

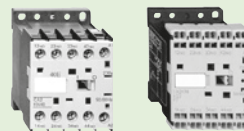
Relays – TeSys SK, K - For control of TeSys K contactor coils and other devices**Type of product****Pages**

Mini relay - 2 contacts, simultaneous action
TeSys SK, SKE



B7/2

Relays - 4 contacts, simultaneous action
TeSys K



B7/4

Auxiliary contact blocks, accessories



B7/6

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

Relays and auxiliary contact blocks
5 contacts, simultaneous action
TeSys D



B7/8

Accessories



B7/10

Control relays

Mini-control relays TeSys CA2 SK and CA3 SK

Mini-control relay TeSys CA2 SKE with alternating contacts



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●●



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

Control relays

Mini-control relays TeSys CA2 SK and CA3 SK

Instantaneous auxiliary contacts and coil suppressor modules



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



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 $2 U_c$ max.
Maximum reduction of transient voltage peaks.

Slight increase in drop-out time (1.1 to 1.5 times the normal time).

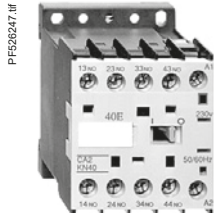
(2) No overvoltage or oscillating frequency.

Slight increase in drop-out time (1.1 to 1.5 times the normal time).

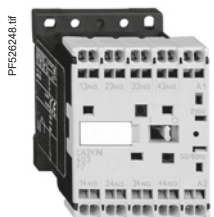
Control relays

TeSys K control relays

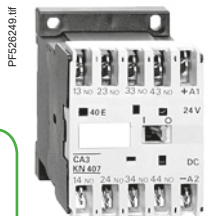
For a.c. or d.c. control circuit



CA2 KN40●●



CA2 KN403●●



CA3 KN407●●

Control
relays

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
ConsumptionAuxiliary
contactsBasic 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 ~	12	20	24 ⁽²⁾	36	42	48	110	115	127	220/	230	230/	380/	400	400/	440	500	660/
50/60 Hz										230		240	400		415			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

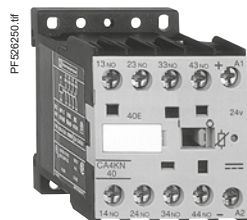
Coil with integral suppression device available: add 3 to the code required. Example: JD3.

(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.

Control relays

TeSys K control relays

For d.c. control circuit



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 U_c)

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

Coil with integral suppression device fitted as standard, by bi-directional peak limiting diode.

Control relays

TeSys K control relays

Instantaneous and time delay auxiliary contact blocks



LA1 KN20



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

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.

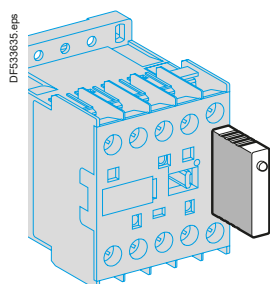


LA2 KT2

Control relays

TeSys K control relays

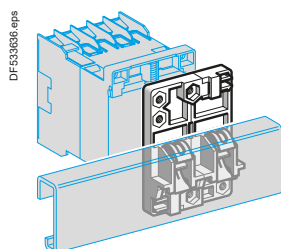
Mounting and marking accessories



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.

