320V7**
440…480	R7	**LX1V320R7**
550…600	X7	**LX1V320X7**
For contactors LC1 V610		
110…120	FE7	**LX1V610FE7**
220…240	P7	**LX1V610P7**
380…415	V7	**LX1V610V7**
440…480	R7	**LX1V610R7**
550…600	X7	**LX1V610X7**

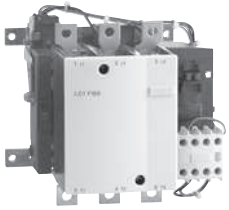
(1) LC1 V160: auxiliary contact blocks mounted at the top of the contactor, with no change to the overall dimensions.
LC1 V320 or LC1 V610: 2 auxiliary contact blocks mounted on the RH and LH side of the contactor, with no change to the overall dimensions.
(2) For LC1 V160: 1 N/C contact for the coil + 1 N/O contact.

TeSys contactors

3-pole shockproof contactors LC1 FG

For control of motors and distribution circuits
Control circuit: a.c.

PF526281R.eps



LC1 FG150

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LC1 FG185

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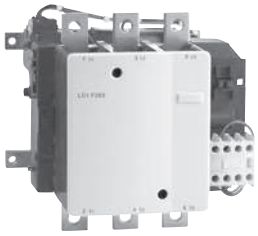

LC1 FG265

3-pole shockproof contactors

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Rated operational current in cat. AC-3, 440 V/AC-1 up to	⚓ (1) DCN ref.	Basic reference, to be completed by adding the voltage code (3) Screw fixing, cabling (2)	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V				
kW	kW	kW	kW	kW	kW	kW	A			kg
40	75	80	80	90	100	65	150/250	**CR182**	**LC1FG150●●**	3.430
55	90	100	100	110	110	100	185/275	**CR242**	**LC1FG185●●**	4.650
75	132	140	140	160	160	147	265/350	**CR302**	**LC1FG265●●**	7.440
110	200	220	250	257	280	185	400/500	**CR432**	**LC1FG400●●**	9.100
147	250	280	295	355	335	335	500/700	**CR582**	**LC1FG500●●**	11.350
200	335	375	400	400	450	450	630/1000	**CR852**	**LC1FG630●●**	18.600

Note: *these contactors have instantaneous auxiliary contact blocks with 2 N/O contacts, 1 N/C contact and one coil maintaining contact.*

(1) Devices approved by the DCN (French naval shipyard department) and authorised for on-board use.
(2) Power terminals can, if required, be protected against direct finger contact by the addition of shrouds, to be ordered separately.
(3) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volt ∼		48	110	115	⚓ (1) 120	208	220	230	240	380	400	415	440
LC1 FG 150…FG185	50 Hz (coil LX1)	E5	F5	F5	–	–	M5	P5	U5	Q5	V5	N5	–
	60 Hz (coil LX1)	E6	F6	–	–	L6	M6	–	U6	Q6	–	–	R6
	50/60 Hz (coil LX9)	E7	F7	F7	G6	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 FG265	40…400 Hz (coil LX1)	E7	F7	F7	G7	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 FG400…FG500	40…400 Hz (coil LX1)	–	F7	F7	G7	L7	M7	P7	U7	Q7	V7	N7	R7
LC1 FG630	40…400 Hz (coil LX1)	–	F7	F7	F7	L7	M7	P7	U7	Q7	V7	N7	R7

TeSys contactors

Magnetic latching contactors

Control circuit: a.c. or d.c. supply

TeSys CR1F

PF526337R.eps

CR1 F1854

PF526338R.eps

CR1 F500

Maximum thermal current in category AC-1 40 °C	Rated operational current in category AC-3 (440 V max)	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)	Weight
A	A					kg
250	150	3	–	–	**CR1F150●●**	3.500
		4	–	–	**CR1F1504●●**	3.800
275	185	3	–	–	**CR1F185●●**	4.600
		4	–	–	**CR1F1854●●**	5.400
350	265	3	–	–	**CR1F265●●**	7.400
		4	–	–	**CR1F2654●●**	8.500
500	400	3	–	–	**CR1F400●●**	9.100
		4	–	–	**CR1F4004●●**	10.200
700	500	3	–	–	**CR1F500●●**	11.300
		4	–	–	**CR1F5004●●**	12.900
1000	630	3	–	–	**CR1F630●●**	18.600
		4	–	–	**CR1F6304●●**	21.500

(1) Standard control circuit voltages: see page opposite.

TeSys contactors

TeSys F reversing contactors for motor control in utilisation category AC-3 (115 to 265 A), pre-assembled

Control circuit: a.c. or d.c.

DB402428.eps

LC2 F115

3-pole reversing contactors (horizontally mounted) (1)

Pre-wired power connections

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3							Operational current in AC-3	Maximum operational voltage	Contactors supplied without coil (2) Complete reference	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V	440 V up to		Fixing, cabling (3)	
kW	kW	kW	kW	kW	kW	kW	A	V		kg
30	55	59	59	75	80	65	115	1000	**LC2F115**	7.560
40	75	80	80	90	100	65	150	1000	**LC2F150**	7.560
55	90	100	100	110	110	100	185	1000	**LC2F185**	10.100
63	110	110	110	129	129	100	225	1000	**LC2F225**	14.200
75	132	140	140	160	160	147	265	1000	**LC2F265**	16.480

Accessories (to be ordered separately)

Description	For reversing contactors	Quantity required	Reference
Power terminal protection shrouds	LC2 F115	2	**LA9F701**
	LC2 F150, F185	2	**LA9F702**
	LC2 F225, F265	2	**LA9F703**
Auxiliary contact blocks and add-on modules	–	–	See pages B9/10 to B9/14

*(1) Fitted with a mechanical interlock without electrical interlocking. Order separately 2 auxiliary contact blocks **LADN●1** to obtain electrical interlocking between the 2 contactors, see page B9/11. For accessories, see pages B9/12 to B9/14.*

(2) Coils to be ordered separately:
- a.c. supply, see pages B9/17 to B9/4,
- d.c. supply, see pages B9/5 and B9/24.

(3) Screw fixing.
Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, see above.

Selection: pages B10/50 to B10/73
Dimensions: pages B9/100 to B9/102
Schemes: page B9/103

TeSys contactors

TeSys F changeover contactors for motor control in utilisation category AC-1 (200 to 350 A), pre-assembled

Control circuit: a.c. or d.c.

DF526098R.eps

LC2 F1854

4-pole changeover contactor pairs (horizontally mounted) (1)

Pre-wired power connections

Utilisation category AC-1 Non inductive loads Maximum operational current θ < 40 °C	Maximum operational voltage	Contactors supplied without coil (2) Complete reference Fixing, cabling (3)	Weight
A	V		kg
200	1000	**LC2F1154**	8.860
250	1000	**LC2F1504**	8.860
275	1000	**LC2F1854**	12.100
315	1000	**LC2F2254**	15.200
350	1000	**LC2F2654**	19.480

Accessories (to be ordered separately)

Description	For changeover pairs	Quantity required	Reference
Power terminal protection shrouds	LC2 F1154	2	**LA9F706**
	LC2 F1504, F1854	2	**LA9F707**
	LC2 F2254, F2654	2	**LA9F708**
Auxiliary contact blocks and add-on modules	–	–	See pages B9/10 to B9/14

*(1) Fitted with a mechanical interlock without electrical interlocking. Order separately 2 auxiliary contact blocks **LAD N●1** to obtain electrical interlocking between the 2 contactors, see page B9/11. For accessories, see pages B9/12 to B9/14.*

(2) Coils to be ordered separately:
- a.c. supply, see pages B9/17 to B9/4,
- d.c. supply, see pages B9/5 and B9/24.

(3) Screw fixing.
Power terminals can be protected against direct finger contact by the addition of shrouds, to be ordered separately, see above.

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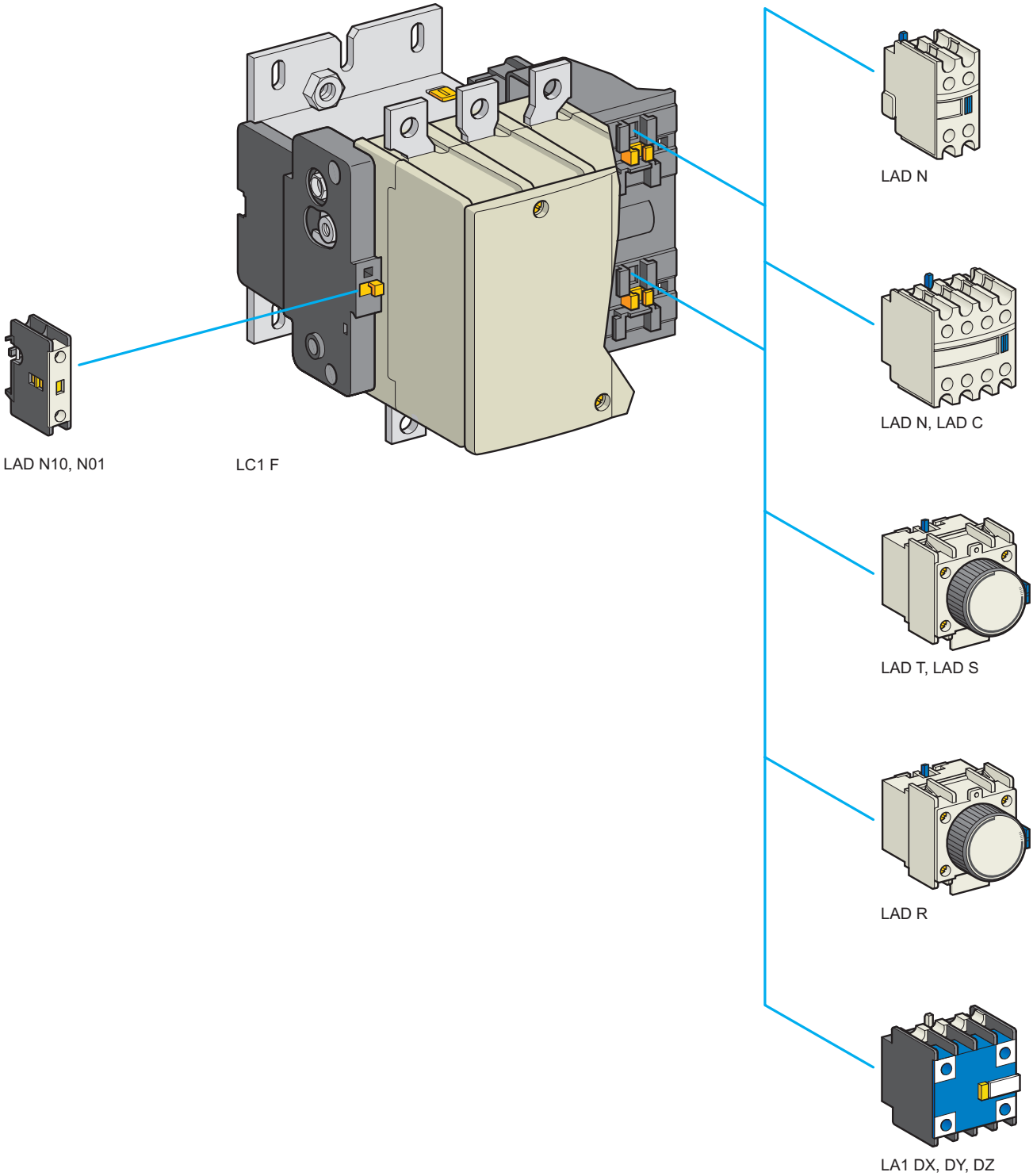

TeSys contactors

TeSys F contactors

Auxiliary contact blocks

Instantaneous auxiliary contact blocks

For use in normal operating environments

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Composition				Reference
1	1	–	–	1	–	**LADN10**
		–	–	–	1	**LADN01**
2	2	–	–	1	1	**LADN11**
		–	–	2	–	**LADN20**
		–	–	–	2	**LADN02**
4	2	–	–	2	2	**LADN22**
		–	–	1	3	**LADN13**
		–	–	4	–	**LADN40**
		–	–	–	4	**LADN04**
		–	–	3	1	**LADN31**
		–	–	2	2 (1)	**LADC22**

With terminal referencing conforming to EN 50012

2	2	–	–	1	1	**LADN11P**
		–	–	1	1	**LADN11G**
4	2	–	–	2	2	**LADN22P**
		–	–	2	2	**LADN22G**

Instantaneous auxiliary contact blocks for connection by lugs

This type of connection is not possible for blocks with 1 contact or blocks with dust and damp protected contacts. For all other instantaneous auxiliary contact blocks, add the figure **6** to the end of the references selected above. Example: **LAD N11** becomes **LAD N116**.

Instantaneous auxiliary contact blocks with dust and damp protected contacts

Recommended for use in particularly harsh industrial environments

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Composition				Reference
2	2	2	–	–	–	**LA1DX20**
		2	2 (2)	–	–	**LA1DY20**
4	2	2	–	2	–	**LA1DZ40**
		2	–	1	1	**LA1DZ31**

Time delay auxiliary contact blocks

Number of contacts	Maximum number of blocks per contactor Clip-on mounting	Time delay		Reference
		Type	Range	
			s	
1 N/O + 1 N/C	2	On-delay	0.1…3 (3)	**LADT0**
			0.1…30	**LADT2**
			10…180	**LADT4**
			1…30 (4)	**LADS2**
		Off-delay	0.1…3 (3)	**LADR0**
			0.1…30	**LADR2**
			10…180	**LADR4**

(1) Including 1 N/O + 1 N/C make before break.
(2) Device fitted with 4 earth screen continuity terminals.
(3) With extended scale from 0.1 to 0.6 s.
(4) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.

High power contactors

Presentation: page B9/10
Schemes: page B9/61

TeSys contactors

TeSys F contactors

Suppressor blocks

TeSys F

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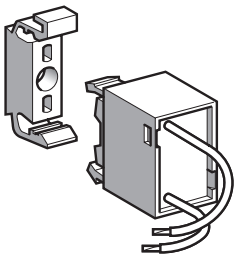

LA9 D09981 *LA4 F●●●*

Suppressor blocks

RC circuits (resistor-capacitor)

■ Effective protection for circuits highly sensitive to "high frequency" interference. For use only in cases where the voltage is virtually sinusoidal, i.e. less than 5 % total harmonic distortion.
■ Voltage limited to 3 Uc max. and oscillating frequency limited to 400 Hz max.
■ Slight increase in drop-out time (1.1 to 1.3 times the normal time).

Mounting	Uc		Reference
Clip-on mounting on all ratings and all a.c. coils.	∼	24…48 V	**LA4FRCE**
		50…110 V	**LA4FRCF**
		127…240 V	**LA4FRCP**
		265…415 V	**LA4FRCV**
Suppressor block bracket			**LA9D09981**

Varistors (peak limiting)

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

Clip-on mounting on all ratings and all coils.	∼ or ⎓	24…48 V	**LA4FVE**
		50…110 V	**LA4FVF**
		127…240 V	**LA4FVP**
		265…415 V	**LA4FVV**

Diodes

■ No overvoltage or oscillating frequencies.
■ Increase in drop-out time (3 to 4 times the normal time).
■ Polarised component.

Clip-on mounting on all ratings and all d.c. coils.	⎓	24…48 V	**LA4FDE**
		55…110 V	**LA4FDF**
		125…250 V	**LA4FDP**
		280…440 V	**LA4FDV**

Bidirectional peak limiting diodes (transil)

■ Protection provided by limiting the transient voltage to between 2 and 2.5 times Uc max.
■ Maximum reduction of transient voltage peaks.

Clip-on mounting on all ratings and all coils.	∼ or ⎓	24…48 V	**LA4FTE**
		50…110 V	**LA4FTF**
		127…240 V	**LA4FTP**
		265…415 V	**LA4FTV**

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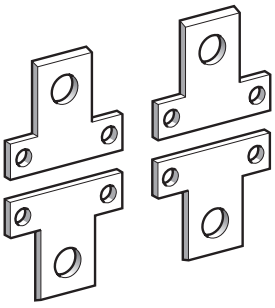

LA9 F●602

Connection accessories

For use on 4-pole contactors	Set of 4 links Set reference	Weight kg
Links for parallel connection of poles (in pairs)		
LC1 F1154	**LA9FF602**	0.200
LC1 F1504, F1854	**LA9FG602**	0.350
LC1 F2254, F2654, F3304, F4004	**LA9FH602**	1.000
LC1 F5004	**LA9FK602**	1.750
LC1 F6304	**LA9FL602**	3.000
Links for "star" connection of 3 poles		
LC1 F115	**LA9FF601**	0.035
LC1 F150, F185	**LA9FG601**	0.050
LC1 F225, F265, F330, F400	**LA9FH601**	0.120
LC1 F500	**LA9FK601**	0.180
LC1 F630, F800	**LA9FL601**	0.550

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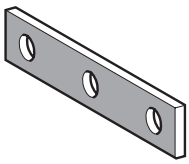


LA9 F●601

813090.eps

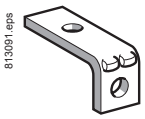
DZ3 FA3

Control circuit voltage take-off from power terminals

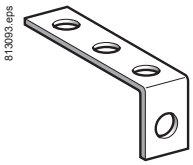
For use with contactors	Mounted on bolt size	Sold in lots of	Unit reference
LC1 F115	M6	10	**DZ3FA3**
LC1 F150, F185	M8	10	**DZ3GA3**
LC1 F225…F500	M10	10	**DZ3HA3**
LC1 F630, F800	M12	10	**DZ3JA3**

Dimensions:
pages B9/57 and B9/58

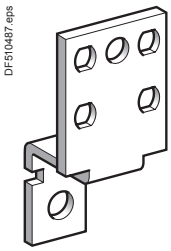
TeSys contactors
TeSys F contactors
Accessories



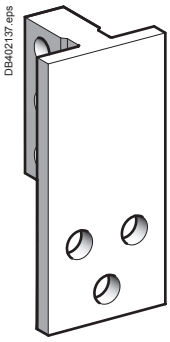
LA9 F●981



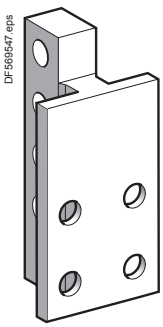
LA9 F●979



LA9 FL980



LA9 F1250



LA9 F2100

Right-angled connectors

For contactors or thermal overload relays

For use with		With connector plates		Set of 3 connectors	
Contactors	Thermal overload relays (1)	Width	Type	Set reference	Weight kg
LC1 F115	LR9 F5●67, LR9 F67	15 mm	Rear	**LA9FF981**	0.060
			Side	**LA9FF979**	0.240
			Large surface area	**LA9FF980**	0.150
LC1 F150, F185	LR9 F5●69, F5●71, LR9 F69, F71	20 mm	Rear	**LA9FG981**	0.080
			Side	**LA9FG979**	0.350
			Large surface area	**LA9FG980**	0.200
LC1 F225, F265, F330, F400	LR9 F7●75,LR9 F75	25 mm	Rear	**LA9FJ981**	0.430
			Side	**LA9FJ979**	0.750
			Large surface area	**LA9FJ980**	0.490
LC1 F500	LR9 F7●79, F7●81, LR9 F79, F81	30 mm	Rear	**LA9FK981**	0.480
			Side	**LA9FK979**	0.920
			Large surface area	**LA9FK980**	0.800
LC1 F630, F800	LR9 F7●81,LR9 F81	40 mm	Rear	**LA9FL981**	1.210
			Side	**LA9FL979**	2.570
			Large surface area	**LA9FL980**	3.190

For use with	With connector plates		Set of 6 connectors	
Contactors	Width	Type	Set reference	Weight kg
LC1 F1250	60 mm	Rear	**LA9F1250**	5.480
LC1 F1400, F1700, F2100	60 mm	Rear	**LA9F2100**	9.550

Connection accessories

For reversing contactors or "star-delta" contactors combined with a thermal overload relay

For use with		Width of connector plates	Set of 3 busbars
Contactors	Thermal overload relays (1)		Set reference
LC1 F115	LR9 F5●57, F5●63 LR9 F5●67, F5●69 LR9 F69, F71	15 mm	**LA7F401**
LC1 F150 and F185	LR9 F5●57, F5●63	20 mm	**LA7F402**
LC1 F185	LR9 F5●71, LR9 F71	25 mm	**LA7F407**
LC1 F225 and F265	LR9 F5●71, LR9 F71	25 mm	**LA7F403**
	LR9 F7●75, F7●79 LR9 F75, F79	25 mm	**LA7F404**
LC1 F330 and F400	LR9 F7●75, F7●79 LR9 F75, F79	25 mm	**LA7F404**
LC1 F400	LR9 F7●81,LR9 F81	25 mm	**LA7F404**
LC1 F500	LR9 F7●75, F7●79 LR9 F7●81 LR9 F75, F79, F81	30 mm	**LA7F405**
LC1 F630, F800	LR9 F7●81, LR9 F81	40 mm	**LA7F406**

(1) For protection relays class 10, replace the ● with a 3 and for class 20, replace the ● with a 5.

Dimensions:
pages B9/57 and B9/58

TeSys contactors
TeSys F contactors
Accessories

TeSys F

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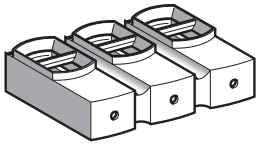

LA9 F103

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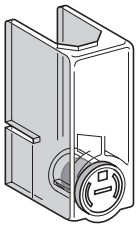

LA9 F701

Insulated terminal blocks

For use on 3-pole contactors	Connection	Tightening tool	Set of 2 blocks Set reference
LC1 F115, F150, F185	1 x 16…150 mm^2 or 2 x 16…95 mm^2	4 mm hexagonal socket key	**LA9F103**

Power terminal protection shrouds

For use on 2, 3 and 4-pole contactors	Number of shrouds per set	Set reference
LC1 F115	6	**LA9F701**
LC1 F150, F185	6	**LA9F702**
LC1 F225, F265, F330, F400 and F4002 F500 and F5002	6	**LA9F703**
LC1 F630, F6302 and F800	6	**LA9F704**
LC1 F1154	8	**LA9F706**
LC1 F1504 and F1854	8	**LA9F707**
LC1 F2254, F2654, F3304, F4004, F5004	8	**LA9F708**
LC1 F6304	8	**LA9F709**

TeSys contactors
TeSys F contactors
Accessories

TeSys F

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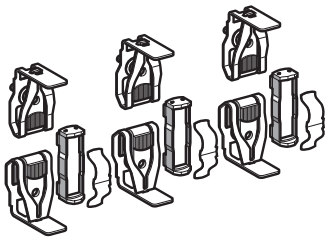

LA5 FG431

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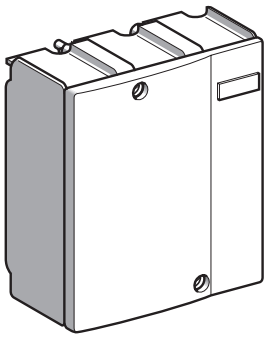

LA5 F40050

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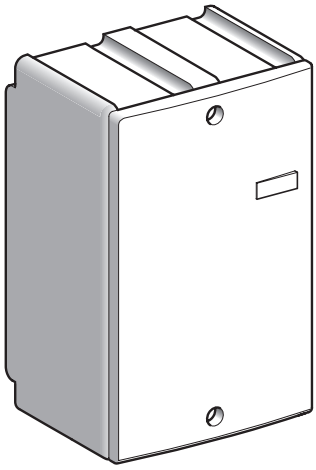


LA5 F210050

Sets of contacts

Per pole: 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.

For contactor	Type	Replacement for	Reference	Weight kg
2-pole	LC1 F4002	2 poles	**LA5F400802**	1.350
	LC1 F5002	2 poles	**LA5F500802**	1.950
	LC1 F6302	2 poles	**LA5F630802**	4.700
	LC1 F6302S011	2 poles	**LA5F630802S011**	4.800
3-pole	LC1 F115. F150	3 poles	**LA5FF431**	0.270
	LC1 F185. F225	3 poles	**LA5FG431**	0.350
	LC1 F265	3 poles	**LA5FH431**	0.660
	LC1 F330. F400	3 poles	**LA5F400803**	2.000
	LC1 F500	3 poles	**LA5F500803**	2.950
	LC1 F630	3 poles	**LA5F630803**	6.100
	LC1 F780	1 pole	**LA5F780801** (1)	4.700
		3 poles	**LA5F780803**	13.200
	LC1 F800	3 poles	**LA5F800803**	6.100
	LC1 F630S011	3 poles	**LA5F630803S011**	6.200
4-pole	LC1 F1504. F1154	4 poles	**LA5FF441**	0.360
	LC1 F1854. F2254	4 poles	**LA5FG441**	0.465
	LC1 F2654	4 poles	**LA5FH441**	0.880
	LC1 F3304. F4004	4 poles	**LA5F400804**	2.700
	LC1 F5004	4 poles	**LA5F500804**	3.900
	LC1 F6304	4 poles	**LA5F630804**	8.150
	LC1 F7804	1 pole	**LA5F780801** (1)	4.700
		4 poles	**LA5F780804**	17.300
	LC1 F6304S011	4 poles	**LA5F630804S011**	8.400

Arc chambers

For contactor	Type	Replacement for	Reference	Weight kg
2-pole	LC1 F4002	2 poles	**LA5F400250**	0.870
	LC1 F5002	2 poles	**LA5F500250**	1.250
	LC1 F6302	2 poles	**LA5F630250**	2.100
	LC1 F6302S011	2 poles	**LA5F630250**	2.100
3-pole	LC1 F115	3 poles	**LA5F11550**	0.490
	LC1 F150	3 poles	**LA5F15050**	0.490
	LC1 F185	3 poles	**LA5F18550**	0.670
	LC1 F225	3 poles	**LA5F22550**	0.670
	LC1 F265	3 poles	**LA5F26550**	0.920
	LC1 F330	3 poles	**LA5F33050**	1.300
	LC1 F400	3 poles	**LA5F40050**	1.300
	LC1 F500	3 poles	**LA5F50050**	1.850
	LC1 F630	3 poles	**LA5F63050**	3.150
	LC1 F780	1 pole	**LA5F780150** (1)	2.100
	LC1 F800	3 poles	**LA5F80050**	3.150
	LC1 F630S011	3 poles	**LA5F63050**	3.150
	LC1 F1250	3 poles	**LA5F125050**	3.150
	LC1 F1400	6 poles	**LA5F140050** (2)	3.750
	LC1 F1700	6 poles	**LA5F170050** (2)	3.750
	LC1 F2100	6 poles	**LA5F210050** (2)	3.750
4-pole	LC1 F1154	4 poles	**LA5F115450**	0.660
	LC1 F1504	4 poles	**LA5F150450**	0.660
	LC1 F1854	4 poles	**LA5F185450**	0.910
	LC1 F2254	4 poles	**LA5F225450**	1.000
	LC1 F2654	4 poles	**LA5F265450**	1.220
	LC1 F3304	4 poles	**LA5F330450**	1.740
	LC1 F4004	4 poles	**LA5F400450** (3)	1.740
	LC1 F5004	4 poles	**LA5F500450** (3)	2.500
	LC1 F6304	4 poles	**LA5F630450** (4)	4.200
	LC1 F7804	1 pole	**LA5F780150** (1)	2.100
	LC1 F6304S011	4 poles	**LA5F630450**	4.200

(1) Comprising 2 identical items per pole.
(2) Comprising three 2-pole arc chambers.
(3) Comprising two 2-pole arc chambers.
(4) Comprising single-pole arc chambers.

TeSys contactors

Capacitive delayed opening devices

For TeSys F contactors

PF511116-32-MR.eps

LAZ R90F

References

These devices prevent inadvertent opening of a contactor in the event of a brief volt drop or momentary supply failure.

Control circuit : d.c. supply

For use with contactor		Corresponding delayed opening device		
Type	**With coil**	**Supply voltage 50/60 Hz**	**Non-adjustable delay time (Tr)**	**Reference**
		V	**s**	
LC1 F115 or LC1 F150	LX4 FF110	110	2…5	**LAZR90F**
	LX4 FF125	127	2…5	**LAZR90F**
	LX4 FF220	220	2…5	**LAZR90M**
	LX4 FF250	240	2…5	**LAZR90M**
	LX4 FF375	380…415	2…5	**LAZR90Q**
	LX4 FF440	440	2…5	**LAZR90Q**
LC1 F185 or LC1 F225	LX4 FG110	110	2…5	**LAZR90F**
	LX4 FG125	127	2…5	**LAZR90F**
	LX4 FG220	220	2…5	**LAZR90M**
	LX4 FG250	240	2…5	**LAZR90M**
	LX4 FG375	380…415	2…5	**LAZR90Q**
	LX4 FG440	440	2…5	**LAZR90Q**
LC1 F265 or LC1 F330	LX4 FH110	110	2…5	**LAZR90F**
	LX4 FH125	127	2…5	**LAZR90F**
	LX4 FH220	220	2…5	**LAZR90M**
	LX4 FH250	240	2…5	**LAZR90M**
	LX4 FH375	380…415	2…5	**LAZR90Q**
	LX4 FH440	440	2…5	**LAZR90Q**
LC1 F400	LX4 FJ110	110	1…2	**LAZR90F**
	LX4 FJ125	127	1…2	**LAZR90F**
	LX4 FJ220	220	1…2	**LAZR90M**
	LX4 FJ250	240	1…2	**LAZR90M**
	LX4 FJ375	380	1…2	**LAZR90Q**
	LX4 FJ400	415	1…2	**LAZR90Q**
	LX4 FJ440	440	1…2	**LAZR90Q**
LC1 F500	LX4 FK110	110	1…2	**LAZR90F**
	LX4 FK125	127	1…2	**LAZR90F**
	LX4 FK220	220	1…2	**LAZR90M**
	LX4 FK250	240	1…2	**LAZR90M**
	LX4 FK375	380	1…2	**LAZR90Q**
	LX4 FK400	415	1…2	**LAZR90Q**
	LX4 FK440	440	1…2	**LAZR90Q**
LC1 F630	LX4 FL110	110	1…2	**LAZR90F**
	LX4 FL125	127	1…2	**LAZR90F**
	LX4 FL220	220	1…2	**LAZR90M**
	LX4 FL250	240	1…2	**LAZR90M**
	LX4 FL375	380	1…2	**LAZR90Q**
	LX4 FL400	415	1…2	**LAZR90Q**
	LX4 FL440	440	1…2	**LAZR90Q**

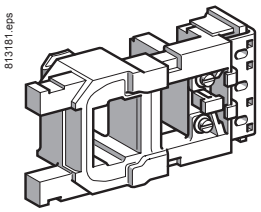
Add-on blocks for delayed opening devices

Application	For use with delayed opening device	Operational voltage	Non-adjustable delay time	Reference
		V	**s**	
To double the delay time	LAZ R90F	110…127	Tr x 2	**LAZR91F**
	LAZ R90M	220…240	Tr x 2	**LAZR91M**
	LAZ R90Q	380…440	Tr x 2	**LAZR91Q**

Other versions

Delayed opening devices for use with other types of contactor. Please consult your Regional Sales Office.

TeSys contactors
TeSys F contactors
a.c. 50/60 Hz supply coils



LX1 FF●●●

References

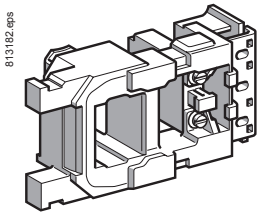
Maximum ambient air temperature: 55 °C. Above this, use an LX9 F coil, see page B9/22.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.

Control circuit voltage		Average resistance at 20 °C ±10 %	Inductance of closed circuit	Voltage code	Reference
Uc - 50 Hz	Uc - 60 Hz				
V	V	Ω	H		
For contactors LC1 F115 and LC1 F150					
24	–	0.27	0.04	B5	**LX1FF024**
42	–	0.94	0.13	D5	**LX1FF042**
–	48	0.78	0.11	E6	**LX1FF040**
48	–	1.17	0.16	E5	**LX1FF048**
–	110	4.55	0.59	F6	**LX1FF092**
–	120	4.77	0.64	G6	**LX1FF095**
110	–	6.38	0.86	F5	**LX1FF110**
115	–	6.38	0.86	FE5	**LX1FF110**
127/132	–	9.14	1.15	G5	**LX1FF127**
–	200/208	14.5	1.87	L6	**LX1FF162**
–	220	18.4	2.38	M6	**LX1FF184**
–	240	18.9	2.5	U6	**LX1FF187**
220	265/277	28.1	3.44	M5	**LX1FF220**
230	–	28.1	3.44	P5	**LX1FF220**
240	–	31.1	4.1	U5	**LX1FF240**
–	380	57.2	7.05	Q6	**LX1FF316**
–	440	72.6	9.21	R6	**LX1FF360**
380	460/480	86.9	10.3	Q5	**LX1FF380**
400	–	86.9	10.3	V5	**LX1FF380**
415	–	95.1	12	N5	**LX1FF415**
500	–	141	17	S5	**LX1FF500**
–	660	172	20.3	Y6	**LX1FF550**
660/690	–	254	28.9	Y5	**LX1FF660**
–	1000	414	48.9	–	**LX1FF850**
1000	–	610	68.5	–	**LX1FF1000**

Specifications

Average consumption at 20 °C:
- inrush 50 Hz: 550 VA; 60 Hz: 660 VA
- sealed 50 Hz: 45 VA; 60 Hz: 55 VA, cos φ= 0.3.

Heat dissipation: 12…16 W.
Operating time at Uc: closing = 23…35 ms, opening = 5…15 ms.



LX1 FG●●●

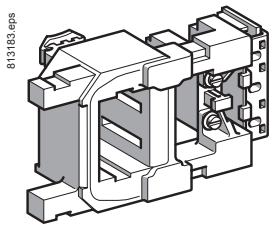
For contactors LC1 F185 and LC1 F225					
24	–	0.18	0.03	B5	**LX1FG024**
42	–	0.57	0.09	–	**LX1FG042**
–	48	0.47	0.08	E6	**LX1FG040**
48	–	0.71	0.12	E5	**LX1FG048**
–	110	2.74	0.44	F6	**LX1FG092**
–	115/120	2.87	0.49	G6	**LX1FG095**
110	–	4.18	0.65	F5	**LX1FG110**
115	–	4.18	0.65	FE5	**LX1FG110**
127/132	–	5.35	0.86	G5	**LX1FG127**
–	200/208	8.8	1.41	L6	**LX1FG162**
–	220	11.1	1.8	M6	**LX1FG184**
–	240	11.4	1.87	U6	**LX1FG187**
220	265/277	16.5	2.59	M5	**LX1FG220**
230	–	16.5	2.59	P5	**LX1FG220**
240	–	20.1	3.09	U5	**LX1FG240**
–	380	34	5.32	Q6	**LX1FG316**
–	440	43.5	6.94	R6	**LX1FG360**
380	460/480	51.3	7.75	Q5	**LX1FG380**
400	–	51.3	7.75	V5	**LX1FG380**
415	–	62.3	9.06	N5	**LX1FG415**
500	–	82.7	12.8	S5	**LX1FG500**
–	660	103	15.3	Y6	**LX1FG550**
660/690	–	154	21.8	Y5	**LX1FG660**
–	1000	249	36.6	–	**LX1FG850**
1000	–	370	51.6	–	**LX1FG1000**

Specifications

Average consumption at 20 °C:
- inrush 50 Hz: 805 VA; 60 Hz: 970 VA
- sealed 50 Hz: 55 VA; 60 Hz: 66 VA, cos φ= 0.3.

Heat dissipation: 18…24 W.
Operating time at Uc: closing = 20…35 ms, opening = 7…15 ms.

TeSys contactors
TeSys F contactors
a.c. 40 to 400 Hz supply coils



LX1 FH●●●2

References

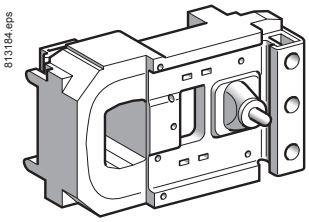
Low sealed consumption.
Operate on networks with harmonic numbers ⩽ 7.
Operating cycles/hour (θ ⩽ 55 °C): ⩽ 2400.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference
	Inrush	Sealed			
V	Ω	Ω	H		
For contactors LC1 F265 and LC1 F330					
24	0.8	20	(1)	B7	**LX1FH0242**
48	2.96	67	(1)	E7	**LX1FH0482**
110	18.7	440	(1)	F7	**LX1FH1102**
115	18.7	440	(1)	FE7	**LX1FH1102**
120/127	22.9	536	(1)	G7	**LX1FH1272**
200/208	58.4	1366	(1)	L7	**LX1FH2002**
220	70.6	1578	(1)	M7	**LX1FH2202**
230	70.6	1578	(1)	P7	**LX1FH2202**
240	87.94	1968	(1)	U7	**LX1FH2402**
277	113	2444	(1)	W7	**LX1FH2772**
380	217	4631	(1)	Q7	**LX1FH3802**
400	217	4631	(1)	V7	**LX1FH3802**
415	217	4631	(1)	N7	**LX1FH3802**
440	265	6731	(1)	R7	**LX1FH4402**
480/500	329	8543	(1)	S7	**LX1FH5002**
600/660	296	10245	(1)	X7	**LX1FH6002**
1000	696	25880	(1)	–	**LX1FH10002**

Specifications

Average consumption at 20 °C for 50 or 60 Hz and cos φ = 0.9:
- inrush: 600…700 VA
- sealed: 8…10 VA.

Heat dissipation: 8 W.
Operating time at Uc: closing = 40…65 ms, opening = 100…170 ms.



LX1 FJ●●●

For contactor LC1 F400					
48	1.6	29.5	0.18	E7	**LX1FJ048**
110/120	9.8	230	1.35	F7	**LX1FJ110**
115	9.8	230	1.35	FE7	**LX1FJ110**
120/127	12.8	280	1.75	G7	**LX1FJ127**
200/208	30	815	4.1	L7	**LX1FJ200**
220	37	1030	5.1	M7	**LX1FJ220**
230	37	1030	5.1	P7	**LX1FJ220**
240	47.5	1320	6.4	U7	**LX1FJ240**
265/277	61	1700	8.1	W7	**LX1FJ280**
380	120	3310	15.8	Q7	**LX1FJ380**
400	120	3310	15.8	V7	**LX1FJ380**
415	145	4070	19.4	N7	**LX1FJ415**
440	145	4070	19.4	R7	**LX1FJ415**
500	190	4980	25.5	S7	**LX1FJ500**
550/600	243	6310	27.4	X7	**LX1FJ600**
1000	720	19420	84.6	–	**LX1FJ1000**

Specifications

Average consumption at 20 °C for 50 or 60 Hz and cos φ = 0.9:
- inrush: 1000…1150 VA
- sealed: 12…18 VA.

Heat dissipation: 14 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

(1) Please consult your Regional Sales Office.

TeSys contactors
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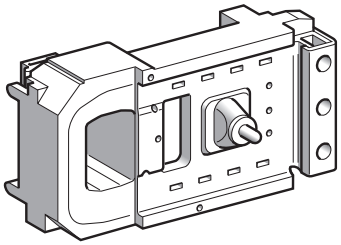
a.c. 40 to 400 Hz supply coils



LX1 FK●●●

References

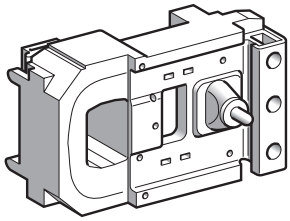
Low sealed consumption.
Operate on networks with harmonic numbers ⩽ 7.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			kg
For contactor LC1 F500						
48	1.9	33.5	0.19	E7	**LX1FK048**	1.150
110/120	9.55	260	1.25	F7	**LX1FK110**	1.150
115	9.55	260	1.25	FE7	**LX1FK110**	1.150
120/127	11.5	315	1.5	G7	**LX1FK127**	1.150
200/208	29	735	3.75	L7	**LX1FK200**	1.150
220	35.5	915	4.55	M7	**LX1FK220**	1.150
230	35.5	915	4.55	P7	**LX1FK220**	1.150
240	44.5	1160	5.75	U7	**LX1FK240**	1.150
265/277	56.5	1490	7.3	W7	**LX1FK280**	1.150
380	112	2980	14.7	Q7	**LX1FK380**	1.150
400	112	2980	14.7	V7	**LX1FK380**	1.150
415	143	3730	18.4	N7	**LX1FK415**	1.150
440	143	3730	18.4	R7	**LX1FK415**	1.150
500	172	4590	22.8	S7	**LX1FK500**	1.150
550/600	232	5660	23.9	X7	**LX1FK600**	1.150
1000	679	16960	72	–	**LX1FK1000**	1.150

Specifications

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1050…1150 VA,
- sealed: 16…20 VA.

Operating cycles/hour (θ ⩽ 55 °C): ⩽ 2400.
Heat dissipation: 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.



LX1 FL●●●

For contactor LC1 F630 and LC1 F1250						
48	1.1	17.1	0.09	E7	**LX1FL048** (1)	1.500
110/120	6.45	165	1.85	F7	**LX1FL110**	1.500
115	6.45	165	1.85	FE7	**LX1FL110**	1.500
127	8.1	205	1.05	G7	**LX1FL127**	1.500
200/208	20.5	605	2.65	L7	**LX1FL200**	1.500
220	25.5	730	3.35	M7	**LX1FL220**	1.500
230	25.5	730	3.35	P7	**LX1FL220**	1.500
240	25.5	730	3.35	U7	**LX1FL220**	1.500
265/277	31	900	4.1	W7	**LX1FL260**	1.500
380	78	2360	10.5	Q7	**LX1FL380**	1.500
400	78	2360	10.5	V7	**LX1FL380**	1.500
415	96	2960	13	N7	**LX1FL415**	1.500
440	96	2960	13	R7	**LX1FL415**	1.500
500	120	3660	16.5	S7	**LX1FL500**	1.500
550/600	155	4560	19.5	X7	**LX1FL600**	1.500
1000	474	12880	56.2	–	**LX1FL1000** (1)	1.500

(1) Incompatible with LC1F1250.

Specifications

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
- inrush: 1500…1730 VA,
- sealed: 20…25 VA.

Operating cycles/hour (θ ⩽ 55 °C): 1200.
Heat dissipation: 20 W.
Operating time at Uc: closing = 40…80 ms, opening = 100…200 ms.

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References

Low sealed consumption.
Operate on networks with harmonic numbers ⩽ 7.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			kg
For contactor LC1 F780						
110/120	4.95 (2)	230 (2)	0.21	F7	**LX1FX110** (1)	3.000
115	4.95 (2)	230 (2)	0.21	FE7	**LX1FX110** (1)	3.000
127	6.1 (2)	280 (2)	0.26	G7	**LX1FX127** (1)	3.000
200/208	15.5 (2)	750 (2)	0.66	L7	**LX1FX200** (1)	3.000
220	19.5 (2)	920 (2)	0.82	M7	**LX1FX220** (1)	3.000
230	19.5 (2)	920 (2)	0.82	P7	**LX1FX220** (1)	3.000
240	19.5 (2)	920 (2)	0.82	U7	**LX1FX220** (1)	3.000
265/277	29.8 (2)	1330 (2)	1.25	W7	**LX1FX280** (1)	3.000
380	60.9 (2)	2780 (2)	2.3	Q7	**LX1FX380** (1)	3.000
400	60.9 (2)	2780 (2)	2.3	V7	**LX1FX380** (1)	3.000
415/480	74.3 (2)	3340 (2)	2.8	N7	**LX1FX415** (1)	3.000
440	74.3 (2)	3340 (2)	2.8	R7	**LX1FX415** (1)	3.000
500	92 (2)	4180 (2)	3.5	S7	**LX1FX500** (1)	3.000

Specifications

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1900…2300 VA, sealed: 44…55 VA.
Operating cycles/hour (θ ⩽ 55 °C): 600.
Heat dissipation: 2 x 22 W.
Operating time at Uc: closing = 40…80 ms, opening = 130…230 ms.

Control circuit voltage Uc	Voltage code	Rectifier Reference (3)	Coil Reference	Weight
V				kg
For contactor LC1 F800				
110/127	FE7	**DR5TE4U**	**LX4F8FW**	1.650
220/240	P7	**DR5TE4U**	**LX4F8MW**	1.650
380/440	V7	**DR5TE4S**	**LX4F8QW**	1.650

Specifications

Operating cycles/hour (θ ⩽ 55 °C): 600.
Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.8:
■ inrush: 1700 VA, sealed: 12 VA.
Operating time at Uc: closing = 60…80 ms, opening = 160…180 ms.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			kg
For contactors LC1 F1400, LC1 F1700 and LC1 F2100						
110	5.92	106	0.72	F7	**LX1FK065** (4)	1.150
120	5.92	106	0.72	G7	**LX1FK070** (4)	1.150
220	9.55	260	1.25	M7	**LX1FK110** (4)	1.150
230	9.55	260	1.25	P7	**LX1FK110** (4)	1.150
240	11.5	315	1.50	U7	**LX1FK127** (4)	1.150
277	16.5	420	2.25	W7	**LX1FK140** (4)	1.150
380	29	735	3.75	Q7	**LX1FK200** (4)	1.150
400	29	735	3.75	V7	**LX1FK200** (4)	1.150
415	35.5	915	4.55	N7	**LX1FK220** (4)	1.150
440	35.5	915	4.55	R7	**LX1FK220** (4)	1.150
500	44.5	1160	5.75	S7	**LX1FK240** (4)	1.150

Specifications

Average consumption at 20 °C for 50 or 60 Hz, cos φ = 0.9:
■ inrush: 1600…2400 VA, sealed: 29…37 VA.
Operating cycles/hour (θ ⩽ 55 °C): 600.
Heat dissipation: 2 x 18 W.
Operating time at Uc: closing = 40…75 ms, opening = 100…170 ms.

(1) Reference of set of 2 identical coils, to be connected in series.
(2) Value for the 2 coils in series.
(3) Rectifier to be ordered separately: 0.100 kg.
(4) Order 2 coils and connect them in series.

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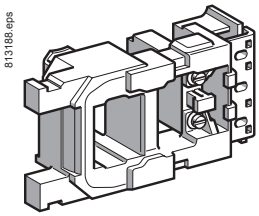
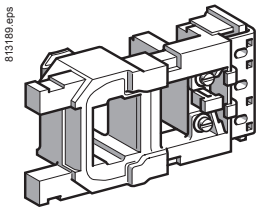
TeSys F contactors

a.c. 40 to 400 Hz supply coils for specific applications (1)



LX9 FF●●●



LX9 FG●●●

References

Low sealed consumption.
High tolerance to inrush voltage drops.
Immune to micro-breaks (mains supply or contact chain).
Operate on networks with harmonic numbers ≤ 7.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			
For contactors LC1 F115 and LC1 F150						
48	3.03	80.2	0.3	E7	**LX9FF048**	
110	14.8	579	2.08	F7	**LX9FF110**	
115	14.8	579	2.08	FE7	**LX9FF110**	
120/127	19	746	2.65	G7	**LX9FF127**	
208	45	1788	5.95	L7	**LX9FF200**	
220	59.4	2190	7.7	M7	**LX9FF220**	
230	59.4	2190	7.7	P7	**LX9FF220**	
240	73.5	2750	9.68	U7	**LX9FF240**	
380	173	6540	23	Q7	**LX9FF380**	
400	173	6540	23	V7	**LX9FF380**	
415	218	8460	30	N7	**LX9FF415**	
440	218	8460	30	R7	**LX9FF415**	
500	262	10300	36	S7	**LX9FF500**	

Specifications
Average consumption at 20 °C: inrush: 690…855 VA, sealed: 6.6…8.1 VA.
Heat dissipation: 5.9…7.2 W.
Operating cycles/hour (θ ≤ 55 °C): < 2400.
Operating time at Uc: closing = 35 ms, opening = 130 ms.

For contactors LC1 F185 and LC1 F225					
48	2.2	60	0.23	E7	**LX9FG048**
110	10.4	411	1.46	F7	**LX9FG110**
115	10.4	411	1.46	FE7	**LX9FG110**
120/127	13	520	1.85	G7	**LX9FG127**
208	33	1339	4.9	L7	**LX9FG200**
220	42.1	1680	5.84	M7	**LX9FG220**
230	42.1	1680	5.84	P7	**LX9FG220**
240	50.6	2060	7.22	U7	**LX9FG240**
380	128	4730	16.4	Q7	**LX9FG380**
400	128	4730	16.4	V7	**LX9FG380**
415	157	5930	20.6	N7	**LX9FG415**
440	157	5930	20.6	R7	**LX9FG415**
500	194	7550	26.3	S7	**LX9FG500**

Specifications
Average consumption at 20 °C: inrush: 950…1180 VA, sealed: 8.9…10.9 VA.
Heat dissipation: 8…9.8 W.
Operating cycles/hour (θ ≤ 55 °C): < 2400.
Operating time at Uc: closing = 35 ms, opening = 130 ms.

For contactors LC1 F265 and LC1 F330					
48	2.96	72	(2)	–	**LX9FH0482**
110/115	18.7	415	(2)	–	**LX9FH1102**
120/127	22.9	156	(2)	–	**LX9FH1272**
220/230	71.6	1621	(2)	–	**LX9FH2202**
240	88	1968	(2)	–	**LX9FH2402**
380/415	222	5075	(2)	–	**LX9FH3802**
500	345	7990	(2)	–	**LX9FH5002**

Specifications
Average consumption at 20 °C: inrush: 560…660 VA, sealed: 8…10 VA.
Heat dissipation: 8.4…10.4 W.
Operating cycles/hour (θ ≤ 55 °C): < 3600.
Operating time at Uc: closing = 45 ms, opening = 25 ms.

(1) Application examples: hoisting (inching, high operating rates), Main-Standby (unstable mains supplies). These coils are particularly suited for use at higher operating temperatures (mounting in non-ventilated compartments, enclosures, etc.).
(2) Please consult your Regional Sales Office.

Schemes:
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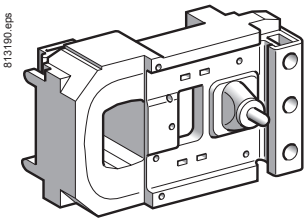
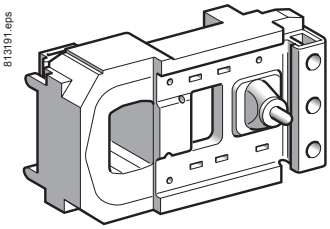
TeSys contactors

TeSys F contactors

a.c. 40 to 400 Hz supply coils for specific applications (1)



LX9 FJ●●●



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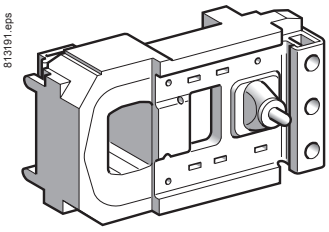

LX9 FL●●●

References

Coils with short operating times (at Uc):
- N/O: 60 ms
- N/C: 50 ms (~ side); 20 ms (⎓ side).

Coils with high operating rates (θ ≤ 70 °C):
- 3600 operating cycles/hour
- 1800 for LC1 F630.

Coils with low inrush consumption.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Rectifier Reference (1)	Coil Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			kg
For contactor LC1 F400						
48	4.03	43	0.22	**DR5TF4V**	**LX9FJ917**	0.970
110	25.7	246	1.3	**DR5TE4U**	**LX9FJ925**	0.970
127	32.3	302	1.7	**DR5TE4U**	**LX9FJ926**	0.970
220/230	99.5	919	5	**DR5TE4U**	**LX9FJ931**	0.970
380/415	311	3011	15	**DR5TE4S**	**LX9FJ936**	0.970
440	386	3690	19	**DR5TE4S**	**LX9FJ937**	0.970
500	478	4380	23	**DR5TE4S**	**LX9FJ938**	0.970

Specifications

Average consumption:
- inrush: 500 VA
- sealed: 23 VA.

Heat dissipation: 11.4…13.9 W.

For contactor LC1 F500						
48	3.73	30.7	0.18	**DR5TF4V**	**LX9FK917**	1.080
110	24	204	1.1	**DR5TE4U**	**LX9FK925**	1.080
127	29.8	250	1.4	**DR5TE4U**	**LX9FK926**	1.080
220/230	89.9	770	4	**DR5TE4U**	**LX9FK931**	1.080
380/415	274	2075	12	**DR5TE4S**	**LX9FK936**	1.080
440	361	3060	16	**DR5TE4S**	**LX9FK937**	1.080
500	448	3750	19	**DR5TE4S**	**LX9FK938**	1.080

Specifications

Average consumption:
- inrush: 550 VA
- sealed: 31 VA.

Heat dissipation: 15…18.3 W.

For contactor LC1 F630						
48	2.81	20.8	0.17	**DR5TF4V**	**LX9FL917**	1.450
110	13.5	114	0.77	**DR5TE4U**	**LX9FL924**	1.450
127	20.8	167	1.2	**DR5TE4U**	**LX9FL926**	1.450
220	52	425	2.9	**DR5TE4U**	**LX9FL930**	1.450
220/240	64.5	518	3.6	**DR5TE4U**	**LX9FL931**	1.450
380/400	163	1360	8.8	**DR5TE4S**	**LX9FL935**	1.450
415/440	204	1670	11	**DR5TE4S**	**LX9FL936**	1.450
500	312	2510	17	**DR5TE4S**	**LX9FL938**	1.450

Specifications

Average consumption:
- inrush: 830 VA
- sealed: 47 VA.

Heat dissipation: 22.8…27.8 W.

(1) Rectifier to be ordered separately: 0.100 kg.

Schemes:
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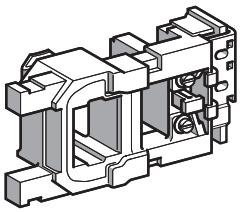
TeSys contactors
TeSys F contactors
d.c. supply coils



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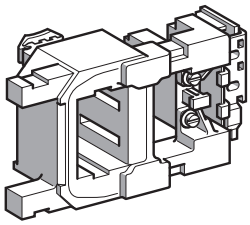

LX4 FH●●●

References

Low sealed consumption.
Operating cycles/hour (θ ≤ 55 °C): ≤ 2400.

Control circuit voltage Uc	Average resistance at 20 °C ±10 % Inrush	Sealed	Inductance of closed circuit	Voltage code	Reference
V	Ω	Ω	H		
For contactors LC1 F115 and LC1 F150					
24	1.12	177	11	**BD**	**LX4FF024**
48	4.52	715	42.7	**ED**	**LX4FF048**
110	21.7	2940	179	**FD**	**LX4FF110**
125	26.8	3560	223	**GD**	**LX4FF125**
220/230	84	11100	704	**MD**	**LX4FF220**
250	105	13000	868	**UD**	**LX4FF250**
440/460	301	48200	4000	**RD**	**LX4FF440**

Specifications
Average consumption:
- inrush: 543…665 W,
- sealed: 3.94…4.83 W.

Operating time at Uc: closing = 30…40 ms, opening = 30…50 ms.

For contactors LC1 F185 and LC1 F225					
24	0.79	169	14.9	**BD**	**LX4FG024**
48	3.2	662	55.3	**ED**	**LX4FG048**
110	14.9	2810	241	**FD**	**LX4FG110**
125	19	3320	289	**GD**	**LX4FG125**
220/230	57.7	10200	890	**MD**	**LX4FG220**
250	76	12400	1140	**UD**	**LX4FG250**
440/460	223	39700	4210	**RD**	**LX4FG440**

Specifications
Average consumption:
- inrush: 737…902 W,
- sealed: 4.13…5.07 W.

Operating time at Uc: closing = 30…40 ms, opening = 30…50 ms.

For contactors LC1 F265 and LC1 F330					
24	0.9	192	26.3	**BD**	**LX4FH024**
48	3.49	707	92.9	**ED**	**LX4FH048**
110	16.8	3180	424	**FD**	**LX4FH110**
125	20.8	3840	530	**GD**	**LX4FH125**
220/230	65.7	11500	1590	**MD**	**LX4FH220**
250	84	13900	1910	**UD**	**LX4FH250**
440/460	255	44000	7570	**RD**	**LX4FH440**

Specifications
Average consumption:
- inrush: 655…803 W,
- sealed: 3.68…4.53 W.

Operating time at Uc: closing = 40…50 ms, opening = 40…65 ms.

For contactor LC1 F400					
48	2.5	558	56	**ED**	**LX4FJ048**
110	12.7	2660	270	**FD**	**LX4FJ110**
125	15.8	3130	330	**GD**	**LX4FJ125**
220	47	8820	910	**MD**	**LX4FJ220**
250	61	10500	1200	**UD**	**LX4FJ250**
440	236	33750	4435	**RD**	**LX4FJ440**

Specifications
Average consumption:
- inrush: 920…1140 W,
- sealed: 4…7.5 W.

Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

Schemes:
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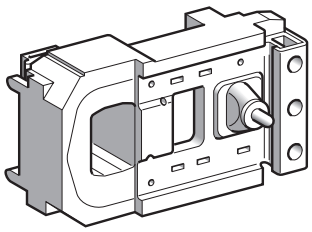
d.c. supply coils

813194.eps



LX4 FK●●●

References

Low sealed consumption.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Voltage code	Reference	Weight
	Inrush	Sealed				
V	Ω	Ω	H			kg
For contactor LC1 F500						
48	2.35	515	67	ED	**LX4FK048**	1.080
110	11.5	2450	280	FD	**LX4FK110**	1.080
125	15	2930	400	GD	**LX4FK125**	1.080
220	44	8150	1080	MD	**LX4FK220**	1.080
250	56	9650	1350	UD	**LX4FK250**	1.080
440	225	31300	5270	RD	**LX4FK440**	1.080

Specifications

Average consumption:
- inrush: 990…1220 W,
- sealed: 4.54…8 W.

Operating cycles/hour (θ ≤ 55 °C): 2400.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

For contactor LC1 F630 and LC1 F1250						
48	1.7	353	40.5	ED	**LX4FL048**	1.450
110	8.1	1680	180	FD	**LX4FL110**	1.450
125	10	2110	230	GD	**LX4FL125** (1)	1.450
220	31	5160	650	MD	**LX4FL220**	1.450
250	38	6080	815	UD	**LX4FL250**	1.450
440	152	23120	2910	RD	**LX4FL440** (1)	1.450

(1) Incompatible with LC1 F1250.

Specifications

Average consumption:
- inrush: 1420…1920 W,
- sealed: 6.5…12.5 W.

Operating cycles/hour (θ ≤ 55 °C): 1200.
Operating time at Uc: closing = 60…70 ms, opening = 40…50 ms.

For contactor LC1 F780						
110	6.1 (2)	280 (3)	0.26	FD	**LX4FX110** (2)	3.000
125	7.7 (2)	410 (3)	0.33	GD	**LX4FX125** (2)	3.000
220	24.6 (2)	1100 (3)	1	MD	**LX4FX220** (2)	3.000
250	29.8 (2)	1330 (3)	1.25	UD	**LX4FX250** (2)	3.000
440	92 (2)	4180 (3)	3.5	RD	**LX4FX440** (2)	3.000

Specifications

Average consumption:
- inrush: 1960…2420 W
- sealed: 42…52 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 70…80 ms, opening = 100…130 ms.

For contactor LC1 F800						
110/120	–	–	–	FW	**LX4F8FW**	1.650
220/240	–	–	–	MW	**LX4F8MW**	1.650
380/400	–	–	–	QW	**LX4F8QW**	1.650

Specifications

Heat dissipation: 25 W.
Operating time at Uc: closing = 60…80 ms, opening = 40…50 ms.

For contactors LC1 F1400, LC1 F1700 and LC1 F2100						
110	2.94	734	98	FD	**LX4FK055** (4)	1.080
125	3.73	916	122	GD	**LX4FK065** (4)	1.080
220	11.5	2450	280	MD	**LX4FK110** (4)	1.080
250	15	2930	400	UD	**LX4FK125** (4)	1.080
440	44	8150	1080	RD	**LX4FK220** (4)	1.080

Specifications

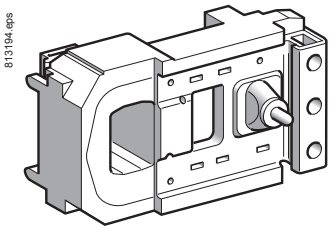
Average consumption:
- inrush: 2000…2200 W,
- sealed: 8…10 W.

Operating cycles/hour (θ ≤ 55 °C): 600.
Operating time at Uc: closing = 50…60 ms, opening = 45…60 ms.

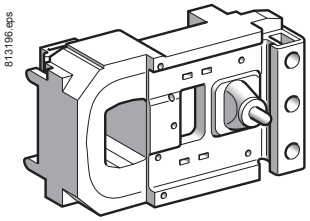
(2) Reference of set of 2 identical coils, to be connected in series.
(3) Value for the 2 coils in series.
(4) Order 2 coils and connect them in series.

Schemes:
page 9/60

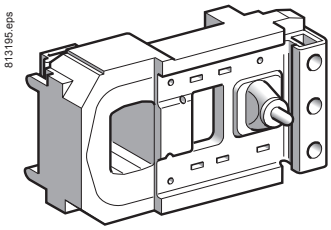
TeSys contactors
TeSys F contactors
d.c. supply coils for specific applications



LX9 FJ●●●



LX9 FK●●●



LX9 FL●●●

References

Coils with short operating times (at Uc):
- N/O: 60 ms
- N/C: 20 ms.

Coils with high operating rates (θ ≤ 70 °C):
- 3600 operating cycles/hour
- 1800 for LC1 F630.

Coils with low inrush consumption.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Induc-tance of closed circuit	Resistor (1)		Coil	
	Inrush	Sealed		Qty required	Reference	Reference	Weight
V	Ω	Ω	H				kg
For contactor LC1 F400							
48	5.11	99	0.27	1	**DR2SC0047**	**LX9FJ918**	0.970
110	32.3	632	1.7	1	**DR2SC0330**	**LX9FJ926**	0.970
125	39.4	760	2	1	**DR2SC0390**	**LX9FJ927**	0.970
220	123	2320	6.1	1	**DR2SC1200**	**LX9FJ932**	0.970
440/460	478	9080	23	1	**DR2SC4700**	**LX9FJ938**	0.970

Specifications

Average consumption:
- inrush: 430 W
- sealed: 22 W.

For contactor LC1 F500							
48	4.67	76.7	0.22	1	**DR2SC0039**	**LX9FK918**	1.080
110	29.8	470	1.4	1	**DR2SC0220**	**LX9FK926**	1.080
125	37.4	637	1.7	1	**DR2SC0330**	**LX9FK927**	1.080
220	115	1935	5.1	1	**DR2SC1000**	**LX9FK932**	1.080
440/460	448	7050	19	1	**DR2SC3300**	**LX9FK938**	1.080

Specifications

Average consumption:
- inrush: 470 W
- sealed: 29 W.

For contactor LC1 F630							
48	3.43	52.9	0.20	2	**DR2SC0047**	**LX9FL918**	1.450
110	17.2	272	0.98	2	**DR2SC0270**	**LX9FL925**	1.450
125	20.8	333	1.2	2	**DR2SC0330**	**LX9FL926**	1.450
220	64.5	1018	3.6	2	**DR2SC1000**	**LX9FL931**	1.450
440/460	260	4010	14	2	**DR2SC3900**	**LX9FL937**	1.450

Specifications

Average consumption:
- inrush: 733 W
- sealed: 48 W.

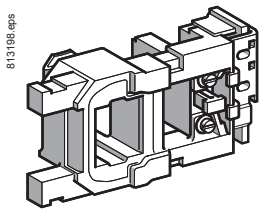
(1) Resistor to be ordered separately, weight of resistor: 0.030 kg.

Schemes:
page 9/60

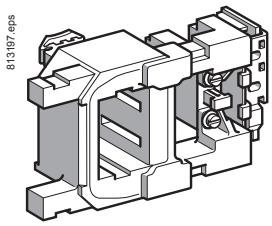
TeSys contactors

TeSys F contactors

Wide range d.c. supply coils for specific applications



LX4 FF●●●



LX4 FH●●●

References

Wide range coils: 0.7…1.25 Uc.
Operating cycles/hour: ⩽ 60 (1).
Ambient temperature (operation): -55 to + 70 °C.

Control circuit voltage Uc	Average resistance at 20 °C ±10 %		Inductance of closed circuit	Reference
	Inrush	Sealed		
V	Ω	Ω	H	
For contactors LC1 F115 and LC1 F150				
24	0.71	120	7.4	**LX4FF020**
48	2.86	392	27	**LX4FF040**
72	7.05	1055	66	**LX4FF060**
110	13.2	1970	121	**LX4FF090**
125	16.9	2340	149	**LX4FF100**

Specifications
Average consumption:
- inrush: 415…1300 W
- sealed: 3…9 W.

For contactors LC1 F185 and LC1 F225				
24	0.52	112	9.3	**LX4FG020**
48	2	359	34.4	**LX4FG040**
72	5.07	984	85	**LX4FG060**
110	9.66	1840	157	**LX4FG090**
125	12	2230	196	**LX4FG100**

Specifications
Average consumption:
- inrush: 580…1820 W
- sealed: 3.1…9.5 W.

For contactors LC1 F265 and LC1 F330				
24	0.58	129	17.3	**LX4FH020**
48	2.19	400	59.5	**LX4FH040**
72	5.58	1110	149	**LX4FH060**
110	11	2120	287	**LX4FH090**
125	13.8	2520	353	**LX4FH100**

Specifications
Average consumption:
- inrush: 515…1600 W
- sealed: 2.7…8.5 W.

Operational voltage	Average resistance at 20 °C ±10 %	Inductance of closed circuit	Coil	Economy resistor Resistors in //			Reference of the assembly (2)
			Reference	No.	Ω	Reference	
V	Ω	H					
For contactor LC1 F400							
24	1.05	0.049	**LX2 FJW11**	3	56	**DR2 SC0056**	**LX5FJW11**
48	4.8	0.22	**LX2 FJW18**	3	220	**DR2 SC0220**	**LX5FJW18**
72	9.6	0.44	**LX2 FJW21**	3	470	**DR2 SC0470**	**LX5FJW21**

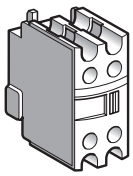
Specifications
Average consumption:
- inrush: 290…860 W
- sealed: 16…47 W.

(1) The mechanical durability of the contactor is limited to 1 million operating cycles.
*(2) The set comprises: 1 coil **LX2 FJ** and 3 resistors **DR2 SC**.*

Schemes:
page 9/60

TeSys contactors
Auxiliary contact blocks for 3-pole shockproof contactors LC1 FG

TeSys F

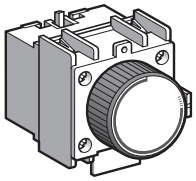


LAD N●●

Instantaneous auxiliary contact blocks

For use in normal operating environments

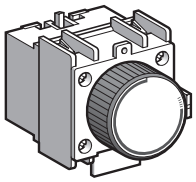
Number of contacts	Max. number of blocks per contactor Clip-on mounting	Composition	Reference	
1	1	– – 1 –	**LADN10**	(1)
		– – – 1	**LADN01**	(1)
4	1	– – 2 2	**LADN22**	(1)
		– – 4 –	**LADN40**	(1)
		– – – 4	**LADN04**	(1)
		– – 3 1	**LADN31**	(1)



LAD T●

Time delay auxiliary contact blocks

Number of contacts	Max. number of blocks per contactor Clip-on mounting	Time delay Type	Range	Reference	
			s		
1 N/O + 1 N/C	1	On-delay	0.1…3 (2)	**LADT0**	
			0.1…30	**LADT2**	(1)
			10…180	**LADT4**	
			1…30 (3)	**LADS2**	
		Off-delay	0.1…3 (2)	**LADR0**	
			0.1…30	**LADR2**	(1)
			10…180	**LADR4**	



LAD R●

(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.
(2) With extended scale from 0.1 to 0.6 s.
(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.

Characteristics: pages B9/82 and B9/83
Schemes: page B9/85

TeSys contactors
Coils for 3-pole shockproof contactors LC1 FG
Spare or replacement parts a.c. supply 50/60 Hz

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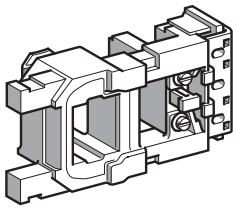

LX1 FF●●●

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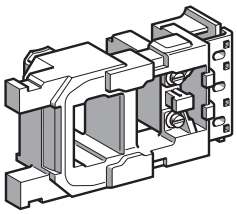


LX1 FG●●●

References

Control circuit voltage Uc		Voltage code	Coil reference	
50 Hz	60 Hz			
V	V			
Coils for contactors LC1 FG150				
–	48	E6	**LX1FF040**	
48	–	E5	**LX1FF048**	
–	110	F6	**LX1FF092**	
–	115/120	G6	**LX1FF095**	(1)
110/115	–	F5	**LX1FF110**	
120	–	FE5	**LX1FF120**	
–	208	L6	**LX1FF170**	
–	320	M6	**LX1FF184**	
–	230/240	U6	**LX1FF187**	
208	–	LE5	**LX1FF200**	
220/230	–	M5	**LX1FF220**	
240	–	U5	**LX1FF240**	
–	380	Q6	**LX1FF316**	
–	415	N6	**LX1FF340**	
–	440	R6	**LX1FF360**	
380	–	Q5	**LX1FF380**	
415/440	–	N5	**LX1FF415**	

Specifications
Average consumption at 20 °C:
- inrush 50 Hz: 550 VA; 60 Hz: 660 VA
- sealed 50 Hz: 45 VA; 60 Hz: 55 VA, cos φ = 0.32.

Operating cycles/hour (θ = 55 °C): 2400.

Coils for contactors LC1 FG185				
–	48	E6	**LX1FG040**	
48	–	E5	**LX1FG048**	
–	110	F6	**LX1FG092**	
–	115/120	G6	**LX1FG095**	(1)
110/115	–	F5	**LX1FG110**	
120	–	FE5	**LX1FG120**	
–	208	L6	**LX1FG170**	
–	320	M6	**LX1FG184**	
–	230/240	U6	**LX1FG187**	
208	–	LE5	**LX1FG200**	
220/230	–	M5	**LX1FG220**	
240	–	U5	**LX1FG240**	
–	380	Q6	**LX1FG316**	
–	415	N6	**LX1FG340**	
–	440	R6	**LX1FG360**	
380	–	Q5	**LX1FG380**	
415/440	–	N5	**LX1FG415**	

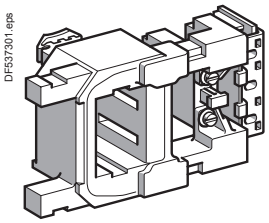
Specifications
Average consumption at 20 °C:
- inrush 50 Hz: 805 VA; 60 Hz: 970 VA
- sealed 50 Hz: 55 VA; 60 Hz: 66 VA, cos φ = 0.34.

Operating cycles/hour (θ = 55 °C): 2400.

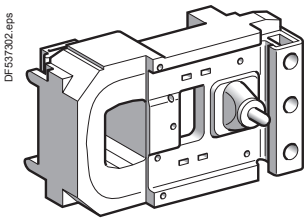
(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.

Schemes:
page B9/85

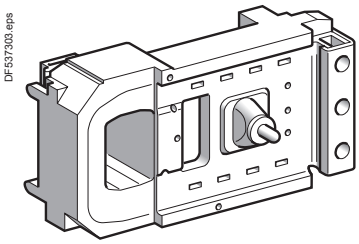
TeSys contactors
Coils for 3-pole shockproof contactors LC1 FG
Spare or replacement parts a.c. supply 50/60 Hz



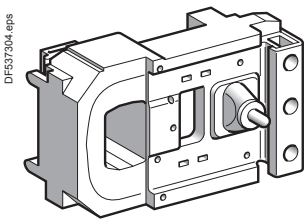
LX1 FH●●●



LX1 FJ●●●



LX1 FK●●●



LX1 FL●●●

References

Control circuit voltage Uc 50 and 60 Hz	Voltage code	Coil reference		Weight
V				kg
Coils for contactors LC1 FG265				
110/120	F7	**LX1FH1102**	(1)	0.740
208	L7	**LX1FH2002**		0.740
220/230	M7	**LX1FH2202**		0.740
240	U7	**LX1FH2402**		0.740
380/415	Q7	**LX1FH3802**		0.740

Specifications
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 600 to 700 VA
- sealed 50 or 60 Hz: 8 to 10 VA, cos φ = 0.9.

Operating cycles/hour (θ = 55 °C): 2400.

Coils for contactors LC1 FG400				
110/120	F7	**LX1FJ110**	(1)	1.000
208	L7	**LX1FJ200**		1.000
220/230	M7	**LX1FJ220**		1.000
230/240	U7	**LX1FJ240**		1.000
380/400	Q7	**LX1FJ380**		1.000
415/440	N7	**LX1FJ415**		1.000

Specifications
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1000 to 1150 VA
- sealed 50 or 60 Hz: 12 to 18 VA, cos φ = 0.9.

Operating cycles/hour (θ = 55 °C): 2400.

Coils for contactors LC1 FG500				
110/120	F7	**LX1FK110**	(1)	1.150
208	L7	**LX1FK200**		1.150
220/230	M7	**LX1FK220**		1.150
230/240	U7	**LX1FK240**		1.150
380/400	Q7	**LX1FK380**		1.150
415/440	N7	**LX1FK415**		1.150

Specifications
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1050 to 1150 VA
- sealed 50 or 60 Hz: 16 to 20 VA, cos φ = 0.9.

Operating cycles/hour (θ = 55 °C): 2400.

Coils for contactors LC1 FG630				
110/120	F7	**LX1FL110**	(1)	1.500
208	L7	**LX1FL200**		1.500
220/230	M7	**LX1FL220**		1.500
380/400	Q7	**LX1FL380**		1.500
415/440	N7	**LX1FL415**		1.500

Specifications
Average consumption at 20 °C:
- inrush 50 or 60 Hz: 1500 to 1730 VA
- sealed 50 or 60 Hz: 20 to 25 VA, cos φ = 0.9.

Operating cycles/hour (θ = 55 °C): 1200.

(1) Device approved by the DCN (French naval shipyard department) and authorised for on-board use.

Schemes:
page B9/85

TeSys contactors
Magnetic latching contactors
Accessories

TeSys FG, TeSys CR1 F

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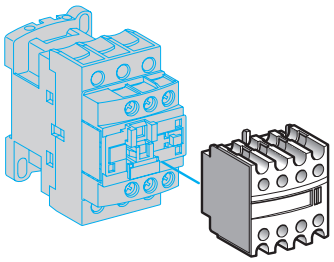

LAD N

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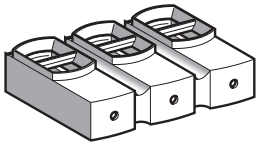

LA9 F103

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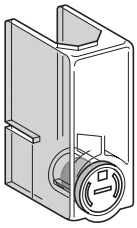

LA9 F70●

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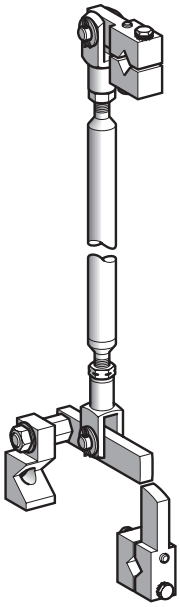


EZ2 LB0601

Accessories for contactors CR1 F

Description	Number of contacts or shrouds	For use on	Reference
Instantaneous auxiliary contacts	(1)	CR1 F	**LADN** (1)
Time delay auxiliary contacts	(1)	CR1 F	**LAD●** (1)
Contact blocks with protected terminals for 3-pole contactors (for mounting on contactors with closed arc chamber)	Set of 2 blocks	CR1 F150 and CR1 F185	**LA9F103**
Power terminal protection shrouds	Set of 6 shrouds for 3-pole contactors	CR1 F150 and CR1 F185	**LA9F702**
		CR1 F265 to CR1 F500	**LA9F703**
		CR1 F630	**LA9F704**
	Set of 8 shrouds for 4-pole contactors	CR1 F1504 and CR1 F1854	**LA9F707**
		CR1 F2654 to CR1 F5004	**LA9F708**
		CR1 F6304	**LA9F709**

Description	Application	Reference
Mechanical interlock and power connections	For assembly of reversing contactors and changeover contactor pairs	See pages B9/31 and B9/32

Accessories for contactors CR1 B

Description	Application	Reference	Weight kg
Mechanical interlock with mounting accessories (3)	For vertical assembly of reversing contactors and changeover contactor pairs	**EZ2LB0601**	1.560
Kit containing 2 bar mounting brackets	For mounting on 120 or 150 mm centres	**LA9B103**	1.620

(1) For maximum number per contactor and complete reference, see page B9/11.
(2) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

Volts	48	110	125	127	220	230	240	250	380	400	415	440	500
For contactors CR1 F													
∼ 50/60 Hz	E7	F7	–	G7	M7	M7	U7	–	Q7	Q7	N7	–	–
∼ 400 Hz	E7	F7	–	G7	M7	M7	–	–	–	–	–	–	–
⎓	E7	F7	–	G7	M7	M7	–	–	–	–	–	–	–
⎓ low consumption	EZ7	FZ7	–	GZ7	MZ7	–	–	–	–	–	–	–	–
For contactors CR1 B													
∼ 50…400 Hz	–	F	–	G	M	M	U	–	Q	V	N	R	S
⎓	–	FD	GD	–	MD	–	UD	UCD	–	–	–	RD	SD

(3) Positive mechanical interlocking between 2 vertically mounted contactors of identical or different ratings. Connecting rods and cranks assembled on right-hand sides, crank pins on the pole side.
Vertical fixing centre distance between the two contactors: 600 mm.

TeSys contactors
Magnetic latching contactors
Components for assembling reversing contactors and changeover contactor pairs CR1 F
Horizontally or vertically mounted

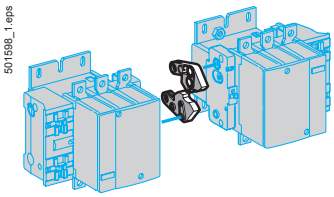
TeSys FG, TeSys CR1F

Horizontally mounted

Mechanical interlocks

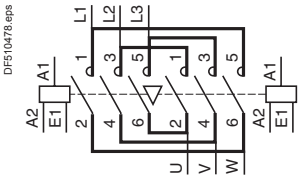
Reversers assembled using 2 contactors of identical rating, type:
CR1 F150
CR1 F185
CR1 F265
CR1 F400
CR1 F500
CR1 F630

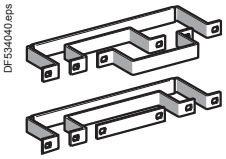
LA9 F●970



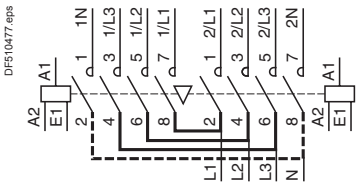
Sets of power connections

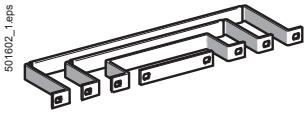
Reversing contactors
LA9 F●976





3 or 4-pole changeover contactor pairs
LA9 F●977 or LA9 F●982



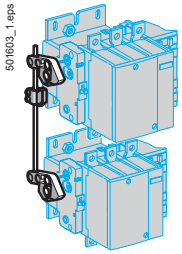


Vertically mounted

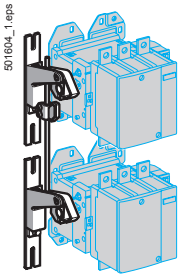
Mechanical interlocks

Reversers assembled using 2 contactors of identical rating, type:
CR1 F150
CR1 F185
CR1 F265
CR1 F400
CR1 F500
CR1 F630

LA9 FF4F Assembly A
LA9 FG4G

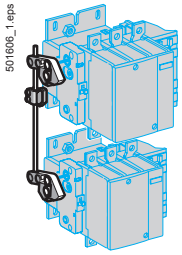


LA9 FH4H Assembly C
LA9 FJ4J
LA9 FK4K
LA9 FL4L

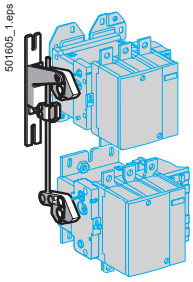


Reversers assembled using 2 contactors of different ratings, type:
CR1 F150
CR1 F185
CR1 F265
CR1 F400
CR1 F500
CR1 F630

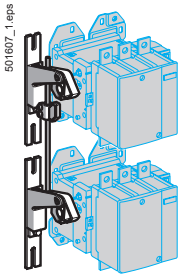
LA9 FG4F Assembly A



LA9 FH4F Assembly B
LA9 FJ4F
LA9 FK4F
LA9 FL4F
LA9 FH4G
LA9 FJ4G
LA9 FK4G
LA9 FL4G

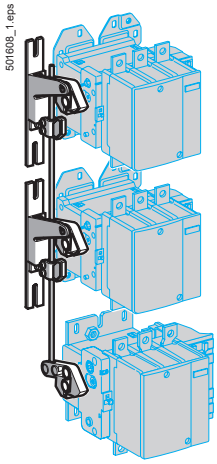


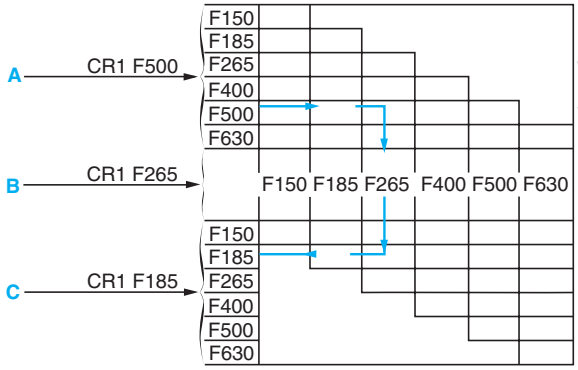
LA9 FJ4H Assembly C
LA9 FK4H
LA9 FL4H
LA9 FK4J
LA9 FL4J
LA9 FK4K



Reversers assembled using 3 contactors of identical or different ratings

LA9 F●4●4●





Warning: the contactor ratings must be in decreasing size from top to bottom.

TeSys contactors

Magnetic latching contactors

Components for assembling reversing contactors and changeover contactor pairs

CR1 F

Reversers assembled using 2 contactors of identical rating

For assembly of 3-pole reversing contactors for motor control (1)

Contactor type	Set of power connections			Mechanical interlock	
	3-pole Reference	4-pole Reference	Weight kg	Kit reference	Weight kg
Horizontally mounted					
CR1 F150	**LA9FF976**	–	0.600	**LA9FF970**	0.060
CR1 F185	**LA9FG976**	–	0.780	**LA9FG970**	0.060
CR1 F265	**LA9FH976**	–	1.500	**LA9FJ970**	0.140
CR1 F400	**LA9FJ976**	–	2.100	**LA9FJ970**	0.140
CR1 F500	**LA9FK976**	–	2.350	**LA9FJ970**	0.140
CR1 F630	**LA9FL976**	–	3.800	**LA9FL970**	0.150
Vertically mounted					
CR1 F150	(2)	–	–	**LA9FF4F**	0.345
CR1 F185	(2)	–	–	**LA9FG4G**	0.350
CR1 F265	(2)	–	–	**LA9FH4H**	1.060
CR1 F400	(2)	–	–	**LA9FJ4J**	1.200
CR1 F500	(2)	–	–	**LA9FK4K**	1.200
CR1 F630	(2)	–	–	**LA9FL4L**	1.220

For assembly of 4-pole changeover contactor pairs

Horizontally mounted					
CR1 F1504	**LA9FF982**	**LA9FF977**	0.460	**LA9FF970**	0.060
CR1 F1854	**LA9FG982**	**LA9FG977**	0.610	**LA9FG970**	0.060
CR1 F2654	**LA9FH982**	**LA9FH977**	1.200	**LA9FJ970**	0.140
CR1 F4004	**LA9FJ982**	**LA9FJ977**	1.800	**LA9FJ970**	0.140
CR1 F5004	**LA9FK982**	**LA9FK977**	2.300	**LA9FJ970**	0.140
CR1 F6304	**LA9FL982**	**LA9FL977**	3.400	**LA9FL970**	0.150
Vertically mounted					
CR1 F1504	(2)	–	–	**LA9FF4F**	0.345
CR1 F1854	(2)	–	–	**LA9FG4G**	0.350
CR1 F2654	(2)	–	–	**LA9FH4H**	1.060
CR1 F4004	(2)	–	–	**LA9FJ4J**	1.200
CR1 F5004	(2)	–	–	**LA9FK4K**	1.200
CR1 F6304	(2)	–	–	**LA9FL4L**	1.220

Reversers assembled using 2 contactors of different ratings

For assembly of 3 or 4-pole changeover contactor pairs

Contactor type		Mechanical interlock	
At bottom	At top	Kit reference	Weight kg
Vertically mounted (3)			
CR1 F150 or F1504	CR1 F185 or F1854	**LA9FG4F**	0.350
	CR1 F265 or F2654	**LA9FH4F**	0.870
	CR1 F400 or F4004	**LA9FJ4F**	0.930
	CR1 F500 or F5004	**LA9FK4F**	0.940
	CR1 F630 or F6304	**LA9FL4F**	0.940
CR1 F185 or F1854	CR1 F265 or F2654	**LA9FH4G**	0.860
	CR1 F400 or F4004	**LA9FJ4G**	0.940
	CR1 F500 or F5004	**LA9FK4G**	0.940
	CR1 F630 or F6304	**LA9FL4G**	0.950
CR1 F265 or F2654	CR1 F400 or F4004	**LA9FJ4H**	1.130
	CR1 F500 or F5004	**LA9FK4H**	1.130
	CR1 F630 or F6304	**LA9FL4H**	1.140
CR1 F400 or F4004	CR1 F500 or F5004	**LA9FK4J**	1.200
	CR1 F630 or F6304	**LA9FL4J**	1.210
CR1 F500 or F5004	CR1 F630 or F6304	**LA9FL4K**	1.210

For assembly of 3 or 4-pole reversing contactors

Using 3 contactors (vertically mounted) of identical or different ratings	Mechanical interlock
	Kit reference (4)
The contactor ratings must be in decreasing size from top to bottom.	**LA9F●4●4●**

(1) A 3-pole reversing contactor for motor control can be converted into a 3-pole changeover contactor pair by removing the upper connecting links.
(2) All power connections are to be made by the customer.
(3) With identical or different number of poles. Power connections to be made by the customer.
(4) Complete the reference by replacing the first dot with the code for the upper contactor, the second dot with the code for the middle contactor and the third dot with the code for the bottom contactor.

Contactors	CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630
Code	F	G	H	J	K	L

Example: mechanical interlock for reversing contactor made up of 3 different contactors: CR1 F500 top, CR1 F26 middle and CR1 F185 bottom: **LA9 FK4H4G**.

Illustrations: page B9/31

Dimensions: pages B9/96 to B9/99

TeSys contactors

Magnetic latching contactors

Accessories and replacement parts for contactors CR1 F

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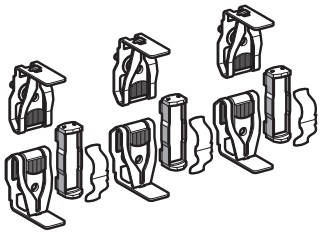

LA5 FG431

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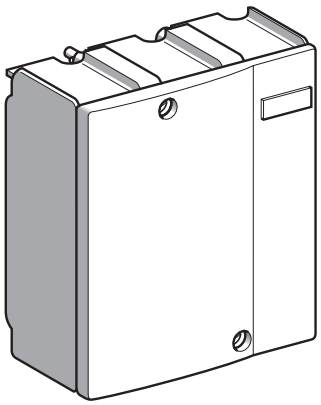

LA5 F40050

References

Description	For contactor		Reference	Weight kg
Complete sets of contacts for 3 or 4 poles (1)	3-pole	CR1 F150	**LA5FF431**	0.270
		CR1 F185	**LA5FG431**	0.350
		CR1 F265	**LA5FH431**	0.660
		CR1 F400	**LA5F400803**	0.660
		CR1 F500	**LA5F500803**	0.660
		CR1 F630	**LA5F630803**	0.660
	4-pole	CR1 F1504	**LA5FF441**	0.360
		CR1 F1854	**LA5FG441**	0.465
		CR1 F2654	**LA5FH441**	0.880
		CR1 F4004	**LA5F400804**	0.465
		CR1 F5004	**LA5F500804**	0.465
		CR1 F6304	**LA5F630804**	0.465
Arc chambers	3-pole	CR1 F150	**LA5F15050**	0.490
		CR1 F185	**LA5F18550**	0.670
		CR1 F265	**LA5F26550**	0.920
		CR1 F400	**LA5F40050**	1.300
		CR1 F500	**LA5F50050**	1.850
		CR1 F630	**LA5F63050**	3.150
	4-pole	CR1 F1504	**LA5F150450**	0.660
		CR1 F1854	**LA5F185450**	0.910
		CR1 F2654	**LA5F265450**	1.220
		CR1 F4004	**LA5F400450**	1.740
		CR1 F5004	**LA5F500450**	2.500
		CR1 F6304	**LA5F630450**	4.200

(1) Set containing the following (per pole): 2 fixed contacts, 1 moving contact , 2 deflectors, 1 back-plate, clamping screws and washers.

TeSys contactors

Magnetic latching contactors

Coils for contactors CR1 F

TeSys FG, TeSys CR1F

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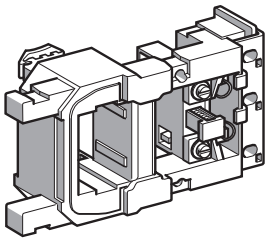

LX0 FF009

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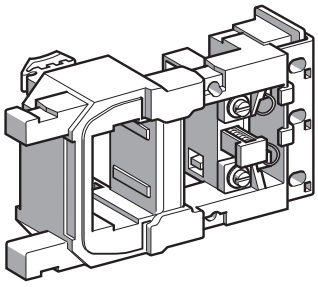

LX0 FH009

Standard coils

Usual voltages		Resistance of winding at θ = 20 °C		Reference	Voltage code	Weight
50…400 Hz or ⎓	50 Hz, 60 Hz	Latching	Unlatching			
V	V	Ω	Ω			kg
For contactors CR1 F150						
48	–	1.98	230.8	**LX0FF005**	E7	0.440
110	–	9.35	1453	**LX0FF006**	F7	0.440
127	–	11.61	1788	**LX0FF007**	G7	0.440
208	–	23.50	4098	**LX0FF020**	L7	0.440
220/230	–	37.55	5139	**LX0FF008**	M7	0.440
–	240	45.16	6544	**LX0FF009**	U7	0.440
–	380/400	114.10	12 447	**LX0FF010**	Q7	0.440
–	415	139.50	16 717	**LX0FF011**	N7	0.440
For contactors CR1 F185						
48	–	1.42	220	**LX0FG005**	E7	0.560
110	–	6.92	1339	**LX0FG006**	F7	0.560
127	–	8.45	1676	**LX0FG007**	G7	0.560
208	–	21.30	3169	**LX0FG020**	L7	0.560
220/230	–	26.27	4729	**LX0FG008**	M7	0.560
–	240	32.95	4729	**LX0FG009**	U7	0.560
–	380/400	82.29	11 885	**LX0FG010**	Q7	0.560
–	415	102.30	14 305	**LX0FG011**	N7	0.560
For contactors CR1 F265						
48	–	1.34	183.4	**LX0FH005**	E7	0.780
110	–	6.90	1031	**LX0FH006**	F7	0.780
127	–	8.56	1325	**LX0FH007**	G7	0.780
208	–	20.20	2654	**LX0FH020**	L7	0.780
220/230	–	25.77	4090	**LX0FH008**	M7	0.780
–	240	33.03	5002	**LX0FH009**	U7	0.780
–	380/400	78.39	11 803	**LX0FH010**	Q7	0.780
–	415	102.9	15 006	**LX0FH011**	N7	0.780
For contactors CR1 F400						
48	–	1.32	90.5	**LX0FJ005**	E7	1.120
110	–	8.09	813	**LX0FJ006**	F7	1.120
127	–	9.79	1027	**LX0FJ007**	G7	1.120
208	–	24.40	2643	**LX0FJ020**	L7	1.120
220/230	–	30.14	3309	**LX0FJ008**	M7	1.120
–	240	37.02	4074	**LX0FJ009**	U7	1.120
–	380/400	94.80	9380	**LX0FJ010**	Q7	1.120
–	415	121.10	11 763	**LX0FJ011**	N7	1.120
For contactors CR1 F500						
48	–	1.57	166	**LX0FK005**	E7	1.220
110	–	7.53	916	**LX0FK006**	F7	1.220
127	–	9.56	1159	**LX0FK007**	G7	1.220
208	–	23.60	2981	**LX0FK020**	L7	1.220
220/230	–	28.81	3733	**LX0FK008**	M7	1.220
–	240	35.67	4595	**LX0FK009**	U7	1.220
–	380/400	89.56	10 570	**LX0FK010**	Q7	1.220
–	415	112.06	13 256	**LX0FK011**	N7	1.220
For contactors CR1 F630						
48	–	0.87	204	**LX0FL005**	E7	1.460
110	–	5.20	1423	**LX0FL006**	F7	1.460
127	–	6.45	1830	**LX0FL007**	G7	1.460
208	–	20.20	2961	**LX0FL020**	L7	1.460
220/230	–	25.36	4603	**LX0FL008**	M7	1.460
–	240	25.36	5658	**LX0FL009**	U7	1.460
–	380/400	60.95	10 676	**LX0FL010**	Q7	1.460
–	415	77.97	13 003	**LX0FL011**	N7	1.460

TeSys contactors

Magnetic latching contactors

Coils for contactors CR1 F

TeSys FG, TeSys CR1F

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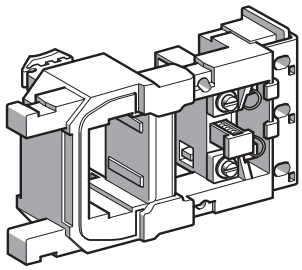


LX0 FF030

Special coils

Coils with two windings with common point, allowing the use of two separate power sources for latching and unlatching.

Coil voltages at 50 Hz, 60 Hz, 400 Hz or ⎓		Resistance of winding at θ = 20 °C		Reference	Voltage code	Weight
Latching	Unlatching	Latching	Unlatching			
V	V	Ω	Ω			kg
For contactors CR1 F150						
220	24	29.5	39.5	**LX0FF224**	MB7	0.440
For contactors CR1 F185						
220	24	26.5	19	**LX0FG224**	MB7	0.560
For contactors CR1 F265						
220	24	26	29.5	**LX0FH224**	MB7	0.780
For contactors CR1 F400						
220	24	30	23	**LX0FJ224**	MB7	1.120
For contactors CR1 F500						
220	24	29	26	**LX0FK224**	MB7	1.220
For contactors CR1 F630						
220	24	26	41	**LX0FL224**	MB7	1.460

Coils with low inrush consumption

Usual voltages ⎓	Resistance of winding at θ = 20 °C		Reference	Voltage code	Weight
	Latching	Unlatching			
V	Ω	Ω			kg
For contactors CR1 F150					
48	4.56	140.56	**LX0FF055**	EZ7	0.440
110	22.37	706.44	**LX0FF056**	FZ7	0.440
127	35.54	1086.36	**LX0FF057**	GZ7	0.440
220	89.85	3342.51	**LX0FF058**	MZ7	0.440
For contactors CR1 F185					
48	5.19	106.54	**LX0FG055**	EZ7	0.570
110	25.50	536.26	**LX0FG056**	FZ7	0.570
127	32.75	732.64	**LX0FG057**	GZ7	0.570
220	102.44	2378.62	**LX0FG058**	MZ7	0.570
For contactors CR1 F265					
48	5.19	74.26	**LX0FH055**	EZ7	0.800
110	25	364.61	**LX0FH056**	FZ7	0.800
127	30.98	458.45	**LX0FH057**	GZ7	0.800
220	97.89	1344.46	**LX0FH058**	MZ7	0.800
For contactors CR1 F400					
48	5.05	36.36	**LX0FJ055**	EZ7	1.150
110	25.39	171.49	**LX0FJ056**	FZ7	1.150
127	31.86	221.20	**LX0FJ057**	GZ7	1.150
220	98.19	648.79	**LX0FJ058**	MZ7	1.150
For contactors CR1 F500					
48	4.42	41	**LX0FK055**	EZ7	1.270
110	22.74	193.36	**LX0FK056**	FZ7	1.270
127	28.25	313.60	**LX0FK057**	GZ7	1.270
220	85.12	918.68	**LX0FK058**	MZ7	1.270
For contactors CR1 F630					
48	3.94	59.17	**LX0FL055**	EZ7	1.500
110	19.36	365.33	**LX0FL056**	FZ7	1.500
127	25.39	452.27	**LX0FL057**	GZ7	1.500
220	74.44	1071.43	**LX0FL058**	MZ7	1.500

TeSys contactors

TeSys F reversing contactors and changeover contactor pairs

Components for assembling 3-pole reversing contactors and changeover contactor pairs, for customer assembly

TeSys LA9F

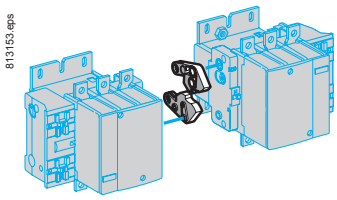
Horizontally mounted

Reversers assembled using 2 contactors of identical rating, type :

LC1 F115
LC1 F150
LC1 F185
LC1 F225
LC1 F265
LC1 F330
LC1 F400
LC1 F500
LC1 F630
LC1 F800

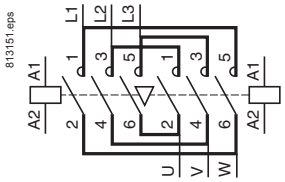
Mechanical interlocks

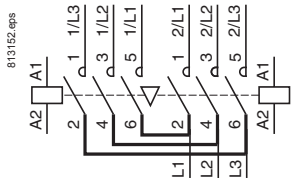
LA9 F●970 (2)

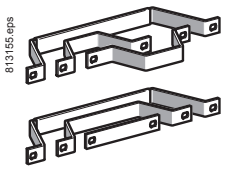


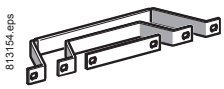
Sets of power connections

Reversing contactors	3-pole changeover contactor pairs (1)
LA9 F●●●76 (2)	**LA9 F●●●82** (2)









Vertically mounted

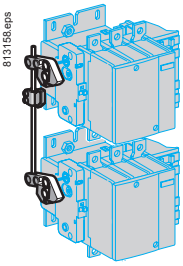
Reversers assembled using 2 contactors of identical rating, type :

LC1 F115
LC1 F150
LC1 F185
LC1 F225
LC1 F265
LC1 F330
LC1 F400
LC1 F500
LC1 F630
LC1 F800

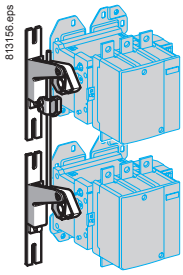
Reversers assembled using 2 contactors of different ratings, see page B9/38

Mechanical interlocks

LA9 FF4F
LA9 FG4G

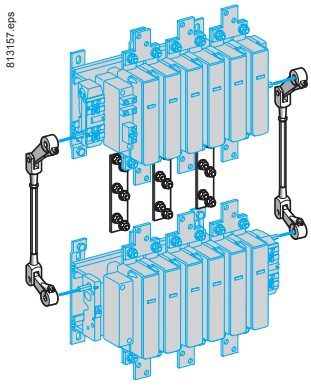


LA9 FH4H
LA9 FJ4J
LA9 FK4K
LA9 FL4L



LC1 F780

LA9 FX970



(1) For 4-pole changeover contactor pairs, see pages B9/38 and B9/39.
(2) Complete references: see page B9/37.

TeSys contactors

TeSys F reversing contactors and changeover contactor pairs

Control circuit: a.c. or d.c.

Reversers assembled using 2 contactors of identical rating

Contactor type [1]	Set of power connections		Mechanical interlock	
	Reference	Weight kg	Kit reference	Weight kg
For assembly of 3-pole reversing contactors for motor control				
Horizontally mounted				
LC1 F115	**LA9FF976**	0.600	**LA9FF970**	0.060
LC1 F150	**LA9F15076**	0.600	**LA9FF970**	0.060
LC1 F185	**LA9FG976**	0.780	**LA9FG970**	0.060
LC1 F225	**LA9F22576**	1.500	**LA9FG970**	0.060
LC1 F265	**LA9FH976**	1.500	**LA9FJ970**	0.140
LC1 F330	**LA9FJ976**	2.100	**LA9FJ970**	0.140
LC1 F400	**LA9FJ976**	2.100	**LA9FJ970**	0.140
LC1 F500	**LA9FK976**	2.350	**LA9FJ970**	0.140
LC1 F630 or F800	**LA9FL976**	3.800	**LA9FL970**	0.150
Vertically mounted				
LC1 F115 or F150	[2]	–	**LA9FF4F**	0.345
LC1 F185	[2]	–	**LA9FG4G**	0.350
LC1 F225	[2]	–	**LA9FG4G**	0.350
LC1 F265 or F330	[2]	–	**LA9FH4H**	1.060
LC1 F400	[2]	–	**LA9FJ4J**	1.200
LC1 F500	[2]	–	**LA9FK4K**	1.200
LC1 F630 or F800	[2]	–	**LA9FL4L**	1.220
LC1 F780	[3]	–	**LA9FX970** [3]	6.100

For assembly of 3-pole changeover contactor pairs [4]

Horizontally mounted				
LC1 F115	**LA9FF982**	0.460	**LA9FF970**	0.060
LC1 F150	**LA9F15082**	0.460	**LA9FF970**	0.060
LC1 F185	**LA9FG982**	0.610	**LA9FG970**	0.060
LC1 F225	**LA9F22582**	1.200	**LA9FG970**	0.060
LC1 F265	**LA9FH982**	1.200	**LA9FJ970**	0.140
LC1 F330	**LA9FJ982**	1.800	**LA9FJ970**	0.140
LC1 F400	**LA9FJ982**	1.800	**LA9FJ970**	0.140
LC1 F500	**LA9FK982**	2.300	**LA9FJ970**	0.140
LC1 F630 or F800	**LA9FL982**	3.400	**LA9FL970**	0.150
Vertically mounted				
LC1 F115 or F150	[2]	–	**LA9FF4F**	0.345
LC1 F185	[2]	–	**LA9FG4G**	0.350
LC1 F225	[2]	–	**LA9FG4G**	0.350
LC1 F265 or F330	[2]	–	**LA9FH4H**	1.060
LC1 F400	[2]	–	**LA9FJ4J**	1.200
LC1 F500	[2]	–	**LA9FK4K**	1.200
LC1 F630 or F800	[2]	–	**LA9FL4L**	1.220
LC1 F780	[3]	–	**LA9FX970** [3]	7.800

*(1) To order the 2 contactors: see pages B9/2 and B9/3. For the 2 auxiliary contact blocks **LAD N●1** required to obtain electrical interlocking between the 2 contactors, see page B9/11. For accessories, see pages B9/12 to B9/14.*

*(2) With the exception of contactors **LC1 F780**, all power connections are to be made by the customer.*

(3) Double mechanical interlock mechanism with 2 interlock connecting rods and 3 power connecting links.

(4) For assembly of 4-pole changeover contactor pairs, see pages B9/38 and B9/39.

Selection : pages B10/50 to B10/73
Dimensions: pages B9/100 to B9/102
Schemes: page B9/103

TeSys contactors

TeSys F changeover contactor pairs

Components for assembling 3 and 4-pole changeover contactor pairs, for customer assembly

TeSys LA9F

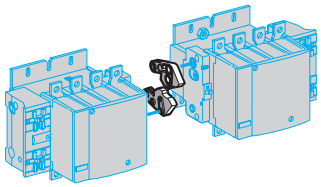
Horizontally mounted

Contactor pairs assembled using 2 contactors of identical rating, type :
LC1 F1154
LC1 F1504
LC1 F1854
LC1 F2254
LC1 F2654
LC1 F3304
LC1 F4004
LC1 F5004
LC1 F6304

Mechanical interlocks

LA9 F●970

813167.eps

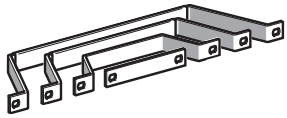


Sets of power connections

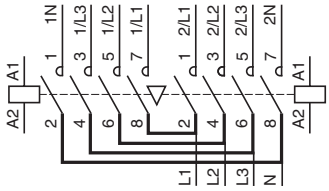
4-pole changeover contactor pairs (1)

LA9 F●●●77

813168.eps



813166.eps



Vertically mounted

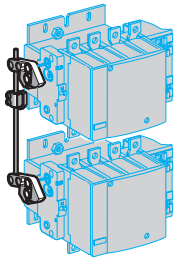
Contactor pairs assembled using 2 contactors of identical rating, type :
LC1 F1154
LC1 F1504
LC1 F1854
LC1 F2254
LC1 F2654
LC1 F3304
LC1 F4004
LC1 F5004
LC1 F6304

Mechanical interlocks

Assembly A

LA9 FF4F
LA9 FG4G

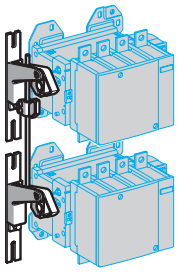
813160.eps



Assembly B

LA9 FH4H
LA9 FJ4J
LA9 FK4K
LA9 FL4L

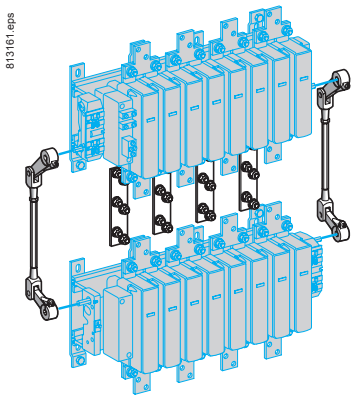
813159.eps



Assembly C

LA9 FX971

813161.eps

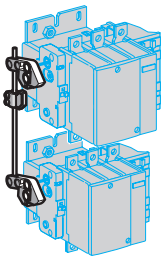


Contactor pairs assembled using 2 contactors of different ratings, type :
LC1 F115 or **F1154**
LC1 F150 or **F1504**
LC1 F185 or **F1854**
LC1 F225 or **F2254**
LC1 F265 or **F2654**
LC1 F330 or **F3304**
LC1 F400 or **F4004**
LC1 F500 or **F5004**
LC1 F630 or **F6304**
LC1 F800

Assembly A

LA9 FG4F

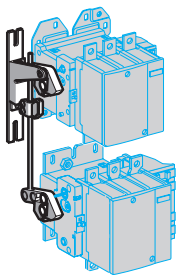
813163.eps



Assembly B

LA9 FH4F, LA9 FH4G
LA9 FJ4F, LA9 FJ4G
LA9 FK4F, LA9 FK4G
LA9 FL4F, LA9 FL4G

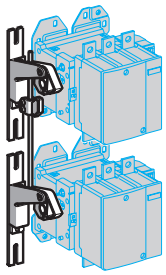
813165.eps



Assembly C

LA9 FJ4H
LA9 FK4H, LA9 FK4J
LA9 FL4H, LA9 FL4J and LA9 FL4K

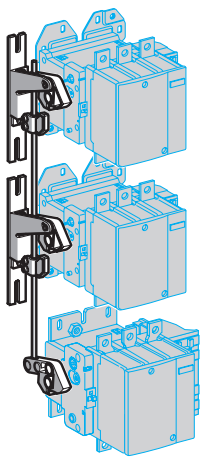
813162.eps



Contactor pairs assembled using 3 contactors of identical or different ratings, type :
LC1 F115 or **F1154**
LC1 F150 or **F1504**
LC1 F185 or **F1854**
LC1 F225 or **F2254**
LC1 F265 or **F2654**
LC1 F330 or **F3304**
LC1 F400 or **F4004**
LC1 F500 or **F5004**
LC1 F630 or **F6304**
LC1 F800

LA9 F●4●4● : see pages B9/40 and B9/41.