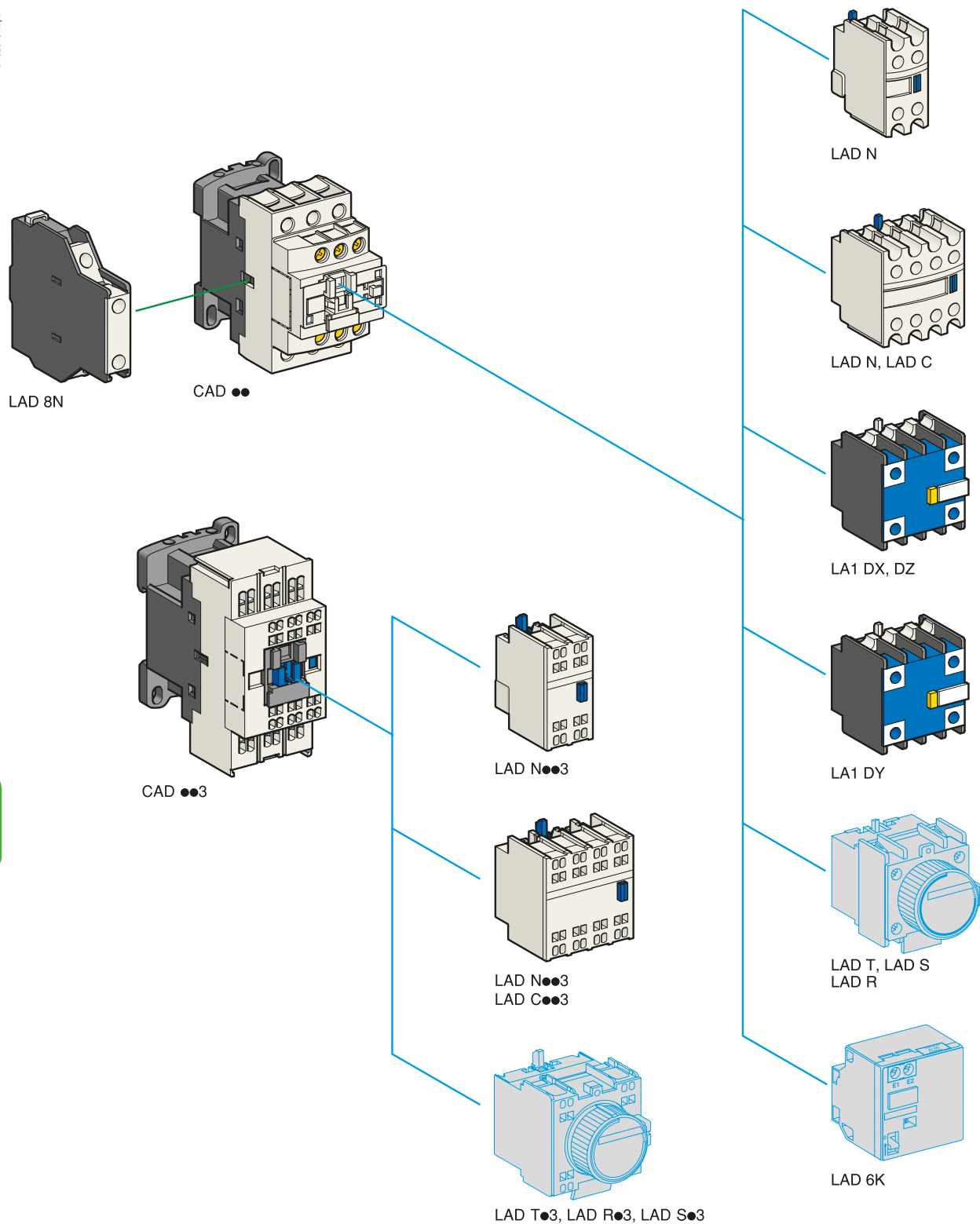
Polarised component.

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

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

References - TeSys D

TeSys control relays

TeSys D control relays and add-on blocks

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



CAD 50●●



CAD 32●●



CAD 503●●



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	Composition	Reference
	Clip-on mounting		
	front	side	
2	1	—	LADN11
	—	1 on LH side	LAD8N11 ⁽⁶⁾
	1	—	LADN20
	—	1 on LH side	LAD8N20 ⁽⁶⁾
	1	—	LADN02
4 ⁽⁴⁾	—	1 on LH side	LAD8N02 ⁽⁶⁾
	1	—	LADN22 LADN22S ⁽⁷⁾
		2 2	LADN13
		1 3	LADN40
		4 —	LADN04
4 ⁽⁴⁾		3 1	LADN31
		2 2	LADC22
	1	—	

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	Composition	Reference
	Front mounting		
		protected ⁽⁵⁾	not protected
2	1	2 — —	LA1DX20
		— 2 —	LA1DX02
		2 — 2	LA1DY20
4 ⁽⁴⁾	1	2 — —	LA1DZ40
		2 — —	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 U _c 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.

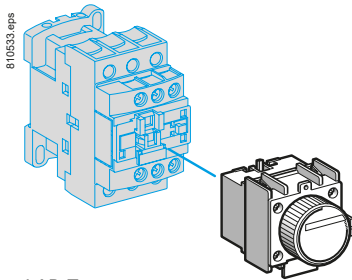
Example: CAD50●● becomes CAD506●●.

⁽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 are allowed with AC coil control relay only.

⁽⁷⁾ With red front face - for safety chain indication.