813164.eps



Important: the contactor ratings must be in decreasing size from top to bottom.

(1) For 3-pole changeover contactor pairs, see pages B9/36 and B9/37.

TeSys contactors

TeSys F changeover contactor pairs

Components for assembling 3 and 4-pole changeover contactor pairs, for customer assembly

Contactor pairs assembled using 2 contactors of identical rating

For assembly of 4-pole changeover contactor pairs (1)

Contactor type (2)	Set of power connections		Mechanical interlock	
	Reference	Weight kg	Kit reference	Weight kg
Horizontally mounted				
LC1 F1154	**LA9FF977**	0.460	**LA9FF970**	0.060
LC1 F1504	**LA9F15077**	0.460	**LA9FF970**	0.060
LC1 F1854	**LA9FG977**	0.610	**LA9FG970**	0.060
LC1 F2254	**LA9F22577**	1.200	**LA9FG970**	0.060
LC1 F2654	**LA9FH977**	1.200	**LA9FJ970**	0.140
LC1 F3304	**LA9FJ977**	1.800	**LA9FJ970**	0.140
LC1 F4004	**LA9FJ977**	1.800	**LA9FJ970**	0.140
LC1 F5004	**LA9FK977**	2.300	**LA9FJ970**	0.140
LC1 F6304	**LA9FL977**	3.400	**LA9FL970**	0.150
Vertically mounted				
LC1 F1154 or F1504	(3)	–	**LA9FF4F**	0.345
LC1 F1854	(3)	–	**LA9FG4G**	0.350
LC1 F2254	(3)	–	**LA9FG4G**	0.350
LC1 F2654 or F3304	(3)	–	**LA9FH4H**	1.060
LC1 F4004	(3)	–	**LA9FJ4J**	1.200
LC1 F5004	(3)	–	**LA9FK4K**	1.200
LC1 F6304	(3)	–	**LA9FL4L**	1.220
LC1 F7804	(4)	–	**LA9FX971** (4)	7.800

Contactor pairs assembled using 2 contactors of different ratings

For assembly of 3 or 4-pole changeover contactor pairs

Contactor type (1)		Mechanical interlock	
At bottom	At top	Kit reference	Weight kg
Vertically mounted			
LC1 F115 or F1154 or LC1 F150 or F1504	LC1 F185 or F1854	**LA9FG4F**	0.350
	LC1 F225 or F2254	**LA9FG4F**	0.350
	LC1 F265 or F2654	**LA9FH4F**	0.870
	LC1 F330 or F3304	**LA9FH4F**	0.870
	LC1 F400 or F4004	**LA9FJ4F**	0.930
	LC1 F500 or F5004	**LA9FK4F**	0.940
	LC1 F630, F6304 or F800	**LA9FL4F**	0.940
LC1 F185 or F1854 or LC1 F225 or F2254	LC1 F265 or F2654	**LA9FH4G**	0.860
	LC1 F330 or F3304	**LA9FH4G**	0.860
	LC1 F400 or F4004	**LA9FJ4G**	0.940
	LC1 F500 or F5004	**LA9FK4G**	0.940
	LC1 F630, F6304 or F800	**LA9FL4G**	0.950
LC1 F265 or F2654 or LC1 F330 or F3304	LC1 F400 or F4004	**LA9FJ4H**	1.130
	LC1 F500 or F5004	**LA9FK4H**	1.130
	LC1 F630, F6304 or F800	**LA9FL4H**	1.140
LC1 F400 or F4004	LC1 F500 or F5004	**LA9FK4J**	1.200
	LC1 F630 or F6304 or F800	**LA9FL4J**	1.210
LC1 F500 or F5004	LC1 F630 or F6304 or F800	**LA9FL4K**	1.210

For assembly of reversers using 3 contactors, vertically mounted

See pages B9/40 and B9/41.

(1) For assembly of 3-pole changeover contactor pairs, see pages B9/36 and B9/38.
(2) To order the 2 contactors: see pages B9/2 and B9/3. For the 2 auxiliary contact blocks ***LAD N●1*** *required to obtain electrical interlocking between the 2 contactors, see page B9/11. For accessories, see pages B9/12 to B9/14.*
(3) All power connections are to be made by the customer.
(4) Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links.

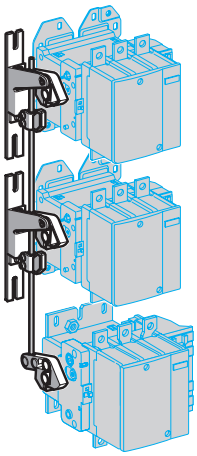
TeSys contactors

TeSys F contactors

Accessories for assembly of reversing contactors and changeover contactor pairs using 3 contactors, vertically mounted - for customer assembly

TeSys LA9F

813215.eps



LA9 F●4●4●

Closing of one of the 3 contactors prevents closing of the other 2.

Mechanical interlock kits

Contactor type (1)			Mechanical interlock (2)	
Top	Middle	Bottom	Kit reference (3)	Weight kg
LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FF4F4F**	0.554
LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FG4F4F**	0.559
	LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	**LA9FG4G4F**	0.559
		LC1 F185, F225, F1854 or F2254	**LA9FG4G4G**	0.562
LC1 F265, F330, F2654 or F3304	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FH4F4F**	1.350
	LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	**LA9FH4G4F**	1.375
		LC1 F185, F225, F1854 or F2254	**LA9FH4G4G**	1.375
	LC1 F265, F330, F2654 or F3304	LC1 F115, F150, F1154 or F1504	**LA9FH4H4F**	1.524
		LC1 F185, F225, F1854 or F2254	**LA9FH4H4G**	1.527
		LC1 F265, F330, F2654 or F3304	**LA9FH4H4H**	1.684
LC1 F400, F4002 or F4004	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FJ4F4F**	1.421
	LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	**LA9FJ4G4F**	1.424
		LC1 F185, F225, F1854 or F2254	**LA9FJ4G4G**	1.428
	LC1 F265, F330, F2654 or F3304	LC1 F115, F150, F1154 or F1504	**LA9FJ4H4F**	1.595
		LC1 F185, F225, F1854 or F2254	**LA9FJ4H4G**	1.598
		LC1 F265, F330, F2654 or F3304	**LA9FJ4H4H**	1.755
	LC1 F400, F4002 or F4004	LC1 F115, F150, F1154 or F1504	**LA9FJ4J4F**	1.666
		LC1 F185, F225, F1854 or F2254	**LA9FJ4J4G**	1.669
		LC1 F265, F330, F2654 or F3304	**LA9FJ4J4H**	1.829
		LC1-F400, F4002 or F4004	**LA9FJ4J4J**	1.890
LC1 F500, F5002 or F5004 (continued on page B9/41)	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FK4F4F**	1.421
	LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	**LA9FK4G4F**	1.424
		LC1 F185, F225, F1854 or F2254	**LA9FK4G4G**	1.428
	LC1 F265, F330, F2654 or F3304	LC1 F115, F150, F1154 or F1504	**LA9FK4H4F**	1.595
		LC1 F185, F225, F1854 or F2254	**LA9FK4H4G**	1.598
		LC1 F265, F330, F2654 or F3304	**LA9FK4H4H**	1.755
	LC1 F400, F4002 or F4004	LC1 F115, F150, F1154 or F1504	**LA9FK4J4F**	1.666
		LC1 F185, F225, F2654 or F3304	**LA9FK4J4G**	1.669
		LC1 F265, F330, F2654 or F3304	**LA9FK4J4H**	1.829
		LC1 F400, F4002 or F4004	**LA9FK4J4J**	1.896
	LC1 F500, F5002 or F5004	LC1 F115, F150, F1154 or F1504	**LA9FK4K4F**	1.666

*(1) To order the 3 contactors, see pages B9/36 and B9/38. For auxiliary contact blocks **LAD N02** used for electrical locking, see page B9/11. For accessories, see pages B9/12 to B9/14.*
(2) Minimum distances between contactors, see page B9/41.
(3) The kit contains the lever arms, the 2 x Ø8 mm rods and all parts required for assembly.

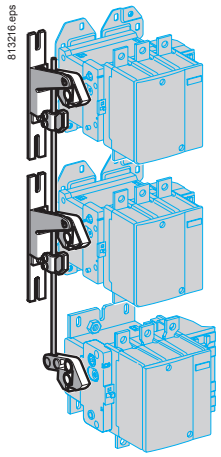
Selection:
pages B10/50 to B10/73

TeSys contactors

TeSys F contactors

Accessories for assembly of reversing contactors and changeover contactor pairs using 3 contactors, vertically mounted - for customer assembly

TeSys LA9F



LA9 F●4●4●

Mechanical interlock kits (continued)

Contactor type (1)			Mechanical interlock (2)	
Top	Middle	Bottom	Kit reference (3)	Weight kg
LC1 F500, F5002 or F5004 *(continued)*	LC1 F500, F5002 or F5004	LC1 F185, F225, F1854 or F2254	**LA9FK4K4G**	1.669
		LC1 F265, F330, F2654 or F3304	**LA9FK4K4H**	1.825
		LC1 F400, F4002 or F4004	**LA9FK4K4J**	1.896
		LC1-F500, F5002 or F5004	**LA9FK4K4K**	1.896
LC1 F630, F800, F6302 or F6304	LC1 F115, F150, F1154 or F1504	LC1 F115, F150, F1154 or F1504	**LA9FL4F4F**	1.428
	LC1 F185, F225, F1854 or F2254	LC1 F115, F150, F1154 or F1504	**LA9FL4G4F**	1.431
		LC1 F185, F225, F1854 or F2254	**LA9FL4G4G**	1.436
	LC1 F265, F330, F2654 or F3304	LC1 F115, F150, F1154 or F1504	**LA9FL4H4F**	1.602
		LC1 F185, F225, F1854 or F2254	**LA9FL4H4G**	1.606
		LC1 F265, F330, F2654 or F3304	**LA9FL4H4H**	1.751
	LC1 F400, F4002 or F4004	LC1 F115, F150, F1154 or F1504	**LA9FL4J4F**	1.673
		LC1 F185, F225, F1854 or F2254	**LA9FL4J4G**	1.676
		LC1 F265, F330, F2654 or F3304	**LA9FL4J4H**	1.832
		LC1 F400, F4002 or F4004	**LA9FL4J4J**	1.903
	LC1-F500, F5002 or F5004	LC1 F115, F150, F1154 or F1504	**LA9FK4K4F**	1.666
		LC1 F185, F225, F1854 or F2254	**LA9FK4K4G**	1.669
		LC1 F265, F330, F2654 or F3304	**LA9FK4K4H**	1.825
		LC1 F400, F4002 or F4004	**LA9FK4K4J**	1.896
		LC1-F500, F5002 or F5004	**LA9FK4K4K**	1.896
	LC1 F630, F800, F6302 or F6304	LC1 F115, F150, F1154 or F1504	**LA9FL4L4F**	1.680
		LC1 F185, F225, F1854 or F2254	**LA9FL4L4G**	1.683
		LC1 F265, F330, F2654 or F3304	**LA9FL4L4H**	1.910
		LC1 F400, F4002 or F4004	**LA9FL4L4J**	1.896
		LC1 F500, F5002 or F5004	**LA9FL4L4K**	1.896
		LC1 F630, F800, F6302, or F6304	**LA9FL4L4L**	1.920

*(1) To order the 3 contactors, see pages B9/36 and B9/38. For auxiliary contact blocks **LAD N02** used for electrical locking, see page B9/11. For accessories, see pages B9/12 to B9/14.*

(2) Minimum distances between contactors.
This is the distance, in mm, between the centres of two adjacent contactors (between the top and middle contactors or between the middle and bottom contactors).

Contactor

Bottom or top	Middle					
	LC1 F115 or F150	LC1 F185 or F225	LC1 F265 or F330	LC1 F400	LC1 F500	LC1 F630 or F800
LC1 F115 or F150	200	210	240	250	270	320
LC1 F185 or F225	210	220	250	250	270	330
LC1 F265 or F330	240	250	250	260	280	350
LC1 F400	250	250	260	260	280	320
LC1 F500	270	270	280	280	300	340
LC1 F630 or F800	320	330	350	320	340	380

(3) The kit contains the lever arms, the 2 x Ø8 mm rods and all parts required for assembly.

High power contactors

Selection:
pages B10/50 to B10/73

TeSys contactors

High power changeover contactor pairs for distribution

Control circuit: a.c. or d.c.

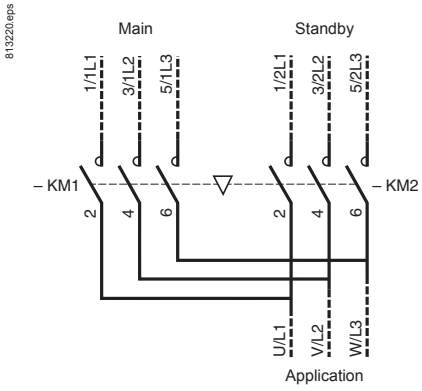
General

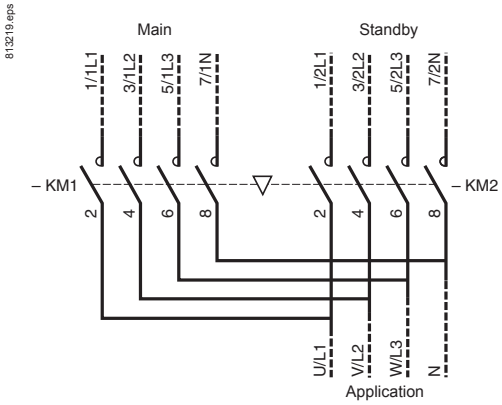
A changeover contactor pair ensures continuity of operation of an installation and energy management.

It switches between:
- a power supply source M (main) which normally supplies the installation
- and a power supply source S (standby) which may be an incoming line from an additional network or a generating set.

The supply sources may be 3-phase or 3-phase + neutral.

Supply - 3-phase





The 2 contactors must be mechanically and electrically interlocked to prevent any paralleling, even transitory, of the two supplies.

Dimensions:
pages B9/104 and B9/105

Schemes:
page B9/105

TeSys contactors

High power changeover contactor pairs for distribution

Control circuit: a.c. or d.c.

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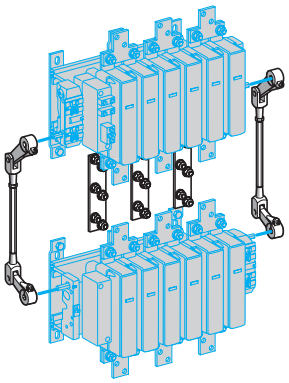

LA9 FX970

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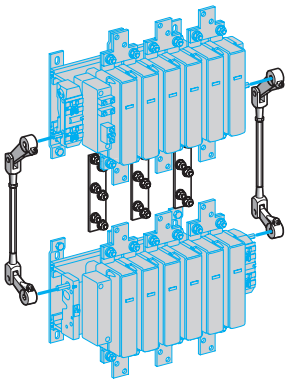


LA9 FX971

Changeover contactor pairs for customer assembly: 3-phase

Vertically mounted.
Maximum operational voltage: 1000 V.
Utilisation category: AC-1.
Maximum temperature in the vicinity of the devices: 40 °C.

Maximum operational current		Contactors (1)		Mechanical interlock (2)
Main	Standby	Main	Standby	
3-phase	3-phase	Reference	Reference	Reference
1600 A	1000 A	**LC1F780**	**LC1F6309**	**LA9FX970**
1600 A	1600 A	**LC1F780**	**LC1F780**	**LA9FX970**

Changeover contactor pairs for customer assembly: 3-phase + neutral

Vertically mounted.
Maximum operational voltage: 1000 V.
Utilisation category: AC-1.
Maximum temperature in the vicinity of the devices: 40 °C.

Maximum operational current		Contactors (1)		Mechanical interlock (2)
Main	Standby	Main	Standby	
3-phase + N	3-phase + N	Reference	Reference	Reference
1600 A + 1000 A	1000 A + 1000 A	**LC1F78041**	**LC1F63049**	**LA9FX970** (3)
1600 A + 1000 A	1600 A + 1000 A	**LC1F78041**	**LC1F78040**	**LA9FX970** (3)
1600 A + 1600 A	1000 A + 1000 A	**LC1F7804**	**LC1F63049**	**LA9FX971**
1600 A + 1600 A	1600 A + 1600 A	**LC1F7804**	**LC1F7804**	**LA9FX971**

(1) Coils to be ordered separately, see pages B9/17 to B9/26.
*(2) Double mechanical interlock mechanism with 2 interlock connecting rods and 4 power connecting links. To order the the 2 auxiliary contact blocks **LAD N●1** required to obtain electrical interlocking between the 2 contactors: see page B9/11.*
(3) Neutral connecting link not supplied (to be ordered separately).

Dimensions:
pages B9/104 and B9/105

Schemes:
page B9/105

TeSys F

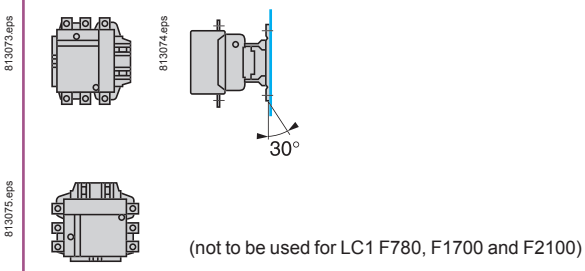
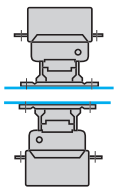
Technical Data for Designers

Contents

TeSys contactors
TeSys F contactors (115 to 2100 A)
Control circuit: a.c. or d.c.

TeSys F

Environment

Contactor type			LC1 F115	LC1 F150	LC1 F185
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	1000	1000	1000
	Conforming to VDE 0110 gr C	V	1500	1500	1500
Rated impulse withstand voltage (Uimp)	Coil not connected to the power circuit	kV	8	8	8
Conforming to standards			EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1, JEM 1038		
Product certifications			CSA, UL, BV, GL, DNV, RINA, RMROS, LROS, CCC		
Degree of protection	Conforming to IEC 60529		IP 2X front face with shrouds LA9 F		
	Conforming to VDE 0106		Front face protected against direct finger contact with shrouds LA9 F		
Protective treatment	Standard version		"TH"		
Ambient air temperature around the device	Storage	°C	-60…+80		
	Operation	°C	-5…+55		
	Permissible at Uc (1)	°C	-40…+70		
Maximum operating altitude	Without derating	m	3000		
Operating positions	Without derating		 813073.eps 813074.eps 30° 813075.eps (not to be used for LC1 F780, F1700 and F2100)		
	With derating		 813076.eps 813077.eps Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1. Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1. In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured.		
	Not to be used		 813078.eps		
Shock resistance (2) 1/2 sine wave = 11 ms	Contactor open		9 gn	9 gn	7 gn
	Contactor closed		15 gn	15 gn	15 gn
Vibration resistance (2) 5…300 Hz	Contactor open		2 gn	2 gn	2 gn
	Contactor closed		6 gn	6 gn	5 gn

(1) In these conditions, it is recommended that LX9 F coils be used for contactor sizes F115 to F225.

(2) In the least favourable direction, without change of contact state (coil at Uc). Where higher resistance to mechanical shock is required, select shock-proof contactors. Please consult your Regional Sales Office.

Selection: pages B10/50 to B10/73 | References: pages B9/2 and B9/3 | Dimensions: pages B9/54 to B9/56 | Schemes: page B9/61

TeSys contactors
TeSys F contactors (115 to 2100 A)
Control circuit: a.c. or d.c.

TeSys F

LC1 F225	LC1 F265	LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
8	8	8	8	8	8	8	8	8	8	8	8
EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1, JEM 1038											
CSA, UL, BV, GL, DNV, RINA, RMROS, LROS, CCC							UL, CSA, GL, LROS	CSA, CCC, ETL-UL			
IP 20 front face with shrouds LA9 F								–			
Front face protected against direct finger contact with shrouds LA9 F								–			
"TH"											
-60…+80							-60…+80	-60…+80			
-5…+55							-5…+55	-5…+40			
-40…+70							-5…+55	-40…+60			
3000											

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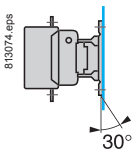

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(not to be used for LC1 F780, F1400, F1700 and F2100)

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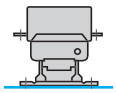

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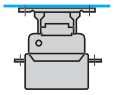

Apply the following derating coefficients: 0.75 on the pull-in voltage, 0.9 on the drop-out voltage and 0.8 on the operational current in AC-1.

Apply the following derating coefficients: 1.15 on the pull-in voltage, 1.1 on the drop-out voltage and 0.8 on the operational current in AC-1.

In either case: neither the making and breaking capacities nor the electrical and mechanical durabilities can be assured.

Not to be used

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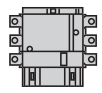


7 gn	6 gn	6 gn	6 gn	9 gn	6 gn	5 gn	6 gn	6 gn	6 gn	6 gn	6 gn
15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn	15 gn
2 gn	2 gn	2 gn	1.5 gn	2 gn	2 gn	2.5 gn	2 gn	2 gn	2 gn	2 gn	2 gn
5 gn	5 gn	5 gn	5 gn	4 gn	4 gn	5.5 gn	4 gn	4 gn	4 gn	4 gn	4 gn

TeSys contactors

TeSys F contactors (115 to 2100 A)

Control circuit: a.c. or d.c.

TeSys F

Pole characteristics

Contactor type				LC1 F115	LC1 F150	LC1 F185	LC1 F225	LC1 F265
Number of poles				3 or 4	3 or 4	3 or 4	3 or 4	3 or 4
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 55 °C		A	115	150	185	225	265
	In AC-1, θ ≤ 40 °C		A	200	250	275	315	350
Rated operational voltage (Ue)	Up to		V	1000	1000	1000	1000	1000
Frequency limits	Of the operational current (1)		Hz	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200
Conventional thermal current	θ ≤ 40 °C		A	200	250	275	315	350
Rated making capacity	I rms conforming to IEC 60947-4-1		A	Making current: 10 x I in AC-3 or 12 x I in AC-4				
Rated breaking capacity	I rms conforming to IEC 60947-4-1		A	Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4				
Maximum permissible current No current flowing for previous 60 minutes, at θ ≤ 40 °C	For 10 s		A	1100	1200	1500	1800	2200
	For 30 s		A	640	700	920	1000	1230
	For 1 min		A	520	600	740	850	950
	For 3 min		A	400	450	500	560	620
	For 10 min		A	320	350	400	440	480
Short-circuit protection by fuses U ≤ 440 V	Motor circuit (type aM)		A	125	160	200	250	315
	With thermal overload relay (type gG)		A	200	200	315	315	500
	gG fuses		A	200	250	315	315	400
Average impedance per pole	At Ith and 50 Hz		mΩ	0.37	0.35	0.33	0.32	0.3
Power dissipation per pole for the above operational currents	AC-3		W	5	8	12	16	21
	AC-1		W	15	22	25	32	37
Connection				Maximum c.s.a.				
	Bar	Number of bars		2	2	2	2	2
		Bar	mm	20 x 3	25 x 3	25 x 3	32 x 4	32 x 4
	Cable with lug		mm^2	95	120	150	185	240
	Cable with connector		mm^2	95	120	150	185	240
	Bolt diameter		mm	Ø6	Ø8	Ø8	Ø10	Ø10
Tightening torque	Power circuit connections		N.m	10	18	18	35	35

(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.
*(2) With set of right-angled connectors **LA9 F2100** (see page B9/13).*
(3) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.

TeSys contactors

TeSys F contactors (115 to 2100 A)

Control circuit: a.c. or d.c.

TeSys F

LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100
3 or 4	2, 3 or 4	2, 3 or 4	2, 3 or 4	3 or 4	3	3	3	3	3
330	400	500	630	780	800	-	-	-	-
400	500	700	1000	1600	1000	1260	1400	1700	2100 (2)
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200	$16^{2/3}$…200
400	500	700	1000	1600	1000	1260	1400	1700	2100 (2)
Making current: 10 x I in AC-3 or 12 x I in AC-4						Making current: 1.5 x I in AC-1			
Making and breaking current: 8 x I in AC-3 or 10 x I in AC-4						Making and breaking current: 1.5 x I in AC-1			
2650	3600	4200	5050	6250	5500	8000	8000	10000	10000
1800	2400	3200	4400	5600	4600	5200	6000	7500	7500
1300	1700	2400	3400	4600	3600	4000	4500	5500	5500
900	1200	1500	2200	3000	2600	3000	4000	4200	4200
750	1000	1200	1600	2200	1700	2000	2600	3000	3000
400	400	500	630	800	800	–	–	–	–
500	630	800	800	1000	1000	–	–	–	–
500	500	800	1000	2 x 800 (3)	1000	1000	2 x 800 (3)	2 x 800 (3)	2 x 1000 (3)
0.28	0.26	0.18	0.12	0.10	0.12	0.12	0.10	0.10	0.10
31	42	45	48	60	77	–	–	–	–
44	65	88	120	250	120	120	150	200	200
Maximum c.s.a.									
2	2	2	2	2	2	2	2	3	4
30 x 5	30 x 5	40 x 5	60 x 5	100 x 5	60 x 5	100 x 5	100 x 5	100 x 5	100 x 5
240	2 x 150	2 x 240	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–
Ø10	Ø10	Ø10	Ø12	2 x Ø12	Ø12	3 x Ø12 (Ø11.5 with set of right-angled connectors LA9 F1250)	4 x Ø12 (Ø11.5 with set of right-angled connectors LA9 F2100)		
35	35	35	58	58	58	58 (35 with set of right-angled connectors LA9 F1250)	58 (35 with set of right-angled connectors LA9 F2100)		

TeSys contactors

TeSys F contactors (115 to 2100 A)

Control circuit: a.c.

TeSys F

Control circuit characteristics with LX1 or LX9 coil

Contactor type				LC1 F115	LC1 F150	LC1 F185	LC1 F225	LC1 F265
Rated control circuit voltage (Uc)		50 or 60 Hz	V	24…1000				
Control voltage limits (θ ≤ 55 °C) 50 or 60 Hz coils		Operation		0.85…1.1 Uc				–
		Drop-out		0.35…0.55 Uc				–
40…400 Hz coils		Operation		–				0.85…1.1 Uc
		Drop-out		–				0.35…0.55 Uc
Average consumption at 20 °C and at Uc								
∼ 50 Hz	Inrush	50 Hz coil	VA	550	550	805	805	–
		40…400 Hz coil	VA	–	–	–	–	650
		Cos φ		0.3	0.3	0.3	0.3	0.9
	Sealed	50 Hz coil	VA	45	45	55	55	–
		40…400 Hz coil	VA	–	–	–	–	10
		Cos φ		0.3	0.3	0.3	0.3	0.9
∼ 60 Hz	Inrush	60 Hz coil	VA	660	660	970	970	–
		40…400 Hz coil	VA	–	–	–	–	650
		Cos φ		0.3	0.3	0.3	0.3	0.9
	Sealed	60 Hz coil	VA	55	55	66	66	–
		40…400 Hz coil	VA	–	–	–	–	10
		Cos φ		0.3	0.3	0.3	0.3	0.9
Heat dissipation			W	12…16	12…16	18…24	18…24	8
Operating time (1)	Closing "C"		ms	23…35	23…35	20…35	20…35	40…65
	Opening "O"		ms	5…15	5…15	7…15	7…15	100…170
Mechanical durability at Uc	In millions of operating cycles			10	10	10	10	10
Maximum operating rate at ambient temperature ≤ 55 °C	In operating cycles per hour			2400	2400	2400	2400	2400
Connection				Min/max c.s.a.				
Flexible cable without cable end	1 or 2 conductors		mm²	1/4	1/4	1/4	1/4	1/4
Flexible cable with cable end	1 conductor		mm²	1/4	1/4	1/4	1/4	1/4
	2 conductors		mm²	1/2.5	1/2.5	1/2.5	1/2.5	1/2.5
Solid cable without cable end	1 or 2 conductors		mm²	1/4	1/4	1/4	1/4	1/4
Tightening torque			N.m	1.2	1.2	1.2	1.2	1.2
Mechanical latching				Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors. For similar type of operation, use magnetic latching contactors CR1 F. See pages B9/30 to B9/35.				

(1) 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) Control circuit characteristics with LX1 coil.

Selection: pages B10/50 to B10/73
References: pages B9/2 and B9/3
Dimensions: pages B9/54 to B9/56
Schemes: page B9/61

TeSys contactors

TeSys F contactors (115 to 2100 A)

Control circuit: a.c.

TeSys F

LC1 F330	**LC1 F400**	**LC1 F500**	**LC1 F630**	**LC1 F780**	**LC1 F800**	**LC1 F1250**	**LC1 F1400**	**LC1 F1700**	**LC1 F2100**
24…1000	48…1000		48…1000	110…500	110…400	110...600	110...500 (2)	110…500 (2)	110…500 (2)
–									
–									
0.85…1.1 Uc	0.85…1.1 Uc		0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc
0.35…0.55 Uc	0.3…0.5 Uc		0.25…0.5 Uc	0.2…0.4 Uc	0.3…0.5 Uc	0.25...0.5 Uc	0.3…0.5 Uc	0.3…0.5 Uc	0.3…0.5 Uc
–	–	–	–	–	–	–	–	–	–
650	1075	1100	1650	2100	1700	1650	2200	2200	2200
0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
–	–	–	–	–	–	–	–	–	–
10	15	18	22	50	12	22	36	36	36
0.9	0.9	0.9	0.9	0.9	–	0.9	0.9	0.9	0.9
–	–	–	–	–	–	–	–	–	–
650	1075	1100	1650	2100	1700	1650	2200	2200	2200
0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
–	–	–	–	–	–	–	–	–	–
10	15	18	22	50	12	22	36	36	36
0.9	0.9	0.9	0.9	0.9	–	0.9	0.9	0.9	0.9
8	14	18	20	2 x 22	25	20	2 x 18	2 x 18	2 x 18
40…65	40…75	40…75	40…80	40…80	60…80	40…80	40…75	40…75	40…75
100…170	100…170	100…170	100…200	130…230	150…180	100...200	100...170	100…170	100…170
10	10	10	5	5	5	1	0.5	0.5	0.5
2400	2400	2400	1200	600	600	1200	600	600	600
Min/max c.s.a.									
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
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	1/2.5
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2

Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors.
For similar type of operation, use magnetic latching contactors CR1 F.
See pages B9/30 to B9/35.

TeSys contactors
TeSys F contactors (115 to 2100 A)
Control circuit: d.c

TeSys F

Control circuit characteristics with LX4 coil

Contactor type				LC1 F115	LC1 F150	LC1 F185	LC1 F225	LC1 F265
Rated control circuit voltage (Uc) ⎓			V	24…460	24…460	24…460	24…460	24…460
Control voltage **limits** (θ ≤ 55 °C)	Operation			0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc
	Drop-out			0.15…0.2 Uc	0.15…0.2 Uc	0.15…0.2 Uc	0.15…0.2 Uc	0.15…0.2 Uc
Average consumption at 20 °C and at Uc	⎓	Inrush	W	560	560	800	800	750
		Sealed	W	4.5	4.5	5	*5*	5
Average operating time at Uc (1)	Closing "C"		ms	30…40	30…40	30…40	30…40	40…50
	Opening "O"		ms	30…50	30…50	30…50	30…50	40…65
				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.				
Mechanical durability at Uc	In millions of operating cycles			10	10	10	10	10
Maximum operating rate at ambient temperature ≤ 55 °C	In operating cycles per hour			2400	2400	2400	2400	2400
Cabling				Min/max c.s.a.				
Flexible cable without cable end	1 conductor		mm²	1/4	1/4	1/4	1/4	1/4
	2 conductors		mm²	1/4	1/4	1/4	1/4	1/4
Flexible cable with cable end	1 conductor		mm²	1/4	1/4	1/4	1/4	1/4
	2 conductors		mm²	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
	2 conductors		mm²	1/4	1/4	1/4	1/4	1/4
Tightening torque			N.m	1.2	1.2	1.2	1.2	1.2
Mechanical latching				Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors. For similar type of operation, use magnetic latching contactors CR1 F. See pages B9/30 to B9/35.				

(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.

Selection: pages B10/50 to B10/73
References: pages B9/2 and B9/3
Dimensions: pages B9/54 to B9/56
Schemes: page B9/61

TeSys contactors
TeSys F contactors (115 to 2100 A)
Control circuit: d.c

TeSys F

LC1 F330	LC1 F400	LC1 F500	LC1 F630	LC1 F780	LC1 F800	LC1 F1250	LC1 F1400	LC1 F1700	LC1 F2100
24…460	48…440	48…440	48…440	110…440	110…400	48…250	110…440	110…440	110…440
0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc
0.15…0.2 Uc	0.2…0.35 Uc	0.2…0.35 Uc	0.2…0.35 Uc	0.2…0.4 Uc	0.3…0.5 Uc	0.2…0.35 Uc	0.2…0.35 Uc	0.2…0.35 Uc	0.2…0.35 Uc
750	1000	1100	1600	2 x 1000	1900	1600	2100	2100	2100
5	6	6	9	2 x 21	12	9	10	10	10
40…50	50…60	50…60	60…70	70…80	60…80	60…70	50…60	50…60	50…60
40…65	45…60	45…60	40…50	100…130	40…50	40…50	45…60	45…60	45…60

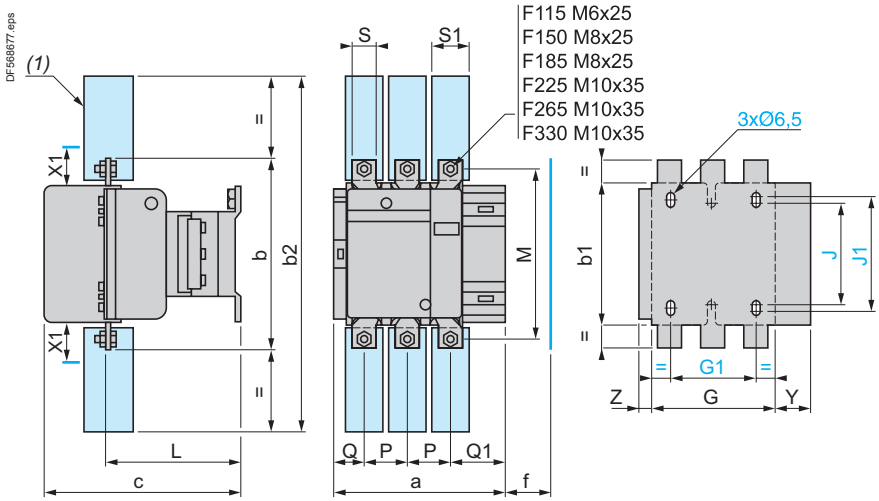
Note: *the arcing time depends on the circuit switched by the poles. For all normal 3-phase applications. the arcing time is less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time.*

10	10	10	5	5	5	1	0.5	0.5	0.5
2400	2400	2400	1200	600	600	1200	600	600	600
Min/max c.s.a.									
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
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	1/2.5
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2

Mechanical latch blocks LA6 DK must not be fitted on LC1 F contactors.
For similar type of operation, use magnetic latching contactors CR1 F.
See pages B9/30 to B9/35.

TeSys F

LC1 F115 to F330



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

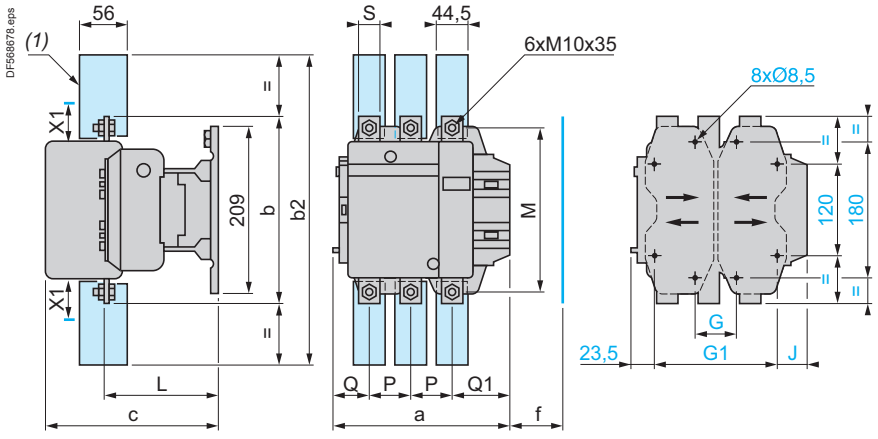
LC1	200...500 V	600...1000 V
F115, F150	10	15
F185	10	15
F225, F265	10	15
F330	10	15

(1) Power terminal protection shroud (see page B9/14).

LC1		a	b	b1	b2	c	f	G	G1	J	J1	L	M	P	Q	Q1	S	S1	Y	Z
F115	3P	163.5	162	137	265	171	131	106	80	106	120	107	147	37	29.5	60	20	26	44	13.5
	4P	200.5	162	137	265	171	131	143	80	106	120	107	147	37	29.5	60	20	26	44	13.5
F150	3P	163.5	170	137	301	171	131	106	80	106	120	107	150	40	26	57.5	20	34	44	13.5
	4P	200.5	170	137	301	171	131	143	80	106	120	107	150	40	26	55.5	20	34	44	13.5
F185	3P	168.5	174	137	305	181	130	111	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5
	4P	208.5	174	137	305	181	130	151	80	106	120	113.5	154	40	29	59.5	20	34	44	13.5
F225	3P	168.5	197	137	364	181	130	111	80	106	120	113.5	172	48	21	51.5	25	44.5	44	13.5
	4P	208.5	197	137	364	181	130	151	80	106	120	113.5	172	48	17	47.5	25	44.5	44	13.5
F265	3P	201.5	203	145	375	213	147	142	96	106	120	141	178	48	39	66.5	25	44.5	38	21.5
	4P	244.5	203	145	375	213	147	190	96	106	120	141	178	48	34	66.5	25	44.5	38	21.5
F330	3P	213	206	145	375	219	147	154.5	96	106	120	145	181	48	43	74	25	44.5	38	20.5
	4P	261	206	145	375	219	147	202.5	96	106	120	145	181	48	43	74	25	44.5	38	20.5

f = minimum distance required for coil removal.

LC1 F400 and F500



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200...500 V	600...1000 V
F400	15	20
F500	15	20

(1) Power terminal protection shroud (see page B9/14).

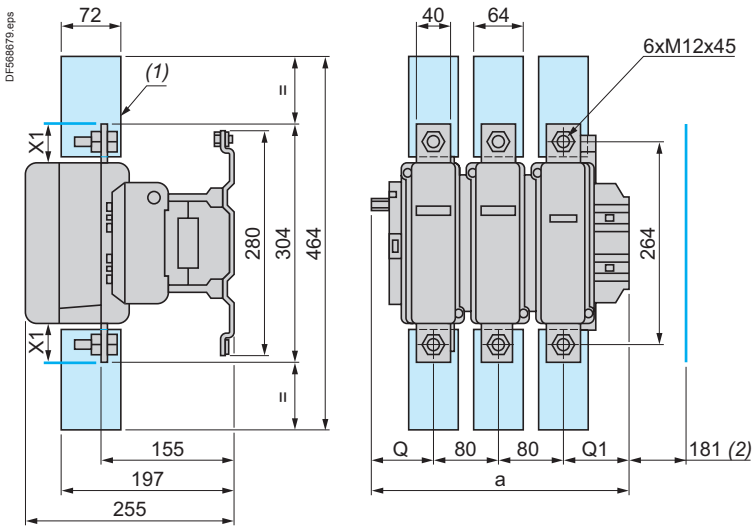
LC1		a	b	b2	c	f	G supplied	G min.	G max.	G1 supplied	G1 min	G1 max.	J	L	M	P	Q	Q1	S
F400	2P	213	206	375	219	146	80	66	102	170	156	192	19.5	145	181	48	69	96	25
	3P	213	206	375	219	146	80	66	102	170	156	192	19.5	145	181	48	43	74	25
	4P	261	206	375	219	146	80	66	150	170	156	240	67.5	145	181	48	43	74	25
F500	2P	233	238	400	232	150	80	66	120	170	156	210	39.5	146	208	55	76	102	30
	3P	233	238	400	232	150	80	66	120	170	156	210	39.5	146	208	55	46	77	30
	4P	288	238	400	232	150	140	66	175	230	156	265	34.5	146	208	55	46	77	30

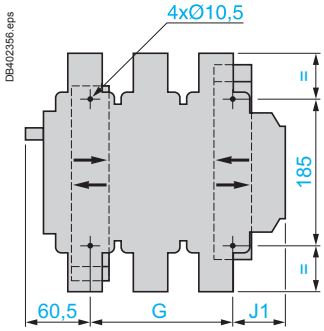
f = minimum distance required for coil removal.

Selection: pages B10/50 to B10/73
Characteristics: pages B9/46 to B9/53
References: pages B9/2 to B9/9
Schemes: page B9/61

TeSys F

LC1 F630 and F800





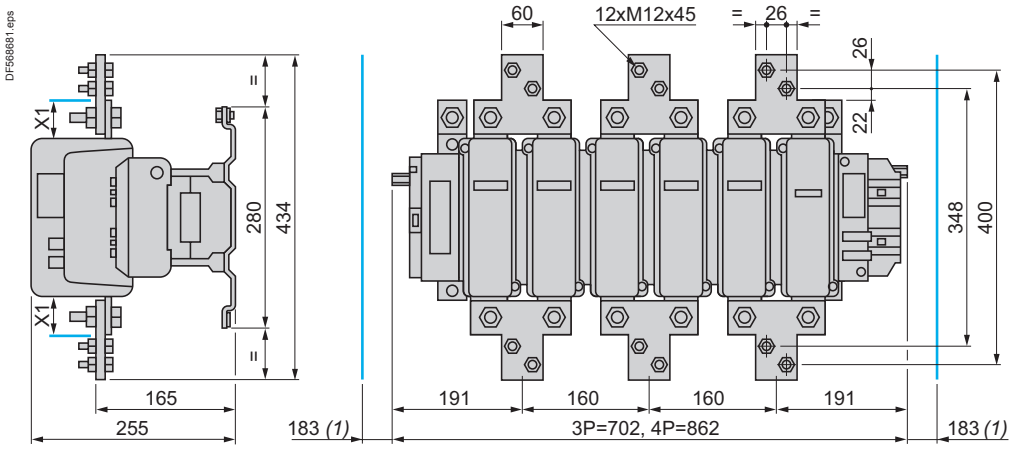
LC1		a	G supplied	G min.	G max.	J1	Q	Q1
F630	2P	309	180	100	195	68.5	102	127
F630, F800	3P	309	180	100	195	68.5	60	89
F630	4P	389	240	150	275	68.5	60	89

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

Voltage	200…500 V	690…1000 V	200…690 V	1000 V
LC1 F630	20	30	–	–
LC1 F800	–	–	10	20

(1) Power terminal protection shroud (see page B9/14).
(2) Minimum distance required for coil removal.

LC1 F780

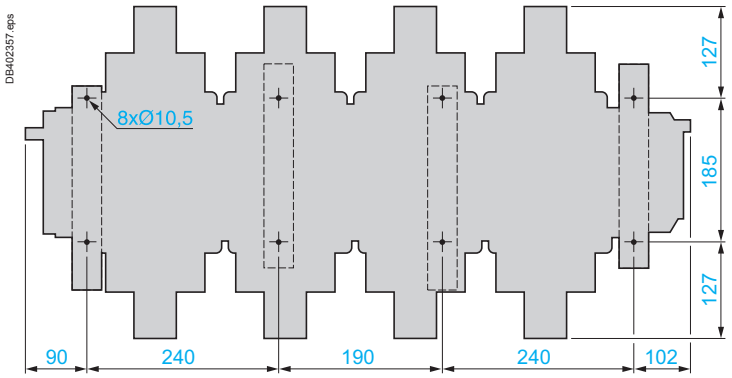


X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

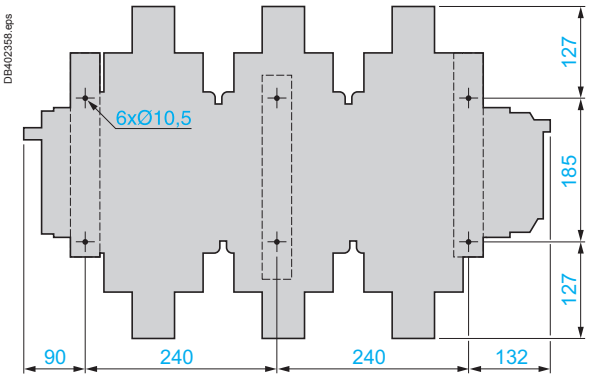
Voltage	200…500 V	690…1000 V
X1 (mm)	30	35

(1) Minimum distance required for coil removal.

Fixing centres of LC1 F7804



Fixing centres of LC1 F780

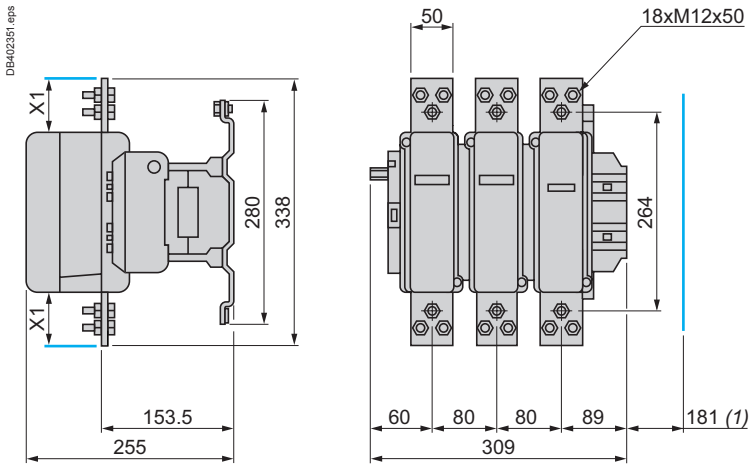


Selection: pages B10/50 to B10/73
Characteristics: pages B9/46 to B9/53
References: pages B9/2 to B9/9
Schemes: page B9/61

TeSys contactors
TeSys F contactors

TeSys F

LC1 F1250

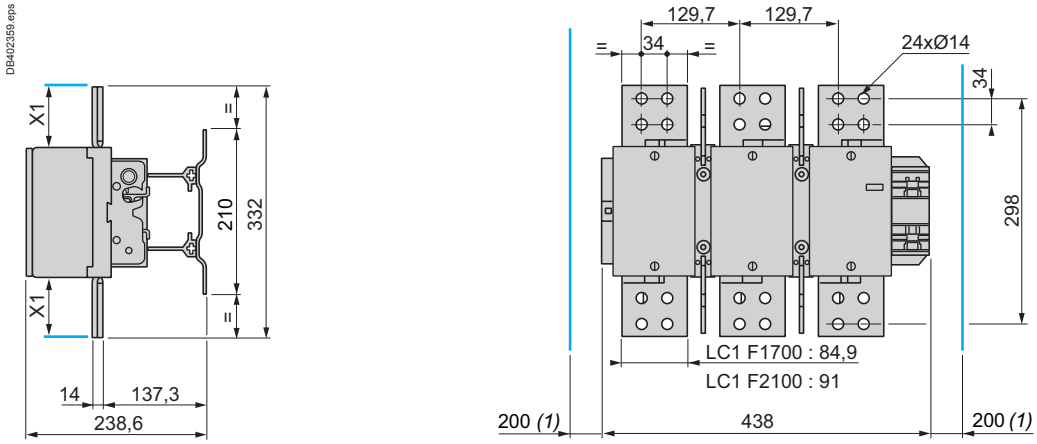


(1) Minimum distance required for coil removal.

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

Voltage	200…500 V	690…1000 V
X1 (mm)	20	30

LC1 F1400, LC1 F1700 and LC1 F2100

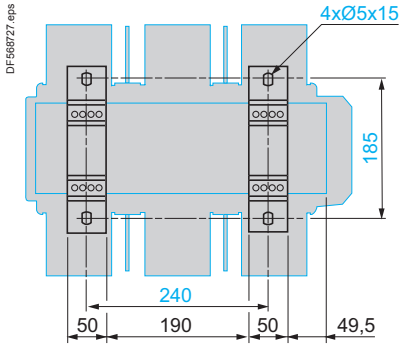


X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

Voltage	200…500 V	690…1000 V
X1 (mm)	90	100

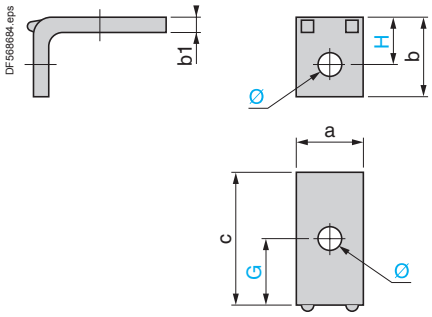
(1) Minimum distance required for coil removal.

Fixing centres of LC1 F1400, F1700 and 2100



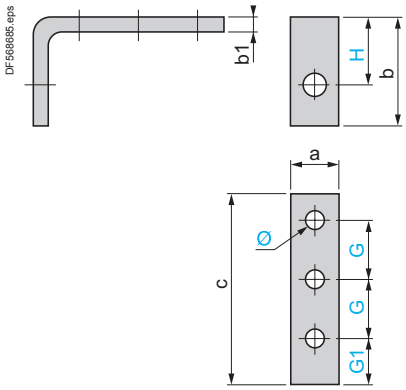
Selection: pages B10/50 to B10/73
Characteristics: pages B9/46 to B9/53
References: pages B9/2 to B9/9
Schemes: page B9/61

Right-angled connectors LA9 F●981 (set of 3) for rear connection



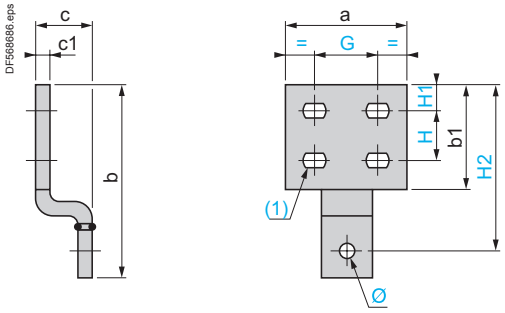
LA9	FF981	FG981	FJ981	FK981	FL981
a	15	20	25	30	40
b	18	23	29	35	48
b1	3	3	4	5	8
c	42	45	55	52	86
G	24	26	32.5	26	45
H	10.5	13	16.5	20	28
Ø	6.5	9	11	11	13

Right-angled connectors LA9 F●979 (set of 3) for side connection



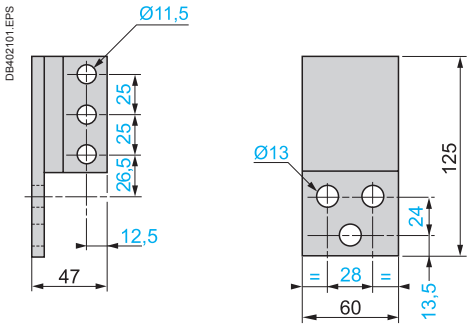
LA9	FF979	FG979	FJ979	FK979	FL979
a	15	20	25	30	40
b	54	58	63.5	68	117
b1	5	5	6	6	10
c	80	92	120	120	130
G	24	28	37	37	37.5
G1	20	22	29	29	35
H	36	39	41	42	76
Ø	6.5	9	11	11	13

Right-angled connectors LA9 F●980 with large surface area (set of 3)

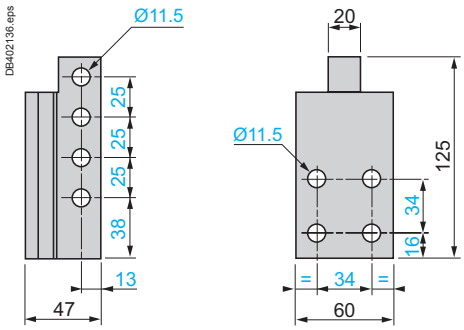


LA9	FF980	FG980	FJ980	FK980	FL980
a	35	40	50	60	100
b	70.5	82.5	98.5	114	154
b1	40	45	55	65	85
c	29	29	33	33	43
c1	3	3	5	5	10
G	18	20	25	29	53
H	18	20	22	26	40
H1	10	12	14	17	20
H2	60.5	72.5	84.5	97	132
Ø	6.5	9	11	11	13
(1)	Ø7 x 10	Ø9 x 12	Ø11 x 14	Ø12.5 x 15	Ø12.5 x 15

Right-angled connectors LA9 F1250 (set of 6)



Right-angled connectors LA9 F2100 (set of 6) for rear connection

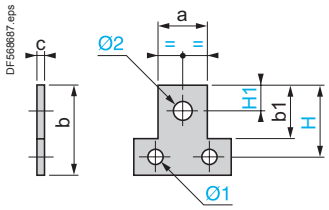


High power contactors

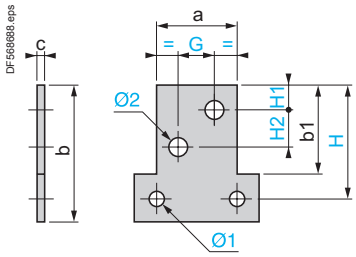
References:
page B9/13

Paralleling links (set of 4)

LA9 FF602, FG602, FH602



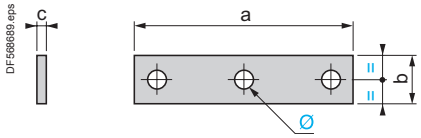
LA9 FK602, FL602



LA9	FF602	FG602	FH602	FK602	FL602
a	25	30	40	50	60
b	45	55	60	85	100
b1	30	35	40	55	65
c	4	5	8	10	10
G	–	–	–	22	26
H	37.5	45	52.5	70	85
H1	12.5	15	15	14	17
H2	–	–	–	22	26
Ø1	6.5	9	11	11	13
Ø2	11	11	13	11	14

Links for "star" connection of 3 poles

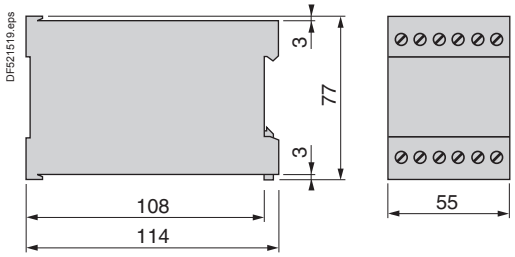
LA9 F●601



LA9	FF601	FG601	FH601	FK601	FL601
a	69	100	121	140	200
b	15	20	20	30	40
c	3	3	5	5	8
Ø	6.5 x 8.5	8.5 x 10.5	10.5 x 13	11	13

Capacitive delayed opening devices for TeSys F contactors

LAZ R9●●



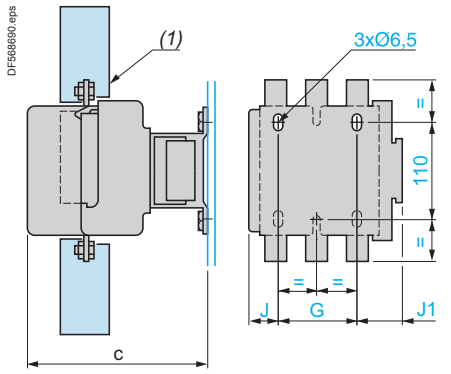
References:
page B9/13

TeSys contactors
TeSys F contactors
Accessories

TeSys F

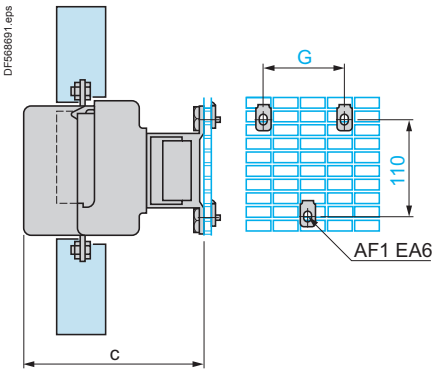
LC1 F115 to F330

On panel



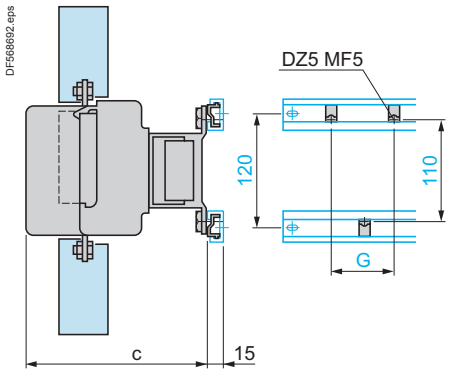
LC1		F115 F150	F185 F225	F265	F330
c (2)	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96
J	3P	26.5	29	44.5	44.5
	4P	45	49	68.5	68.5
J1	3P	57	59.5	61.5	61.5
	4P	75.5	79.5	85.5	85.5

On pre-slotted mounting plate AM1 PA, PB, PC



LC1		F115 F150	F185 F225	F265	F330
c (2)	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96

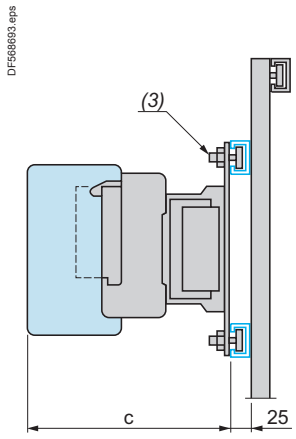
On rails DZ5 MB on 120 mm centres



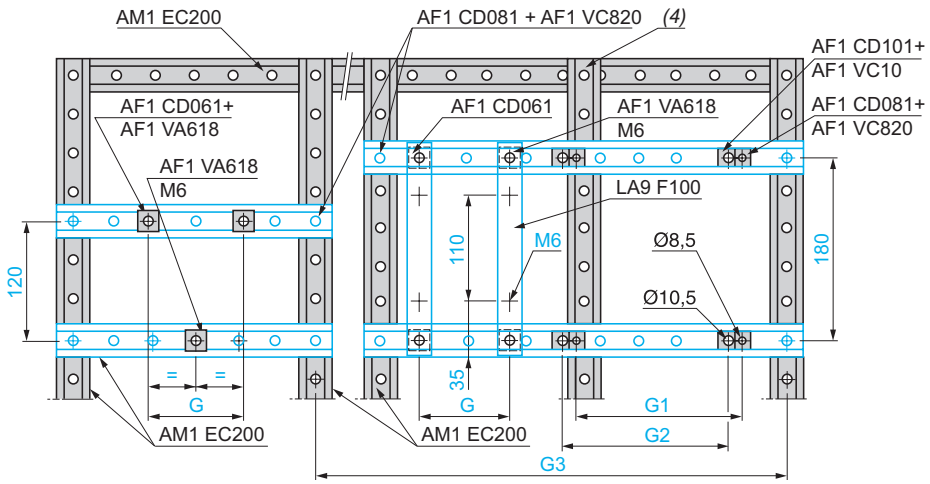
LC1		F115 F150	F185 F225	F265	F330
c (2)	3P	171	181	213	219
	4P	171	181	213	219
G	3P	80	80	96	96
	4P	80	80	96	96

LC1 F

On 2 notched rails AM1 EC●●●



LC1 F115 to F330



LC1 F400 to F800

LC1		F115, F150	F185, F225	F265	F330	F400	F500	F630	F780	F800
c	3P	165 (5)	176	207	213	219	232	255	255	255
	4P	165 (5)	176	207	213	219	232	255	255	–
G (M6)	3P	80	80	96	96	–	–	–	–	–
	4P	80	80	96	96	–	–	–	–	–
G1 (∅ 8.5)	3P	–	–	–	–	80	80	–	–	–
	4P	–	–	–	–	80	140	–	–	–
G2 (∅ 10.5)	3P	–	–	–	–	–	–	180	See page B9/55	180
	4P	–	–	–	–	–	–	240	See page B9/55	–

(1) Power terminal protection shroud (see page B9/14).
(2) See X1 (minimum electrical clearance) pages B9/54 and B9/55.
(3) AF1 CD●●● and AF1 VA●●●.
(4) This AM1 EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).
(5) + 6 mm with time-delay block on LC1 F.

Selection: pages B10/50 to B10/73
Characteristics: pages B9/46 to B9/53
References: pages B9/2 to B9/9
Schemes: page B9/61

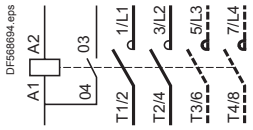
TeSys contactors
TeSys F contactors

TeSys F

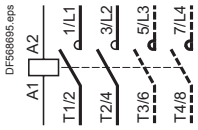
Contactors

2, 3 and 4-pole contactors

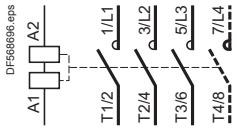
LC1 F115 to F630 , F1250 (coil LX1 F ∿)



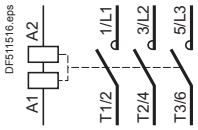
LC1 F115 to F630 , F1250 (coil LX4 F ⎓)
LC1 F115 to F265 (coil LX9 F ∿)
LC1 F800 (coil LX8 F ∿/ ⎓)



LC1 F780 ∿ or ⎓



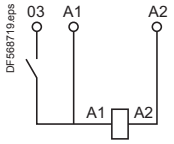
LC1 F1400 ∿ or ⎓
LC1 F1700 ∿ or ⎓
LC1 F2100 ∿ or ⎓



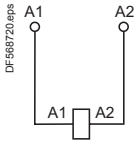
Coils

Standard ∿ coils

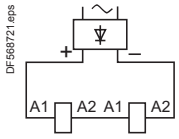
LX1 FF, FG, FJ…FL
LX1 FH0422…FH3802



LX1 FH0202…FH0362
LX1 FH4402…FH10002
LX1 F8●

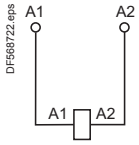


LX1 FX
Rectifier supplied and fixed on the contactor



Standard ⎓ coils

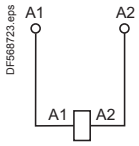
LX4 FF, FG, FH, FJ, FK, FL, FX (1), LX4 F8●



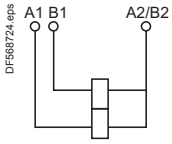
(1) 2 coils in series.

Special ∿ coils

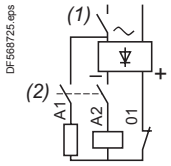
LX9 FF, FG



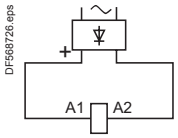
LX9 FH●●●2



LX9 FJ, FK, FL



LX4 F8●



(1) Breaking on ∿ side.
Drop-out time 50 ms.
(2) Breaking on ⎓ side.
Drop-out time 20 ms.

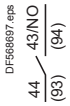
TeSys contactors
TeSys F contactors

TeSys F

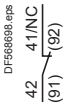
Add-on blocks

Instantaneous auxiliary contacts

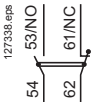
1 N/O LAD N10 (1)



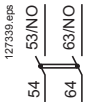
1 N/C LAD N01 (1)



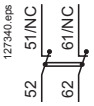
1 N/O + 1 N/C LAD N11



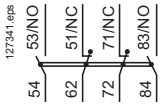
2 N/O LAD N20



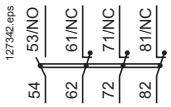
2 N/C LAD N02



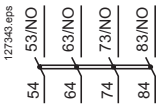
2 N/O + 2 N/C LAD N22



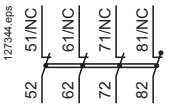
1 N/O + 3 N/C LAD N13



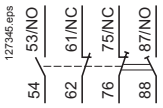
4 N/O LAD N40



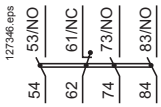
4 N/C LAD N04



2 N/O + 2 N/C (2) **LAD C22**



3 N/O + 1 N/C LAD N31

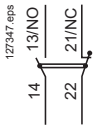


(1) Items in brackets: See "TeSys D contactors".

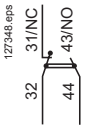
(2) 1 N/O + 1 N/C make before break.

Instantaneous auxiliary contacts with terminal referencing conforming to standard EN 50012 (References: pages B9/10 and B9/11)

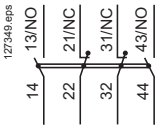
1 N/O + 1 N/C LAD N11P



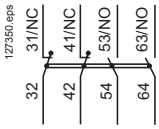
1 N/O + 1 N/C LAD N11G



2 N/O + 2 N/C LAD N22P

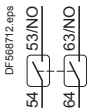


2 N/O + 2 N/C LAD N22G

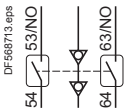


Dust and damp protected instantaneous auxiliary contacts

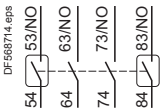
2 N/O (24-50 V) LA1 DX20



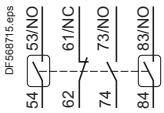
2 N/O (5-24 V) LA1 DY20



2 N/O protected (24-50 V) + 2 N/O standard LA1 DZ40



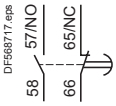
2 N/O protected (24-50 V) + 1 N/O + 1 N/C standard LA1 DZ31



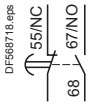
Time delay auxiliary contacts

On-delay 1 N/O +1 N/C LAD T●

Off-delay 1 N/O + 1 N/C LAD R●

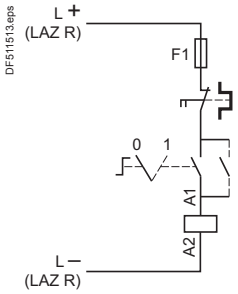


On-delay 1 N/C + 1 N/O break before make LAD S●



Capacitive delayed opening devices for TeSys F contactors

LAZ R9●● + LC1 F



High power contactors

TeSys contactors

3-pole vacuum contactors and reversing contactors

Selection

Contactor size			LC1 V160	LC1 V320	LC1 V610
For utilisation category AC-3					
Maximum operational current in AC-3		**A**	160	320	610
Rated operational power P (standard power ratings of motors)	230 V	**kW**	45	90	160
	400 V	**kW**	75	160	300
	525 V	**kW**	110	220	400
	690 V	**kW**	150	280	560
	1000 V	**kW**	200	400	800
	1500 V	**kW**	280	600	930
For 3-phase motors conforming to CSA standards					
Rated operational power P (standard power ratings of 3-phase CSA motors)	200 V	**hp**	50	100	150
	240 V	**hp**	60	125	200
	380 V	**hp**	100	200	300
	480 V	**hp**	125	250	400
	600 V	**hp**	150	300	500
	800 V	**hp**	200	400	700
	1000 V	**hp**	250	500	1000
	1500 V	**hp**	400	800	1300
For switching 3-phase capacitors					
Rated operational power P	240 V	**kVAR**	47	94	176
	480 V	**kVAR**	95	190	356
	600 V	**kVAR**	100	200	400
	1500 V	**kVAR**	250	500	1000
For switching the primaries of 3-phase transformers (LV/LV)					
Rated operational power P	208 V	**kVA**	20	41	81
	240 V	**kVA**	23	47	94
	480 V	**kVA**	47	94	188
	600 V	**kVA**	59	117	234

Environment characteristics

Contactor type				LC1 V160	LC1 V320	LC1 V610
Shock resistance (1/2 sine wave = 11 ms)		Contacts closed		10 gn	10 gn	10 gn
		Contacts open		10 gn	10 gn	10 gn
Vibration resistance		10…500 Hz		2 gn	2 gn	2 gn
Operating altitude	Above sea level	Maximum	**m**	3600	3600	3600
	Below sea level	Minimum	**m**	2500	4500	4500
Ambient air temperature around the device		Storage	**°C**	-40…+80	-40…+80	-40…+80
		Operation 0.8… 1.1 Uc	**°C**	-5…+55	-5…+55	-5…+55
		Permissible for operation at Uc	**°C**	-10…+75	-10…+75	-10…+75
Degree of protection		Conforming to IEC 60529		IP 00	IP 00	IP 00
Operating position				Any	Any	Any
Cabling		Cable c.s.a.	**mm²**	70	185	2 x 185
		Key for hex. screws	**mm**	Allen 4	20	20
		Tightening torque	**N.m**	14	39	39

Control circuit characteristics

Rated insulation voltage (Ui)	To earth	**V**	2000	2000	2000
Consumption	Inrush	**VA**	300	600	1700
	Sealed	**VA**	30	20	28
Permissible control circuit voltage			0.8…1.1 Uc	0.8…1.1 Uc	0.8…1.1 Uc
Closing time (1)		**ms**	18...22	24...32	24...32
Opening time (1)		**ms**	95...115	95...115	95...115

(1) 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.

References: page B9/4
Dimensions: page B9/64
Schemes: page B9/64

TeSys contactors
3-pole vacuum contactors and reversing contactors

TeSys V

Main pole characteristics

Contactor type			LC1 V160	LC1 V320	LC1 V610
Rated insulation voltage (Ui)		V	1500	1500	1500
Rated impulse withstand voltage (Uimp)		kV	8	8	8
Conforming to standards			EN 60947-4-1 - IEC 60947-4-1		
Approvals			CSA		
Conventional rated thermal current (Ith)		A	160	320	630
Rated operational current (Ie)	θ ≤ 40 °C AC-1	A	160	320	630
	θ ≤ 55 °C AC-3	A	160	320	610
	θ ≤ 55 °C AC-4	A	130	270	540
Electrical durability in millions of operating cycles (400 V at I max)	AC-1		1.2	1	1
	AC-3		1.6	1.5	1.5
	AC-4		0.18	0.15	0.12
Mechanical durability	In millions of operating cycles		5	2.5	2
Maximum operating rate in operating cycles per hour	Mechanical		1200	1200	1200
	AC-1		900	900	900
	AC-3		900	900	900
	AC-4		450	450	450
Maximum making capacity (Irms)	Ue = 1500 V To IEC 60947	A	1900	3800	7300
Maximum breaking capacity (Irms)	Ue = 1500 V To IEC 60947	A	1600	3200	6100
Maximum permissible current	For 1 s	A	2400	4500	9000
	For 2 s	A	2000	3750	7580
	For 10 s	A	1600	3200	6100
	For 30 s	A	960	1920	3600
Short-circuit protection at Ie in cat. AC-3 max.	aM fuse	A	160	400	630

Auxiliary contact characteristics

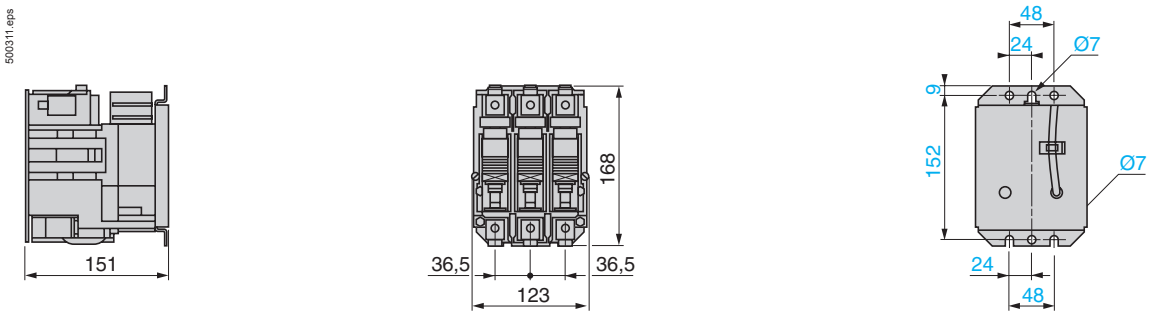
Rated insulation voltage (Ui)		V	690
Conventional rated thermal current (Ith)		A	10
Rated operational current (Ie)	AC-15, 230 V	A	0.78
	AC-15, 400 V	A	0.45
	AC-15, 500 V	A	0.35
	DC-13, 24 V	A	1.1
	DC-13, 110 V	A	0.24
	DC-13, 220 V	A	0.12
Cabling	Cable c.s.a.	mm^2	2.5
Short-circuit protection	gG fuse	A	10
Operating time (1) (at 100 % of Uc)	"C"	ms	±5
	"O"	ms	±5

(1) Operating time in relation to the main contacts.

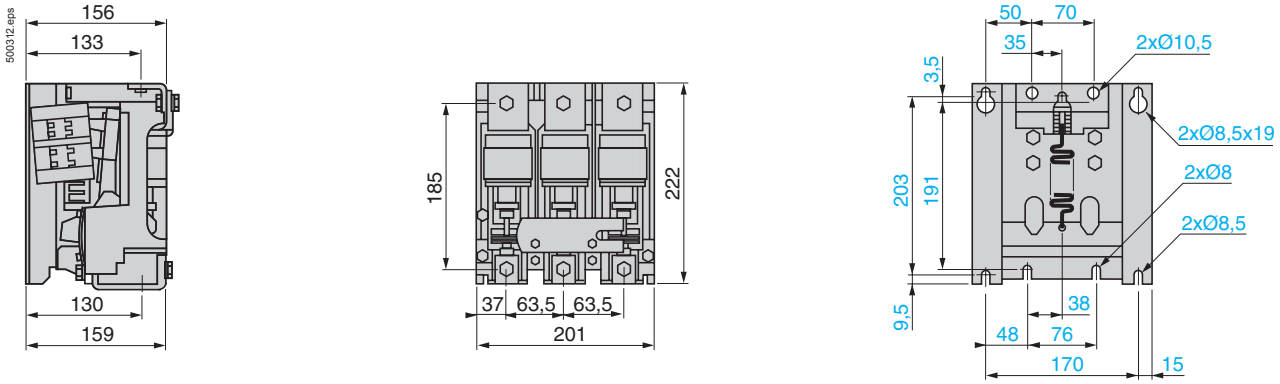
TeSys contactors
3-pole vacuum contactors

Dimensions, mounting

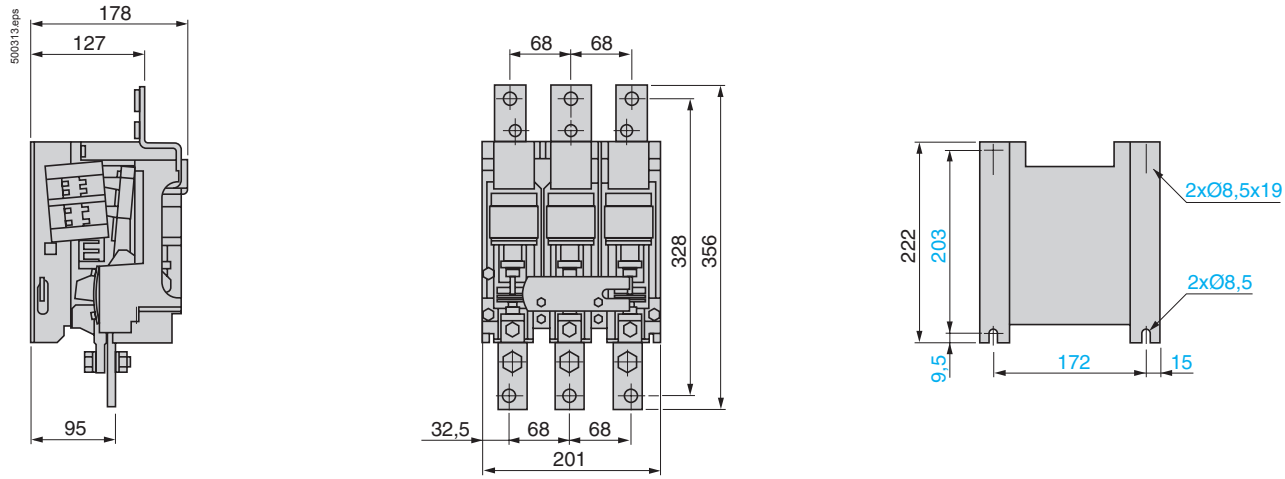
LC1 V160



LC1 V320

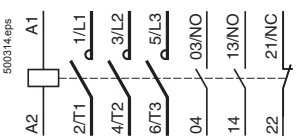


LC1 V610

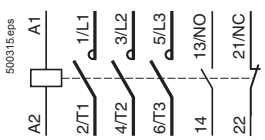


Schemes

LC1 V160

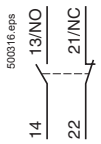


LC1 V320, V610

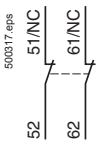


Auxiliary contact blocks

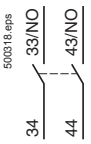
LA1 VN11 1 N/O & 1 N/C



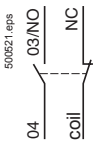
LA1 VN02 2 N/C



LA1 VN20 2 N/O



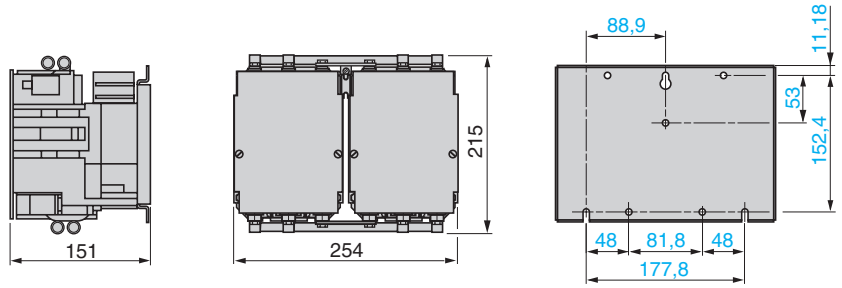
LA1 VN11X 1 N/O



Dimensions, mounting

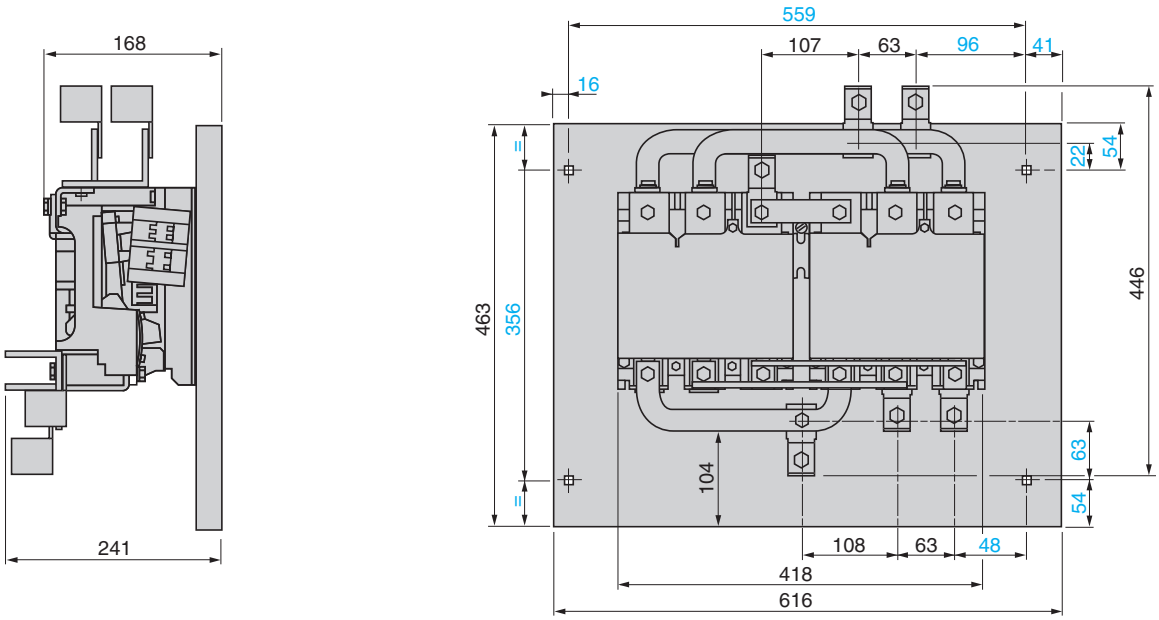
LA9 V974 + 2 x LC1V160

562320.eps



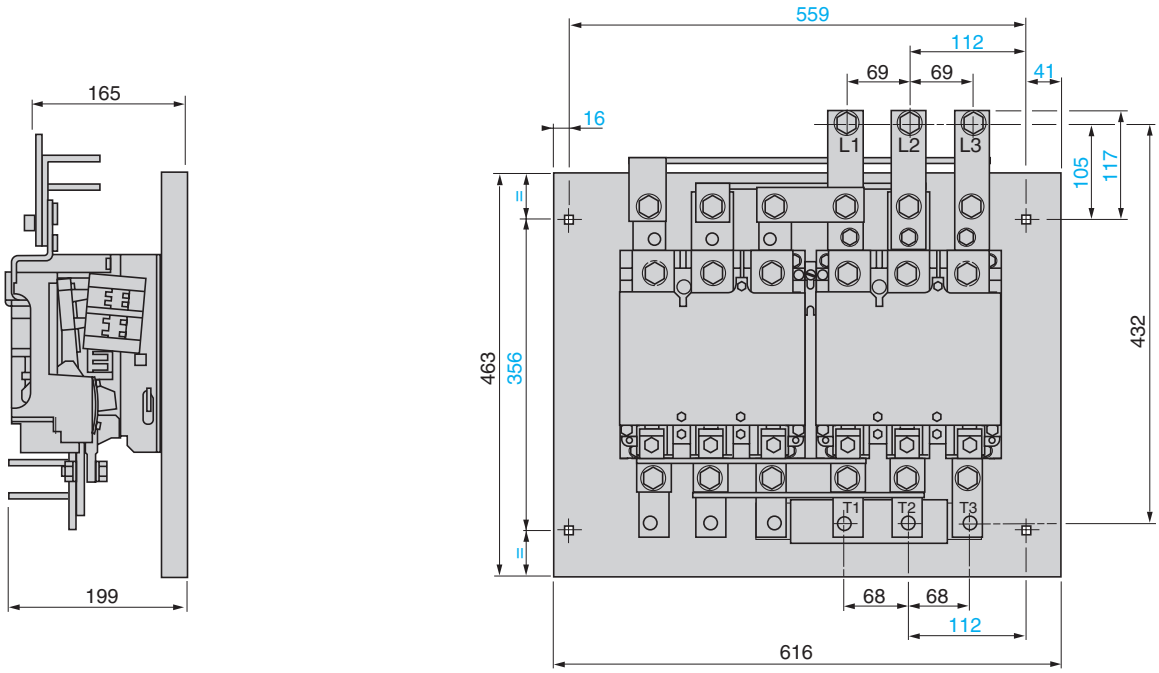
LC2 V320

DF536047.eps



LC2 V610

562322.eps



High power contactors

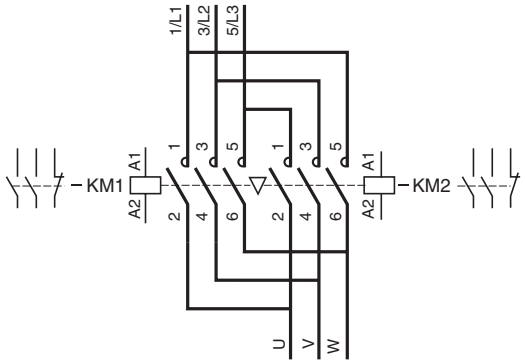
TeSys reversing contactors
3-pole reversing vacuum contactors

TeSys V

Schemes

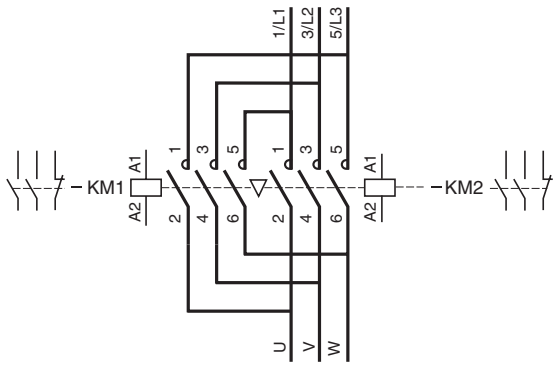
LA9 V974 + 2 x LC1V160

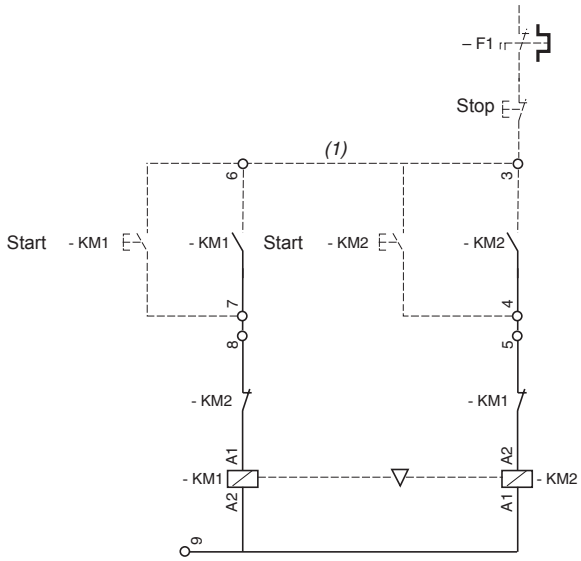
562323.eps



LC2 V320

562324.eps



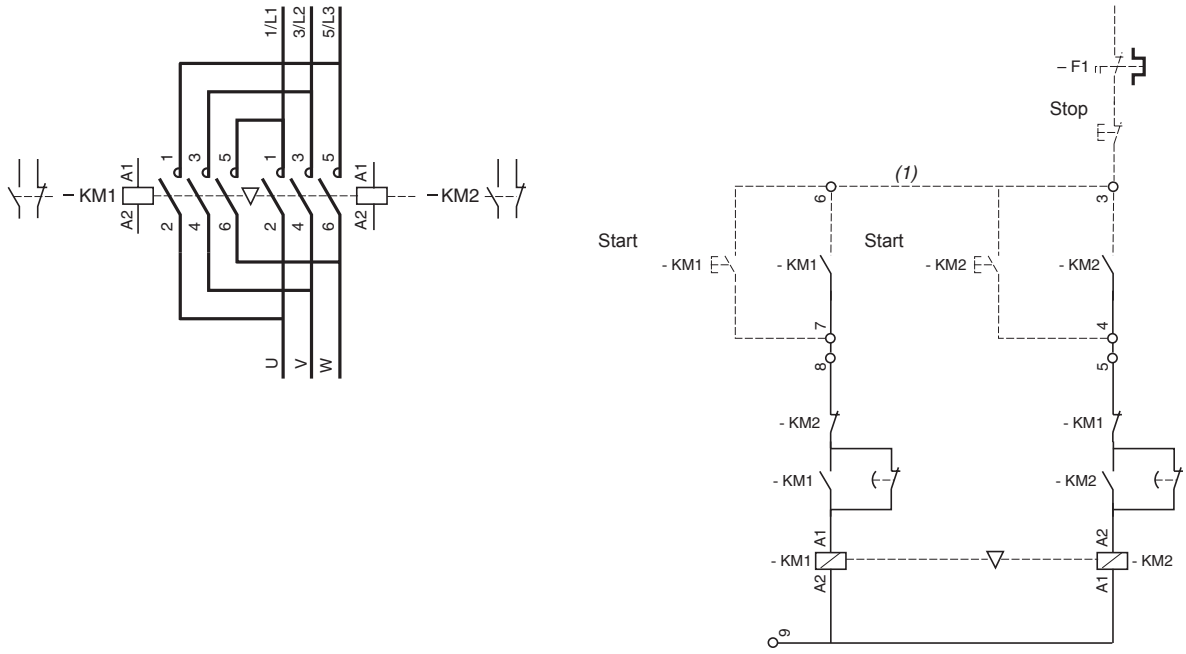


(1) Dotted line indicates wiring to be installed by the customer.

Schemes

LC2 V610

562325.eps



(1) Dotted line indicates wiring to be installed by the customer.

High power contactors

TeSys contactors
3-pole shockproof contactors LC1 FG

TeSys F

PF537334

LC1 FG150

PF537336

LC1 FG265

Presentation

In an environment subject to severe mechanical shocks, unwanted closing of a contactor's poles and the serious consequences of this, is not permissible.

Shockproof contactors **LC1 FG150** to **FG630** are equipped with an auxiliary electromechanical device which ensures that the contactor is mechanically locked in the “open” position when it’s main electromagnet is not energised.

If the contactor is subjected to mechanical impact, from back to front or from front to back, accidental closing of the poles is then impossible.

In addition, accidental opening of the poles (when the contactor is in the “on” position), is virtually impossible due to the significant pull-in force characteristic of these contactors.

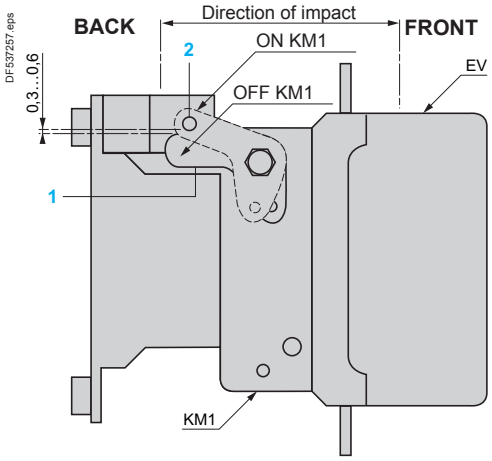
Applications

- **Marine:** on-board equipment, windlasses, capstans, winches, etc…
- **Military equipment :** land, sea, launching silos.
- **Heavy mechanical handling systems:** travelling cranes, cranes, gantries.
- **Conveying and handling:** lifts, hoists, conveyors.
- **Equipment for power stations.**
- **Distribution boards.**

TeSys contactors
3-pole shockproof contactors LC1 FG

Description of shockproof device

Shockproof contactors **LC1 FG●●●** are equipped with:
- a lever **1** that is rotated by the core of the contactor's electromagnet.
- an auxiliary electromagnet (EV) for the locking function.
- an RC circuit (Resistor-Capacitor) to limit overvoltage.

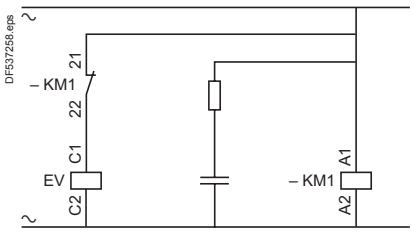


Operation

- In the 'off' position (contactor open and not energised) the core **2** of the electromagnet (EV) locks the lever **1** and therefore the contactor.
- The coils (KM1) and (EV) are energised simultaneously, the core **2** releases the lever **1** and allows the contactor to close.
- De-energisation of the locking electromagnet (EV) is achieved by an auxiliary contact within the contactor.

The core **2** rests freely in lever **1**.
- On de-energisation of coil KM1, the moving contact drops out.

Core **2**, under spring pressure, once again locks lever **1**.



High power contactors

TeSys contactors

3-pole shockproof contactors LC1 FG a.c. supply

According to the utilisation category and required electrical durability

Use in category AC-3 (Ue ≤ 440 V)

Operational current and power (θ ≤ 55 °C)

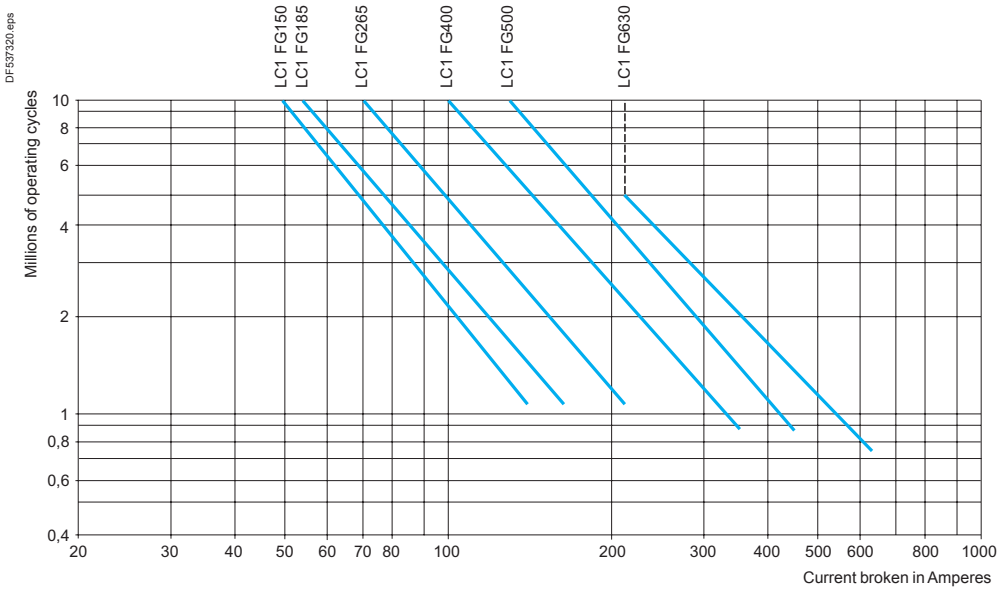
Contactors			LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
Operational current		A	150	185	265	400	500	630
Operational power Standard power ratings of motors)	220/230 V	kW	40	55	75	110	147	200
		hp	*54*	*75*	*100*	*150*	*200*	*270*
	380/400 V	kW	75	90	132	200	250	335
		hp	*100*	*185*	*180*	*270*	*340*	*450*
	415 V	kW	80	100	140	220	280	375
		hp	*110*	*136*	*180*	*300*	*380*	*500*
	440 V	kW	80	100	140	250	295	400
		hp	*110*	*136*	*190*	*340*	*400*	*545*
	500 V	kW	90	110	160	257	355	400
		hp	*125*	*150*	*220*	*350*	*480*	*545*
	660/690 V	kW	100	110	160	280	335	450
		hp	*136*	*150*	*220*	*380*	*450*	*600*
	1000 V	kW	65	100	147	185	335	450
		hp	*85*	*136*	*200*	*250*	*450*	*610*

Maximum operating rate (operating cycles/hour) (1)

On-load factor	Operational power	LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
≤ 85 %	P	750	750	750	500	500	500
≤ 85 %	0.5 P	2000	2000	2000	1200	1200	1200
≤ 25 %	P	1200	1200	1200	1200	1200	1200

(1) Depending on the operational power and the on-load factor (θ ≤ 55 °C).

Electrical durability in utilisation category AC-3 (Ue ≤ 440 V)



Control of 3-phase asynchronous squirrel cage motors with breaking whilst running.
The current broken (Ie) in category AC-3 is equal to the rated operational current of the motor.
Example:
Asynchronous motor with P = 55 kW - Ue = 380 V - Ie = 105 A
4 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1 FG265**.

Presentation: pages B9/68 and B9/69
Characteristics: pages B9/76 to B9/83
References: page B9/6
Dimensions, schemes: pages B9/84 and B9/85

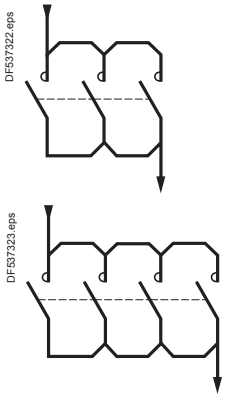
TeSys contactors
3-pole shockproof contactors LC1 FG a.c. supply
According to the utilisation category and required electrical durability

Use in category AC-1 (Ue ≤ 440 V)

Contactors				LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
Connection	Cable	C.s.a.	mm²	120	150	240	–	–	–
	Bar	Number		–	–	–	2	2	2
		C.s.a.	mm	–	–	–	30 x 5	40 x 5	60 x 5
Maximum operating rate in operating cycles/hour				600	600	600	600	600	600
Operational current AC-1		≤ 40 °C	A	250	270	350	500	700	1000
		≤ 55 °C	A	220	240	300	430	580	850
		≤ 70 °C (1)	A	170	180	250	340	500	700

(1) Only for operation with coil supplied at Uc.

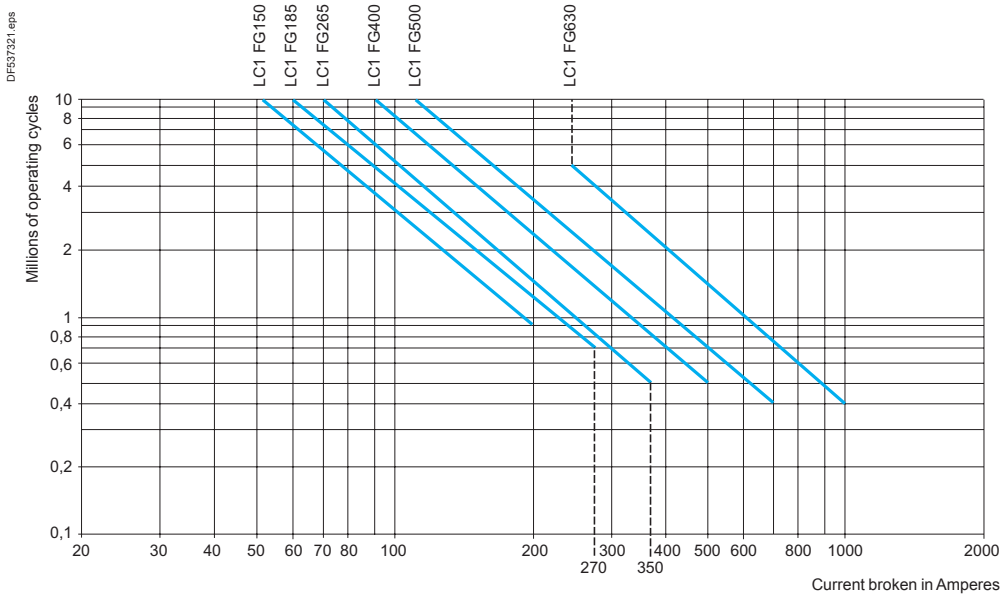
Increase in operational current by parallel connection of poles



Apply the following multiplying factors to the current values given above.
The factors take into account the often unbalanced current distribution between the 2 poles:
- 2 poles in parallel: K = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

Recommended connection scheme to equalise the currents in each pole (see opposite).

Electrical durability in utilisation category AC-1 (Ue ≤ 440 V)



Example:
Control of resistive circuits (cos φ ≥ 0.95).
The current broken (Ic) in category AC-1 is equal to the current (Ie) normally drawn by the load.
Ue = 220 V - Ic = Ie = 300 A - θ = 40 °C.
1 million operating cycles required.
The above selection curves show the contactor rating needed: **LC1 FG400**.

High power contactors

TeSys contactors
3-pole shockproof contactors LC1 FG a.c. supply
According to the utilisation category and required electrical durability

Thermal limits in utilisation categories AC-2/AC-4

Contactors		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
Thermal limit zone	**Operating cycles/hour (1) and on-load factor**	**Maximum current broken according to the duty requirements** (thermal limit, ambient temperature ⩽ 55 °C)					
A	From 150 and 15 % to 300 and 10 %	310	380	560	780	1100	1400
B	From 150 and 20 % to 600 and 10 %	280	350	500	700	950	1250
C	From 150 and 30 % to 1200 and 10 %	240	300	400	600	750	950
D	From 150 and 55 % to 2400 and 10 %	190	240	320	450	600	720
E	From 150 and 85 % to 3600 and 10 %	145	170	230	350	500	660

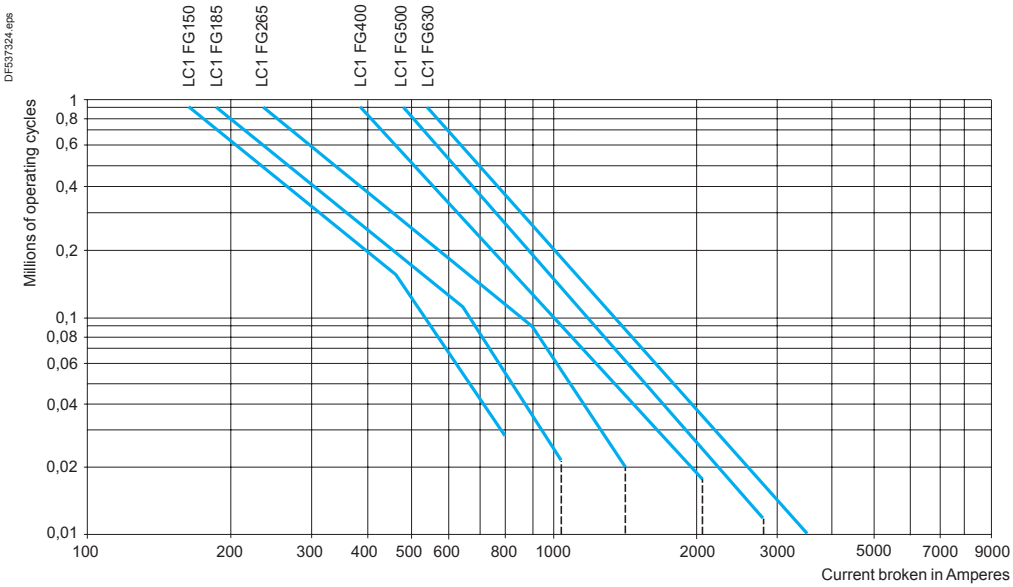
(1) Do not exceed the maximum limit for the mechanical operating cycles.

Counter current braking (plugging)

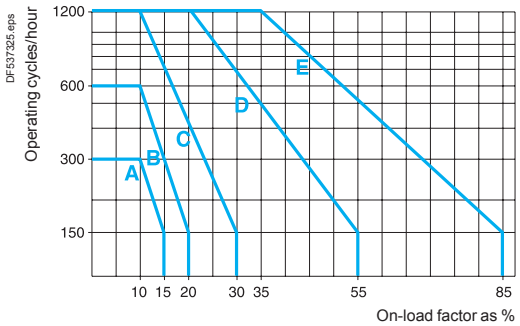
The current varies from the maximum plug-braking current to the rated motor current.
The current made must be compatible with the making and breaking capacities of the contactor.

In most cases, breaking occurs at a current value close to the locked rotor current and contactor selection can therefore be made using the criteria for utilisation categories AC-2 and AC-4.

Electrical durability in utilisation categories AC-2/AC-4 (Ue ⩽ 440 V)



Example: Contactor selection



For an on-load factor of 10 % at 400 operating cycles per hour, the curve on the left indicates zone B. If the current broken is 600 A, the above table leads to selection of an **LC1 FG400** contactor. Referring to the electrical durability curves, it can be seen that the contactor will be able to perform 350 000 operating cycles. Where a higher value of electrical durability is required, 1 million operating cycles for example, an **LC1 FG630** contactor would be recommended.

TeSys contactors
For switching 3-phase capacitor banks, used for power factor correction
Switching the primaries of 3-phase transformers (LV/LV)

Switching 3-phase capacitors

Capacitors, together with the circuits to which they are connected, form oscillatory circuits which can, at the moment of switch-on, give rise to high transient currents (> 180 In) at high frequencies (1 to 15 kHz).
The contactors are used for direct switching. The values of peak current at switch-on must not exceed the values indicated below.

An inductor or an early break resistor may be inserted in each of the three phases supplying the capacitors to reduce the peak current, if necessary. This must be done when switching multiple step capacitor banks.
Inductance values are determined according to the selected operating temperature: please refer to our “Motor starter solutions - Control and protection components” catalogue.

In addition, in accordance with standards IEC 60070, NF C 54 100, VDE 0560, the switching contactor must be able to withstand a continuous current of 1.43 times the rated current of the capacitor bank step being switched. The rated operational powers given in table the below take this overload into account.

Short-circuit protection is normally provided by g1 fuses rated at 1.3 to 1.6 In.

Maximum operational power of contactors

Maximum operating rate: 120 operating cycles/hour.
Electrical durability at maximum load: 100 000 operations.
With choke inductors connected, where necessary.

Operational power at 50/60 Hz						Maximum peak current	Contactor to be used
θ ≤ 40 °C			θ ≤ 55 °C				
220 V 240 V	400 V 440 V	600 V 660 V	220 V 240 V	400 V 440 V	600 V 660 V		
kvar	kvar	kvar	kvar	kvar	kvar	A	
60	100	135	40	85	90	3200	**LC1FG150**
70	125	160	50	100	100	3500	**LC1FG185**
90	160	225	75	125	125	5000	**LC1FG265**
125	220	300	100	160	200	8000	**LC1FG400**
180	300	400	125	220	300	10 000	**LC1FG500**
250	400	600	190	350	500	12 000	**LC1FG630**

Switching the primaries of 3-phase transformers (LV/LV)

When a transformer is switched on, there is generally an initial current surge which can reach 20 to 40 times the rated current for the power ratings shown below.
This current reaches its peak value almost instantaneously and then decreases in a largely exponential manner, quickly dropping back down to its steady state value.

Contactor selection

Operating rate less than 120 operating cycles/hour.
Maximum operational voltages: 1000 V 50/60 Hz.
The value of the peak magnetising current must be lower than the values indicated below.
Maximum ambient temperature: 55 °C.

Contactor			LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
Maximum permissible current peak at switch-on		**A**	1700	2800	3500	5500	6800	9000
Maximum operational power (1)	220 V	**kVA**	25	40	50	75	100	140
	380 V	**kVA**	50	75	90	130	170	225
	415/440 V	**kVA**	55	80	100	140	190	250
	500 V	**kVA**	65	95	110	170	225	280
	660 V	**kVA**	80	120	140	200	270	315
	1000 V	**kVA**	100	150	200	250	375	470

(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.