LAD T

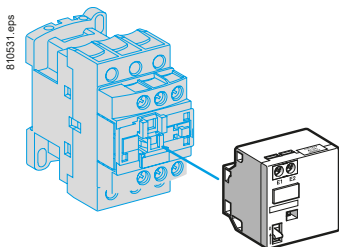
Time delay auxiliary contact blocks for connection by screw clamp terminals ⁽¹⁾

Number and type of contacts	Maximum number per relay Front mounting	Time delay		Reference
		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 B8/29)

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 Front mounting	Basic reference to be completed ⁽⁵⁾
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 U_c 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
	~ 50...127 V	LAD4RCG
	~ 110...250 V	LAD4RCU

Varistors (peak limiting)

- Protection provided by limiting the transient voltage value to 2U_c 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 ---	--- 5...600 V	LAD4DDL
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Bidirectional peak limiting diode ⁽⁶⁾

- Protection provided by limiting the transient overvoltage value to 2U_c 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

⁽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):

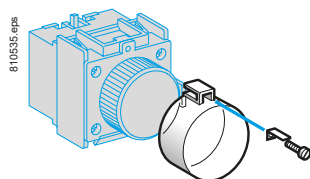
Volts ~ and ---	24	32/36	42/48	60/72	100	110/127	220/240	256/277	380/415
Code	B	C	E	EN	K	F	M	U	Q

⁽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 relay is used without suppression, the standard suppressor should be replaced with a blanking plug LAD9DL.

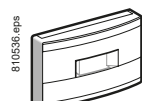
TeSys control relays

TeSys D control relays

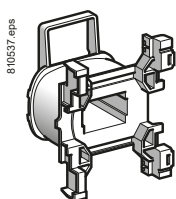
Accessories and spare parts



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 ($\cos \phi = 0.75$) 50/60 Hz: 70 VA at 50 Hz,
 - sealed ($\cos \phi = 0.3$) 50/60 Hz: 8 VA at 60 Hz,
- Operating range ($\theta < 60$ °C): 0.85 to 1.1 U_c

Control circuit voltage U_c	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.

Technical Data for Designers

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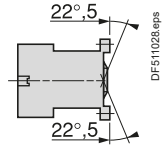
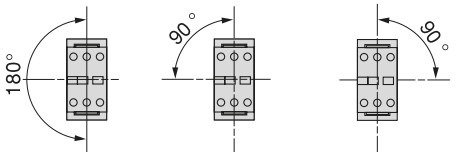
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TeSys D:

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Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

Environment					
Rated insulation voltage (Ui)	Conforming to IEC 60947, CSA 22-2 n° 14, UL 508	V	690		
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5		
Approvals			cULus, CCC, EAC, CB certification		
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2X		
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	
Connection by connectors					
	Solid cable	mm²	Min. 1 x 1.5 or 2 x 1.5	Max. 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
		ms	7...14		8...12
	Between coil de-energisation and opening of the N/O contacts	ms	6...8		4...6
		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 12V coil		—		10

Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

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	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, gl fuse	A	10											
Operational power of contacts conforming to IEC 60947														
		a.c. supply, category AC-15						d.c. supply, category DC-13						
		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).						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	110/127	220/230	380/400	440	V	24	48	110	220	440
1 million operating cycles		VA	48	96	240	440	800	880	W	120	80	60	52	51
3 million operating cycles		VA	17	34	86	158	288	317	W	55	38	30	28	26
10 million operating cycles		VA	7	14	36	66	120	132	W	15	11	9	8	7
Occasional making capacity		VA	1000	2050	5000	10000	14000	13 000	W	720	600	400	300	230

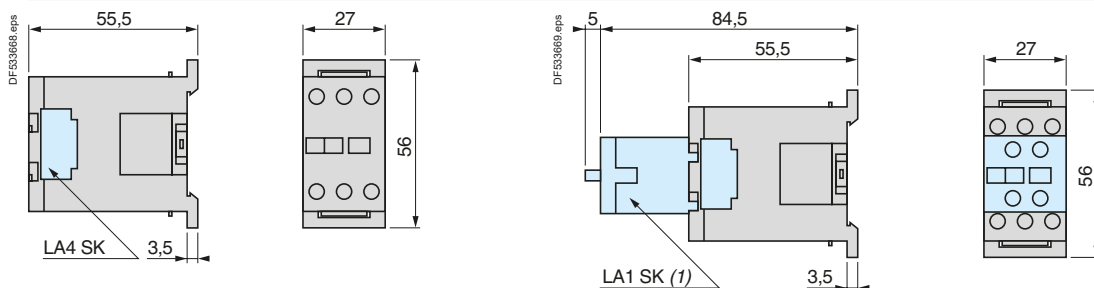
Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