TeSys contactors

3-pole shockproof contactors LC1 FG d.c. supply

Selection guide for utilisation categories DC-1 to DC-5

Use in category DC-1 (resistive loads; time constant L/R ⩽ 1 ms)

Rated operational current Ie

Operational voltage (Ue)	Number of poles to be wired in series	Contactors					
		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
V		A	A	A	A	A	A
24	1	160	220	300	400	600	850
	2	160	220	300	400	600	850
	3	160	220	300	400	600	850
	4	160	220	300	400	600	850
48/75	1	160	220	300	400	600	850
	2	160	220	300	400	600	850
	3	160	220	300	400	600	850
	4	160	220	300	400	600	850
125	1	–	–	–	–	–	–
	2	130	170	300	400	550	850
	3	130	170	300	400	600	850
	4	130	170	300	400	600	850
225	1	–	–	–	–	–	–
	2	100	150	250	350	450	700
	3	130	170	300	400	600	850
	4	130	170	300	400	600	850
300	3	100	150	250	350	450	700
	4	130	170	300	400	600	850
460	4	100	150	250	350	450	700

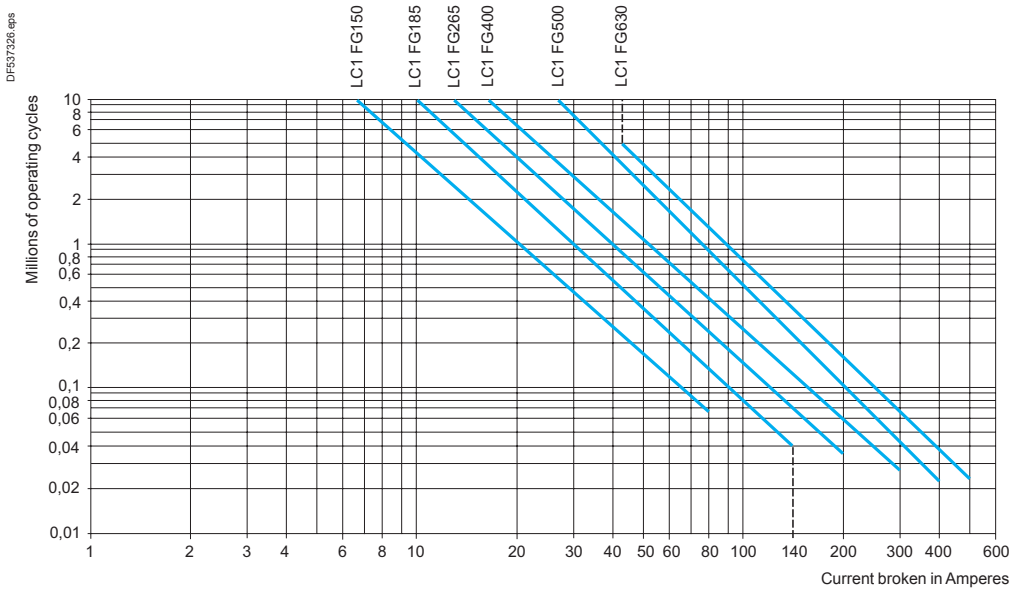
Use in category DC-2 to DC-5 (inductive loads; time constant L/R ⩽ 15 ms)

Rated operational current Ie

Operational voltage (Ue)	Number of poles to be wired in series	Contactors					
		LC1 FG150	LC1 FG185	LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
V		A	A	A	A	A	A
24	1	140	180	280	350	550	850
	2	140	180	280	350	550	850
	3	140	180	280	350	550	850
	4	140	180	280	350	550	850
48/75	1	140	180	280	350	550	850
	2	140	180	280	350	550	850
	3	140	180	280	350	550	850
	4	140	180	280	350	550	850
125	1	–	–	–	–	–	–
	2	100	140	250	350	550	850
	3	120	160	280	350	550	850
	4	120	160	280	350	550	850
225	1	–	–	–	–	–	–
	2	80	100	200	280	450	700
	3	100	140	250	350	550	850
	4	120	160	280	350	550	850
300	3	80	100	200	280	450	700
	4	120	160	280	350	550	850
460	4	80	100	200	280	450	700

TeSys contactors
3-pole shockproof contactors LC1 FG d.c. supply
Selection guide for utilisation categories DC-1 to DC-5

Electrical durability
Utilisation categories DC-1 to DC-5



Determining the electrical durability
The electrical durability can be read directly from the curve above, having previously calculated the power broken Pc. The following table gives, for each utilisation category, the value of Pc according to the operational current Ie and the operational voltage Ue.

Utilisation categories	**Pc** (Power broken)
DC-1 Non-inductive loads	Pc = Ue x Ie
DC-2 Shunt motors, breaking whilst running	Pc = 0.1 Ue x Ie
DC-3 Shunt motors, reversing	Pc = Ue x 2.5 Ie
DC-4 Series wound motors, breaking whilst running	Pc = 0.3 Ue x Ie
DC-5 Series wound motors, reversing	Pc = Ue x 2.5 Ie
Counter current braking (plugging)	Pc = 1.5 Ue x 1.5 Ie

Example:
Series wound motor, breaking whilst motor running, category DC-4.
P = 50 kW, Ue = 200 V, Ie = 250 A.
Select contactor **LC1 FG265** with 3 poles in series.
The power broken is: Pc = 0.3 Ue x Ie = 0.3 x 200 x 250 = 15 kW.
The electrical durability read from the curve is 8 million operating cycles.

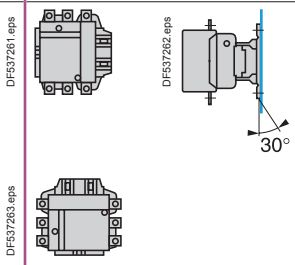
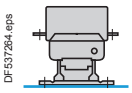
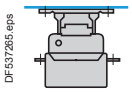
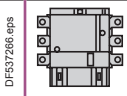
Maximum operating rate
The following operating rate used at Ie must not be exceeded: 120 operating cycles/hour.

Use of poles in parallel
The electrical durability is equal to the number of operating cycles performed by a pole, multiplied by the number of poles in parallel, multiplied by a coefficient of 0.70.

TeSys contactors
3-pole shockproof contactors LC1 FG
Control circuit: a.c.

TeSys F

Environment

Contactor type			LC1 FG150	LC1 FG185
Rated insulation voltage (Ui)	Conforming to IEC 60947-4-1	V	1000	
	Conforming to VDE 0110 gr C	V	1500	
Rated impulse withstand voltage (Uimp)	Coil not connected to the power circuit	kV	8	
Conforming to standards			EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1	
Product certifications			N.A.T.O.	
Degree of protection	Conforming to IEC 60529		IP 20 front face with shrouds LA9 F	
	Conforming to VDE 0106		Front face protected against direct finger contact with shrouds LA9 F	
Protective treatment	Standard version		"TH"	
Ambient air temperature around the device	Storage	°C	-60…+80	
	Operation	°C	-5…+55	
	Permissible at Uc (1)	°C	-40…+70	
Maximum operating altitude	Without derating	m	3000	
Operating positions	Without derating			
	With derating (3)		**Fixing A**  **Fixing B** 	
	Not to be used			
Shock resistance (2)			12 g, 50 ms on the three axes: X, Y, Z	
			15 g, 11 ms on the three axes: X, Y, Z	

*(1) In these conditions, it is recommended that coils LX9F be used for contactor sizes **FG150** to **FG265**.*
(2) In the least favourable direction, without change of contact state (coil at Uc).
(3) Horizontal fixing:
- *the operational current AC-1 is equivalent to 80 % of the value indicated in the catalogue*
- *breaking and making capacities not guaranteed*
- *mechanical and electrical durabilities not guaranteed.*

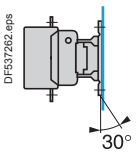
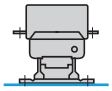
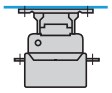
Derating of pull-in and drop-out voltage

Contactors LC1		FG150	FG185	FG265	FG400	FG500	FG630
Fixing A	Pull-in	75 %	75 %	75 %	80 %	80 %	80 %
	Drop-out	105 %	105 %	105 %	110 %	110 %	110 %
Fixing B	Pull-in	115 %	115 %	115 %	120 %	120 %	120 %
	Drop-out	90 %	90 %	90 %	95 %	95 %	95 %

Presentation: pages B9/68 and B9/69 | Selection: pages B9/70 to B9/75 | References: page B9/6 | Dimensions, schemes: pages B9/84 and B9/85

TeSys contactors
3-pole shockproof contactors LC1 FG
Control circuit: a.c.

TeSys F

LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
1000			
1500			
8			
EN 60947-1, EN 60947-4-1, IEC 60947-1, IEC 60947-4-1			
N.A.T.O.			
IP 20 front face with shrouds LA9 F			
Front face protected against direct finger contact with shrouds LA9 F			
“TH”			
-60…+80			
-5…+55			
-40…+70			
3000			
DF537261.eps  DF537262.eps 			
DF537263.eps 			
A DF537264.eps 			
B DF537265.eps 			
DF537266.eps 			
12 g, 50 ms on the three axes: X, Y, Z			
15 g, 11 ms on the three axes: X, Y, Z			

TeSys contactors
3-pole shockproof contactors LC1 FG
Control circuit: a.c.

TeSys F

Pole characteristics

Contactor type				LC1 FG150	LC1 FG185
Number of poles				3	3
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 55 °C	θ ≤ 70 °C	A	150/150	185/180
	In AC-1, θ ≤ 55 °C	θ ≤ 70 °C	A	220/170	240/180
Rated operational voltage (Ue)	Up to		V	1000	1000
Frequency limits	Of the operational current (1)		Hz	25 to 200	25 to 200
Conventional thermal current	θ ≤ 40		°C	250	275
Rated making capacity	I rms conforming to IEC 60947-4-1		A	Making current: 10 x I in AC-3	
Rated breaking capacity	I rms conforming to IEC 60947-4-1		A	Making and breaking current: 8 x I in cat. AC-3	
Permissible short time rating No current flowing for preceding 60 minutes with θ ≤ 40 °C	For 1.5 or 10 s		A	1200	1500
	For 30 s		A	700	920
	For 1 mn		A	600	740
	For 3 mn		A	450	500
	For 10 mn		A	350	400
Fuse protection against short-circuits (U ≤ 440 V)	Motor circuit (type aM)		A	160	200
	With thermal overload relay (type gG)		A	200	315
	gG fuses		A	250	315
Average impedance per pole	At Ith and 50 Hz		mΩ	0.35	0.33
Power dissipation per pole for the above operational currents	AC-3		W	8	12
	AC-1		W	22	25
Cabling Minimum c.s.a.	Bar	No. of bars		2	2
		Bar	mm	25 x 3	25 x 3
	Cable with lug		mm²	120	150
	Cable with connector		mm²	120	150
	Bolt diameter		mm	Ø8	Ø8
Tightening torque	Power circuit connections		N.m	18	18

(1) Sine wave without interference. Above these values, please consult your Regional Sales Office.

TeSys contactors
3-pole shockproof contactors LC1 FG
Control circuit: a.c.

TeSys F

LC1 FG265	LC1 FG400	LC1 FG500	LC1 FG630
3	3	3	3
265/250	400/340	500/500	630/630
300/250	430/340	580/500	850/700
1000	1000	1000	1000
25 to 200	25 to 200	25 to 200	25 to 200
350	500	700	1000
Making current: 10 x I in AC-3			
Making and breaking current: 8 x I in AC-3			
2200	3600	4200	5050
1230	2400	3200	4400
950	1700	2400	3400
620	1200	1500	2200
480	1000	1200	1600
315	400	500	630
500	630	800	800
400	500	800	1000
0.3	0.26	0.18	0.12
21	42	45	48
37	65	88	120
2	2	2	2
32 x 4	30 x 5	40 x 5	60 x 5
240	2 x 150	2 x 240	–
240	–	–	–
Ø10	Ø10	Ø10	Ø12
35	35	35	58

TeSys contactors
3-pole shockproof contactors LC1 FG
Control circuit: a.c.

TeSys F

Control circuit characteristics with LX1 coil

Contactor type					LC1 FG150	LC1 FG185
Rated control circuit voltage (Uc)		50 or 60 Hz		V	48…440	
Control voltage limits (θ ≤ 55 °C)	50 or 60 Hz coils	Operation			0.85…1.1 Uc	
		Drop-out			0.35…0.55 Uc	
	40…400 Hz coils	Operation			–	
		Drop-out			–	
Average consumption at 20 °C and at Uc	∼ 50 Hz	Inrush	50 Hz coil	VA	550	805
			40…400 Hz coil	VA	–	–
			Cos φ		0.3	0.3
		Sealed	50 Hz coil	VA	45	55
			40…400 Hz coil	VA	–	–
			Cos φ		0.3	0.3
	∼ 60 Hz	Inrush	60 Hz coil	VA	660	970
			40…400 Hz coil	VA	–	–
			Cos φ		0.3	0.3
		Sealed	60 Hz coil	VA	55	66
			40…400 Hz coil	VA	–	–
			Cos φ		0.3	0.3
Heat dissipation				W	12…16	18…24
Operating time (1)		Closing "C"		ms	23…35	20…35
		Opening "O"		ms	5…15	7…15
Mechanical durability at Uc		In millions of operating cycles			10	10
Maximum operating rate at ambient temperature ≤ 55 °C		In operating cycles per hour			2400	2400
Cabling Min/max c.s.a.	Flexible cable without cable end		1 or 2 conductors	mm²	1/4	1/4
	Flexible cable with cable end		1 conductor	mm²	1/4	1/4
			2 conductors	mm²	1/2.5	1/2.5
	Solid cable without cable end		1 or 2 conductors	mm²	1/4	1/4
Tightening torque				N.m	1.2	1.2

Characteristics of the locking electromagnet (shockproof device)

Contactor type			LC1 FG150	LC1 FG185
Control circuit voltage 50/60 Hz		V	48…440	48…440
Inrush consumption		VA	100	100
Maximum energisation time at Uc		ms	20	20
Maximum operating rate	In operating cycles per hour		2400	2400
Mechanical durability at Uc	In millions of operating cycles		1 x 10^6	1 x 10^6

(1) 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.

Presentation: pages B9/68 and B9/69 | Selection: pages B9/70 to B9/75 | References: page B9/6 | Dimensions, schemes: pages B9/84 and B9/85

LC1 FG265	**LC1 FG400**	**LC1 FG500**	**LC1 FG630**
48…440	110…440	110…440	110…440
–	–	–	–
–	–	–	–
0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc
0.35…0.55 Uc	0.3…0.5 Uc	0.3…0.5 Uc	0.25…0.5 Uc
–	–	–	–
650	1075	1100	1650
0.9	0.9	0.9	0.9
–	–	–	–
10	15	18	22
0.9	0.9	0.9	0.9
–	–	–	–
650	1075	1100	1650
0.9	0.9	0.9	0.9
–	–	–	–
10	15	18	22
0.9	0.9	0.9	0.9
8	14	18	20
40…65	40…75	40…75	40…80
100…170	100…170	100…170	100…200
10	10	10	10
2400	2400	2400	1200
1/4	1/4	1/4	1/4
1/4	1/4	1/4	1/4
1/2.5	1/2.5	1/2.5	1/2.5
1/4	1/4	1/4	1/4
1.2	1.2	1.2	1.2

LC1 FG265	**LC1 FG400**	**LC1 FG500**	**LC1 FG630**
48…440	110…440	110…440	110…440
100	100	100	100
20	20	20	20
2400	2400	2400	1200
1 x 10^6	1 x 10^6	1 x 10^6	1 x 10^6

TeSys contactors
Auxiliary contact blocks
for 3-pole shockproof contactors LC1 FG

TeSys F

Environment

Contact block type			LAD N	LAD T and LAD S	LAD R
Conforming to standards			IEC 60947-5-1, NF C 63-140, VDE 0660, BS 4794, EN 60947-5-1		
Product certifications			UL, CSA		
Protective treatment	Conforming to IEC 60068		"TH"		
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP2X		
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 Ø6 mm. Flexible or solid cable with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5		

Instantaneous and time delay contact characteristics

Contact block type			LAD N	LAD T and LAD S	LAD R
Number of contacts			1 or 4	2	2
Rated operational voltage (Ue)	Up to	V	660		
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V	690		
	Conforming to UL, CSA	V	600		
Conventional thermal current (Ith)	For ambient temperature ⩽ 60 °C	A	10		
Frequency of the operational current		Hz	25…400		
Minimum switching capacity	U min	V	17		
	I min	mA	5		
Short-circuit protection	Conforming to IEC 60947-5-1 and VDE 0660. gG fuse	A	10		
Rated making capacity	Conforming to IEC 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)		
Time delay (LADT, 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

Rated operational power of contacts Conforming to IEC 60947-5-1		V	24	48	110/127	220/230	380/400	440	600
	1 million operating cycles	VA	150	300	400	480	500	500	500
	3 million operating cycles	VA	80	170	250	290	320	320	320
	10 million operating cycles	VA	30	65	90	120	130	130	130
	Occasional making capacity	VA	1200	2600	7000	13 000	15 000	13 000	9000

References: page B9/27
Schemes: page B9/85

TeSys contactors
Auxiliary contact blocks
for 3-pole shockproof contactors LC1 FG

TeSys F

Environment

Module type			LAD T (On-delay)	LAD R (Off-delay)
Conforming to standards			IEC 60255-5	
Product certifications			UL, CSA	
Protective treatment	Conforming to IEC 60068		"TH"	
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact IP2X	
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 IEC 60947-1	V	250	
Cabling	Phillips n° 2 and Ø6 mm. Flexible or solid cable with or without cable end	mm²	Min: 1 x 1; max: 2 x 2.5	

Control circuit characteristics

Module type			LAD T (On-delay)	LAD R (Off-delay)
Built-in protection	Of the input		By varistor	By varistor
	Contactor coil suppression		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
Control type			By mechanical contact only	By mechanical contact only connecting cable < 10 m

Time delay characteristics

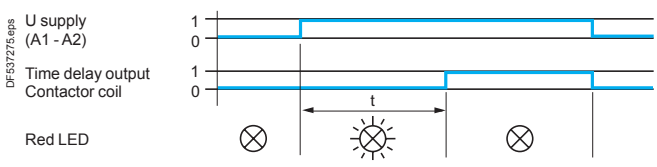
Module type			LAD T (On-delay)	LAD R (Off-delay)
Timing ranges		s	0.1…2 ; 1.5…30 ; 25…500	0.1…2 ; 1.5…30 ; 25…500
Repeat accuracy	0…40 °C		±3 % (10 ms minimum)	±3 % (10 ms minimum)
Reset time	During time delay period	ms	150	225
	After time delay period	ms	50	–
Immunity to microbreaks	During time delay period	ms	10	20
	After time delay period	ms	2	–
Minimum impulse duration		ms	–	40
Time delay signalling	By LED		Illuminates during time delay period	Illuminates during time delay period

Switching characteristics (solid state type)

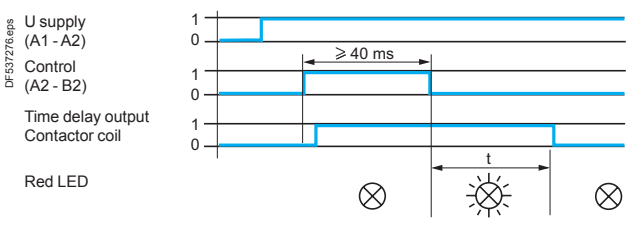
Module type			LAD T (On-delay)	LAD R (Off-delay)
Maximum power dissipated		W	2	3.5
Leakage current		mA	< 5	< 5
Residual voltage		V	3.3	3.3
Overvoltage protection			3 kV; 0.5 joule	3 kV; 0.5 joule
Electrical durability	In millions of operating cycles		30	30

Operating diagrams

Electronic On-delay timer LAD T



Electronic Off-delay timer LAD R



References:
page B9/27

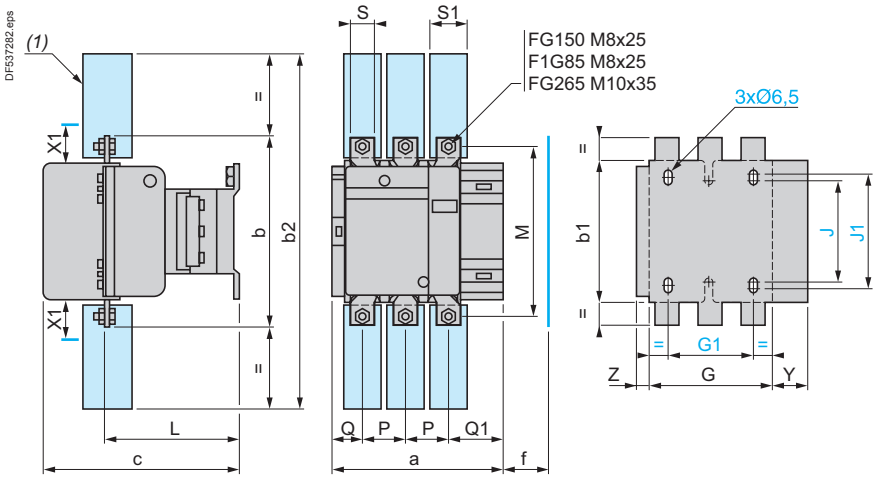
Schemes:
page B9/85

TeSys contactors
3-pole shockproof contactors LC1 FG

TeSys F

Dimensions

LC1 FG150, FG185 and FG265



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

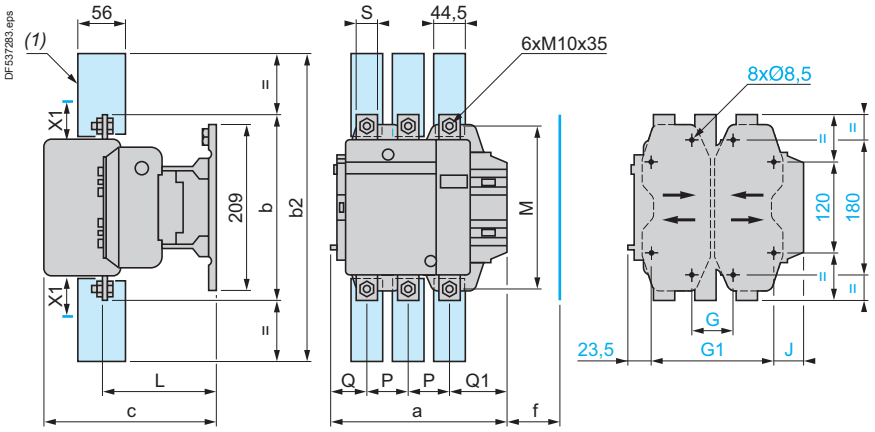
LC1	200…500 V	600…1000 V
FG150	10	15
FG185	10	15
FG265	10	15

(1) Power terminal protection shroud (see page B9/14).

LC1	a	b	b1	b2	c	f	G	G1	J	J1	L	M	P	Q	Q1	S	S1	Y	Z
FG150	181	170	137	301	180	131	106	80	106	120	116	150	40	26	57.5	20	34	44	13.5
FG185	183.5	174	137	305	190	130	111	80	106	120	122.5	154	40	29	59.5	20	34	44	13.5
FG265	217.5	203	145	375	222	147	142	96	106	120	150	178	48	39	66.5	25	44.5	38	21.5

f = minimum distance required for coil removal.

LC1 FG400 and FG500



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200…500 V	600…1000 V
FG400	15	20
FG500	15	20

(1) Power terminal protection shroud (see page B9/14).

LC1	a	b	b2	c	f	G supplied	G min.	G max.	G1 supplied	G1 min.	G1 max.	J	L	M	P	Q	Q1	S
FG400	237	206	375	234	146	80	66	102	223	156	192	19.5	160	181	48	75	74	25
FG500	257	238	400	247	150	80	66	120	223	156	210	39.5	181	208	55	78	77	30

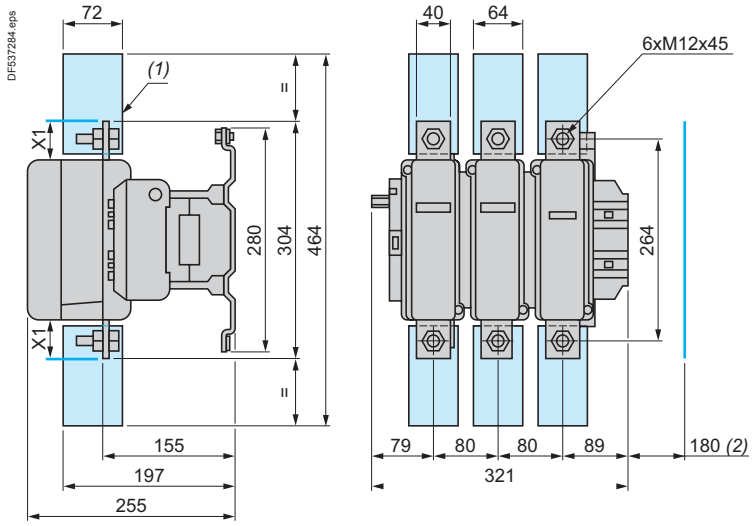
f = minimum distance required for coil removal.

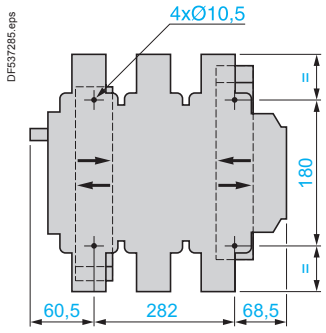
TeSys contactors
3-pole shockproof contactors LC1 FG

TeSys F

Dimensions

LC1 FG630





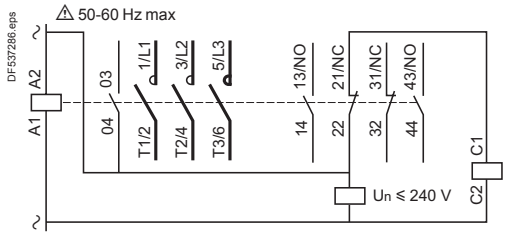
X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200…500 V	690…1000 V
FG630	20	30

(1) Power terminal protection shroud (see page B9/14).
(2) Minimum distance required for coil removal.

Schemes

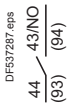
Contactors LC1-FG150 to FG630



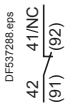
Add-on blocks

Instantaneous auxiliary contacts

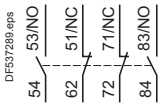
1 N/O LAD N10



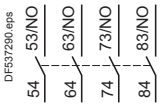
1 N/C LAD N01



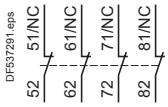
2 N/O + 2 N/C LAD N22



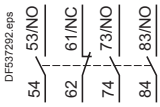
4 N/O LAD N40



4 N/C LAD N04

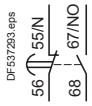


3 N/O + 1 N/C LAD N31

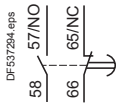


Time delay auxiliary contacts

On-delay 1 N/O + 1 N/C LAD T●

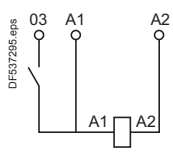


Off-delay 1 N/O + 1 N/C LAD R●



Coils ∿

LX1 FF, FG, FH, FJ, FK and FL



High power contactors

TeSys contactors
Magnetic latching contactors

Magnetic latching contactors of both block and bar mounted types are fitted with a special electromagnet which enables them to remain in the “On” position when the coil is no longer energised.

Applications

The special properties of magnetic latching contactors make them suitable for a large number of applications.

Properties

■ Retention of the sequence memory in automatic control equipment in the event of loss of control voltage.
■ Energy saving, since the source of supply to the coil does not need to supply current when the contactor is latched in the closed state.
■ Change of state from “Closed” to “Open” by current signal through the coil.
■ Unaffected by mains interference.
■ Utilisation of contactors beyond their breaking capacity, as operations are performed off-load.
■ Contactors are silent in the latched position.

Applications

■ Refineries, power stations, excitation circuits.
■ Contactors remaining in the closed state for long periods.
Examples: refineries, power supplies, low voltage distribution.
■ Selective opening control.
■ No unwanted opening and closing of the main power poles.
■ Current carrying at voltages up to 1000 Volts.

Operation of the electromagnet

CR1 F block contactors

CR1 F magnetic latching contactors are fitted with a double coil with 3 terminals comprising a latching winding and an unlatching winding. The 2 windings have a common point which can necessitate special wiring precautions when the latching supply is separate from the unlatching supply.

The power supplies may be a.c. or d.c. For d.c. operation, the polarities indicated must be complied with.

Operating precautions:
■ the 2 windings must not be supplied simultaneously
■ a winding must not be supplied continuously
■ supply to the coils must be via pulsed contacts.

Manual opening:
if the control voltage is not present, the contactor can be unlatched manually.

CR1 B bar mounted contactors

CR1 B magnetic latching contactors are fitted with a single coil, supplied with d.c. or with a.c. through a rectifier.

Latching is obtained by direct supply of the coil in one direction of current flow.

Unlatching is obtained by a reverse current, adjusted by resistors.

Mechanical latching contactors

LC1 D block contactors

For applications using smaller contactor sizes than those described on page B9/78, it is possible to obtain the same function by the addition of a mechanical latch block type LA6 DK, which can be mounted on LC1 D contactors (see page B9/78).

TeSys contactors

Magnetic latching contactors

Selection guide for direct on-line starting of squirrel cage motors

Continuous or intermittent duty up to 30 operating cycles/hour

Motor (1)												3-pole contactor	3-pole differential thermal overload relay		3 fuses Type	
220 V 230 V			380 V 400 V			415 V			440 V			(2)	Reference	Setting range	aM	BS-88
P		In	P		In	P		In	P		In	Reference			Rating	
kW	HP	A	kW	HP	A	kW	HP	A	kW	HP	A			A	A	A
25	35	85	–	–	–	–	–	–	–	–	–	CR1F150	LR9F5367	60…100	100	125
30	40	103	51	70	98	55	75	100	59	80	97	CR1F150	LR9F5369	90…150	100	160
33	45	113	55	75	105	–	–	–								
–	–	–	59	80	112	59	80	105	63	85	109	CR1F150	LR9F5369	90…150	125	160
–	–	–	63	85	117	63	85	115	–	–	–					
37	50	126	75	100	138	75	100	135	75	100	125	CR1F150	LR9F5369	90…150	160	200
40	54	134	–	–	–	–	–	–	80	110	131					
45	60	150	80	110	147	80	110	138	90	125	146	CR1F185	LR9F5369	90…150	160	200
51	70	170	90	125	170	90	125	165	100	136	162	CR1F185	LR9F5371	132…220	200	250
55	75	182	–	–	–	100	136	182	–	–	–					
59	80	195	100	138	188	110	150	200	110	150	178	CR1F265	LR9F5371	132…220	250	315
63	85	203	110	150	205	–	–	–	129	175	209					
75	100	240	129	175	242	129	175	230	132	180	215	CR1F265	LR9F7375	200…330	250	315
–	–	–	132	180	245	132	180	240	–	–	–					
–	–	–	–	–	–	140	190	250	140	190	227	CR1F265	LR9F7375	200…330	315	400
80	110	260	140	190	260	147	200	260	147	200	236	CR1F400	LR9F7375	200…330	315	400
–	–	–	147	200	273	150	205	270	150	205	246					
–	–	–	150	205	280	160	220	280	160	220	256					
90	125	295	160	220	300	–	–	–	180	245	289	CR1F400	LR9F7375	200…330	315	400
–	–	–	–	–	–				185	250	295					
100	136	325	180	245	333	180	245	320	200	270	321	CR1F400	LR9F7379	300…500	400	500
110	150	356	185	250	342	185	250	325	220	300	353					
–	–	–	200	270	370	200	270	340	250	340	401	CR1F400	LR9F7379	300…500	400	500
						220	300	385	–	–	–					
129	175	420	220	300	408	–	–	–	257	350	412	CR1F500	LR9F7379	300…500	500	630
132	180	425	250	340	460	250	340	425	280	380	450	CR1F500	LR9F7381	380…630	500	630
140	190	450	–	–	–	257	350	450	–	–	–					
147	200	472	–	–	–	–	–	–	295	400	473	CR1F500	LR9F7381	380…630	500	630
–	–	–	257	350	475	280	380	475	300	410	481	CR1F630	LR9F7381	380…630	500	630
			–	–	–	295	400	500	–	–	–					
150	205	483	280	380	510	300	410	510	315	430	505	CR1F630	LR9F7381	380…630	630	800
160	220	520	295	400	546	315	430	535	335	450	518					
180	245	578	300	410	565	335	450	550	355	480	549	CR1F630	LR9F7381	380…630	630	800
185	250	595	315	430	584	355	480	580	375	500	575					
200	270	626	335	450	620	375	500	610	400	454	611	CR1F630	LR9F7381	380…630	800	1000
220	★	700	355	★	635	400	★	650	425	★	650	CR1BL33		500…800	800	1000
			375	★	670	425	★	690	445	★	680					
			400	★	710	445	★	730	450	★	690					
			–		–	450	★	740	475	★	730					
250	★	800	425	★	760	475	★	780	500	★	780	CR1BM33		500…800	800	1000
257	★	826	445	★	790	500	★	820	530	★	825	CR1BM33		630…1000	1000	1250
280	★	900	450	★	800	530	★	870	560	★	870					
295	★	948	475	★	850	560	★	920	600	★	920					
300	★	980	500	★	900	600	★	978	630	★	965					
315	★	990	530	★	950											

(1) The ratings are for standard 220/230 V, 380/400 V, 415 or 440 V motors. The overload relays should preferably be set to the motor full-load current shown on the motor rating plate. For other power ratings, select the overload relay with the appropriate range; the associated contactor and fuses must have ratings equal to or immediately greater than In.

(2) Reference to be completed, see page B9/79.

★ There are no standard power ratings for these motors.

TeSys contactors

Magnetic latching contactors

Selection guide for utilisation category AC-3

TeSys F

Rated operational current in AC-3 ($\theta \leq 55$ °C)											
Contactor size		**CR1 F150**	**CR1 F185**	**CR1 F265**	**CR1 F400**	**CR1 F500**	**CR1 F630**	**CR1 BL**	**CR1 BM**	**CR1 BP**	**CR1 BR**
440 V	**A**	150	185	265	400	500	630	750	1000	1500	1800
500 V	**A**	135	175	245	385	500	540	750	900	1200	1500
660/690 V	**A**	130	140	230	365	435	470	700	800	900	1100
1000 V	**A**	47	73	95	135	270	330	400	400	500	600
Rated operational power (standard motor power ratings)											
220…240 V	**kW**	40	55	75	110	147	200	220	280	425	500
	HP	*54*	*75*	*100*	*150*	*200*	*270*	*300*	*380*	*580*	*680*
380…400 V	**kW**	75	90	132	200	250	335	400	500	750	900
	HP	*100*	*185*	*180*	*270*	*340*	*450*	*545*	*680*	*1000*	*1220*
415 V	**kW**	80	100	140	220	280	375	425	530	800	900
	HP	*110*	*136*	*180*	*300*	*380*	*500*	*580*	*720*	*1100*	*1220*
440 V	**kW**	80	100	140	250	295	400	450	560	800	900
	HP	*110*	*136*	*190*	*340*	*400*	*545*	*610*	*760*	*1100*	*1220*
500 V	**kW**	90	110	160	257	355	400	500	600	750	900
	HP	*125*	*150*	*220*	*350*	*480*	*545*	*680*	*810*	*1000*	*1220*
660/690 V	**kW**	100	110	160	280	335	450	560	670	750	900
	HP	–	–	–	–	–	*610*	*760*	*910*	*1000*	*1220*
1000 V	**kW**	65	100	147	185	335	450	530	530	670	750
	HP	–	*136*	*200*	*250*	–	*610*	*720*	*720*	*910*	*1000*

Maximum operating rate in operating cycles/hour, at rated operational power with an on-load factor = 85 %: 750 for CR1 F150 to F265, 500 for CR1 F400 to F630 and 120 for CR1 B.

Characteristics: pages B9/92 to B9/95
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

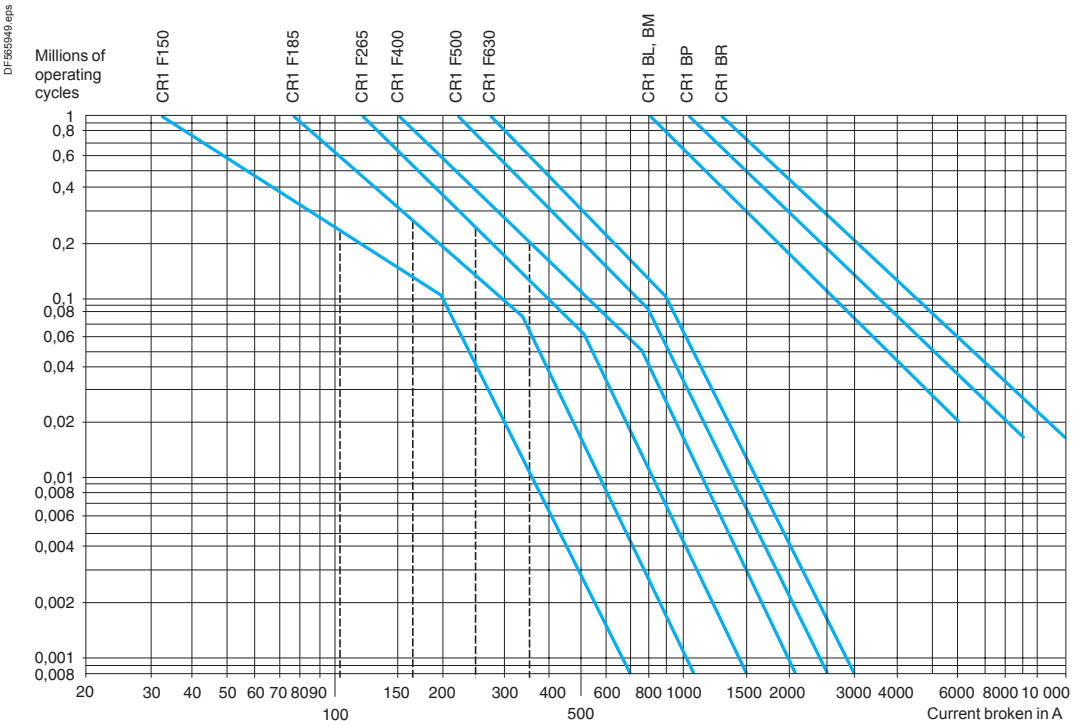
TeSys contactors

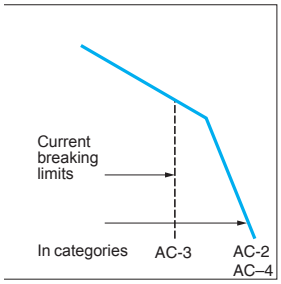
Magnetic latching contactors

Selection according to required electrical durability

Use in category AC-3 (Ue ≤ 440 V) (1) (θ ≤ 55 °C)

The current (Ic) in AC-3 is equal to the rated operational current (Ie) drawn by the motor.





Example:
Asynchronous motor with P = 50 kW, Ue = 380 V, Ie = 100 A, Ic = Ie = 100 A, or asynchronous motor with P = 55 kW, Ue = 415 V, Ie = 100 A, Ic = Ie = 100 A.
600000 operating cycles required.
The above selection curves show the contactor rating needed, CR1 F185.

(1) For 660 V, multiply the number of operating cycles by 0.8.

Characteristics: pages B9/92 to B9/95
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

TeSys contactors

Magnetic latching contactors

Selection guide for utilisation category AC-1 and according to required electrical durability

Maximum operational current (on-load factor ≥ 0.95)

Maximum operating rate: 120 operating cycles/hour

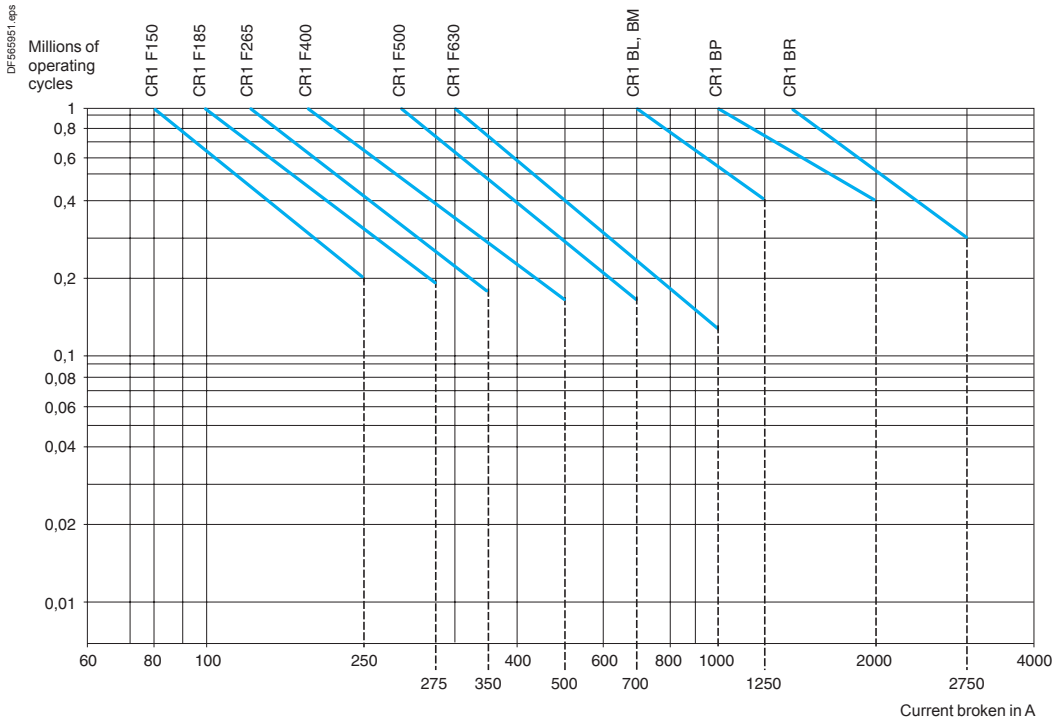
Contactor size			CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
Cable c.s.a.		mm²	120	150	185	–	–	–	–	–	–	–
Number of bars			–	–	–	2	2	2	2	2	3	4
Bar c.s.a.		mm	–	–	–	30 x 5	40 x 5	60 x 5	50 x 5	80 x 5	100 x 5	100 x 5
Operational current in category AC-1 at ambient temperature	≤ 40 °C	A	250	275	350	500	700	1000	800	1250	2000	2750
	≤ 55 °C	A	250	275	300	430	580	850	700	1100	1750	2400
	≤ 70 °C	A	170	180	250	340	500	700	600	900	1500	2000

Increase in operational current by parallel connection 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 = 1.6
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

(1)



Example:

Ue = 220 V - Ie = 200 A - θ = 40 °C - Ic = Ie = 200 A

600000 operating cycles required.

The above selection curves show the contactor rating needed, CR1 F400.

(1) For 660 V, multiply the number of operating cycles by 0.8.

Characteristics: pages B9/92 to B9/95

References: pages B9/7, B9/30 to B9/35

Dimensions: pages B9/96 to B9/99

TeSys contactors

Magnetic latching contactors

Selection guide for switching the primaries of 3-phase transformers

Operating conditions

Maximum ambient temperature: 55 °C.
Maximum operational voltage: 1000 V, 50…60 Hz.

When a transformer is switched on, there is generally an initial current surge which reaches its peak value almost instantaneously and then decreases in a largely exponential manner to quickly reach its steady state value.

The value of this current depends on:
- the characteristics of the magnetic circuit and of the windings (cross sectional area of the core, rated inductance, number of turns, size of the windings, ...)
- the performance of the magnetic laminations used (residual induction and saturation inductance),
- the magnetic state of the circuit and the instantaneous value of the a.c. mains voltage at the moment of switch-on.

The peak current at the moment of switch-on can reach 20 to 40 times the rated current for the various kVA power ratings in the tables below. This value is independent of the “no-load” or “on-load” state of the transformer.

The peak magnetising current of the transformer must be lower than the values given in the tables below.

Contactor selection

Maximum operating rate: 120 operating cycles/hour

Contactor size			CR1 F150	CR1 F185	CR1 F265	CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
Maximum permissible current peak at switch-on		**A**	1700	2800	3500	5500	6800	9000	18 000	18 000	24 000	30 000
Maximum operational power (1)	220…230 V	**kVA**	25	40	50	75	100	140	230	230	300	380
	380…400 V	**kVA**	50	75	90	130	170	225	400	400	530	660
	415…440 V	**kVA**	55	80	100	140	190	250	450	450	560	700
	500 V	**kVA**	65	95	110	170	225	280	480	480	600	750
	660 V	**kVA**	80	120	140	200	270	315	600	600	800	950
	1000 V	**kVA**	100	150	200	250	375	470	700	700	1000	1200

(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.

Characteristics: pages B9/92 to B9/95
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

TeSys contactors
Magnetic latching contactors

TeSys F

Environment

Contactor type			CR1 F150	CR1 F185	CR1 F265
Rated insulation voltage (Ui)	Conforming to IEC 60158-1, BS 775, 60947-4	V	1000	1000	1000
	Conforming to VDE 0110 grC	V	1500	1500	1500
Protective treatment	Standard version		"TH"		
	Special version		–		
Ambient air temperature around the device	Storage	°C	-60…+80		
	For operation at Uc	°C	-15…+70		
Maximum operating altitude	Without derating	m	3000		
Operating positions	Without derating		±5 °		

Pole characteristics

Number of poles				3 or 4	3 or 4	3 or 4
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 40 °C		A	150	185	265
	In AC-1, θ ≤ 40 °C		A	250	275	350
	In AC-4, θ ≤ 40 °C		A	138	170	245
Rated operational voltage (Ue)	Up to		V	1000	1000	1000
Frequency limits (sine wave)	Of the opeational current		Hz	25…200	25…200	25…200
Rated making capacity	I rms		A	1700	2100	2940
Rated breaking capacity	I rms	220…440 V	A	1500	1800	2450
		500 V	A	1200	1600	2200
		660/690 V	A	1100	1200	1700
		1000 V	A	450	600	800
Permissible short time rating from cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C	For 1 s		A	1200	1500	2200
	For 5 s		A	1200	1500	2200
	For 10 s		A	1200	1500	2200
	For 30 s		A	700	920	1230
	For 1 min		A	600	740	950
	For 3 min		A	450	500	620
	For 10 min		A	350	400	480
Short-circuit protection by fuses θ ≤ 440 V	Motor circuit AC-3 (type aM)		A	160	200	315
	AC-1 circuit (type gG, BS 88)		A	250	315	400
Average impedance per pole	At Ith and 50 Hz		mΩ	0.45	0.36	0.32
Power dissipated per pole for the above operational currents	AC-3		W	6	12	22
	AC-1		W	18	26	39
Connection	Number of conductors			1	1	1
	Cable with lugs		mm^2	120	150	240
	Cable with connector		mm^2	120	150	240
	Number of bars			2	2	2
	Bar c.s.a.		mm	25 x 3	25 x 3	32 x 4
	Bolt diameter			Ø8	Ø8	Ø10
	Tightening torque		N.m	18	18	35

Selection: pages B9/87 to B9/91
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

TeSys contactors
Magnetic latching contactors

TeSys F

CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
1000	1000	1000	1000	1000	1000	1000
1500	1500	1500	1500	1500	1500	1500
"TH"			"TC"			
–			"TH"			
-60…+80			-60…+80			
-15…+70			-15…+60			
3000			3000			
±5 ° in relation to normal vertical mounting plane			±5 ° in relation to normal vertical mounting plane			
3 or 4	3 or 4	3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4
400	500	630	750	1000	1500	1800
500	700	1000	800	1250	2000	2750
370	460	560	700	800	1250	1500
1000	1000	1000	1000	1000	1000	1000
25…200	25…200	25…200	50…60	50…60	50…60	50…60
4500	5000	6740	10 000	10 000	15 000	18 000
4000	5000	6300	10 000	10 000	15 000	18 000
3500	4500	5400	9000	9000	12 000	15 000
3000	3560	4600	8000	8000	9000	11 000
1200	2500	3200	4000	4000	5000	6000
3600	4200	5050	9600	9600	12 000	15 000
3600	4200	5050	9600	9600	12 000	15 000
3600	4200	5050	7000	8000	9600	12 000
2400	3200	4400	4800	5200	6400	8000
1700	2400	3400	3500	3800	5200	6300
1200	1500	2200	2100	2400	3600	4400
1000	1200	1600	1200	1800	2800	3600
400	500	630	800	1200	800 x 2 (1)	1000 x 2 (1)
500	800	1000	800	1200	1000 x 2 (1)	1200 x 2 (1)
0.28	0.18	0.12	0.18	0.18	0.13	0.09
45	45	48	88	180	290	360
70	88	120	115	280	520	680
2	2	–	–	–	–	–
150	240	–	–	–	–	–
–	–	–	–	–	–	–
2	2	2	2	2	3	4
30 x 5	40 x 5	60 x 5	50 x 5	80 x 5	100 x 5	100 x 10
Ø10	Ø10	Ø12	4 x Ø8	4 x Ø10	4 x Ø10	4 x Ø10
35	35	58	21	35	35	35

(1) Paralleling of poles must be carried out only in accordance with the fuse manufacturer's recommendations.

TeSys contactors
Magnetic latching contactors

TeSys F

Control circuit characteristics

Contactor type					CR1 F150	CR1 F185	CR1 F265
Rated control circuit voltage (Uc)	∿ 50 or 60 Hz			V	48…415		
	∿ 400 Hz			V	48…220		
	⎓			V	48…220		
	⎓ low consumption			V	48…220		
Control voltage limits ∿ and ⎓	Latching				0.85…1.1 Uc		
	Unlatching				0.85…1.1 Uc		
Maximum operating rate at ambient temperature ≤ 40 °C	In operating cycles per hour				120		
Mechanical durability	In millions of operating cycles				1		
Average consumption 50/60 Hz	Latching	1-pole		VA	–	–	–
		2-pole		VA	–	–	–
		3-pole		VA	1100	1600	1650
		4-pole		VA	100	1600	1650
	Unlatching	1-pole		VA	–	–	–
		2-pole		VA	–	–	–
		3-pole		VA	7.3	8	9
		4-pole		VA	7.3	8	9
400 Hz and ⎓	Latching	1-pole		VA	–	–	–
		2-pole		VA	–	–	–
		3-pole		VA	1260	1750	1800
		4-pole		VA	1260	1750	1800
	Unlatching	1-pole		VA	–	–	–
		2-pole		VA	–	–	–
		3-pole		VA	10	11	12
		4-pole		VA	10	11	12
⎓ low consumption	Latching	3/4-pole		W	500	500	500
	Unlatching	3/4-pole		W	15	20	40
Average operating time at Uc (1)	Latching			ms	35…40	35…40	45…50
	Unlatching			ms	50…100	50…100	50…100

(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.

Note: *the arcing time depends on the circuit switched by the main poles. For 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.*

Auxiliary contact characteristics

Type of contacts			LAD N for contactors CR1 F
Conventional thermal current		A	10
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V	690
Connection	Flexible or solid conductor with or without cable end	mm²	1 x 1 min; 2 x 2.5 max

Operational power of contacts LAD N for contactors CR1 F

a.c. supply

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).

	V	48	115	230	400	600
1 million operating cycles	VA	120	280	560	960	1440
Occasional making capacity	VA	2600	7000	13 000	15 000	9000

d.c. supply

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.

V	48	125	250	440
W	90	75	68	61
W	700	400	260	220

Selection: pages B9/87 to B9/91
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

TeSys contactors
Magnetic latching contactors

TeSys F

CR1 F400	CR1 F500	CR1 F630	CR1 BL	CR1 BM	CR1 BP	CR1 BR
48…415			110…500			
48…220			110…500			
48…220			110…500			
48…220			–			
0.85…1.1 Uc			0.85…1.1 Uc			
0.85…1.1 Uc			0.85…1.1 Uc			
120			120			
1			1			
–	–	–	650	650	650	650
–	–	–	1100	1100	1100	1100
1450	1650	2100	1650	1650	1650	1650
1450	1650	2100	1850	1850	1850	1850
–	–	–	110	110	110	110
–	–	–	125	125	125	125
12	9.5	8	165	165	165	165
12	9.5	8	175	175	175	175
–	–	–	600	600	600	600
–	–	–	1000	1000	1000	1000
1600	1800	2300	1500	1500	1500	1500
1600	1800	2300	1700	1700	1700	1700
–	–	–	100	100	100	100
–	–	–	115	115	115	115
16	13	11	150	150	150	150
16	13	11	160	160	160	160
500	550	620	–	–	–	–
70	60	45	–	–	–	–
40…75	40…80	40…80	100…150	100…150	100…150	100…150
50…100	50…100	50…100	20…40	20…40	20…40	20…40

(1) The closing time is measured from the moment the closing coil is energised to initial contact of the main poles. The opening time is measured from the moment the opening coil is energised to the moment the main poles separate.

Note: *the arcing time depends on the circuit switched by the main poles. For 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.*

LAD N for contactors CR1 F	ZC4 GM for contactors CR1 B
10	20
690	660
1 x 1 min; 2 x 2.5 max	2 min; 4 max

Operational power of contacts ZC4 GM for contactors CR1 B

a.c. supply

Electrical durability (valid for up to 2400 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).

	V	110 127	220	380	415 440	500
1 million operating cycles	VA	2000	4000	4000	4000	3500
Occasional making capacity	VA	14000	23000	35000	45000	35000

d.c. supply

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.

V	110	120	440	500
W	250	250	230	200
W	1600	800	400	360

Selection: pages B9/87 to B9/91
References: pages B9/7, B9/30 to B9/35
Dimensions: pages B9/96 to B9/99

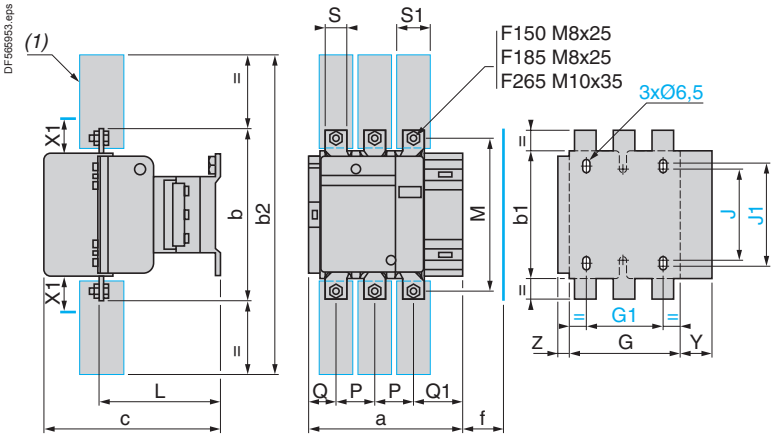
TeSys contactors
Magnetic latching contactors CR1 F

TeSys F

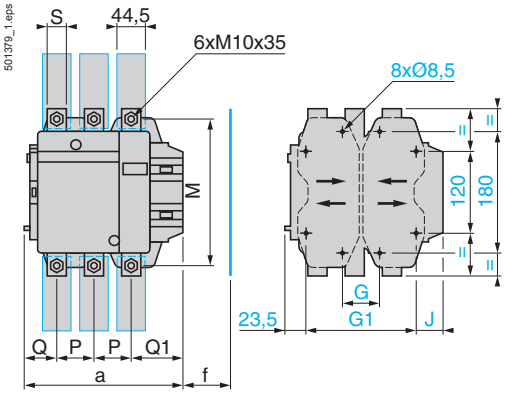
CR1 F150 to F500

Common side view

CR1 F150, F185, F265



CR1 F400, F500



CR1	F150		F185		F265	
	3P	4P	3P	4P	3P	4P
a	163.5	201.5	168.5	208.5	201.5	244.5
b	170	170	174	174	203	203
b1	137	137	137	137	145	145
b2	301	301	305	305	370	370
c	171	171	181	181	213	213
f	131	131	130	130	147	147
G	106	143	111	151	142	190
G1	80	80	80	80	96	96
J	106	106	106	106	106	106
J1	120	120	120	120	120	120
L	107	107	113.5	113.5	141	141
M	150	150	154	154	178	178
P	40	40	40	40	48	48
Q	26	26	29	29	39	34
Q1	57.5	55.5	59.5	59.5	66.5	66.5
S	20	20	20	20	25	25
S1	27	27	34	34	38	38
Y	44	44	38.5	30.5	30.5	21.5
Z	13.5	13.5	13.5	13.5	15.5	15.5

f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

Voltage in V	200…500	660…1000
CR1 F150	10	15
CR1 F185	10	15
CR1 F265	10	15

CR1	F400		F500	
	3P	4P	3P	4P
a	213	261	233	288
G min.	66	66	66	66
b	206	206	238	238
b2	375	375	400	400
c	219	219	232	232
f	146	146	150	150
G supplied	80	80	80	140
G max.	102	150	120	175
G1 supplied	170	170	170	230
G1 min.	156	156	156	156
G1 max.	192	240	210	265
J	12	60	32	27
L	145	145	146	146
M	181	181	208	208
P	48	48	55	55
Q	43	43	47	47
Q1	74	74	77	77
S	25	25	30	30

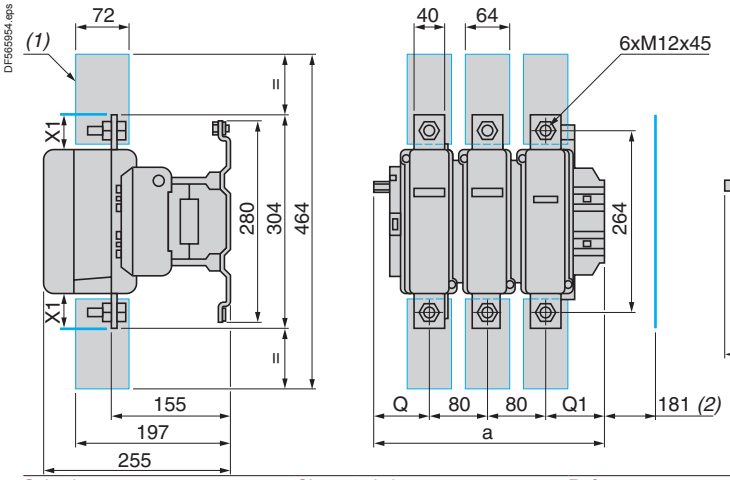
f = minimum distance required for coil removal.

X1: Minimum electrical clearance according to operational voltage and breaking capacity.

Voltage in V	200…500	660…1000
CR1 F400	15	20
CR1 F500	15	20

(1) Power terminal protection shroud (see page B9/14).

CR1 F630



CR1 F630	3P	4P
a	309	389
G supplied	180	240
G min.	100	150
G max.	195	275
J1	61	81
Q	60	60
Q1	89	89

X1: Min. electrical clearance according to operational voltage and breaking capacity.

Voltage in V	X1
200…500	20
690…1000	30

(1) Power terminal protection shroud.
(2) Minimum distance required for coil removal.

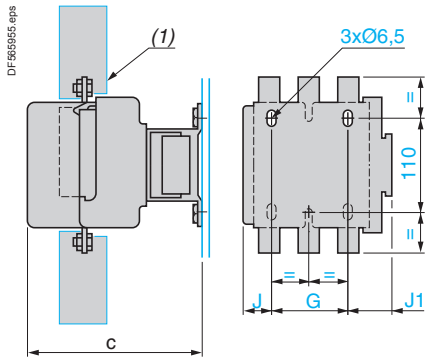
Selection: pages B9/87 to B9/91
Characteristics: pages B9/92 to B9/95
References: pages B9/7, B9/30 to B9/35

TeSys contactors
Magnetic latching contactors CR1 F

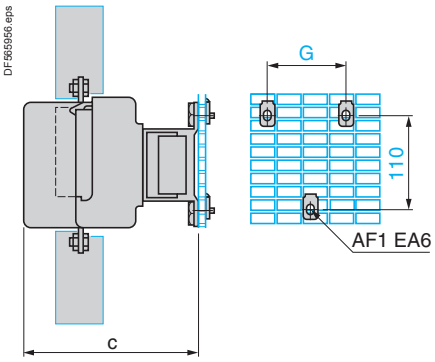
TeSys F

CR1 F150…F265

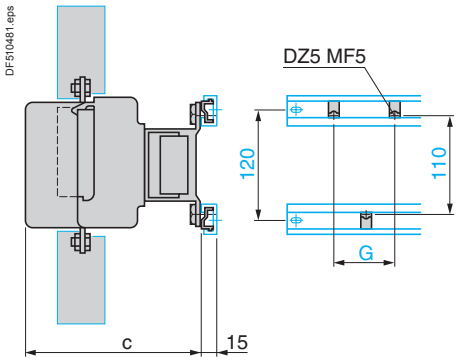
Panel mounted



On pre-slotted mounting plate AM1 PA, PB, PC



On rails DZ5 MB on 120 mm centres



CR1		F150	F185	F265
c	3P	171	181	213
	4P	171	181	213
G	3P	80	80	96
	4P	80	80	96
J	3P	26.5	29	44.5
	4P	45	49	68.5
J1	3P	57	59.5	61.5
	4P	75.5	79.5	85.5

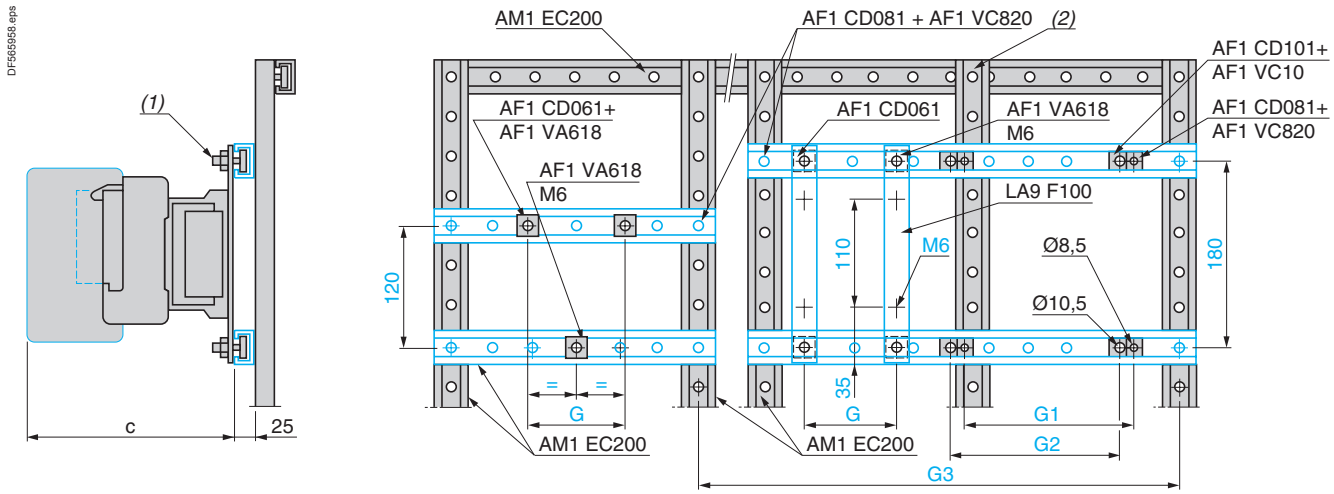
CR1		F150	F185	F265
c	3P	171	181	213
	4P	171	181	213
G	3P	80	80	96
	4P	80	80	96

CR1		F150	F185	F265
c	3P	171	181	213
	4P	171	181	213
G	3P	80	80	96
	4P	80	80	96

(1) Power terminal protection shroud (see page B9/14).

CR1 F150…F650

On 2 notched uprights AM1 EC●●●



CR1		F150	F185	F265	F400	F500	F630
c	3P	171	181	213	213	226	250
	4P	171	181	213	213	226	250
G (M6)	3P	80	80	96	–	–	–
	4P	80	80	96	–	–	–
G1 (Ø 8.5)	3P	–	–	–	80	80	–
	4P	–	–	–	80	140	–
G2 (Ø 10.5)	3P	–	–	–	–	–	180
	4P	–	–	–	–	–	240

(1) AF1 CD●●● or AF1 VA●●●.
(2) This AM1 EC200 upright is required when G2 or G3 is greater than 700 mm (please consult your Regional Sales Office).

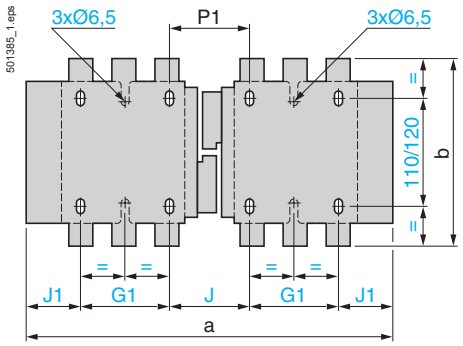
High power contactors

TeSys contactors
Magnetic latching contactors CR1 F

TeSys F

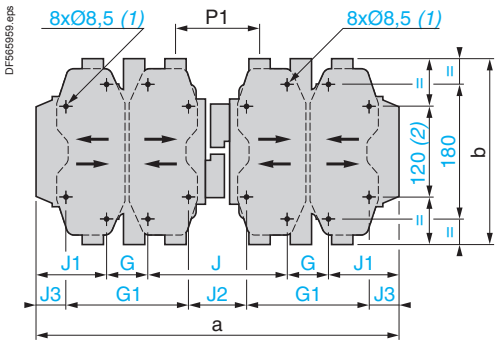
Reversing contactors 2 x CR1 F150…F265

Horizontally mounted



2 x **CR1**		**F150**	**F185**	**F265**
a	3P	345	357	425
	4P	422	437	521
b	3P	170	174	203
	4P	170	174	203
G1	3P	80	80	96
	4P	80	80	96
J	3P	71	78	109
	4P	111	118	157
J1	3P	57	59.5	61.5
	4P	75.5	79.5	85.5
P1	3P	71	78	100
	4P	71	78	100

Reversing contactors 2 x CR1 F400…F630



2 x **CR1**		**F400**	**F500**	**F630**
a	3P	446	485	636
	4P	542	595	796
b	3P	206	238	304
	4P	206	238	304
G	3P	80	80	180
	4P	80	140	240
G1	3P	170	170	–
	4P	170	230	–
J	3P	157	156	139
	4P	157	156	139
J1	3P	64.5	84.5	68.5
	4P	112.5	79.5	68.5
J2	3P	67	66	–
	4P	67	66	–
J3	3P	19.5	39.5	–
	4P	67.5	34.5	–
P1	3P	107	112	137
	4P	107	112	137

(1) Except F630: 4 x Ø 10.5.
(2) Except F630: 180.

Selection:
pages B9/87 to B9/91
Characteristics:
pages B9/92 to B9/95
References:
pages B9/7, B9/30 to B9/35

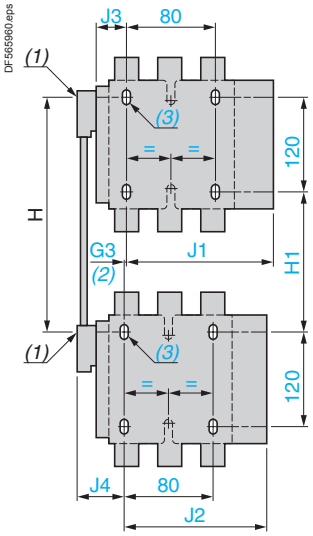
TeSys contactors
Magnetic latching contactors CR1 F

TeSys F

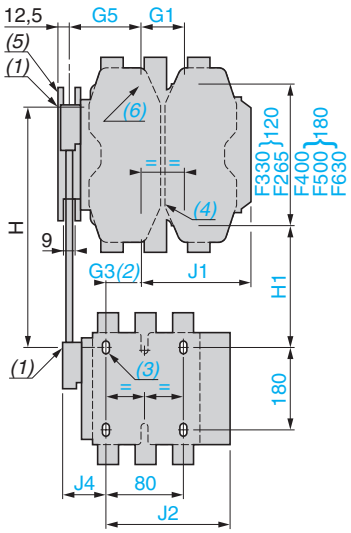
Reversing contactors

Vertically mounted with mechanical interlock **LA9 F●●●**.
2 contactors **CR1 F** of identical or different ratings (CR1 F150…F630), see pages B9/81 and B9/81.

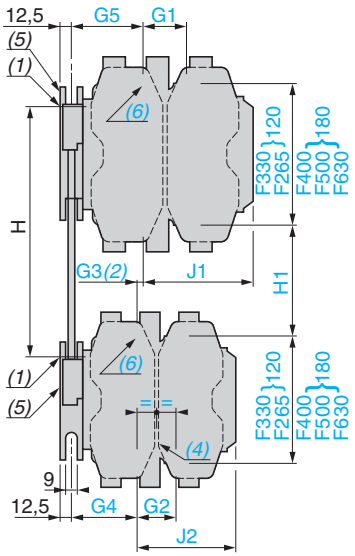
Assembly A



Assembly B



Assembly C



(1) Mechanical interlock shaft.
(2) For assembly of contactors of different ratings only.
(3) 3 x Ø6.5 mm for CR1 F150…F265.
(4) 3 x Ø6.5 mm for CR1 F265.
(5) Mechanical interlock guide bracket.
(6) 4 x Ø8.5 mm for CR1 F400, F500 or 4 x Ø10.5 mm.

Assembly type LA9 F		A			B								C								
		F4F	G4F	G4G	H4F	J4F	K4F	L4F	H4G	J4G	K4G	L4G	H4H	J4H	K4H	L4H	J4J	K4J	L4J	K4K	L4K	L4L
G1	3P	–	–	–	96	80	80	180	96	80	80	180	96	80	80	180	80	80	180	80	180	180
	4P	–	–	–	96	80	140	240	96	80	140	240	96	80	140	240	80	140	240	140	240	240
G2	3P	–	–	–	–	–	–	–	–	–	–	–	96	96	96	96	80	80	80	80	80	180
	4P	–	–	–	–	–	–	–	–	–	–	–	96	96	96	96	80	80	80	140	140	240
G3	3P	0	3	0	21	45	45	35	19	42	42	33	0	23	23	14	0	0	9 (7)	0	9 (7)	0
	4P	0	4	0	27	26	26	17	23	22	22	13	0	0	0	9 (7)	0	0	9 (7)	0	9 (7)	0
G4	3P	–	–	–	–	–	–	–	–	–	–	–	60	60	60	60	83	83	83	83	83	74
	4P	–	–	–	–	–	–	–	–	–	–	–	83	83	83	83	83	83	83	83	83	74
G5	3P	–	–	–	60	83	83	74	60	83	83	74	60	83	83	74	83	83	74	83	74	74
	4P	–	–	–	83	83	83	74	83	83	83	74	83	83	83	74	83	83	74	83	74	74
H	min.	200	210	220	240	250	270	310	250	250	270	310	250	260	280	330	260	280	325	300	345	380
	max.	310	300	310	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380	380
H1	min.	80	90	100	110	80	100	140	120	90	110	150	130	110	130	170	60	100	140	120	160	200
	max.	190	180	190	250	210	210	210	250	220	220	220	260	230	230	220	200	200	195	200	195	200
J1	3P	133	134	134	149.5	137	157	241	149.5	137	157	241	149.5	137	157	24	137	157	241	157	244	241
	4P	145	146	146	164.5	185	212	321	164.5	185	212	321	164.5	185	212	321	185	212	321	212	321	321
J2	3P	133	133	134	183	133	183	133	134	134	134	134	142.5	149.5	149.5	149.5	137	137	137	157	157	241
	4P	145	145	146	145	145	145	145	146	146	146	146	164.5	164.5	164.5	164.5	185	185	185	212	212	312
J3	3P	48.5	53	53	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4P	67	73	73	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
J4	3P	48.5	54	53	48.5	48.5	48.5	48.5	53	53	53	53	–	–	–	–	–	–	–	–	–	–
	4P	67	69	73	67	67	67	67	73	73	73	73	–	–	–	–	–	–	–	–	–	–

(7) In this case, G4 is greater than G5.

High power contactors

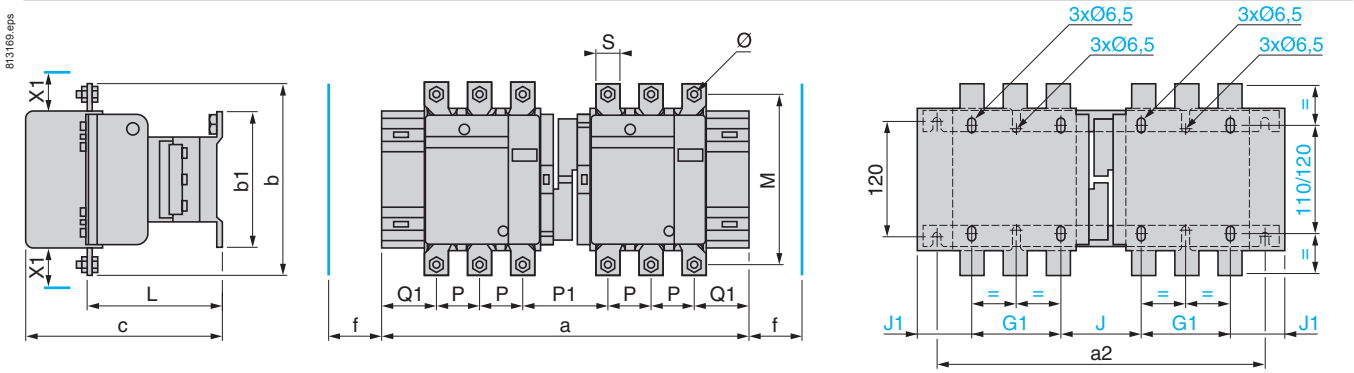
TeSys contactors

TeSys F reversing contactors and changeover contactor pairs

Horizontally mounted

Pre-assembled

LC2 F115 to F265 (reverser supplied on 2 bars which can be used for fixing the device)



f - Minimum distance required for coil removal.

Bar fixing centres
Vertical: 120 mm
Horizontal: a2 see table

X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200…500 V	660…1000 V
F115, F150	10	15
F185	10	15
F225, F265	10	15

LC2		a	a2	b	b1	c	G1	J	J1	L	M	P	P1	Q1	S	f	Ø
F115	3P	345	317	162	137	171	80	71	57	107	147	37	77	60	20	131	M6
	4P	419	378	162	137	171	80	108	75.5	107	147	37	77	60	20	131	M6
F150	3P	345	317	170	137	171	80	71	57	107	150	40	71	57	20	131	M8
	4P	422	381	170	137	171	80	111	75.5	107	150	40	71	55.5	20	131	M8
F185	3P	357	326	174	137	181	80	78	59.5	113.5	154	40	78	59.5	20	130	M8
	4P	437	390	174	137	181	80	118	79.5	113.5	154	40	78	59.5	20	130	M8
F225	3P	357	326	197	137	181	80	78	59.5	113.5	172	48	62	51.5	25	130	M10
	4P	437	390	197	137	181	80	118	79.5	113.5	172	48	54	47.5	25	130	M10
F265	3P	425	386	203	145	213	96	109	61.5	141	178	48	100	66.5	25	147	M10
	4P	521	464	203	145	213	96	157	85.5	141	178	48	100	66.5	25	147	M10

Selection:
pages A5/23 to A5/47

References:
pages B9/36 to B9/41

Schemes:
page B9/103

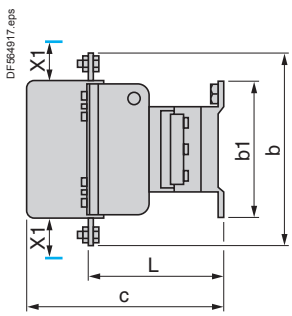
TeSys contactors

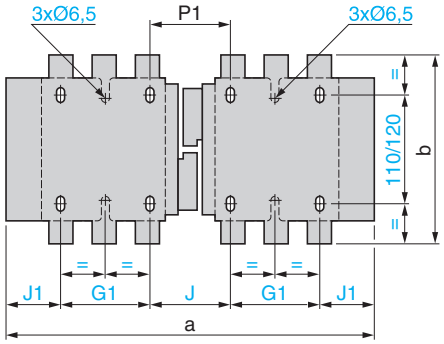
TeSys F reversing contactors and changeover contactor pairs

Horizontally mounted

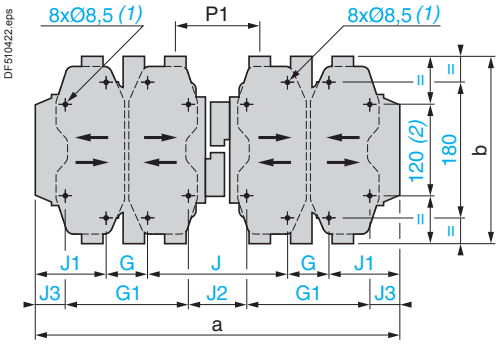
For customer assembly, fixing recommended on AM1 EC uprights, please consult your Regional Sales Office.

2 x **LC1 F115 to F330**





2 x **LC1 F400, F500, F630, F800**



X1 (mm) = Minimum electrical clearance according to operating voltage and breaking capacity.

LC1	200…500 V	660…1000 V	200…690 V	1000 V
F115, F150	10	15	–	–
F185	10	15	–	–
F225, F265	10	15	–	–
F330	10	15	–	–
F400	15	20	–	–
F500	15	20	–	–
F630	20	30	–	–
F800	–	–	10	20

2 x LC1		a	b	b1	c	G	G1	J	J1	J2	J3	L	P1
F115	3P	345	162	137	171	–	80	71	57	–	–	107	77
	4P	419	162	137	171	–	80	108	75.5	–	–	107	77
F150	3P	345	170	137	171	–	80	71	57	–	–	107	71
	4P	422	170	137	171	–	80	111	75.5	–	–	107	71
F185	3P	357	174	137	181	–	80	78	59.5	–	–	113.5	78
	4P	437	174	137	181	–	80	118	79.5	–	–	113.5	78
F225	3P	357	197	137	181	–	80	78	59.5	–	–	113.5	62
	4P	437	197	137	181	–	80	118	79.5	–	–	113.5	54
F265	3P	425	203	145	213	–	96	109	61.5	–	–	141	100
	4P	521	203	145	213	–	96	157	85.5	–	–	141	100
F330	3P	447	206	145	219	–	96	124	65.5	–	–	145	107
	4P	543	206	145	219	–	96	172	89.5	–	–	145	107
F400	3P	446	206	209	219	80	170	157	64.5	67	19.5	145	107
	4P	542	206	209	219	80	170	157	112.5	67	67.5	145	107
F500	3P	485	238	209	232	80	170	156	84.5	66	39.5	146	112
	4P	595	238	209	232	140	230	156	79.5	66	34.5	146	112
F630	3P	636	304	280	255	180	–	139	68.5	–	–	155	137
	4P	796	304	280	255	240	–	139	88.5	–	–	155	137
F800	3P	636	304	280	255	180	–	139	68.5	–	–	155	137

(1) Except LC1 F630 and F800: 4 x Ø10.5.
(2) Except LC1 F630 and F800.

For other dimensions: see pages B9/54 and B9/55.

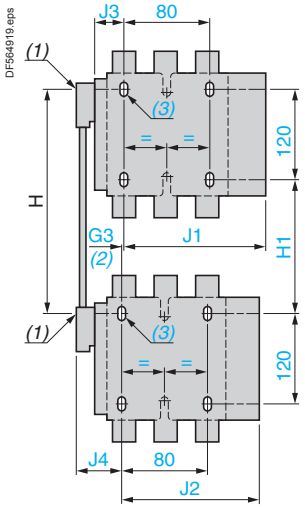
TeSys contactors

TeSys F reversing contactors and changeover contactor pairs

Vertically mounted

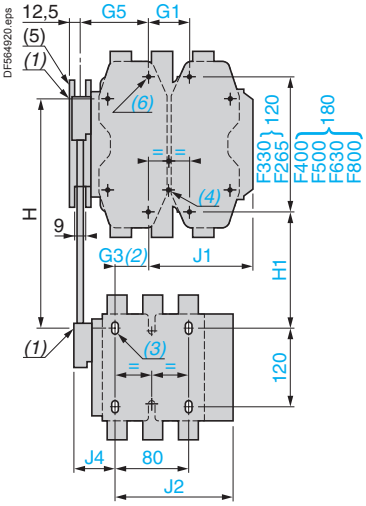
For customer assembly, with mechanical interlock (MI) **LA9 F**, fixing recommended on AM1 EC uprights (please consult your Regional Sales Office). 2 x **LC1** identical or different ratings (**LC1 F115 to F630 and F800**). See pages B9/36 to B9/39.

Assembly A



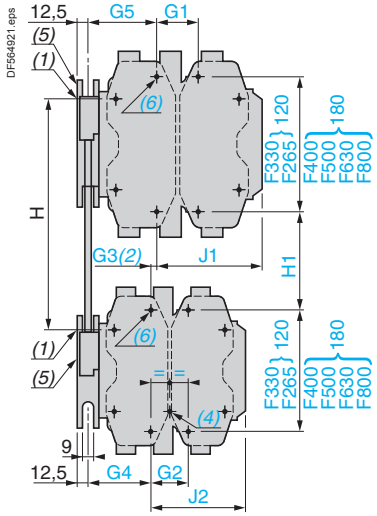
(1) Mechanical interlock shaft.
(2) For assembly of contactors of different ratings only.
(3) 4 x Ø6.5 for LC1 F115 to F225.

Assembly B



(4) 4 x Ø6.5 for LC1 F265.
(5) Mechanical interlock guide bracket.

Assembly C



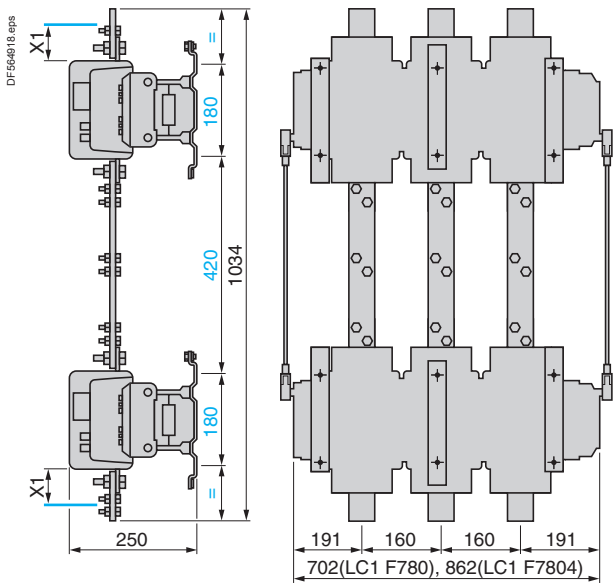
(6) 4 x Ø8.5 for LC1 F400, F500 or 4 x Ø10.5 for LC1 F630 and F800.

Assembly A (7) - Mechanical interlock reference

	G3 3P	G3 4P	H min.	H max.	H1 min.	H1 max.	J1 3P	J1 4P
LA9 FF4F	0	0	200	310	80	190	137	155.5
LA9 FG4F	3	4	210	300	90	180	139.5	159.5
LA9 FG4G	0	0	220	310	100	190	139.5	159.5

	J2 3P	J2 4P	J3 3P	J3 4P	J4 3P	J4 4P
LA9 FF4F	137	155.5	48.5	67	48.5	67
LA9 FG4F	137	155.5	53	73	54	69
LA9 FG4G	139.5	159.5	53	73	53	73

For customer assembly, fixing recommended on AM1 EC uprights, please consult your Regional Sales Office.
2 x **LC1 F780**



X1 and fixings, see page B9/84.

(7) Only 3P for F800.
(8) In this case, G4 is greater than G5.

Assembly B (7) - Mechanical interlock reference

	G1 3P	G1 4P	G3 3P	G3 4P	G5 3P	G5 4P	H min.	H max.
LA9 FH4F	96	96	21	27	60	83	240	380
LA9 FJ4F	80	80	45	26	83	83	250	380
LA9 FK4F	80	140	45	26	83	83	270	380
LA9 FL4F	180	240	35	17	74	74	310	380
LA9 FH4G	96	96	19	23	60	83	250	380
LA9 FJ4G	80	80	42	22	83	83	250	380
LA9 FK4G	80	140	42	22	83	83	270	380
LA9 FL4G	180	240	33	13	74	74	310	380

	H1 min.	H1 max.	J1 3P	J1 4P	J2 3P	J2 4P	J4 3P	J4 4P
LA9 FH4F	110	250	157.5	181.5	137	155.5	48.5	67
LA9 FJ4F	80	210	144.5	192.5	137	155.5	48.5	67
LA9 FK4F	100	210	164.5	219.5	137	155.5	48.5	67
LA9 FL4F	140	210	248.5	328.5	137	155.5	48.5	67
LA9 FH4G	120	250	157.5	181.5	139.5	159.5	53	73
LA9 FJ4G	90	220	144.5	192.5	139.5	159.5	53	73
LA9 FK4G	110	220	164.5	219.5	139.5	159.5	53	73
LA9 FL4G	150	220	248.5	328.5	139.5	159.5	53	73

Assembly C (7)

	G1 3P	G1 4P	G2 3P	G2 4P	G3 3P	G3 4P	G4 3P	G4 4P	G5 3P	G5 4P
LA9 FH4H	96	96	96	96	0	0	60	83	60	83
LA9 FJ4H	80	80	96	96	23	0	60	83	83	83
LA9 FK4H	80	140	96	96	23	0	60	83	83	83
LA9 FL4H	180	240	96	96	14	9 (8)	60	83	74	74
LA9 FJ4J	80	80	80	80	0	0	83	83	83	83
LA9 FK4J	80	140	80	80	0	0	83	83	83	83
LA9 FL4J	180	240	80	80	9 (8)	9 (8)	83	83	74	74
LA9 FK4K	80	140	80	140	0	0	83	83	83	83
LA9 FL4K	180	240	80	140	9 (8)	9 (8)	83	83	74	74
LA9 FL4L	180	240	180	240	0	0	74	74	74	74

	H min.	H max.	H1 min.	H1 max.	J1 3P	J1 4P	J2 3P	J2 4P
LA9 FH4H	250	380	130	260	157.5	181.5	157.5	181.5
LA9 FJ4H	260	380	110	230	144.5	192.5	157.5	181.5
LA9 FK4H	280	380	130	230	164.5	219.5	157.5	181.5
LA9 FL4H	330	380	170	220	248.5	328.5	157.5	181.5
LA9 FJ4J	260	380	60	200	144.5	192.5	144.5	192.5
LA9 FK4J	280	380	100	200	164.5	219.5	144.5	192.5
LA9 FL4J	325	380	140	195	248.5	329.5	144.5	192.5
LA9 FK4K	300	380	120	200	164.5	329.5	164.5	219.5
LA9 FL4K	345	380	160	195	248.5	328.5	164.5	219.5
LA9 FL4L	380	380	200	200	248.5	328.5	248.5	328.5

Selection: pages A5/23 to A5/47
References: pages B9/36 to B9/41
Schemes: page B9/103

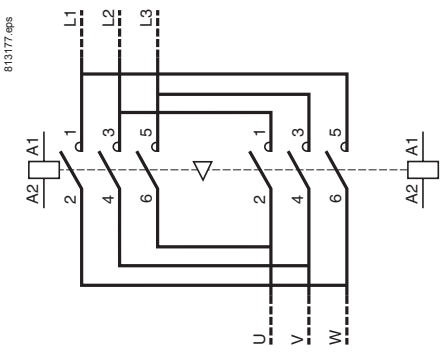
TeSys contactors

TeSys F reversing contactors and changeover contactor pairs

Reversing contactors for motor control LC2 F

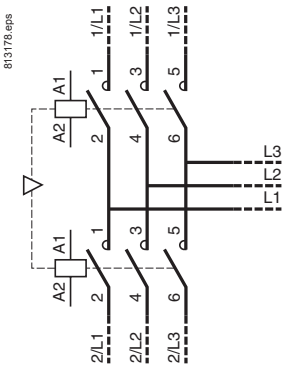
2 x LC1 F

Horizontally mounted



2 x LC1 F

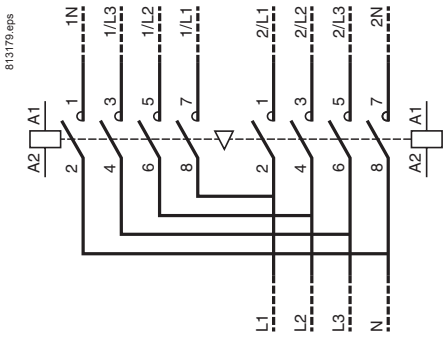
Vertically mounted



Changeover contactor pairs for distribution LC2 F

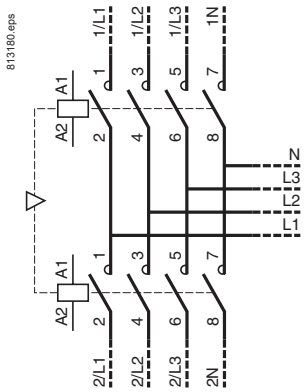
2 x LC1 F

Horizontally mounted



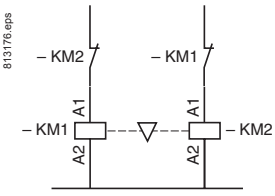
2 x LC1 F

Vertically mounted



Electrical interlocking of reversers fitted with mechanical interlock without integral electrical contacts

LA9 F



High power contactors

TeSys contactors

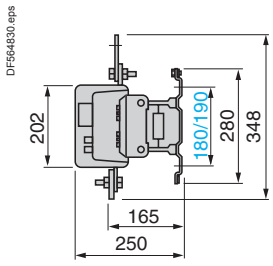
High power changeover contactor pairs for distribution

TeSys F

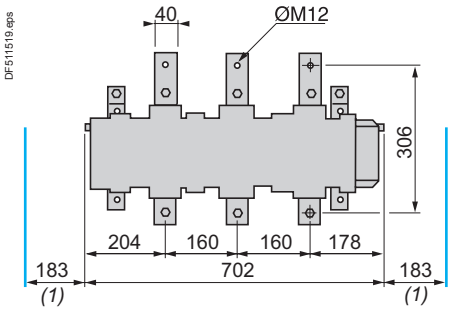
Dimensions

Contactors used to assemble high power changeover contactor pairs LC1 F780: see page B9/43

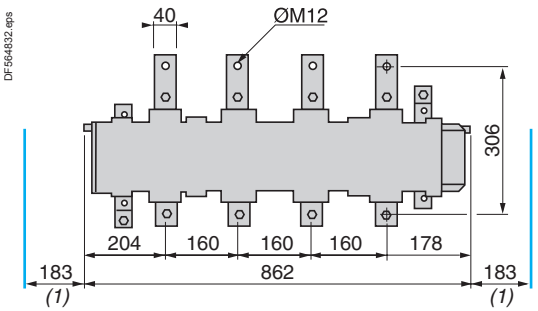
Common side view



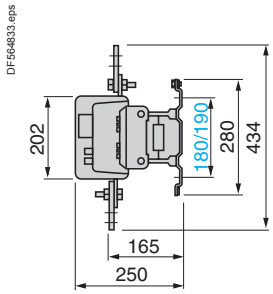
LC1 F6309



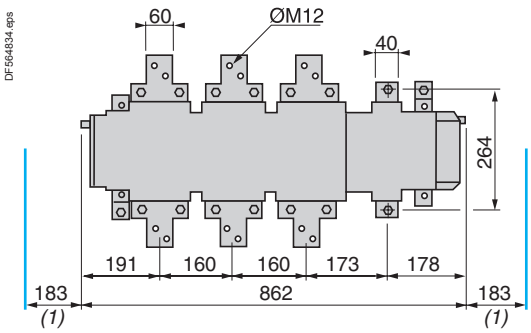
LC1 F63049



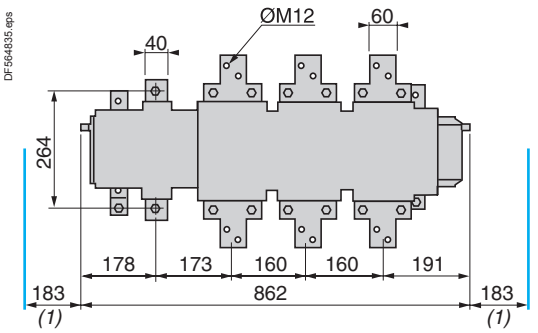
Common side view



LC1 F78040



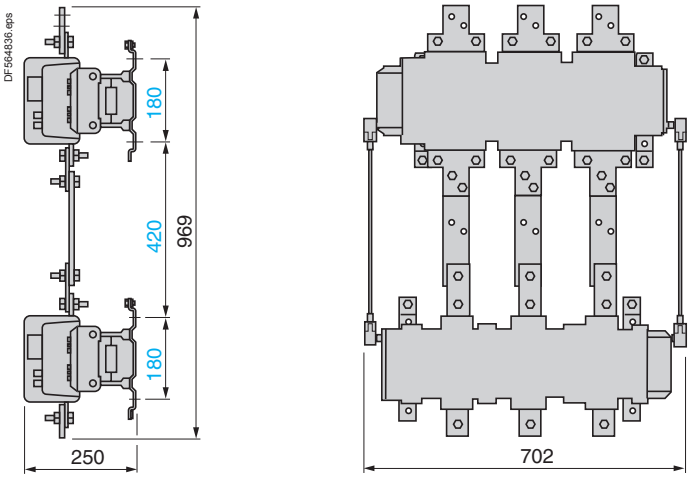
LC1 F78041



(1) Minimum distance required for removal of each coil.

3-phase changeover contactor pairs

LC1 F780 + LC1 F780 + LA9 FX970: see page B9/43
LC1 F780 + LC1 F6309 + LA9 FX970



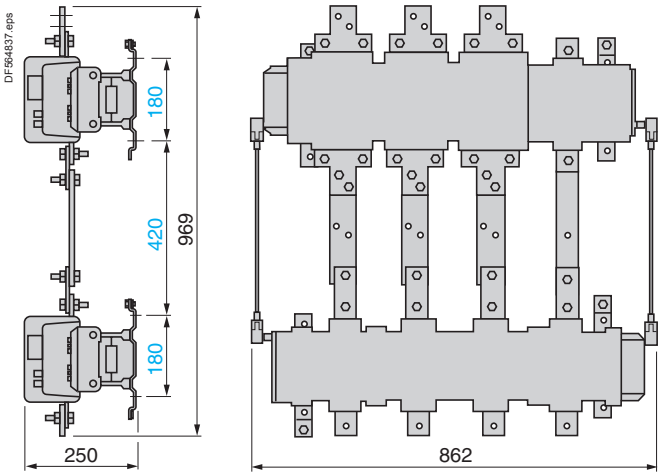
References:
page B9/43

TeSys contactors
High power changeover contactor pairs for distribution

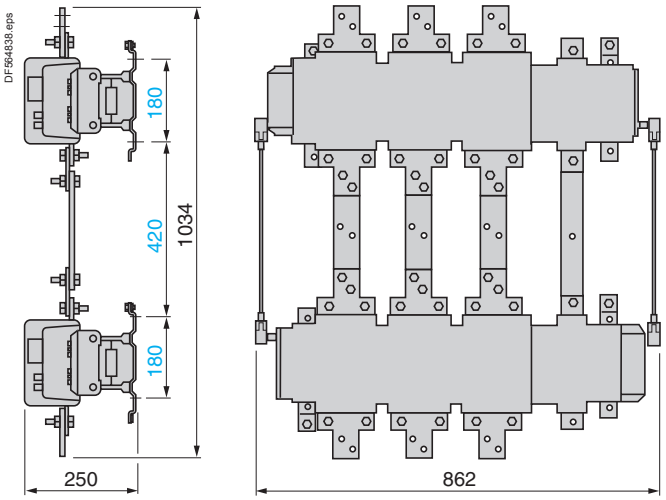
Dimensions

3-phase + neutral changeover contactor pairs

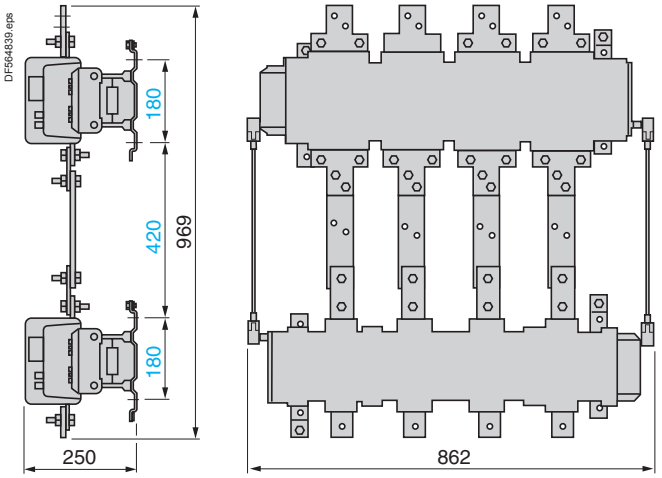
LC1 F78041 + LC1 F63049 + LA9 FX970



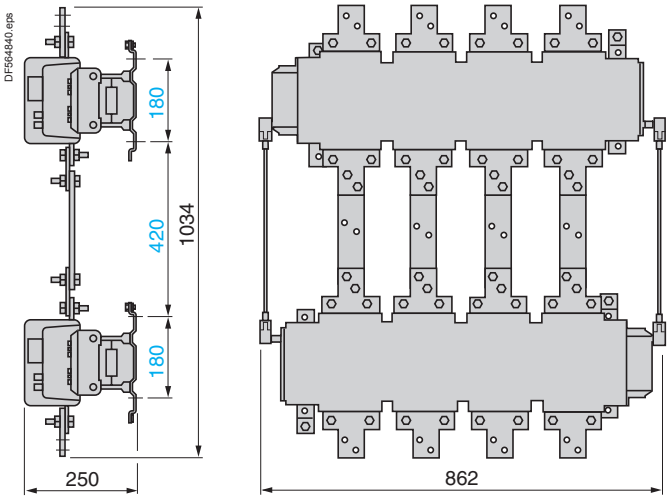
LC1 F78041 + LC1 F78040 + LA9 FX970



LC1 F7804 + LC1 F63049 + LA9 FX971

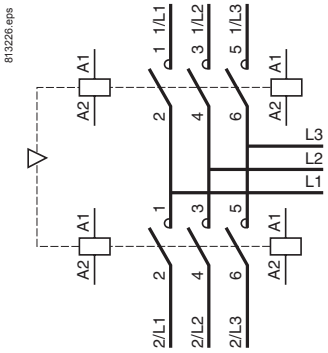


LC1 F7804 + LC1 F7804 + LA9 FX971

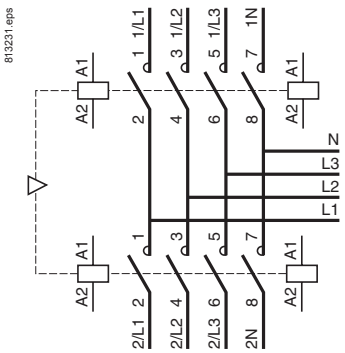


Schemes

3-phase changeover contactor pairs



3-phase + neutral changeover contactor pairs



References:
page B9/43

Bar mounted contactors
TeSys B

Pre defined composition contactors – TeSys B

Variable composition contactors – TeSys B

All details and composition list in the TeSys B dedicated catalogue >

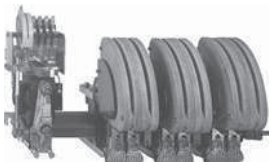
Catalogue ref:
DIAED2070702EN

Free download on the web

On request – TeSys B

TeSys contactors
TeSys LC1B contactors

TeSys B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LC1 BP33

Contactors for motor control in category AC-3, from 750 to 1800 A (~ or ⎓)

3-pole contactors

Standard power ratings of 3-phase motors 50-60 Hz in category AC-3							Rated operational current in AC-3 440V up to	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)	Weight
220 V 230 V	380 V 400 V	415 V	440 V	500 V	660 V 690 V	1000 V					
kW	kW	kW	kW	kW	kW	kW	A				kg
220	400	425	450	500	560	530	750	2	2	**LC1BL33●22**	58.000
								3	1	**LC1BL33●31**	58.000
								1	3	**LC1BL33●13**	58.000
								4	–	**LC1BL33●40**	58.000
280	500	530	560	600	670	530	1000	2	2	**LC1BM33●22**	57.000
								3	1	**LC1BM33●31**	57.000
								1	3	**LC1BM33●13**	57.000
								4	–	**LC1BM33●40**	57.000
425	750	800	800	700	750	670	1500	2	2	**LC1BP33●22**	94.000
								3	1	**LC1BP33●31**	94.000
								1	3	**LC1BP33●13**	94.000
								4	–	**LC1BP33●40**	94.000
500	900	900	900	900	900	750	1800	2	2	**LC1BR33●22**	129.000
								3	1	**LC1BR33●31**	129.000
								1	3	**LC1BR33●13**	129.000
								4	–	**LC1BR33●40**	129.000

Contactors for control in category AC-1, from 800 to 2750 A (~ or ⎓)

Single, 2, 3 or 4-pole contactors

Maximum operational current in AC-1 (θ ≤ 40 °C)	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)	Weight
A					kg
800	1	2	2	**LC1BL31●22**	32.000
		3	1	**LC1BL31●31**	32.000
		1	3	**LC1BL31●13**	32.000
		4	–	**LC1BL31●40**	32.000
	2	2	2	**LC1BL32●22**	45.000
		3	1	**LC1BL32●31**	45.000
		1	3	**LC1BL32●13**	45.000
		4	–	**LC1BL32●40**	45.000
	3	2	2	**LC1BL33●22**	58.000
		3	1	**LC1BL33●31**	58.000
		1	3	**LC1BL33●13**	58.000
		4	–	**LC1BL33●40**	58.000
	4	2	2	**LC1BL34●22**	72.000
		3	1	**LC1BL34●31**	72.000
		1	3	**LC1BL34●13**	72.000
		4	–	**LC1BL34●40**	72.000

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office):

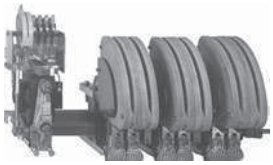
Volts	48	110	120	125	127	220	230	240	380	400	415	440	500
~ 50…400 Hz	–	F	K	–	G	M	P	U	Q	V	N	R	S
⎓	ED	FD	–	GD	–	MD	–	UD	–	–	–	RD	SD

*For voltages other than those indicated above, replace the p in the reference with the the operational voltage (3 figures) and the type of current (2 letters: **AC** for a.c. supply and **DC** for d.c. supply). Example: 82 V d.c., the reference becomes LC1 BP33**082DC**22.*
For coil characteristics, see pages B10/6 to B10/9.

Selection: pages A5/23 to A5/47
Characteristics: pages B10/24 and B10/25
Dimensions and schemes: pages B10/26 and B10/27

TeSys contactors
TeSys LC1B contactors

TeSys B



LC1 BP33

Contactors for control in category AC-1, from 800 to 2750 A (~ or ⎓)

Single, 2, 3 or 4-pole contactors

Maximum operational current in AC-1 (θ ≤ 40 °C)	Number of poles	Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)	Weight
A					kg
1250	1	2	2	**LC1BM31●22**	31.000
		3	1	**LC1BM31●31**	31.000
		1	3	**LC1BM31●13**	31.000
		4	–	**LC1BM31●40**	31.000
	2	2	2	**LC1BM32●22**	44.000
		3	1	**LC1BM32●31**	44.000
		1	3	**LC1BM32●13**	44.000
		4	–	**LC1BM32●40**	44.000
	3	2	2	**LC1BM33●22**	57.000
		3	1	**LC1BM33●31**	57.000
		1	3	**LC1BM33●13**	57.000
		4	–	**LC1BM33●40**	57.000
	4	2	2	**LC1BM34●22**	71.000
		3	1	**LC1BM34●31**	71.000
		1	3	**LC1BM34●13**	71.000
		4	–	**LC1BM34●40**	71.000
2000	1	2	2	**LC1BP31●22**	41.000
		3	1	**LC1BP31●31**	41.000
		1	3	**LC1BP31●13**	41.000
		4	–	**LC1BP31●40**	41.000
	2	2	2	**LC1BP32●22**	65.000
		3	1	**LC1BP32●31**	65.000
		1	3	**LC1BP32●13**	65.000
		4	–	**LC1BP32●40**	65.000
	3	2	2	**LC1BP33●22**	94.000
		3	1	**LC1BP33●31**	94.000
		1	3	**LC1BP33●13**	94.000
		4	–	**LC1BP33●40**	94.000
	4	2	2	**LC1BP34●22**	120.000
		3	1	**LC1BP34●31**	120.000
		1	3	**LC1BP34●13**	120.000
		4	–	**LC1BP34●40**	120.000
2750	1	2	2	**LC1BR31●22**	52.000
		3	1	**LC1BR31●31**	52.000
		1	3	**LC1BR31●13**	52.000
		4	–	**LC1BR31●40**	52.000
	2	2	2	**LC1BR32●22**	85.000
		3	1	**LC1BR32●31**	85.000
		1	3	**LC1BR32●13**	85.000
		4	–	**LC1BR32●40**	85.000
	3	2	2	**LC1BR33●22**	129.000
		3	1	**LC1BR33●31**	129.000
		1	3	**LC1BR33●13**	129.000
		4	–	**LC1BR33●40**	129.000
	4	2	2	**LC1BR34●22**	160.000
		3	1	**LC1BR34●31**	160.000
		1	3	**LC1BR34●13**	160.000
		4	–	**LC1BR34●40**	160.000

(1) See previous page.

Selection: pages A5/23 to A5/47
Characteristics: pages B10/24 and B10/25
Dimensions and schemes: pages B10/26 and B10/27

TeSys contactors

TeSys LC1 B contactors

Accessories and spare parts

TeSys B

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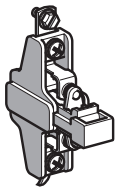

ZC4 GM1

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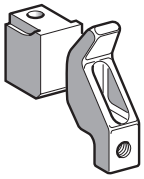
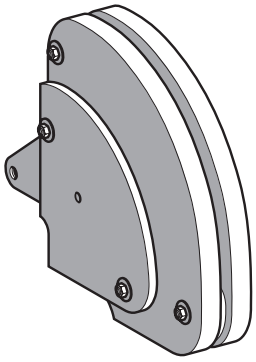


PA1 LB80
(PA1 LB76 + PA1 LB75)

813309.eps

PA1 LB89

813306.eps



PA1 LB50

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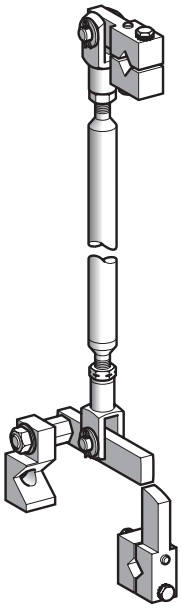


EZ2 LB0601

Spare parts

Description	For contactor	Composition	Reference	Weight kg
Instantaneous auxiliary contact blocks	LC1 B	1 N/O	**ZC4GM1**	0.030
		1 N/C	**ZC4GM2**	0.030

Description	For contactor	Number of sets required per contactor pole	Set reference	Weight kg
Set of contacts (1 moving contact, 1 fixed contact)	LC1 BL	1	**PA1LB80**	0.420
	LC1 BM	1	**PA1LB80**	0.420
	LC1 BP	2	**PA1LB80**	0.420
	LC1 BR	3	**PA1LB80**	0.420

Description	For contactor	Reference	Weight kg
Moving contact only (for 1 finger)	LC1 B	**PA1LB75**	0.220
Fixed contact only (for 1 finger)	LC1 B	**PA1LB76**	0.200
Blow-out horn only (for 1 finger)	LC1 B	**PA1LB89**	0.120
Arc chamber (for 1 contactor pole)	LC1 BL	**PA1LB50**	3.700
	LC1 BM	**PA1LB50**	3.700
	LC1 BP	**PA1PB50**	6.200
	LC1 BR	**PA1RB50**	8.500

Mounting accessories

Description	For contactor	Sold in lots of	Unit reference	Weight kg
Bar support bracket for mounting on 120 or 150 mm centres	LC1 BL to BR	2	**LA9B103**	1.620

Assembly of two vertically mounted contactors by the customer

Description	For contactor	Reference	Weight kg
Mechanical interlock and locking device components	LC1 B	**EZ2LB0601**	1.280

Specifications

- Positive mechanical interlock between two vertically mounted contactors of the same or different ratings.
- Connecting rod with cranks mounted on the right-hand, pole side.
- Vertical fixing centres of the two contactors: 600 mm.