Dimensions

Mini-control relays

CA2 SK and CA3 SK



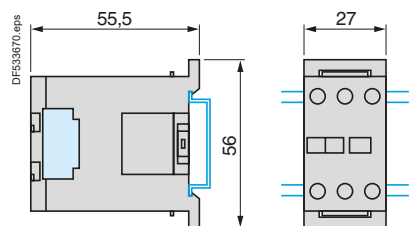
(1) Only on CA2 SK20.

Mounting

Mini-control relays

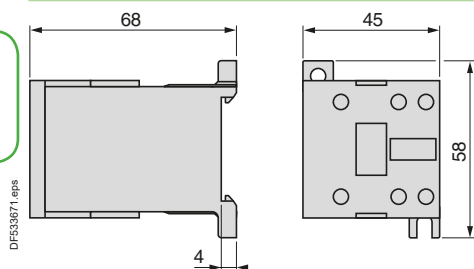
CA2 SK and CA3 SK

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



Dimensions

CA2 SKE

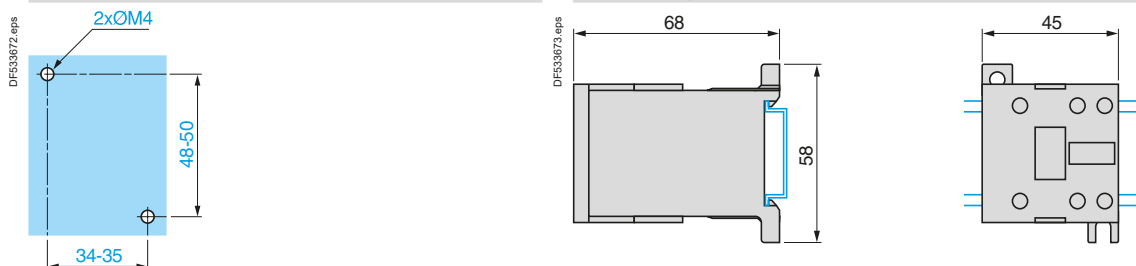


Mounting

CA2 SKE

On panel

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



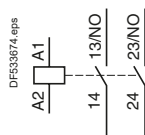
Control relays

Mini-control relays TeSys CA● SK and CA2 SKE

Schemes

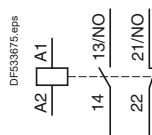
CA2 SK20, CA3 SK20

2 N/O



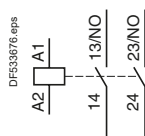
CA2 SK11, CA3 SK11

1 N/O + 1 N/C



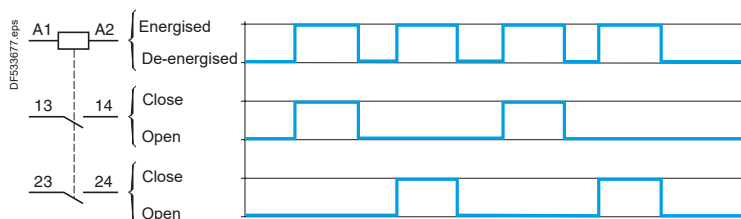
CA2 SKE

2 N/O



CA2 SKE

Function diagram



Instantaneous auxiliary contacts

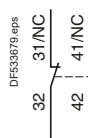
2 N/O

LA1 SK20



2 N/C

LA1 SK02



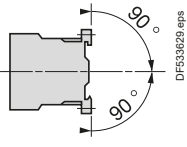
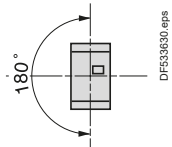
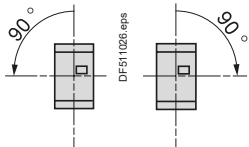
1 N/O + 1 N/C

LA1 SK11



Control relays

TeSys K control relays

Environment					
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5		
Product certifications			UL, CSA, CCC, EAC, CB certification		
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		
Terminal referencing	Conforming to standards EN 50005 and EN 50011		Up to 8 contacts		
Degree of protection	Conforming to IEC 60529		Protection against direct finger contact IP2x (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		
	Control relay closed		4 gn		
Flame resistance	Conforming to IEC 60695-2-11		850 °C		
Shock resistance (1/2 sine wave, 11 ms)	Control relay open		10 gn		
	Control relay closed		15 gn		
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
		ms	10...20	30...40	30...40
	Between coil de-energisation and opening of the N/O contacts	ms	10...20	10	10...20
		ms	15...25	15	15...25
	Closing of the N/C contacts	ms	2	2	2
		ms	2	2	2
Maximum immunity to microbreaks		ms	2	2	2

Control relays

TeSys K control relays

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 IEC 60947	V	690
	Conforming to UL 60947-5-1, CSA C22.2 n° 60947-5-1	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	V	17
	I min	mA	5
Short-circuit protection	Conforming to IEC 60947, 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 ($\cos \varphi 0.7$) = 10 times the power broken ($\cos \varphi 0.4$)

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	110/127	220/230	380/400	440	600/690	V	24	48	110	220	440	600
1 million operating cycles	VA	48	96	240	440	800	880	1200	W	120	80	60	52	51	50
3 million operating cycles	VA	17	34	86	158	288	317	500	W	55	38	30	28	26	25
10 million operating cycles	VA	7	14	36	66	120	132	200	W	15	11	9	8	7	6
Occasional making capacity	VA	1000	2050	5000	10000	14000	13000	9000	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 $\cos \varphi 0.7$).

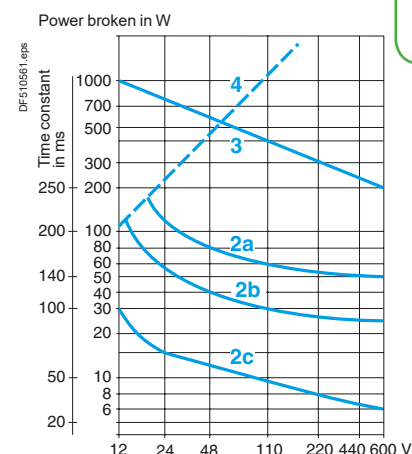
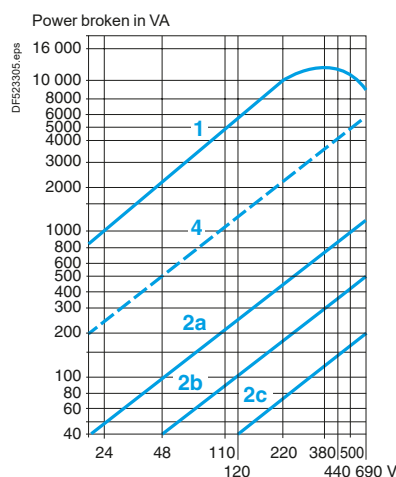
2 Electrical durability of contacts for:

- 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



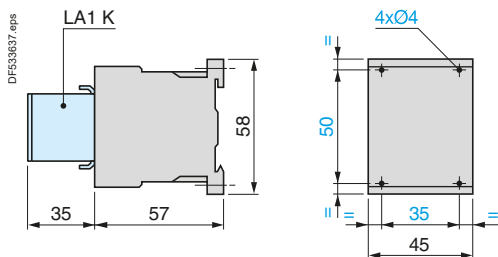
Control relays

TeSys K control relays

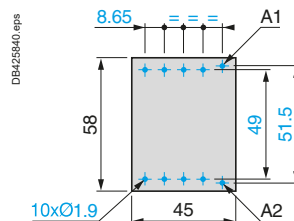
Control relays

CA2 K, CA3 K, CA4 K

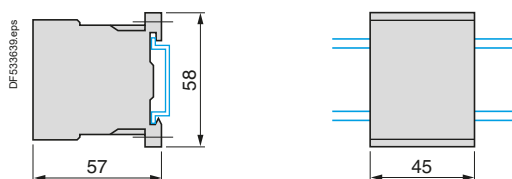
On panel



On printed circuit board

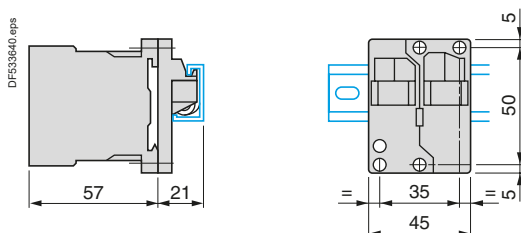


On mounting rail AM1 DP200 or AM1 DE200 (≥ 35 mm)