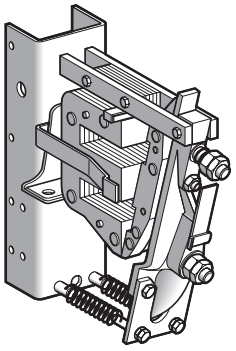
Description	Specification	Height mm	Sold in lots of	Unit reference	Weight kg
Notched mounting rails used as uprights and as equipment support	2 mm steel, with zinc chromate treatment	1650	4	**AM1EC165**	2.460
		1850	4	**AM1EC185**	2.760
		2000	4	**AM1EC200**	2.980
1/4 turn sliding clip nut and corresponding screw for assembly of rails AM1 EC	M8	–	10	**AF1CD081**	0.020
	M8 x 18	–	10	**AF1VC820**	0.024

Selection: pages A5/23 to A5/47
Characteristics: pages B10/24 and B10/25
Dimensions and schemes: pages B10/26 and B10/27

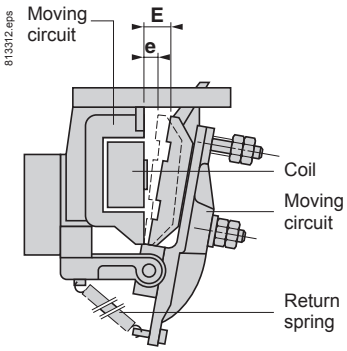
TeSys B

Electromagnet

Electromagnet EB5 KB50

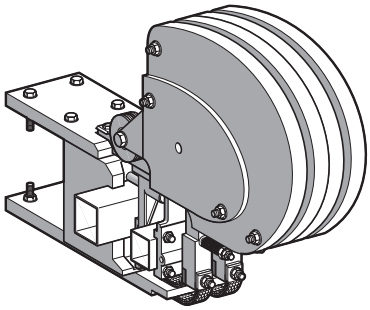


Adjustment of pick-up travel and pull-in travel

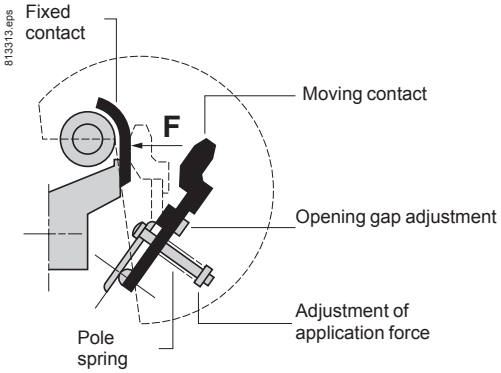


Poles

Complete pole



N/O pole



⎓ or ∿ supply adjustment characteristics with economy resistor (and rectifier on ∿)

Contactor type			LC1 BL	LC1 BM	LC1 BP	LC1 BR
Electromagnet			EB5 KB50	EB5 KB50	EB5 KB50	EB5 KB50
	Pick-up travel (**E**)	**mm**	30	30	30	30
	Pull-in travel (**e**)	**mm**	10	10	10	10
Coil			WB1KB●●●	WB1KB●●●	WB1KB●●●	WB1KB●●●
	Pull-in voltage	**V**	0.75 Uc	0.75 Uc	0.75 Uc	0.75 Uc
	Drop-out voltage	**V**	0.3…0.5 Uc	0.3…0.5 Uc	0.3…0.5 Uc	0.3…0.5 Uc
N/O pole Adjustment of application force (F) on the contact per pole according to contactor composition	1-pole	**daN**	30	30	30 (1)	30 (2)
	2-pole	**daN**	30	30	30 (1)	30 (2)
	3-pole	**daN**	30	30	30 (1)	30 (2)
	4-pole	**daN**	30	30	30 (1)	30 (2)

(1) Each pole has 2 contacts; the force must be applied evenly to each of these contacts.
(2) Each pole has 3 contacts; the force must be applied evenly to each of these contacts.

Bar mounted contactors

TeSys contactors

TeSys LC1 B contactors

Replacement coils and accessories for single-pole contactors

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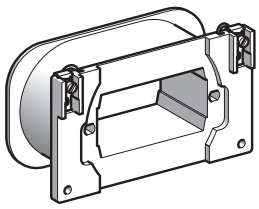

WB1 KB●●●

References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
□ 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
□ 1 individual rectifier (to be wired)
□ 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

Operating range min-max (1)		Coil		Economy resistor				Rectifier (for ∿ only)	Coil	Weight
d.c.	a.c.	Resistance at 20 °C ±10 %	I inrush ±10 % at Un max	Resistor		Contact		Reference	Reference	
				Unit reference	Total resistance	Qty	Reference			
V	V	Ω	A		Ω					kg
47-51	–	5.1	10.3	**DR2SC0270**	270	1	**ZC4GM2**	–	**WB1KB155**	1.120
52-56	–	5.9	9.5	**DR2SC0330**	330	1	**ZC4GM2**	–	**WB1KB132**	1.120
57-64	–	7.3	8.9	**DR2SC0390**	390	1	**ZC4GM2**	–	**WB1KB123**	1.120
65-68	–	9.5	7.1	**DR2SC0560**	560	1	**ZC4GM2**	–	**WB1KB133**	1.120
69-79	–	11.6	6.9	**DR2SC0680**	680	1	**ZC4GM2**	–	**WB1KB121**	1.120
80-87	–	16.2	5.3	**DR2SC0820**	820	1	**ZC4GM2**	–	**WB1KB130**	1.120
88-94	–	19.9	4.7	**DR2SC1000**	1000	1	**ZC4GM2**	–	**WB1KB140**	1.120
95-108	110-125	25.5	4.3	**DR2SC1200**	1200	1	**ZC4GM2**	**DR5TE1U**	**WB1KB134**	1.120
109-136	126-155	33.1	4.2	**DR2SC1800**	1800	1	**ZC4GM2**	**DR5TE1U**	**WB1KB124**	1.120
137-151	156-173	50.9	3	**DR2SC2700**	2700	2	**ZC4GM2**	**DR5TE1U**	**WB1KB122**	1.120
152-166	174-191	61.36	2.7	**DR2SC3300**	3300	2	**ZC4GM2**	**DR5TE1U**	**WB1KB135**	1.120
167-189	192-216	78.4	2.4	**DR2SC3900**	3900	2	**ZC4GM2**	**DR5TE1U**	**WB1KB136**	1.120
190-221	217-256	94.8	2.3	**DR2SC4700**	4700	2	**ZC4GM2**	**DR5TE1U**	**WB1KB139**	1.120
222-243	257-280	123.9	1.9	**DR2SC6800**	6800	1	**LC1DT20LDS135**	**DR5TE1U**	**WB1KB125**	1.120
244-267	281-307	159.9	1.7	**DR2SC8200**	4700 + 3300	1	**LC1DT20LDS135**	**DR5TE1S**	**WB1KB137**	1.120
268-318	308-365	199.6	1.6	**DR2SC1001**	5600 + 4700	1	**LC1DT20UDS135**	**DR5TE1S**	**WB1KB126**	1.120
319-405	366-463	247.4	1.6	**DR2SC1201**	6800 + 5600	1	**LC1DT20TDS135**	**DR5TE1S**	**WB1KB138**	1.120
406-446	464-500	382	1.1 (2)	**DR2SC1001**	20 000	1	**LC1DT20VDS135**	**DR5TE1S**	**WB1KB127**	1.120
447-500	–	506.7	1 (3)	**DR2SC1201**	24 000	1	**LC1DT20RDS135**	–	**WB1KB128**	1.120

Specifications

■ Average coil consumption (low sealed consumption):
□ d.c.: inrush 380…520 W, sealed 0.15…0.20 W
□ a.c. (with rectifier): inrush 450…620 VA, sealed 0.15…0.20 VA
■ Time constant when sealed 25 ms
■ Economy resistor consumption: 7…10 W
■ Operating cycles/hour at θ ⩽ 55 °C: ⩽ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ⩽ 7.

(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.
(2) 2 resistors in series: 2 x 10000 Ω.
(3) 2 resistors in series: 2 x 12000 Ω.

TeSys contactors

TeSys LC1 B contactors

Replacement coils and accessories for 2-pole contactors

References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
□ 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
□ 1 individual rectifier (to be wired)
□ 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

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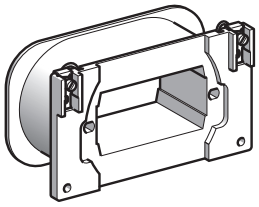

WB1 KB●●●

Operating range min-max (1)		Coil		Economy resistor				Rectifier (for ∿ only)	Coil	Weight
d.c.	a.c.	Resistance at 20 °C ± 10 %	I inrush ± 10 % at Un max	Resistors (2 in series) Unit reference	Total resistance	Contact Qty	Reference	Reference	Reference	
V	V	Ω	A		Ω					kg
48-51	–	3.22	15.8	**DR2SC0068**	2 x 68	1	**ZC4GM2**	–	**WB1KB141**	1.120
52-56	–	4.04	13.8	**DR2SC0082 DR2SC0100**	82 + 100	1	**ZC4GM2**	–	**WB1KB142**	1.120
57-62	–	4.96	12.5	**DR2SC0100 DR2SC0120**	100 + 120	1	**ZC4GM2**	–	**WB1KB155**	1.120
63-68	–	5.86	11.6	**DR2SC0120**	2 x 120	1	**ZC4GM2**	–	**WB1KB132**	1.120
69-79	–	7.2	11	**DR2SC0150**	2 x 150	1	**ZC4GM2**	–	**WB1KB123**	1.120
80-85	–	9.6	8.8	**DR2SC0180 DR2SC0220**	180 + 220	1	**ZC4GM2**	–	**WB1KB133**	1.120
86-98	99-113	11.4	8.6	**DR2SC0220 DR2SC0270**	220 + 270	1	**ZC4GM2**	–	**WB1KB121**	1.120
99-108	114-125	16.3	6.6	**DR2SC0330**	2 x 330	1	**ZC4GM2**	**DR5TE1U**	**WB1KB130**	1.120
109-119	126-136	19.7	6	**DR2SC0390**	2 x 390	1	**ZC4GM2**	**DR5TE1U**	**WB1KB140**	1.120
120-136	137-156	25.2	5.4	**DR2SC0470**	2 x 470	2	**ZC4GM2**	**DR5TE1U**	**WB1KB134**	1.120
137-173	157-196	32.5	5.3	**DR2SC0680**	2 x 680	2	**ZC4GM2**	**DR5TE1U**	**WB1KB124**	1.120
174-191	197-216	49.7	3.8	**DR2SC1000**	2 x 1000	2	**ZC4GM2**	**DR5TE1U**	**WB1KB122**	1.120
192-210	217-238	61	3.4	**DR2SC1200**	2 x 1200	2	**ZC4GM2**	**DR5TE1U**	**WB1KB135**	1.120
211-238	239-272	77.2	3	**DR2SC1500 DR2SC1800**	1500 + 1800	2	**ZC4GM2**	**DR5TE1U**	**WB1KB136**	1.120
239-279	273-318	94	3	**DR2SC1800 DR2SC2200**	1800 + 2200	1	**LP1DT20LDS135**	**DR5TE1S**	**WB1KB139**	1.120
280-310	319-359	128	2.4	**DR2SC2700**	2 x 2700	1	**LP1DT20UDS135**	**DR5TE1S**	**WB1KB125**	1.120
311-341	360-387	160	2.1	**DR2SC3300**	2 x 3300	1	**LP1DT20TDS135**	**DR5TE1S**	**WB1KB137**	1.120
342-399	388-452	197	2	**DR2SC3900**	2 x 3900	1	**LP1DT20TDS135**	**DR5TE1S**	**WB1KB126**	1.120
400-500	453-500	257	1.9	**DR2SC4700 DR2SC5600**	4700 + 5600	1	**LP1DT20VDS135**	**DR5TE1S**	**WB1KB138**	1.120

Specifications

■ Average coil consumption (low sealed consumption):
□ d.c.: inrush 600…800 W, sealed 0.35…0.5 W
□ a.c. (with rectifier): inrush 720…1000 VA, sealed 0.35…0.5 VA.
■ Time constant when sealed 25 ms.
■ Economy resistor consumption: 15…20 W.
■ Operating cycles/hour at θ ⩽ 55 °C: ⩽ 120.
■ Mechanical durability at Uc: 1.2 million operating cycles.
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ⩽ 7.

(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.

TeSys contactors

TeSys LC1 B contactors

Replacement coils and accessories for 3-pole contactors

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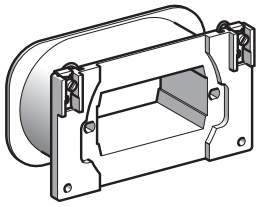


WB1 KB●●●

References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
□ 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
□ 1 individual rectifier (to be wired),
□ 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

Operating range min-max (1)		Coil		Economy resistor				Rectifier (for ∿ only)	Coil	Weight
d.c.	a.c.	Resistance at 20 °C ±10 %	I inrush ±10 % at Un max	Resistors (2 in parallel or in series) Unit reference	Total resistance	Contact Qty	Reference	Reference	Reference	
V	V	Ω	A		Ω					kg
47-50	–	1.85	27	**DR2SC0150**	2x150//	1	**ZC4GM2**	–	**WB1KB154**	1.120
51-55	–	2.35	23.5	**DR2SC0180**	2x180//	1	**ZC4GM2**	–	**WB1KB153**	1.120
56-60	–	3.22	18.5	**DR2SC0220**	2x220//	1	**ZC4GM2**	–	**WB1KB141**	1.120
61-66	–	4.04	16	**DR2SC0270**	2X270//	1	**ZC4GM2**	–	**WB1KB142**	1.120
67-72	–	4.96	14.5	**DR2SC0330**	2x330//	1	**ZC4GM2**	–	**WB1KB155**	1.120
73-79	–	5.86	13.5	**DR2SC0100**	2x100	1	**ZC4GM2**	–	**WB1KB132**	1.120
80-92	–	7.2	12.8	**DR2SC0120**	2x120	1	**ZC4GM2**	–	**WB1KB123**	1.120
93-98	108-113	9.6	10.2	**DR2SC0150** **DR2SC0180**	150 + 180	1	**ZC4GM2**	**DR5TE1U**	**WB1KB133**	1.120
99-114	114-132	11.4	10	**DR2SC0180** **DR2SC0220**	180 + 220	1	**ZC4GM2**	**DR5TE1U**	**WB1KB121**	1.120
115-126	133-145	16.3	7.7	**DR2SC0270**	2x270	2	**ZC4GM2**	**DR5TE1U**	**WB1KB130**	1.120
127-139	146-160	11.7	7	**DR2SC0330**	2x330	2	**ZC4GM2**	**DR5TE1U**	**WB1KB140**	1.120
140-159	161-181	25.2	6.3	**DR2SC0390** **DR2SC0470**	390 + 470	2	**ZC4GM2**	**DR5TE1U**	**WB1KB134**	1.120
160-201	182-228	32.2	6.2	**DR2SC0560**	2x560	2	**ZC4GM2**	**DR5TE1U**	**WB1KB124**	1.120
202-222	229-255	49.7	4.5	**DR2SC0820**	2x820	2	**ZC4GM2**	**DR5TE1U**	**WB1KB122**	1.120
223-246	256-282	61	4	**DR2SC1000**	2x1000	1	**LC1DT20LDS135**	**DR5TE1S**	**WB1KB135**	1.120
247-277	283-316	77.2	3.6	**DR2SC1200**	2x1200	1	**LC1DT20LDS135**	**DR5TE1S**	**WB1KB136**	1.120
278-327	317-372	94	3.5	**DR2SC1500**	2x1500	1	**LC1DT20UDS135**	**DR5TE1S**	**WB1KB139**	1.120
328-360	373-408	128	2.8	**DR2SC1500**	3x1500	1	**LC1DT20TDS135**	**DR5TE1S**	**WB1KB125**	1.120
361-399	409-452	160	2.5	**DR2SC1800**	3x1800	1	**LC1DT20VDS135**	**DR5TE1S**	**WB1KB137**	1.120
400-469	453-500	197	2.4	**DR2SC2200**	3x2200	1	**LC1DT20VDS135**	**DR5TE1S**	**WB1KB126**	1.120
470-500	–	257	1.9	**DR2SC2700**	3x2700	1	**LC1DT20RDS135**	–	**WB1KB138**	1.120

Specifications

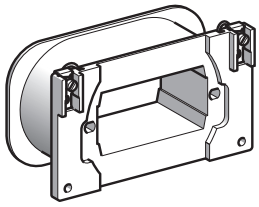
■ Average coil consumption (low sealed consumption):
□ d.c.: inrush 900…1100 W, sealed 0.7…1 W
□ a.c. (with rectifier): inrush 1100…1300 VA, sealed 0.7…1 VA.
■ Time constant when sealed 25 ms.
■ Economy resistor consumption: 24…30 W.
■ Operating cycles/hour at θ ≤ 55 °C: ≤ 120.
■ Mechanical durability at Uc: 1.2 million operating cycles.
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ≤ 7.

(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.

TeSys contactors

TeSys LC1 B contactors

Replacement coils and accessories for 4-pole contactors



WB1 KB●●●

References

The same coils are used for ⎓ or ∿ contactor control supply.

■ For d.c. operation, the following must be associated with the coil:
□ 1 economy resistor arrangement (resistors + 1 or 2 auxiliary contact(s) or 1 contactor).

■ For 50 to 400 Hz a.c. operation, the following must be associated with the coil:
□ 1 individual rectifier (to be wired),
□ 1 economy resistor arrangement (resistors + auxiliary contact(s) or 1 contactor) wired into the rectified current side.

Operating range min-max (1)		Coil		Economy resistor				Rectifier (for ∿ only)	Coil	Weight
d.c.	a.c.	Resistance at 20 °C ± 10 %	I inrush ± 10 % at Un max	Resistors (3 in series) Reference unit	Total resistance	Contact Qty	Reference	Reference	Reference	
V	V	Ω	A		Ω					kg
57-61	–	2.35	26	**DR2SC0027**	3x27	1	**ZC4GM2**	–	**WB1KB153**	1.120
62-67	–	3.22	21	**DR2SC0033**	3x33	1	**ZC4GM2**	–	**WB1KB141**	1.120
68-73	–	4.04	18	**DR2SC0039**	3x39	1	**ZC4GM2**	–	**WB1KB142**	1.120
74-81	–	4.96	16.3	**DR2SC0047**	3x47	1	**ZC4GM2**	–	**WB1KB155**	1.120
82-89	–	5.86	15	**DR2SC0056**	3x56	1	**ZC4GM2**	–	**WB1KB132**	1.120
90-102	105-119	7.2	14	**DR2SC0068**	3x68	1	**ZC4GM2**	**DR5TE1U**	**WB1KB123**	1.120
103-111	120-128	9.6	11.5	**DR2SC0100**	3x100	2	**ZC4GM2**	**DR5TE1U**	**WB1KB133**	1.120
112-129	129-148	11.4	11.3	**DR2SC0100**	3x100	2	**ZC4GM2**	**DR5TE1U**	**WB1KB121**	1.120
130-143	149-163	16.3	8.7	**DR2SC0150**	3x150	2	**ZC4GM2**	**DR5TE1U**	**WB1KB130**	1.120
144-157	164-179	19.7	8	**DR2SC0180**	3x180	2	**ZC4GM2**	**DR5TE1U**	**WB1KB140**	1.120
158-180	180-204	25.2	7.1	**DR2SC0220**	3x220	2	**ZC4GM2**	**DR5TE1U**	**WB1KB134**	1.120
181-226	205-259	32.5	6.9	**DR2SC0330**	3x330	2	**ZC4GM2**	**DR5TE1U**	**WB1KB124**	1.120
227-251	260-288	49.7	5	**DR2SC0470**	3x470	1	**LC1DT20LDS135**	**DR5TE1S**	**WB1KB122**	1.120
252-278	289-317	61	4.5	**DR2SC0560**	3x560	1	**LC1DT20UDS135**	**DR5TE1S**	**WB1KB135**	1.120
279-313	318-356	77.2	4	**DR2SC0680**	3x680	1	**LC1DT20UDS135**	**DR5TE1S**	**WB1KB136**	1.120
314-368	357-418	94	3.9	**DR2SC0820**	3x820	1	**LC1DT20TDS135**	**DR5TE1S**	**WB1KB139**	1.120
369-408	419-462	128	3.2	**DR2SC1200**	3x1200	1	**LC1DT20VDS135**	**DR5TE1S**	**WB1KB125**	1.120
409-448	463-500	160	2.8	**DR2SC1500**	3x1500	1	**LC1DT20VDS135**	**DR5TE1S**	**WB1KB137**	1.120
449-500	–	197	2.5	**DR2SC1800**	3x1800	1	**LC1DT20RDS135**	–	**WB1KB126**	1.120

Specifications

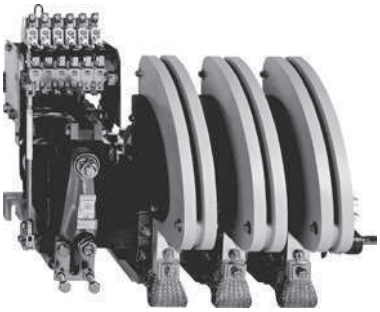
■ Average coil consumption (low sealed consumption):
□ d.c.: inrush 1100…1400 W, sealed 1.2…1.6 W
□ a.c. (with rectifier): inrush 1300…1600 VA, sealed 1.2…1.6 VA
■ Time constant when sealed 25 ms
■ Economy resistor consumption: 35…45 W
■ Operating cycles/hour at θ ⩽ 55 °C: ⩽ 120
■ Mechanical durability at Uc: 1.2 million operating cycles
■ With a.c. operation: good resistance to voltage drop on inrush, non susceptibility to micro-breaks, mains harmonics: level ⩽ 7.

(1) For supply voltages of less than 110 V, beware of voltage drops caused by the inrush current.

CR1 B
Magnetic latching contactors

TeSys B

DB116198.eps



CR1 BL33

Accessories for contactors CR1 B
Control circuit: a.c. or d.c. supply

Maximum thermal current in category AC-1	Rated operational current in category AC-3	Composition	Number of Instantaneous auxiliary contacts		Basic reference, to be completed by adding the voltage code (1)	Weight
A	A		N/C	N/O		kg
800	750	1 pole	2	1	**CR1BL31●21** (2)	32.000
		2 poles	2	1	**CR1BL32●21** (2)	45.000
		3 poles	2	1	**CR1BL33●21** (2)	58.000
		4 poles	2	1	**CR1BL34●21** (2)	72.000
1250	1000	1 pole	2	1	**CR1BM31●21** (2)	31.000
		2 poles	2	1	**CR1BM32●21** (2)	44.000
		3 poles	2	1	**CR1BM33●21** (2)	57.000
		4 poles	2	1	**CR1BM34●21** (2)	71.000
2000	1500	1 pole	2	1	**CR1BP31●21** (2)	41.000
		2 poles	2	1	**CR1BP32●21** (2)	65.000
		3 poles	2	1	**CR1BP33●21** (2)	94.000
		4 poles	2	1	**CR1BP34●21** (2)	120.000
2750	1800	1 pole	2	1	**CR1BR31●21** (2)	52.000
		2 poles	2	1	**CR1BR32●21** (2)	85.000
		3 poles	2	1	**CR1BR33●21** (2)	129.000
		4 poles	2	1	**CR1BR34●21** (2)	160.000

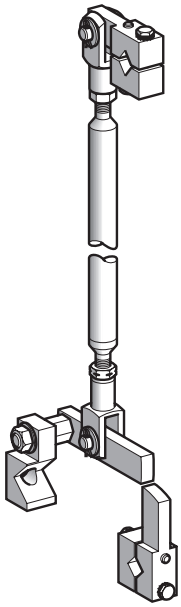
(1) Standard control circuit voltages:

Volts	110	125	127	200	220	240	250	380	412	440	500
∿ 50-400 Hz	F	-	G	L	M	U	-	Q	N	R	S
⎓	FD	GD	-	-	MD	UD	UCD	-	-	RD	SD

For other voltages, see tables of references coils page B10/11 or consult us.

(2) Other configurations, see below.

DB116217.eps



Other configurations for CR1 B

For other configurations of auxiliary contacts, replace the number 21 (2 “N/O” + 1 “N/C”) by the reference of the chosen configuration.
Example: LC1 BP33●30.

1 “N/O” + 2 “N/C” ⟶ **12**

3 “N/O” ⟶ **30**

Accessories for contactors CR1 B

Description	Application	Reference	Weight
			kg
Mechanical interlock (3) with mounting accessories	For vertical assembly of reversing contactors and CR1 B changeover contactor pairs	**EZ2LB0601**	1.560
Kit containing 2 bar mounting brackets		**LA9B103**	1.620

Spare parts see page B10/12.

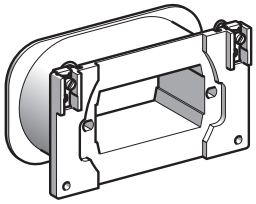
Note: *the protection coil control circuit against short circuits must be performed by a fuse coordinated with the cable section used: 1.5 mm² for copper: 12 A fuse maximum (BS88 or g1).*

(3) Positive mechanical interlocking between 2 vertically mounted contactors of identical or different ratings. Connecting rods and cranks assembled on right-hand sides, crank pins on the pole side.
Vertical fixing centre distance between the two contactors: 600 mm.

CR1 B
Magnetic latching contactors

TeSys B

Coils for CR1 B contactors



WB1 KB●●●

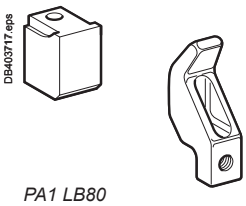
Usual voltage		Coils		Spare parts				
⎓	∼ 50 - 400 Hz	Resistance (θ = 20 °C)	Reference	Additional resistors (1)		Cut-out contact		Rectifier for ∼
				R1	R2	Number	Type	
V	V	Ω		Ω	Ω			
For CR1 B●31		**1 pole**						
-	110/120	19.7	**WB1KB140**	68	47	2	**ZC4GM2** or **ZC4GM8**	**DR5TE1U**
110 / 125	-	25.2	**WB1KB134**	68	68	2	**ZC4GM2** or **ZC4GM8**	-
-	220/240	77.2	**WB1KB136**	220	180	2	**ZC4GM2** or **ZC4GM8**	**DR5TE1U**
220	-	94	**WB1KB139**	270	220	2	**ZC4GM2** or **ZC4GM8**	-
250	-	128	**WB1KB125**	330	270	3	**ZC4GM2** or **ZC4GM8**	-
-	380/400	197	**WB1KB126**	470	470	3	**ZC4GM2** or **ZC4GM8**	**DR5TE1S**
-	415/440	257	**WB1KB138**	1000	470	3	**ZC4GM2** or **ZC4GM8**	**DR5TE1S**
For CR1 B●32		**2 poles**						
-	110	9.6	**WB1KB133**	10	33	1	**PR4FB0011**	**DR5TE1U**
110	120/127	11.4	**WB1KB121**	47	39	1	**PR4FB0010**	**DR5TE1U**
125	-	19.7	**WB1KB140**	100	47	1	**PR4FB0009**	-
-	220	32.5	**WB1KB124**	120	120	1	**PR4FB0007**	**DR5TE1U**
220	240	49.7	**WB1KB122**	220	150	1	**PR4FB0007**	**DR5TE1U**
250	-	77.2	**WB1KB136**	330	220	1	**PR4FB0006**	-
-	380/400	128	**WB1KB125**	470	470	1	**PR4FB0005**	**DR5TE1S**
-	415/440	160	**WB1KB137**	680	560	1	**PR4FB0004**	**DR5TE1S**
For CR1 B●33		**3 poles**						
-	110	7.2	**WB1KB123**	39	27	1	**PR4FB0012**	**DR5TE1U**
110	120/127	9.6	**WB1KB133**	47	39	1	**PR4FB0011**	**DR5TE1U**
125	-	11.4	**WB1KB121**	56	47	1	**PR4FB0010**	-
220	240	32.5	**WB1KB124**	180	120	1	**PR4FB0008**	**DR5TE1U**
250	-	61	**WB1KB135**	270	270	1	**PR4FB0006**	-
-	380/400	94	**WB1KB139**	470	390	1	**PR4FB0005**	**DR5TE1S**
-	415/440	128	**WB1KB125**	680	470	1	**PR4FB0004**	**DR5TE1S**
For CR1 B●34		**4 poles**						
-	110	5.8	**WB1KB132**	33	27	1	**PR4FB0014**	**DR5TE1U**
110	120/127	7.2	**WB1KB123**	47	33	1	**PR4FB0012**	**DR5TE1U**
125	-	11.4	**WB1KB121**	56	45	1	**PR4FB0010**	-
-	220	25.2	**WB1KB134**	150	120	1	**PR4FB0008**	**DR5TE1U**
-	240	32.5	**WB1KB124**	180	150	1	**PR4FB0007**	**DR5TE1U**
250	-	49.7	**WB1KB122**	270	220	1	**PR4FB0007**	-
-	380	77.2	**WB1KB136**	390	390	1	**PR4FB0006**	**DR5TE1S**
-	400/440	94	**WB1KB139**	560	470	1	**PR4FB0005**	**DR5TE1S**

(1) For hot and humid conditions "TH treatment", the references of the coils are supplemented by the letters "TH".
*Example: **WB1 KB 135TH**.*
*Reference of resistance: **DR2 SC0010** for 10 ohms and **DR2 SC0470** for 470 ohms.*

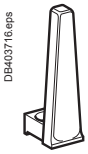
Weight of the various elements:
- *coil WB1 KB●●● 1.120 kg*
- *contact ZC4 GM● 0.030 kg*
- *switch PR4 FB00●● 0.600 kg*
- *rectifier DRS TEl● 0.100 kg*
- *resistance DR2 SC0●●● 0.030 kg*

CR1 B
Magnetic latching contactors

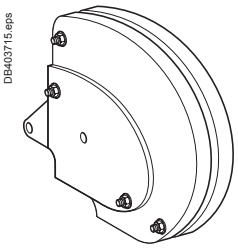
TeSys B



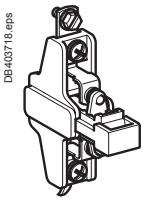
PA1 LB80
(PA1 LB76 + PA1 LB75)



PA1 LB89



PA1 LB50

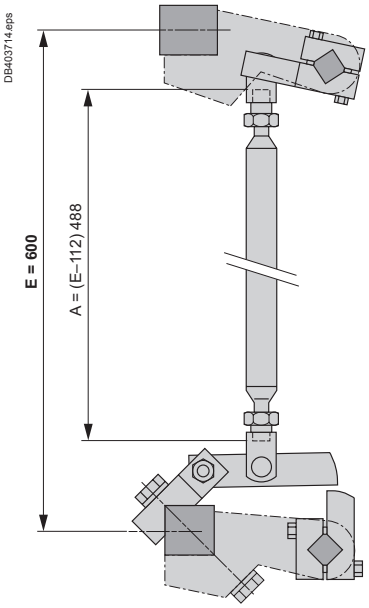


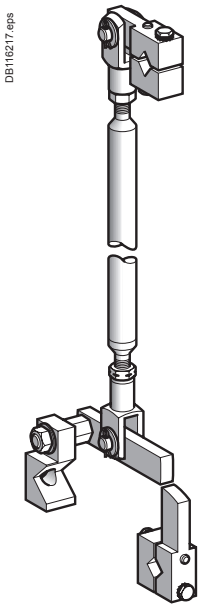
ZC4 GM1

Separate components and spare

Description	For contactors	Number of sets required per pole	Reference	Weight kg
Sets of contacts (1 moving contact, 1 fixed contact)	**CR1BL**	1	**PA1LB80**	0.420
	CR1BM	1	**PA1LB80**	0.420
	CR1BP	2	**PA1LB80**	0.420
	CR1BR	3	**PA1LB80**	0.420
Description	**For contactors**	**Composition**	**Reference**	**Weight kg**
Moving contact only (for one finger)	**CR1B**		**PA1LB75**	0.220
Fixed contact only (for one finger)	**CR1B**		**PA1LB76**	0.200
Blow-out horn only (for 1 finger)	**CR1B**		**PA1LB89**	0.120
Arc chambers (for a single pole)	**CR1BL**		**PA1LB50**	3.700
	CR1BM		**PA1LB50**	3.700
	CR1BP		**PA1PB50**	6.200
	CR1BR		**PA1RB50**	8.500
Auxiliary contact blocks	**CR1B**	1 contact N/C	**ZC4GM1**	0.030
	CR1B	1 contact N/O	**ZC4GM2**	0.030
	CR1B	1 contact N/C	**ZC4GM9**	0.030
	CR1B	1 contact N/O	**ZC4GM8**	0.030
Switch pole for automatic cut-out coil	**CR1B**		**PR4FB00●●** (1)	0.600
Set of moving and fixed contacts for switch pole	**CR1B**		**PV1FA80**	0.035
Arc chamber for switch pole	**CR1B**		**PN1FB50**	0.220

Mechanical interlock for the realization of reversing superposed contactors ref. EZ2-LB0601



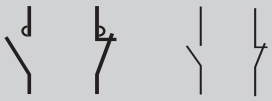


(1) Reference to be completed, see page B10/10.

CRX B and CVX B for switching the excitation circuits of synchronous machines

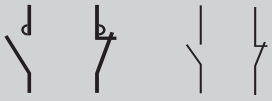
Magnetic latching contactors

Control circuit: dc

Operational voltage	Number of pole N/O	Number of pole N/C	Instantaneous auxiliary contacts		Rated operational current	Basic reference to be completed by adding the voltage (1)	Weight
							
⎓ V					A		kg
850	2	1	6	2	80	**CRXBF21●●**	6.280
					170	**CRXBG21●●**	10.890
					250	**CRXBH21●●**	15.000
					470	**CRXBJ21●●**	21.700
					630	**CRXBK21●●**	38.150
					800	**CRXBL21●●**	58.000
					1250	**CRXBM21●●**	58.000
					2000	**CRXBP21●●**	81.000
					2750	**CRXBR21●●**	114.000

Contactors with standard electromagnets

Control circuit: dc with economy resistor

Operational voltage	Number of pole N/O	Number of pole N/C	Instantaneous auxiliary contacts		Rated operational current	Basic reference to be completed by adding the voltage (1)	Weight
							
⎓ V					A		kg
850	2	1	6	2	80	**CVXBF21●●**	6.280
					170	**CVXBG21●●**	10.890
					250	**CVXBH21●●**	15.000
					470	**CVXBJ21●●**	21.700
					630	**CVXBK21●●**	38.150
					800	**CVXBL21●●**	58.000
					1250	**CVXBM21●●**	58.000
					2000	**CVXBP21●●**	81.000
					2750	**CVXBR21●●**	114.000

(1) Standard control circuit voltages (for other voltages, please consult your Regional Sales Office).

Volts	110	125	250
⎓	FD	GD	UD

CRX B and CVX B for switching the excitation circuits of synchronous machines

Contactors description

CRX and CVX B contactors comprise:

- ■ 2 N/O poles with magnetic blow-out (80…2750 A at ⎓ 850 V).
- ■ 1 N/C pole without blow-out (80…630 A).
- ■ 1 electromagnet with d.c. supply
- □ either magnetic latching (CRX B●21●●)
- □ or with economy resistor (CVX B●21●●).
- ■ 2 instantaneous auxiliary contact heads (6 N/O contacts + 2 N/C contacts).
- ■ 1 mounting bar, 1 rotary drive shaft.

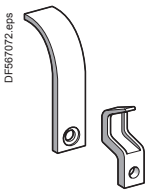
The following can be added:
- ■ 1 or 2 blocks of 4 instantaneous auxiliary contacts LAD N●●, without increasing the overall size of the contactor.
- ■ or 1 time delay block LAD T● or LAD R●.

Note: *it is not possible to fit a mechanical latch block LA6 DK●● on these contactors.*

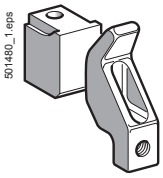
Characteristics

Sizes of contactors CRX B and CVX B			F	G	H	J	K	L	M	P	R
N/O Pole											
Rated current	θ ≤ 40 °C	**A**	80	170	250	470	630	800	1250	2000	2750
Maximum operating voltage d.c.	2 pole series	**V**	850								
Rated insulation voltage According to IEC 60664-1	d.c.	**V**	1000								
Making capacity	d.c.	**A**	1400	2900	3500	5200	6500	14 000	14 000	21 000	25 000
Breaking capacity	d.c. L/R = 15 ms	**A**	500	1000	1200	1200	1500	3200	4400	7200	10 000
Overlap time with the N/C pole		**ms**	2								
N/C Pole											
Rated current	θ ≤ 40 °C	**A**	80	200	300	470	630	630	630	630	630
Making capacity	d.c.	**A**	1600	3200	4000	5200	6500	6500	6500	6500	6500
Breaking capacity	d.c. L/R = 15 ms	**A**	0								
Permissible current	For 10 seconds	**A**	480	960	1400	2700	3600	3600	3600	3600	3600

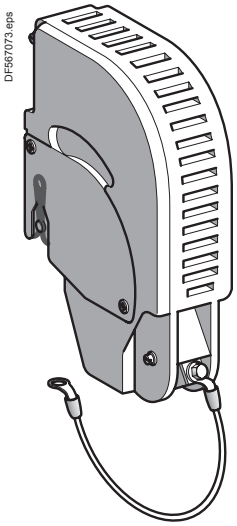
CRX B and CVX B for switching the excitation circuits of synchronous machines



PN1 JB80



PN1 LB80



PN3 KB50

Spare parts

Sets of contacts for CRX contactors

Description	Number of sets required per contactor pole	CRX B and CVX B contactor sizes	Reference	Weight kg
1 fixed contact + 1 moving contact	1	F	**PA2FB80**	0.070
	1	G	**PA2GB80**	0.160
	1	H	**PA2HB80**	0.220
	1	J	**PN1JB80**	0.320
	1	K	**PN1KB80**	0.440
	1	L	**PA1LB80**	0.420
	1	M	**PA1LB80**	0.420
	2	P	**PA1LB80**	0.420
	3	R	**PA1LB80**	0.420

Arc chamber only

Description	Number of sets required per contactor pole	CRX B and CVX B contactor sizes	Reference	Weight kg
Arc chamber	1	F	**PA2FB50**	0.070
		G	**PA2GB50**	0.160
		H	**PA2HB50**	0.220
		J	**PN3JB50**	0.320
		K	**PN3KB50**	0.440
		L	**PA1LB50**	0.420
		M	**PA1LB50**	0.420
		P	**PA1PB52**	0.840
		R	**PA1RB52**	1.260

Variable composition standard and high performance contactors

TeSys B

Applications

- Motor switching in categories AC-3.
- Resistive load switching: heating, etc.
- Distribution circuit switching: line contactor.
- Supply changeover switching: circuit coupling etc.
- Transformer, capacitor, lighting switching.

PB110868.eps

PB110869.eps

Contactors	Type	CV1 B					
	Size	F	G	H	J	K	L
Rated operational current	AC-3	80 A	170 A	250 A	350 A	460 A	700 A
	AC-4/DC-5	72 A/–	145 A/–	205 A/–	290/470 A (1)	380/630 A (1)	584/1000 A (1)
	AC-1	80 A	200 A	300 A	470 A	630 A	1000 A
Rated operational voltage		690 V ∼	690 V ∼	690 V ∼	690 V ∼	690 V ∼	690 V ∼
Available with configuration type command		A - B - C - D					

Available control circuit configuration

Type A
a.c. supply ∼

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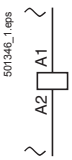

Type B
d.c. supply ⎓

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(1) With PN3 poles.

Variable composition standard and high performance contactors

TeSys B

- Motor switching in categories AC-4, DC-5.
- Inductive circuit switching.
- High voltage d.c. switching: crane electromagnets, railway locomotives.
- Load switching at high operating rates.

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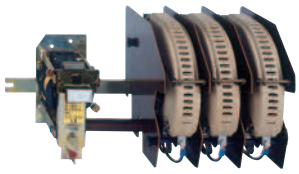

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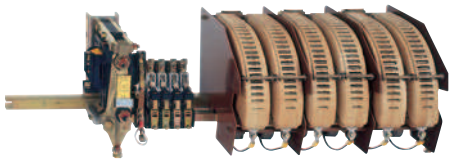

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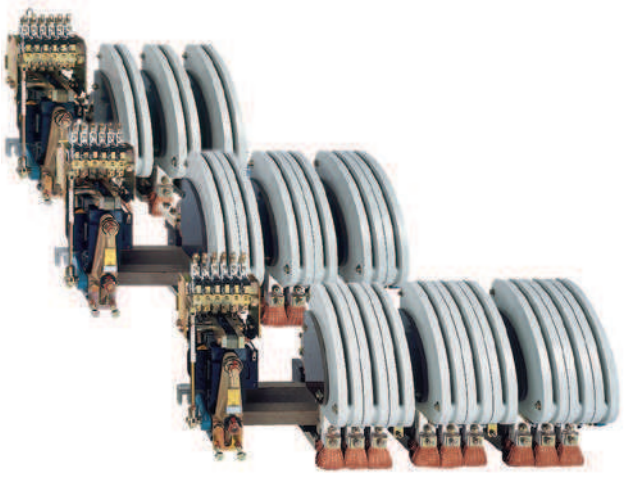
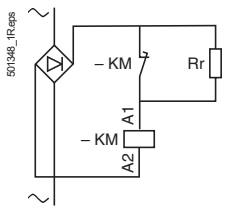


CV3 B				
F	**G**	**H**	**J**	**K**
80 A	200 A	250 A	320 A	460 A
80/80 A	170/200 A	208/300 A	250/320 A	380/500 A
80A	200 A	300 A	320 A	500 A
1000 V ~	1000 V ~	1000 V ~	1000 V ~	1000 V ~
A - B - C - D				

CV3 B and LC1 B			
L	**M**	**P**	**R**
800 A	1000 A	1500 A	1800 A
720/800 A	830/1000 A	1200/1800 A	1500/2500 A
800 A	1250 A	2000 A	2750 A
1000 V ~	1000 V ~	1000 V ~	1000 V ~
C - D (B: special conditions - contact us)			

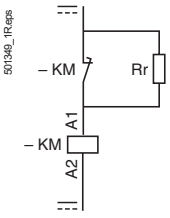
Type C
a.c. supply via economy resistor

501348_1R.eps



Type D
d.c. supply via economy resistor

501349_1R.eps



Variable composition contactors
Ordering process

TeSys B

Selection

To define a contactor
The criteria required to define the composition of a contactor are:
- the number of N/O and N/C power poles
- the current and power supply voltage

(note: on a d.c. supply, the time constant $\frac{L}{R}$ of the load must be known in order to define the number of poles to be wired in series to break the arc)
- the control circuit voltage
- the number of auxiliary contacts.

To order a contactor
Three possibilities are offered:
- contactor selectable by code combinations:
  - use the configuration software “bar contactor soft-customer.xls” to download on: www.schneider-electric.com.
  - use the symbol combination table, on the next page.
- Contactor not selectable by code combinations use the symbol combination table or the software, use the order form on catalogue DIA2070702EN.

To order a contactor manually
contactor selectable by code combinations
- Use the symbol combination table on the next page.
- Check the operational currents possible in the selection restrictions table, below.
- Check the maximum number of poles in the selection table, below.

Choice of operational current (Ie) for contactors selectable by code combinations

Contactor type		CV1 BF CV3 BF	CV1 BG CV3 BG	CV1 BH CV3 BH	CV1 BJ CV3 BJ	CV1 BK CV3 BK	CV1 BL
Rated operational current (1)	11 A	E	–	–	–	–	–
	13 A	M	–	–	–	–	–
	20 A	N	–	–	–	–	–
	40 A	P	–	–	–	–	–
	50 A	Q	Q	–	–	–	–
	80 A	F	–	–	–	–	–
	125 A	–	R	R	–	–	–
	200 A	–	G	G	–	–	–
	250 A	–	–	–	S	–	–
	300 A	–	–	H	–	–	–

(1) Other rating: contact us.

Guide to selection of poles for code combinations

Maximum potential of pole contactors, new design (size F to H)

Pole N/O	Pole N/C
0	1
1	0
1	1
2	0
2	1
3	0
4	0

For another combination, please contact us.

Contactors CV1 B or CV3 B:
number of standard auxiliary contacts: 3 N/O +2 N/C + additive Tesys D.

Examples

- Switching of single-phase capacitor: 400 V - 80 A - 1 N/O main pole. 220 V / 50 Hz. control circuit voltage, 3 N/O and 2 N/C auxiliary contacts.
Reference: **CV1 BF1F0ZM5A**.
- Switching of d.c. heating circuits: 800 V - 150 A - 2 N/O main poles - 48 V ⎓. control circuit, instantaneous auxiliary contact 1 N/O + 1 on-delay.
Reference: **CV3 BG2G0ZEDA + LADT 0, 2 or 4**.

Other versions

To obtain a composition with more main poles or with more than 4 auxiliary contacts, please use **order form CF 452, on** catalogue DIA2070702EN..

Variable composition contactors CV1B / CV3B - 80 to 300 A

Symbol combination table

TeSys B

Reference to be constituted (see examples page B10/18)														
Type of contactor related to application														
∼ 690 V, ⎓ 220 V/pole		**CV1 B**												
∼ 1000 V, ⎓ 440 V/pole		**CV3 B**												
Contactor size AC-1/AC-3														
CV1: 80/80 A	CV3: 80/80 A		**F** *											
CV1: 200/170 A	CV3: 200/200 A		**G** *											
CV1: 300/250 A	CV3: 300/285 A		**H** *											
Number of poles														
N/O poles	1 N/O			**1**										
	2 N/O			**2**										
	3 N/O			**3**										
	4 N/O			**4**										
N/C poles	1 N/C					**1**								
No main poles				**0**	**Z**	**0**	**Z**							
Operational current (determines the blow-out coil size)														
11 A					**E**		**E**							
13 A					**M**		**M**							
20 A					**N**		**N**							
40 A					**P**		**P**							
50 A					**Q**		**Q**							
80 A					**F**		**F**							
125 A					**R**		**R**							
200 A					**G**		**G**							
250 A					**S**		**S**							
300 A					**H**		**H**							
Without breaking					**Z**		**Z**							
Control circuit voltage														
24 V								**B**						
48 V								**E**						
110 V								**F**						
120 V								**K**						
127 V								**G**						
208 V								**L**						
220 V								**M**						
230 V								**P**						
240 V								**U**						
380 V								**Q**						
400 V								**V**						
Operating frequency														
50 Hz									**5**					
60 Hz									**6**					
50/60 Hz (rectifier + economy resistor)									**7**					
⎓									**D**					
⎓ + economy resistor									**R**					
Auxiliary contacts (LA1 BN32 + additives (fitted as standard))														
Instantanés	3 N/O + 2 N/C										**A**			

To check whether the symbol combinations are possible, refer to the selection information and guide on pages B10/18 and B10/20.
If in doubt, fill out order form CF 452, see catalogue DIA2070702EN.

★ *New design, can use any additives in the range of contactors TeSys D except LA6DK, and LAD6K LAD8N.*

Important information for use by Schneider Electric
To place an order in SAP GRC switch-LOGOS
Example: Order the contactor CRXBKZ1GD
■ enter in the Reference product "CRXBK"
■ in the field "Technical text", specify "CRXBK**Z1GD**".

Variable composition contactors
CV1 B - 80 to 1000 A
CV3 B - 80 to 500 A

Selection (see page B10/18)

To order a contactor manually
contactor selectable by code combinations

- Use the symbol combination table on page B10/21.
- Check the operational currents possible in the selection restrictions table, below.
- Check the maximum number of poles in the selection table, below.

Choice of operational current (Ie) for contactors selectable by code combinations

Contactor type		CV1 BF CV3 BF	CV1 BG CV3 BG	CV1 BH CV3 BH	CV1 BJ CV3 BJ	CV1 BK CV3 BK	CV1 BL
Rated operational current (1)	11 A	**E**	–	–	–	–	–
	13 A	**M**	–	–	–	–	–
	20 A	**N**	–	–	–	–	–
	40 A	**P**	–	–	–	–	–
	50 A	**Q**	**Q**	–	–	–	–
	80 A	**F**	–	–	–	–	–
	125 A	–	**R**	**R**	–	–	–
	200 A	–	**G**	**G**	–	–	–
	250 A	–	–	–	**S**	–	–
	300 A	–	–	**H**	–	–	–
	320 A	–	–	–	**T**	–	–
	400 A	–	–	–	–	**U**	–
	470 A	–	–	–	**J**	–	–
	500 A	–	–	–	–	**V**	–
	630 A	–	–	–	–	**K**	**K**
	1000 A	–	–	–	–	–	**L**
	0 Sans soufflage	**Z**	**Z**	**Z**	**Z**	**Z**	**Z**

(1) Other rating: contact us.

Guide to selection of code combinations

CV1 B contactors: maximum number of power poles

Contactor type	CV1 BF		CV1 BG		CV1 BH		CV1 BJ		CV1 BK		CV1 BL	
Pole type	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**
Number of poles	5	0	4	0	4	0	4	0	4	0	2 (1)	0
	0	2	0	2	0	2	0	2	0	2	0	1 (2)
	2	1	2	1	2	1	2	1	2	1	–	–

CV3 B contactors: maximum number of power poles

Contactor type	CV3 BF		CV3 BG		CV3 BH		CV3 BJ		CV3 BK	
Pole type	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**	**N/O**	**N/C**
Number of poles	5	0	4	0	4	0	2	0	2	0
	0	2	0	2	0	2	–	–	–	–
	1	2	1	2	–	–	–	–	–	–
	3	1	2	1	2	1	–	–	–	–

CV1 B or CV3 B contactors:
Maximum number of auxiliary contacts: 4 + 1 time delay if necessary

Selection restrictions, according to coil type:
(1) 4-pole with economy resistor.
(2) 2-pole with economy resistor.

Variable composition contactors
CV1 B - 80 to 1000 A
CV3 B - 80 to 500 A
Symbol combination table

Reference to be constituted (see examples page B10/20)														
Type of contactor related to application														
∼ 690 V, ⎓ 220 V/pole		**CV1 B**												
∼ 1000 V, ⎓ 440 V/pole		**CV3 B**												
Contactor size AC-1/AC-3														
CV1: 80/80 A	CV3: 80/80 A		**F**											
CV1: 200/170 A	CV3: 200/200 A		**G**											
CV1: 300/250 A	CV3: 300/285 A		**H**											
CV1: 470/350 A	CV3: 320/320 A		**J**											
CV1: 630/460 A	CV3: 500/460 A		**K**											
CV1: 1000/700 A			**L**											
Number of poles														
N/O poles	1 N/O			**1**										
	2 N/O			**2**										
	3 N/O			**3**										
	4 N/O			**4**										
	5 N/O			**5**										
N/C poles	1 N/C					**1**								
	2 N/C					**2**								
	3 N/C					**3**								
No main poles				**0**	**Z**	**0**	**Z**							
Operational current (determines the blow-out coil size)														
11 A					**E**		**E**							
13 A					**M**		**M**							
20 A					**N**		**N**							
40 A					**P**		**P**							
50 A					**Q**		**Q**							
80 A					**F**		**F**							
125 A					**R**		**R**							
200 A					**G**		**G**							
250 A					**S**		**S**							
300 A					**H**		**H**							
320 A					**T**		**T**							
400 A					**U**		**U**							
470 A					**J**		**J**							
500 A					**V**		**V**							
630 A					**K**		**K**							
1000 A					**L**		**L**							
Without breaking					**Z**		**Z**							
Control circuit voltage														
24 V								**B**						
48 V								**E**						
110 V								**F**						
120 V								**K**						
127 V								**G**						
208 V								**L**						
220 V								**M**						
230 V								**P**						
240 V								**U**						
380 V								**Q**						
400 V								**V**						
415 V								**N**						
440 V								**R**						
480 V								**T**						
500 V								**S**						
600 V								**X**						
Operating frequency														
50 Hz									**5**					
60 Hz									**6**					
50/60 Hz (rectifier + economy resistor)									**7**					
⎓									**D**					
⎓ + economy resistor									**R**					
Auxiliary contacts (type ZC4 GM)														
N/O instantaneous	1 N/O										**1**			
	2 N/O										**2**			
	3 N/O										**3**			
	4 N/O										**4**			
N/C instantaneous	1 N/C											**1**		
	2 N/C											**2**		
	3 N/C											**3**		
	4 N/C											**4**		
No instantaneous auxiliary contacts											**0**	**0**		
On-delay	1 N/O + 1 N/C on-delay												**J**	
Off-delay	1 N/O + 1 N/C off-delay												**N**	

To check whether the symbol combinations are possible, refer to the selection information and guide on pages B10/18 and B10/20.
If in doubt, fill out order form CF 452, on catalogue DIA2070702EN.

TeSys B and V

Technical Data for Designers

Contents

TeSys contactors
TeSys LC1 B contactors

TeSys B

Environment

Contactor type			LC1 BL	LC1 BM	LC1 BP	LC1 BR
Rated insulation voltage (Ui)	Conforming to IEC 60158-1/IEC 60947-4	V	1000	1000	1000	1000
	Conforming to VDE 0110 gr C	V	1500	1500	1500	1500
Conforming to standards			IEC 60947-4, EN 60947-4			
Product certifications			CSA			
Ambient air temperature around the device (for operation at Uc)	Storage	°C	-60…+80			
	Operation	°C	-5…+55			
	Permissible	°C	-30…+70			
Maximum operating altitude	Without derating	m	2000			
Operating positions	Without derating		±23° occasional, in relation to normal vertical mounting plane			

Pole characteristics

Number of poles			1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4	1, 2, 3 or 4
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-3, θ ≤ 55 °C	A	750	1000	1500	1800
	In AC-1, θ ≤ 40 °C	A	800	1250	2000	2750
Rated operational voltage (Ue)	Up to	V	1000			
Frequency limits (sine wave)	Without derating	Hz	50/60			
	Derating coefficient		100 Hz: 0.9 - 150 Hz: 0.8 - 250 Hz: 0.7 - 400 Hz: 0.5			
Maximum thermal current (Ith)	θ ≤ 40 °C	A	800	1250	2000	2750
Rated making capacity	I rms conforming to IEC 60158-1 and 60947-4	A	8000	9000	12000	15000
Rated breaking capacity	I rms conforming to IEC 60158-1 and 60947-4 up to 440 V	A	8000	9000	12000	15000
	500 V	A	7000	8000	12000	14000
	660-690 V	A	6000	7000	9000	11000
	1000 V	A	4000	4000	5000	6000
Permissible short time rating From cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C	For 1 s	A	9600	9600	12000	15000
	For 5 s	A	9600	9600	12000	15000
	For 10 s	A	7000	8000	9600	12000
	For 30 s	A	4800	5200	6400	8000
	For 1 min.	A	3500	3800	5200	6300
	For 3 min.	A	2100	2400	3600	4400
	For 10 min.	A	1200	1800	2800	3600
Short-circuit protection by fuses U ≤ 440 V	Motor circuit (type aM)	A	800	1200	2 x 800 (1)	2 x 1000 (1)
	With thermal overload relay (type gl)	A	1000	1500	2 x 1000 (1)	2 x 1200 (1)
	gl fuses	A	800	1200	2 x 1000 (1)	2 x 1200 (1)
Average impedance per pole	At Ith and 50 Hz	mΩ	0.18	0.18	0.13	0.09
Power dissipated per pole	AC-3	W	115	180	290	290
	AC-1	W	115	280	520	680
Connection	Number of bars		2	2	3	4
	Bar	mm	50 x 5	80 x 5	100 x5	100 x 5
Bolt diameter		mm	4 x Ø8	4 x Ø10	4 x Ø10	4 x Ø10
Tightening torque	Power circuit connections	N.m	18	35	35	35

(1) Fuses must not be connected in parallel unless specified by the manufacturer.

Selection: pages A5/23 to A5/47
References: pages B10/2 to B10/4
Dimensions and schemes: pages B10/26 and B10/27

TeSys contactors
TeSys LC1 B contactors

TeSys B

Control circuit characteristics

Contactor type				LC1 BL	LC1 BM	LC1 BP	LC1 BR
Rated control voltage	50/60 Hz		V	110…500	110…500	110…500	110…500
	⎓ 1,2 or 3-pole contactors		V	48…500	48…500	48…500	48…500
	⎓ 4-pole contactors		V	48…500	48…500	48…500	60…500
Voltage limits	Operation		V	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Uc	0.85…1.1 Ucw
	Drop-out		V	0.30…0.50 Uc	0.30…0.50 Uc	0.35…0.50 Uc	0.40…0.50 Uc
Maximum consumption (coil + economy resistor)	~	Number of poles: 1	VA	Inrush: 620 - sealed: 10			
		Number of poles: 2	VA	Inrush: 1000 - sealed: 20			
		Number of poles: 3	VA	Inrush: 1300 - sealed: 31			
		Number of poles: 4	VA	Inrush: 1600 - sealed: 47			
	⎓ (1)	Number of poles: 1	W	Inrush: 520 - sealed: 10			
		Number of poles: 2	W	Inrush: 800 - sealed: 20			
		Number of poles: 3	W	Inrush: 1100 - sealed: 31			
		Number of poles: 4	W	Inrush: 1400 - sealed: 47			
Operating time (2) average at Uc (in milliseconds)	"C"		ms	100…150	100…150	100…150	100…150
	"O" breaking on ~ side		ms	50…100	50…100	50…100	50…100
	"O" breaking on ⎓ side		ms	20…40	20…40	20…40	20…40
Mechanical durability (at Uc)	In millions of operating cycles			1.2	1.2	1.2	1.2
Maximum operating rate in mechanical operating cycles	Ambient temperature ≤ 55 °C		Op. cycs/h	120	120	120	120

Characteristics of instantaneous auxiliary contacts ZC4 GM●

Rated thermal current		A	20							
Rated insulation voltage	Conforming to IEC 60947-1	V	660							
	Conforming to VDE, group C	V	750							
Short-circuit protection gl type cartridge fuses	Conforming to IEC 60947-1 and VDE 0660	A	20							
Operational power			~ supply					⎓ supply			
		V	110/127	220	380	415/440	500	110	220	440	500
	1 million operating cycles	VA/W	2000	4000	4000	4000	3500	250	250	230	200
Making and breaking capacity		VA/W	14000	23000	35000	45000	35000	1600	800	400	360
Cabling	With cable end	mm²	1 or 2 x 4 mm² conductors								
	Without cable end	mm²	1 or 2 x 6 mm² conductors								

(1) The inrush and sealed power values of d.c. electromagnets often require the use of an intermediate relay for control.

(2) 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.

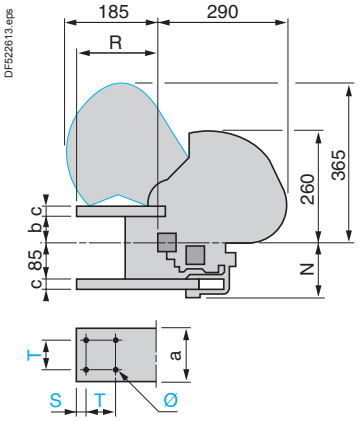
Bar mounted contactors

Selection: pages A5/23 to A5/47
References: pages B10/2 to B10/4
Dimensions and schemes: pages B10/26 and B10/27

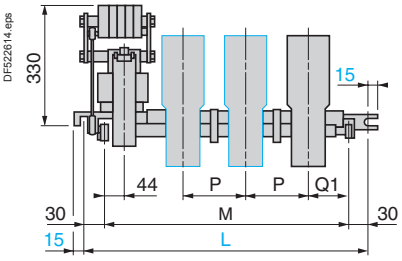
TeSys contactors
TeSys LC1 B contactors

TeSys B

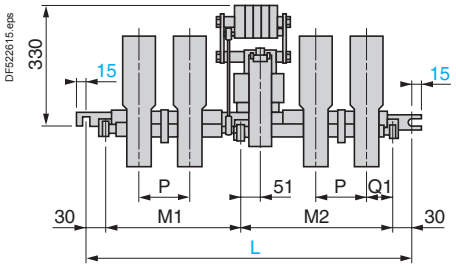
Single, 2, 3 or 4-pole contactors LC1 B
Common side view



Single, 2 or 3-pole contactors LC1 B●31, B●32 or B●33

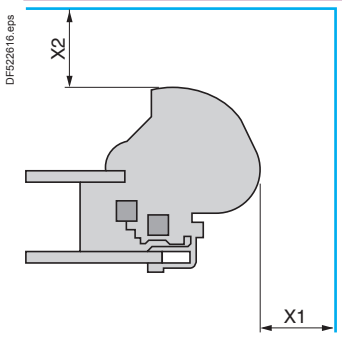


4-pole contactors LC1 B●34



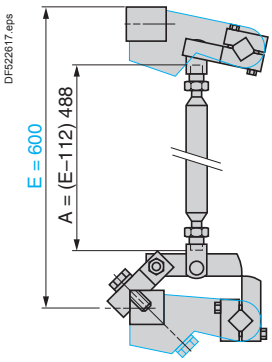
Number of poles	LC1 BL				LC1 BM				LC1 BP				LC1 BR			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
a	50	50	50	50	63	63	63	63	100	100	100	100	125	125	125	125
b	59	59	59	59	55	55	55	55	55	55	55	55	50	50	50	50
c	16	16	16	16	20	20	20	20	20	20	20	20	25	25	25	25
L	345	445	540	760	345	445	540	760	385	540	760	1065	445	635	885	1065
M	285	385	480	–	285	385	480	–	325	480	700	–	385	575	825	–
M1	–	–	–	308	–	–	–	308	–	–	–	455	–	–	–	455
M2	–	–	–	392	–	–	–	392	–	–	–	550	–	–	–	550
N	121	121	121	121	125	125	125	125	125	125	125	125	130	130	130	130
P	100	100	100	100	100	100	100	100	150	150	150	150	195	195	195	195
Q1	100	100	100	100	100	100	100	100	110	110	110	110	130	130	130	130
R	122	122	122	122	157	157	157	157	173	173	173	173	173	173	173	173
S	10	10	10	10	17	17	17	17	20	20	20	20	20	20	20	20
T	30	30	30	30	30	30	30	30	60	60	60	60	60	60	60	60
Ø	9	9	9	9	11	11	11	11	11	11	11	11	11	11	11	11

Electrical safety clearance
Values X1 and X2 are given for a breaking capacity of 10 In (~ 3-phase supply).



~ 3-phase voltage		LC1 BL	LC1 BM	LC1 BP	LC1 BR
380/440 V	X1	100	100	150	200
	X2	150	150	200	250
500 V	X1	100	100	150	200
	X2	150	150	220	250
660/690 V	X1	150	150	200	200
	X2	200	200	250	250
1000 V	X1	200	200	200	250
	X2	250	250	250	300

Mechanical interlock for assembling vertically mounted reversing contactors
EZ2 LB0601



Selection:
pages A5/23 to A5/47

References:
pages B10/2 to B10/4

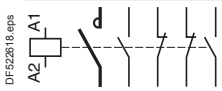
Schemes:
page B10/27

TeSys contactors
TeSys LC1 B contactors

TeSys B

TeSys LC1 B contactors

LC1 B•31•22



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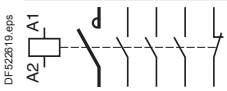

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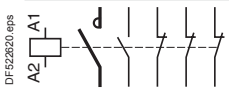

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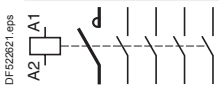

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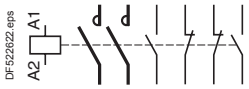

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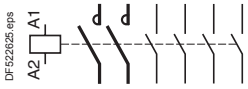
LC1 B•32•13

LC1 B•32•40



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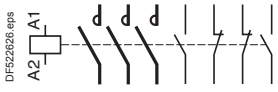

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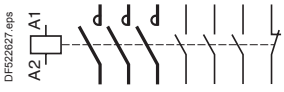

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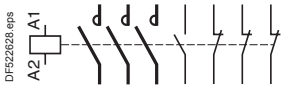

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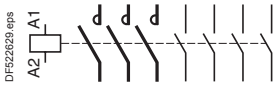
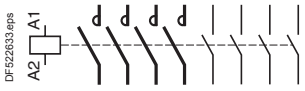


LC1 B•34•22

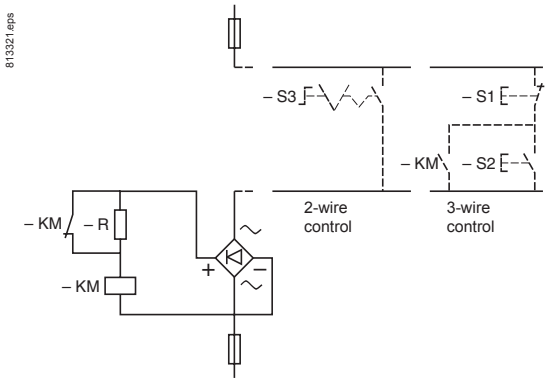
LC1 B•34•31

LC1 B•34•13

LC1 B•34•40

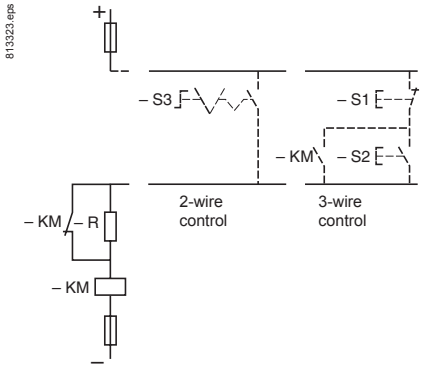


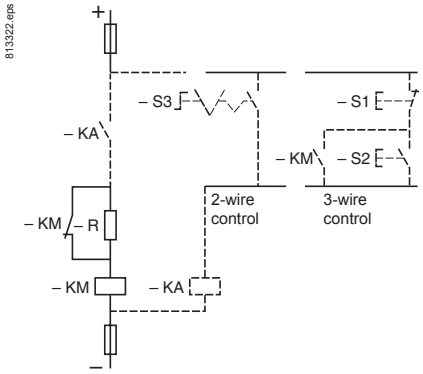
a.c. control circuit



Dotted lines show optional wiring and external items required.

d.c. control circuit





Note: *it is essential to check that the control circuit contacts have ratings compatible with the voltage and power consumption of the operating coil of the contactor. If not, an intermediate "KA" relay must be fitted and wired as shown.*

Dotted lines show optional wiring and external items required.

Bar mounted contactors

CR1 B
Magnetic latching contactors

Magnetic latching contactors

The magnetic latching contactors are equipped with a specific electromagnet allowing them to maintain position “ON” although the coil is fed by any current.

Use

The specific properties of magnetic latching contactors make them suitable for many uses:

Properties	Use
Memory retention of the sequence in automatic equipment, in the event of loss of the control voltage.	Refineries, power plants, excitation circuits.
Energy saving, as no current is drained when the contactor is activated.	Contactor staying activated for long periods. Examples: refineries, alimentation energy, ST distribution.
Change of state “Work” / “Rest” by current pulse sent to the coil.	Selective opening control.
Insensitivity to main perturbations.	No unexpected opening or closing of power poles
Use of contactors beyond breaking capacity as they are activated off-load.	Passer diverter, for use with 1000 V
Silent contactor when locked in ON position	

Electro-magnet operation of the CR1 B contactors

The CR1 B magnetic latching contactors are equipped with a single coil, supplied with direct current or alternating current through a rectifier.
The latching is obtained by direct feeding of the coil with a current in a given direction.
The unlatching is produced by a current of opposite direction, adjusted by resistors.

Range

- The magnetic latching contactors are available from 80 to 630 A (Size F to K).
- The characteristics of N/O and N/C poles are identical to those of CV1 and CV3 B (Size F to K).
- For other characteristics and mounting dimensions, please contact us.
- For ratings of 800 to 2750 A, see next page.

CR1 B
Magnetic latching contactors

TeSys B

Direct starting of squirrel cage motors

In continuous or intermittent service up to 30 operating cycles per hour.

Motor (1)								3-poles contactor
220 / 230 V		380 / 400 V		415 V		440 V		
P	In	P	In	P	In	P	In	Size (2)
kW	A	kW	A	kW	A	kW	A	
220	700	355	635	400	650	425	650	**CR1-BL33**
-	-	375	670	425	690	445	680	**CR1-BL33**
-	-	400	710	445	730	450	690	**CR1-BL33**
-	-	-	-	450	740	475	730	**CR1-BL33**
250	800	425	760	475	780	500	780	**CR1-BM33**
257	826	445	790	500	820	530	825	**CR1-BM33**
280	900	450	800	530	870	560	870	**CR1-BM33**
295	948	475	850	560	920	600	920	**CR1-BM33**
300	980	500	900	600	978	630	965	**CR1-BM33**
315	990	530	950	-	-	-	-	**CR1-BM33**

(1) The ratings are for standard 220/230 V, 380/400 V, 415 or 440 V motors. The overload relays should preferably be set to the motor full-load current shown on the motor rating plate. For other power ratings, select the overload relay with the appropriate range; the associated contactor and fuses must have ratings equal to or immediately greater than In.
(2) Reference to be completed on page B10/10 .

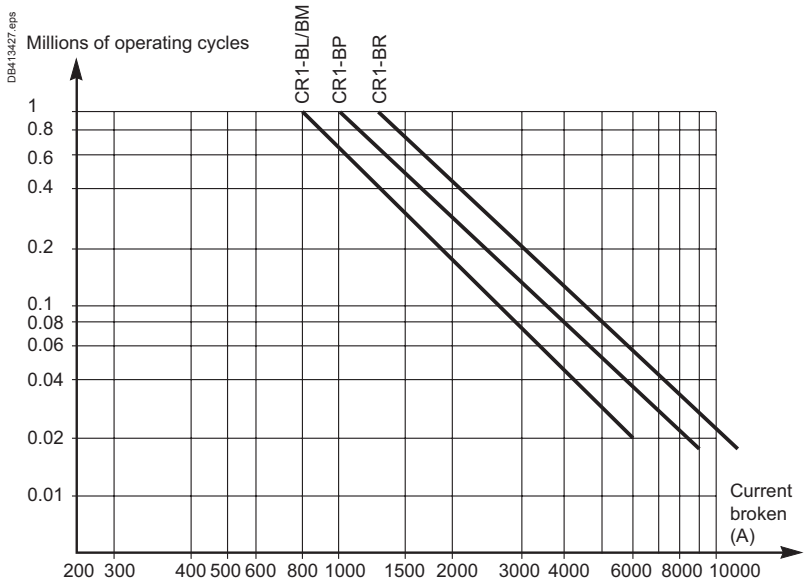
Selection guide for utilisation category and electrical durability

a.c.: category AC-3					
CR1 B contactor rating		**L**	**M**	**P**	**R**
Rated operational current ($\theta \leq 55$ °C)					
440 V	**A**	750	1000	1500	1800
500 V	**A**	750	900	1200	1500
660 V	**A**	700	800	900	1100
1000 V	**A**	400	400	500	600
Operational power ($\theta \leq 55$ °C) (normalized motor power)					
220 / 230 V	**kW**	220	280	425	500
380 / 400 V	**kW**	400	500	750	900
415 V	**kW**	425	530	800	900
440 V	**kW**	450	560	800	900
500 V	**kW**	500	600	750	900
660 V	**kW**	560	670	750	900
1000 V	**kW**	530	530	670	750

Maximum operating rate of 120 operating cycles/hour, at rated operational power with an on-load factor ≤ 85 %.

Electrical durability in category AC-3 (Ue ≤ 440 V)

For 660 V, multiply the number of operating cycles by 0.8.



CR1 B
Magnetic latching contactors

TeSys B

Selection guide for utilisation category and electrical durability

Resistive circuits - power factor ≥ 0.95.

a.c.: category AC-3						
CR1 B contactor rating			**L**	**M**	**P**	**R**
Maximum operational current (θ ≤ 55 °C)						
Number of bars			2	2	3	4
Cabling c.s.a.		**mm²**	50 x 5	80 x 5	100 x 5	100 x 5
Rated operationnal current in category AC-1 at ambient air temperature	≤ 40 °C	**A**	800	1250	3000	2750
	≤ 55 °C	**A**	700	1100	1750	2400
	≤ 70 °C	**A**	600	900	1500	2000

Increase in rated operational current by paralleling of poles

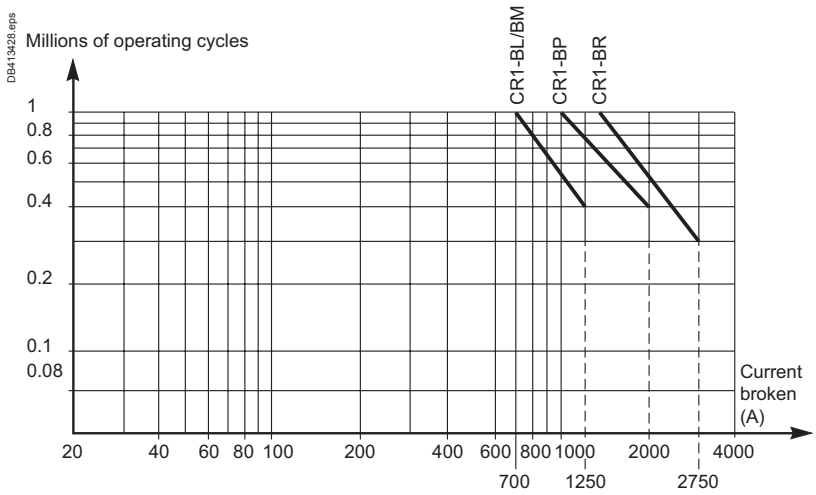
Apply the following coefficients to the above currents:
- 2 poles in parallel: K = 1.60
- 3 poles in parallel: K = 2.25
- 4 poles in parallel: K = 2.8.

These coefficients take into account an often unbalanced distribution of current between the poles.

Maximum operating rate in operating cycles 120/hour.

Electrical durability in category AC-1 (Ue ≤ 440 V)

For 660 V, multiply the number of operating cycles by 0.8.



Switching the primaries of 3-phase transformers

Conditions of use

- Maximum operational voltage: 1000 V 50/60 Hz.
- Maximum ambient temperature: 55 °C.

At power up, there is usually a suden inrush current. It reaches almost instantly its peak value and then decreases so approximately exponentially to its rapid steady state value.
The value depends on:
- characteristics of the magnetic circuit and the windings (section of kernel design field,number of turns, dimensions of the coils...)
- characteristics of magnetic metal sheets used (residual induction and saturation induction)
- of the magnetic state of the circuit and the instantaneous value of the alternating voltage of the network at the time of activation.

When a transformer is switched on, there is generally an initial current surge which can reach 20 to 40 times the rated current for the power ratings shown below.

This current reaches its peak value almost instantaneously and then decreases in a largely exponential manner, quickly dropping back down to its steady state value.

CR1 B contactor rating			**L**	**M**	**P**	**R**
Prospective peak current at switch-on		**A**	18000	18000	24000	30000
Maximum operational power (1)	220 / 230 V	**kVA**	230	230	300	380
	380 400 V	**kVA**	400	400	530	660
	415 / 440 V	**kVA**	450	450	560	700
	500 V	**kVA**	480	480	600	750
	660 V	**kVA**	600	600	800	950
	1000 V	**kVA**	700	700	1000	1200

(1) Maximum operational power corresponding to a current peak at switch-on of 30 In.

CR1 B
Magnetic latching contactors
a.c or d.c. control circuit

TeSys B

Characteristics

CR1 B contactor rating				L	M	P	R
Number of poles				1, 2, 3 or 4			
Rated operational voltage			V	1000			
Environment							
Terminal protection cover against accidental contact				Without			
Protective treatment				TC			
Ambient air temperature		storage	°C	-60 ... +80			
		operation	°C	-15 ... +60			
Maximum operating altitude			m	3000			
Maximum inclination				± 30° occasional, in relation to normal vertical mounting plane			
Pole characteristics							
Rated operational voltage conforming to		BS 775 and IEC 158-1	V	1000			
		VDE 0110 grC	V	1500			
Frequency limits by operational current			Hz	50-60			
Operational current	Distribution (θ ≤ 40 °C)	AC-1	A	800	1250	2000	2750
	Motor (θ ≤ 40 °C, U ≤ 440 V)	AC-3	A	750	1000	1500	1800
		AC-4	A	750	1000	1500	1800
Rated making capacity I rms conforming to IEC 158-1			A	10000	10000	15000	18000
Rated breaking capacity conforming to IEC 158-1		220 - 380 - 415 - 440 V	A	10000	10000	15000	18000
		500 V	A	9000	9000	12000	15000
		660 V	A	8000	8000	9000	11000
		1000 V	A	4000	4000	5000	6000
Permissible short time rating From cold state, with no current flowing for previous 60 minutes at θ ≤ 40 °C		for 1 s	A	9600	9600	12000	15000
		for 5 s	A	9600	9600	12000	15000
		for 10 s	A	7000	8000	9600	12000
		for 30 s	A	4800	5200	6400	8000
		for 1 min	A	3500	3800	5200	6300
		for 3 min	A	2100	2400	3600	4400
		for 10 min	A	1200	1800	2800	3600
Short-circuit protection by fuses (max. rating)	Distribution	type g1 - BS 88	A	800	1200	1000 x 2 (1)	1200 x 2 (1)
	Motor circuit	type aM	A	800	1200	800 x 2 (1)	1000 x 2 (1)
	With thermal overload relay	type g1 - BS 88	A	1000	1500	1000 x 2 (1)	1200 x 2 (1)
Average impedance per pole			mΩ	0.18	0.18	0.13	0.09
Power dissipated per pole		AC-1	W	115	280	520	680
		AC-3	W	88	180	290	360
Number of bars				2	2	3	4
Bar			mm	50 x 5	80 x 5	100 x 5	100 x 10
Control circuit characteristics							
Rated control voltage		50/60 Hz	V	110 to 500			
		400 Hz and ⎓	V	110 to 500			
Voltage limits ∿ and ⎓		latching	Un	0.85 to 1.1			
		unlatching	Un	0.85 to 1.1			
Maximum operating rate in mechanical operating cycles (at θ ≤ 40 °C)			man./h	120			
Mechanical durability			man.	1 million			
Average consumption at 50/60 Hz	Latching	1 pole	VA	650	650	650	650
		2 poles	VA	1100	1100	1100	1100
		3 poles	VA	1650	1650	1650	1650
		4 poles	VA	1850	1850	1850	1850
	Unlatching	1 pole	VA	110	110	110	110
		2 poles	VA	125	125	125	125
		3 poles	VA	165	165	165	165
		4 poles	VA	175	175	175	175
Average consumption at 400 Hz and ⎓	Latching	1 pole	VA	600	600	600	600
		2 poles	VA	1000	1000	1000	1000
		3 poles	VA	1500	1500	1500	1500
		4 poles	VA	1700	1700	1700	1700
	Unlatching	1 pole	VA	100	100	100	100
		2 poles	VA	115	115	115	115
		3 poles	VA	150	150	150	150
		4 poles	VA	160	160	160	160
Average operating time at nominal voltage				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.			
Operating in a.c. or d.c.		Latching	ms	100 - 150	100 - 150	100 - 150	100 - 150
		Unlatching	ms	20 - 40	20 - 40	20 - 40	20 - 40
				Note: the arcing time depends on the circuit switched by the main poles. For 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.			
Characteristics of instantaneous auxiliary contacts (type ZC4 GM for CR1 B contactors)							
Rated thermal current			A	20			
Rated insulation voltage conforming to		IEC 337-1		660			
		VDE 0110 grC		750			
Cabling		Number of bars		2			
		Bar c.s.a.	mm²	4			

(1) Parallel cabling must be done only according the instructions of the fuses manufacturer.

CR1 B
Magnetic latching contactors

TeSys B

Characteristics

Characteristics of instantaneous auxiliary contacts (type ZC4 GM for CR1 B contactors)

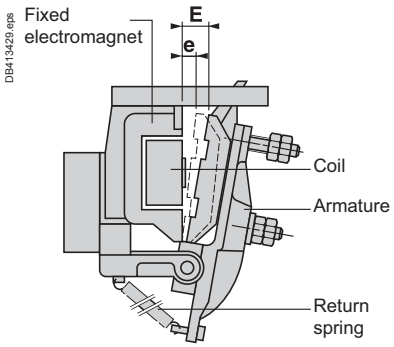
Operational power	in a.c.	V	110/127	220	380	415/440	500
	1 million operating cycles	VA	2000	4000	4000	4000	3500
	occasional making capacity	VA	14000	23000	35000	45000	35000
			Electrical durability (valid for up to 2400 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making current (cos φ 0.7) = 10 times the power broken (cos φ 0.4).				
Operational power	in d.c.	V	110	220	440	500	
	1 million operating cycles	VA	250	250	230	200	
	occasional making capacity	VA	1600	800	400	360	
			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.				

Adjustment characteristics for control circuit

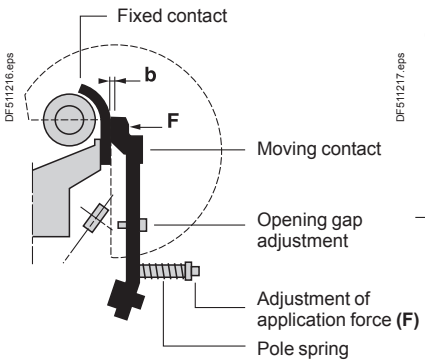
CR1 B contactor rating			L	M	P	R
Electromagnet		Ref.	ET1-KB50			
Air gap of the magnetic circuit		mm	5/100			
Pick-up travel (E)		mm	30			
Pull-in travel (e)		mm	10			
N° of the return spring of the moving part			1 x 292 (1 pole contactors) 2 x 292 (2 poles, 3 poles, 4 poles contactors)			
Type of coil			WB1-KB			
Pull-in cold voltage (θ = 20 °C)		Un	0.75			
Drop-out voltage		Un	0.30 to 0.50			
Adjustment of application force (F) on the contact per pole	according to contactor composition					
Number of springs	1 pole		201	201	201	155
	2 poles		201	201	201	155
	3 poles		201	201	201	155
	4 poles		201	201	201	155
Application force (F) to contact per pole	1 pole	daN	30	30	30 (1)	30 (2)
	2 poles	daN	30	30	30 (1)	30 (2)
	3 poles	daN	30	30	30 (1)	30 (2)
	4 poles	daN	30	30	30 (1)	30 (2)
Switch pole setting	Opening gap (b.), electro-magnet closed	mm	2 ±0.5			
	Beginning of opening, during closing action (F)	mm	12 to 14			
	Application force (F)	daN	0.900			

(1) Each pole has 2 contacts: the force must be applied evenly to each of these contacts.
(2) Each pole has 3 contacts: the force must be applied evenly to each of these contacts.

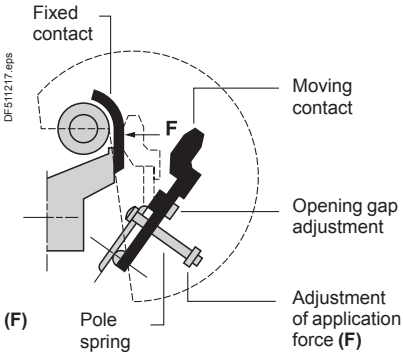
Electromagnet ET1-KB50



N/O pole



N/C pole

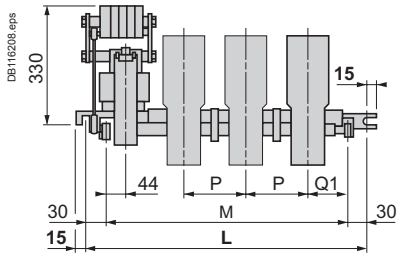


CR1 B
Magnetic latching contactors

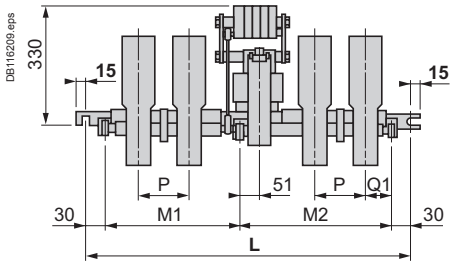
TeSys B

Front face view

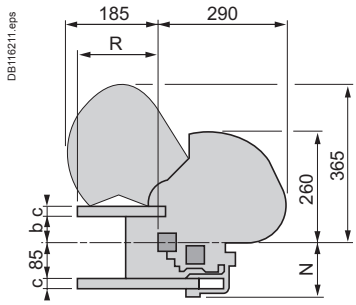
Single, 2 or 3-pole contactors



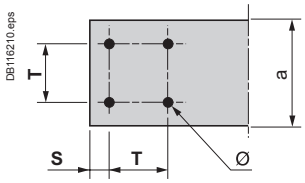
4-pole contactors



Common side view

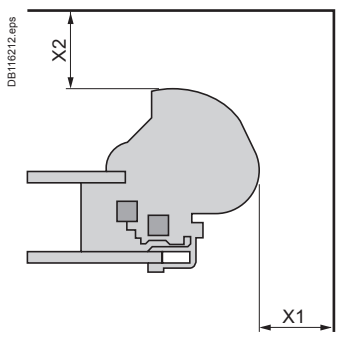


Drilling plan of busbars connections



Diameter of screw: 12 mm.

Type	Rating (A)	Number of poles	L	M	M1	M2	b	c	ø	a	T	S	R	N	P	Q1
CR1 BL	800	1	345	285	-	-	59	16	9	50	30	10	122	121	100	100
		2	445	385	-	-	59	16	9	50	30	10	122	121	100	100
		3	540	480	-	-	59	16	9	50	30	10	122	121	100	100
		4	760	-	308	392	59	16	9	50	30	10	122	121	100	100
CR1 BM	1250	1	345	285	-	-	55	20	11	63	30	17	157	125	100	100
		2	445	385	-	-	55	20	11	63	30	17	157	125	100	100
		3	540	480	-	-	55	20	11	63	30	17	157	125	100	100
		4	760	-	308	392	55	20	11	63	30	17	157	125	100	100
CR1 BP	2000	1	385	325	-	-	55	20	11	100	60	20	173	125	150	110
		2	540	480	-	-	55	20	11	100	60	20	173	125	150	110
		3	760	700	-	-	55	20	11	100	60	20	173	125	150	110
		4	1065	-	455	550	55	20	11	100	60	20	173	125	150	110
CR1 BR	2750	1	445	385	-	-	55	20	11	125	60	20	173	130	195	123
		2	635	575	-	-	55	20	11	125	60	20	173	130	195	123
		3	885	825	-	-	55	20	11	125	60	20	173	130	195	123
		4	1065	-	455	550	55	20	11	125	60	20	173	130	195	123



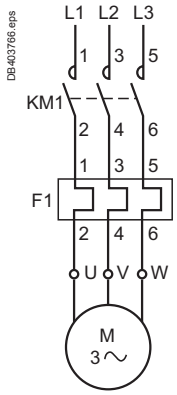
Minimum electrical clearance

Values X1 and X2 are given for a breaking capacity of 10 In (a 3-phase supply).

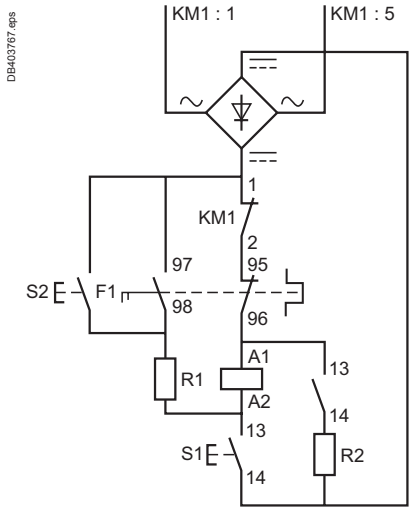
Rating of contactor CR1 B		L	M	P	R
∼ 3-phase voltage					
380/440 V	X1	100	100	150	200
	X2	150	150	200	250
500 V	X1	100	100	150	200
	X2	150	150	220	250
660 V	X1	150	150	200	200
	X2	200	200	250	250
1000 V	X1	200	200	200	250
	X2	250	250	250	300

CR1 B
Magnetic latching contactors

Contactor CR1 B with overload relay



Contactor CR1 B

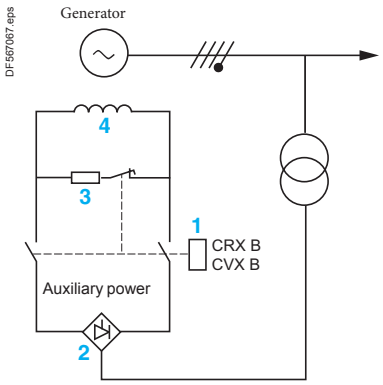


CRX B and CVX B for switching the excitation circuits of synchronous machines

Presentation

Variable composition contactors CRX B and CVX B are designed for switching the excitation circuits of synchronous machines, in particular electrical power station generators, for operational currents from 80 to 2750 A.
Example: Static excitation generator.

Basic scheme



1 Excitation contactor
2 Thyristor bridge
3 Discharge resistor Rd
4 Excitation winding

Operating principle

The voltage delivered by the generator is related to the current flowing through the excitation winding 4.

Start-up phase

■ The contactor 1 closes, off load.
■ An adjustable auxiliary power supply generates current in the excitation winding 4 to allow power-up of the generator.
■ When the voltage delivered by the generator is sufficient to supply the excitation winding 4 via a thyristor bridge 2, the auxiliary supply is switched off.

Stop phase

When a stop instruction is received, the thyristor bridge 2 operates for a few seconds as an inverter, then the excitation contactor 1 opens.
The function of the N/C pole is to discharge residual electromagnetic energy from the excitation winding 4 via the discharge resistor Rd 3.

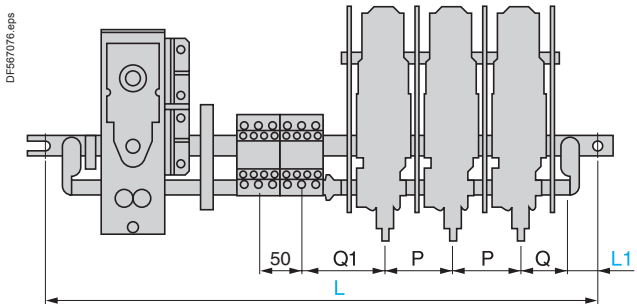
Under normal operating conditions, breaking is therefore easy, especially as the N/O poles and the N/C pole are make before break.
However, in the event of a problem, the contactor must be able to break.

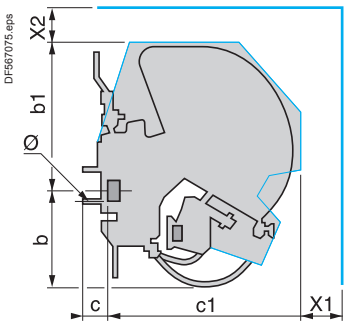
Note: The N/C pole, which is used for machine de-excitation, has no arc chambers.
Its breaking capacity is nil. Re-energisation of the contactor must therefore be avoided during the de-excitation phase.
If there is any risk of this happening, it is advisable to add an off-delay function that prevents pick-up of the contactor for the 10 seconds following drop-out.

CRX B and CVX B for switching the excitation circuits of synchronous machines

TeSys B

Contactors CRX B and CVX B, sizes F to K

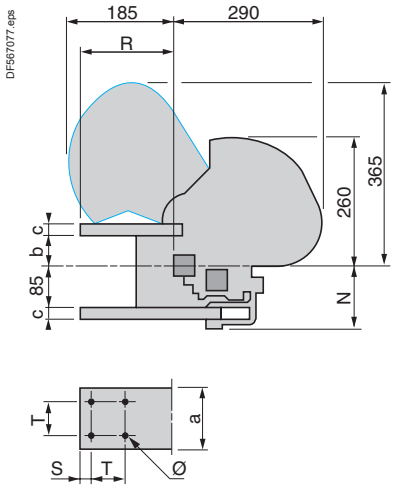


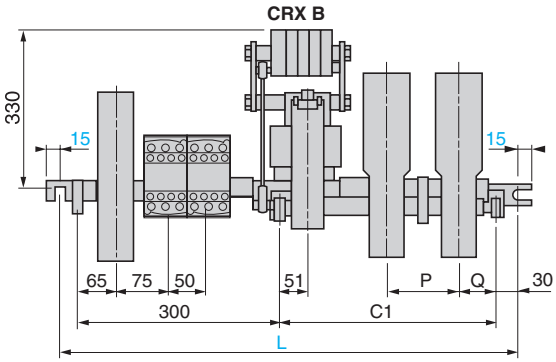


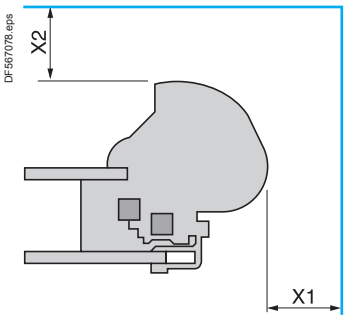
Dimension L: fixing centres depending on the number of N/O or N/C main poles, with or without magnetic blow-out, and the number of ZC4 GM auxiliary contact blocks in addition to the maintaining contact.

C●X B contactor size	Ø	b	b1	c	c1	L	L1	P	Q	Q1	Minimum electrical clearance X1	X2
F	M6	75	120	17	149	445	15	50	20	52	25	15
G	M8	60	164	43	134	540	15	50	45	52	20	15
H	M10	62	188	52	176	540	20	60	57	57	60	55
J	M10	114	117	40	173	635	34	85	64	70	50	100
K	M12	141	214	45	215	760	37	100	64	75	80	80

Contactors CRX B and CVX B, sizes L to R







*Dimension L: fixing centres depending on the number of N/O or N/C main poles, with or without magnetic blow-out, and the number of **ZC4 GM** auxiliary contact blocks in addition to the maintaining contact.*

C●X B contactor size	Ø	b	c	C1	L	N	P	Q	R	Minimum electrical clearance X1	X2
L	M8	59	16	392	760	121	100	100	122	200	250
M	M10	55	20	392	760	125	100	100	157	200	250
P	M10	55	20	487	885	125	150	110	173	200	250
R	M10	50	25	582	950	130	195	130	173	250	300

Variable composition contactors

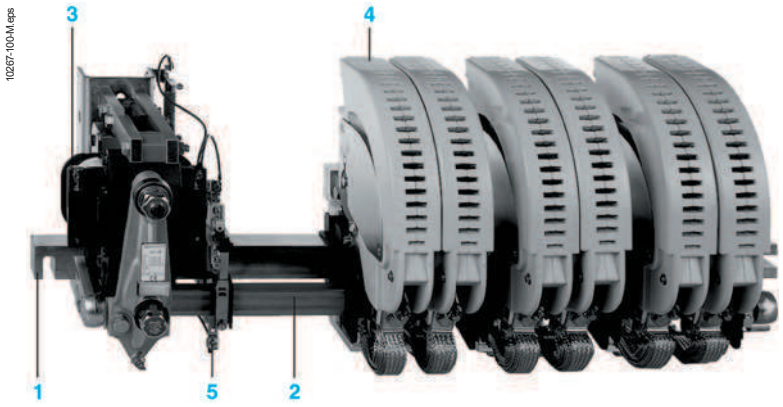
TeSys CV1 B, CV3 B

The variable composition contactor range is split into 3 groups:

■ **Low power switching contactors:**
□ type CV1 B●, 80 to 1000 A
□ type CV3 B●, 80 to 500 A.
For motor control, the references of the CV1 and CV3 contactors are given on catalogue DIA2070702EN.
For other applications, the composition of the commercial references is described on Symbol combination table, see pages B10/18 and B10/21 or use the configuration software “bar contactor soft-customer.xls” to download on: www.schneider-electric.com.

■ **Increased power switching contactors:**
□ type LC1 B●, 800 to 2750 A. References shown on B10/2.

■ **Specific contactors** (large number of main poles, pole arrangement, customised fixing and dimensions, component referencing, etc.) :
□ type CV1●B, 80 to 1000 A
□ type CV3●B, 80 to 2750 A.
To order these contactors, complete the Order form on catalogue DIA2070702EN.



1 Mounting bar
2 Rotating armature shaft
3 Electromagnet
4 Main pole
5 Instantaneous auxiliary contacts, type GM

Variable composition contactors are particularly suited for switching a.c. or d.c. motors and other circuits and are capable of providing a high number of operating cycles.
Their variable composition design allows them to be built to customer specification.

Applications

These variable composition contactors are ideally suited for the most frequently encountered applications:

■ Switching a.c. squirrel cage and slip-ring motors in all utilisation categories (AC-2, AC-3, AC-4).
■ Switching d.c. motors in all utilisation categories (DC-2, DC-3, DC-4, DC-5).
■ Switching a.c. resistive loads (category AC-1) and d.c. resistive loads (category DC-1).
■ Switching distribution circuits (category AC-1).
■ Short-circuiting of rotor resistors.
■ Switching capacitors, power factor correction.
■ Switching transformer primaries.
■ Switching inductive circuits with high time constant (L/R > 15 ms)
Example: alternator excitation circuit.
■ Severe duty requirements and main pole arrangements comprising 1 to 6 N/O and/or N/C poles.

Variable composition contactors

TeSys CV1 B, CV3 B

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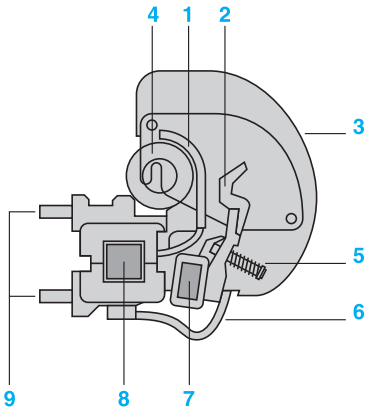

N/O pole 80…2750 A.

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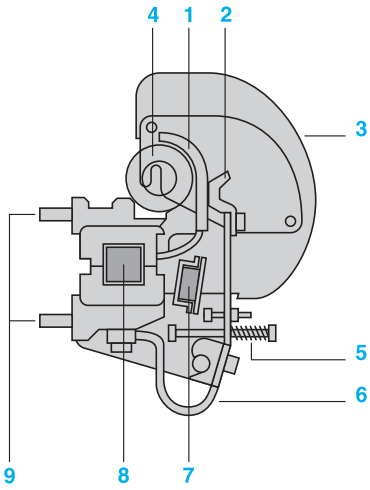


N/C pole 80…1000 A.

1 Fixed contact
2 Moving contact
3 Arc chamber
4 Blow-out coil
5 Pole pressure spring
6 Braided conductor
7 Rotating armature shaft (moving contact actuator)
8 Mounting bar
9 Terminal lugs

Power circuit

The principal function of a main pole is to make and break the supply current.
It is designed to continuously carry its nominal operational current.

Making the current

On energisation of the electromagnet coil, the armature shaft rotates and the moving contact makes with the fixed contact. The contact pressure, maintained by the pole pressure spring, is sufficient to overcome the electrodynamic forces of transient current peaks (e.g.: switching a transformer, starting a motor, etc.).

Breaking the current

On de-energisation of the electromagnet coil, the contacts separate and electrical arcing is dissipated by the blow-out coil and arc chamber. To optimise the performance of the magnetic blow-out, the blow-out coil can be selected to suit the operational current, which is particularly important when switching d.c.
The N/C pole operates in a reverse manner to the N/O pole, i.e. the contacts are closed whilst the electromagnet coil is de-energised and open during energisation.

CV1 contactors

■ **690 V ∿, 220 V ⎓ / pole**
□ N/O poles 80…1000 A (PN1)
□ N/C poles 80…1000 A (PR1).

■ **Variants:**
□ no-load breaking poles
- N/O poles 80…1000 A (PN5)
- N/C poles 80…1000 A (PR5).

□ arc chambers with splitters for dispersing the electric arc: 1000 V ∿ / 440 V ⎓ per pole
- N/O poles 500…1000 A (PN3)
- N/C poles 500…1000 A (PR3).

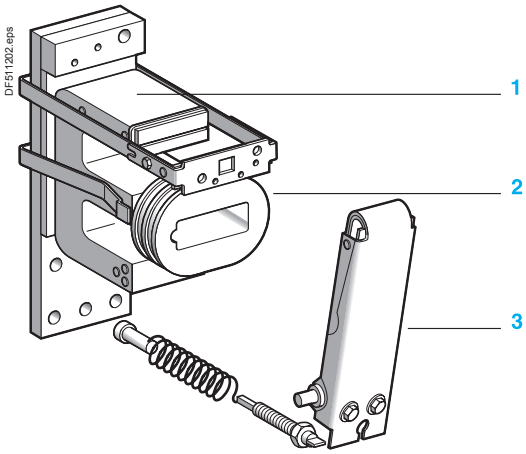
CV3 contactors

■ **1000 V ∿, 440 V ⎓ / pole**
□ N/O poles 0…500 A (PA3)
□ N/C poles 80…500 A (PR3)
□ N/O poles 750…2750 A (PA1).

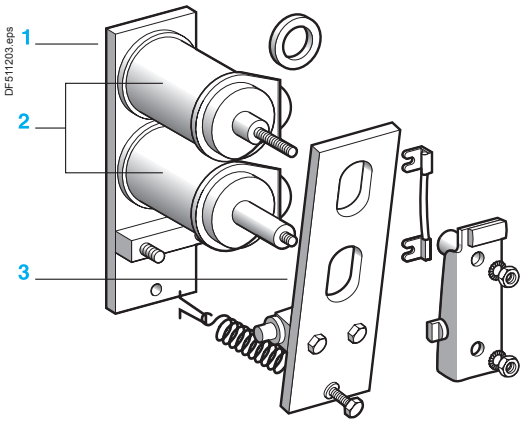
■ **Variants:**
□ high making capacity poles 750…2750 A (PA2)
□ high breaking capacity poles and poles with reduced safety clearances (arc chambers with closed splitters) 750…2750 A (PA1PX8)
□ no-load breaking poles
- N/O poles 750…2750 A (PA5).

Variable composition contactors

TeSys CV1 B, CV3 B



Electromagnet EB1 or EC1
1 Electromagnet core
2 Coil
3 Electromagnet armature



Electromagnet EK
1 Electromagnet core
2 Coil
3 Electromagnet armature

Control circuit

■ 2 types of electromagnet: E shaped core and U shaped core.
■ 2 types of coil: type WB1 and type WB2.

Electromagnet with E shaped core and coil type WB1

■ **Electromagnet with E shaped laminated iron core, type EB or EC** (1)
□ with central air gap machined in armature,
□ with single coil type **WB1** fitted on centre limb of core.
The upper limb incorporates a shading ring, the armature rotates.

■ **Coil - direct a.c. 50 or 60 Hz supply**
□ 20 to 600 V
□ 1200 operations/hour.

At the moment of inrush, with the armature open, the coil impedance is low and power consumption is high.
In the sealed state the armature is closed, the coil impedance increases and power consumption is low.
The inrush current is 6 to 10 times higher than the sealed current.

■ **Electromagnet** directly DC powered or via individual rectifier (50-400 Hz):
□ the electromagnet is mounted with the reduction in consumption
□ 12 to 500 V
□ 120 operations/hour.

■ **Electromagnet** powered via individual rectifier (50-400 Hz):
□ the electromagnet is mounted with the reduction in consumption
□ 12 to 500 V
□ 120 operations/hour.

At the moment of inrush, the full actuating voltage is applied to the coil and the inrush current is determined by the coil resistance.
In the sealed state an additional resistor is switched automatically in series with the coil, so as to reduce power consumption.
This economy resistor is switched by a N/C auxiliary contact which is adjusted to open only when the armature is fully closed.
The inrush current is 15 to 40 times higher than the sealed current.

Coils type WB1, used in conjunction with laminated iron cores, have a much higher inrush current than sealed current, whatever the nature of the supply current.

When establishing the current and selecting the supply voltage rating, it is important to take into account the line voltage drop due to the inrush current.

Electromagnet with U shaped core and coil type WB2 for d.c. supply

■ **Electromagnet** with U shaped solid iron core, type **EK:**
□ 2 similar coils type **WB2** connected in series, one coil being fitted to each limb of the core
□ the armature rotates.

■ **Electromagnet** for d.c. supply
□ 12 to 600 V
□ 1200 operations/hour.

The coils for this type of electromagnet have a considerable number of turns so as to obtain sufficient magnetic flux to attract the armature.

Due to its simplicity and relatively slow movements the assembly is very robust and, therefore, has increased mechanical durability.

(1) For contactor compositions requiring an increased number of poles, use EC electromagnets.

Variable composition contactors

TeSys CV1 B, CV3 B

Instantaneous and time delay auxiliary contacts

Signalling, electrical interlocking and slave functions can be achieved by using auxiliary contacts.

Instantaneous auxiliary contacts suitable for use with all contactor types are available in 2 versions:
- 1 N/O instantaneous contact, reference ZC4 GM1.
- 1 N/C instantaneous contact, reference ZC4 GM2.
- 1 block of 3 instantaneous N/O contacts and 2 N/C instantaneous contacts, reference LA1BN32A.

Delayed auxiliary contacts can be mounted onto contactors CV1 and CV3:
- 1 N/O contact + 1 N/C contact, ON-delay, reference ZC2 GG1 (delay from 0.2 to 180 s)
- 1 N/O contact + 1 N/C contact, OFF-delay, reference ZC2 GG5 (delay from 0.2 to 180 s)
- On the block LA1 BN32A, 1 block of N/O ON-delayed contact + 1 N/C ON-delayed contact , references LADT0 (delay from 0.1 to 3 s), LADT2 (0.1 to 30 s), LADT4 (10 to 180 s)
- On the block ref. LA1 BN32A: 1 block of N/O OFF-delayed contact + 1 N/C OFF-delayed contact, references LADR0 (delay from 0.1 to 3 s), LADR4 (10 to 180 s).

The delayed contacts are established or separate some time after the closing or opening of the contactor which operates them. This time is adjustable.

On the block LA1 BN32A all TeSys D contactors additives can be mounted, with the exception of LA6DK, LAD6K and LAD8N

Assembling reversing/changeover contactor pairs

Mounting accessories

For applications involving the switching of reversing motors or changeover circuits, contactors of different ratings can easily be mounted vertically and interlocked. Mechanical interlock kits are available and auxiliary contacts can be used for electrical interlocking.