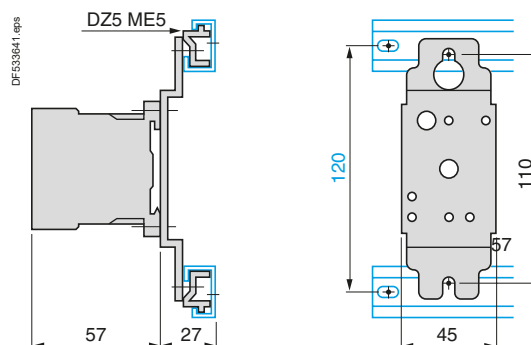
LA9 D973

On asymmetrical rail with clip-on mounting plates



DX1 AP25

On asymmetrical rail with clip-on mounting plates

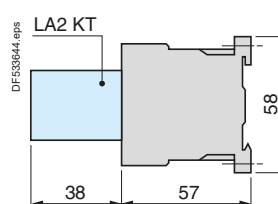


Electronic time delay contact blocks

LA2 KT

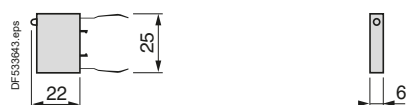


On control relay

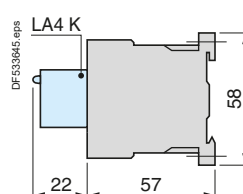


Suppressor modules

LA4 K



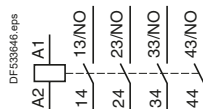
On control relay



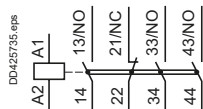
Control relays

CA2 K, CA3 K, CA4 K

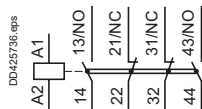
4 N/O



3 N/O + 1 N/C

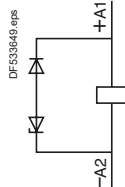


2 N/O + 2 N/C

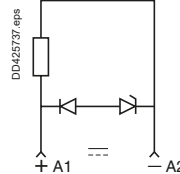


With integral suppression device

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

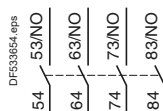
LA1 KN11,
LA1 KN117



For CA2 K, CA3 K

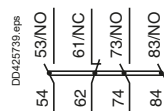
4 N/O

LA1 KN40,
LA1 KN407



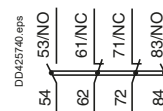
3 N/O + 1 N/C

LA1 KN31,
LA1 KN317



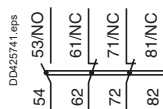
2 N/O + 2 N/C

LA1 KN22,
LA1 KN227



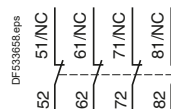
1 N/O + 3 N/C

LA1 KN13, LA1 KN137



4 N/C

LA1 KN04, LA1 KN047

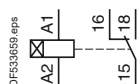


Electronic time delay contact blocks LA2 KT

For CA2 K, CA3 K, CA4 K

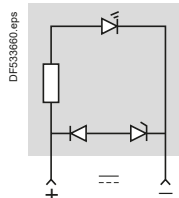
1 C/O

LA2 KT2

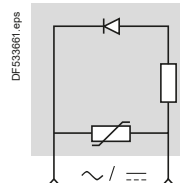


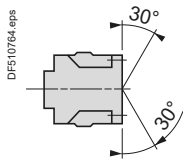
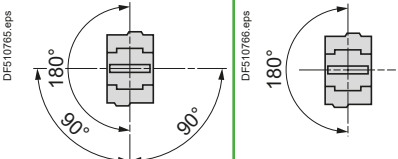
Suppressor modules

LA4 KC



LA4 KE



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		Reinforced insulation up to 400 V		
Conforming to standards			IEC/EN 60947-5-1, UL 60947-5-1, CSA C22.2 n° 60947-5-1, GB/T 14048.5		
Product certifications			UL, CSA, CCC, EAC, CB certification, EU-MR-RO by DNV-GL		
Degree of protection	Conforming to IEC 60529		Front face protected against direct finger contact IP 2X		Protection against direct finger contact IP 2X
Ambient air temperature around the device	Storage	°C	-60...+80		
	Operation ⁽¹⁾	°C	-40...+60		
	Allowed ⁽¹⁾	°C	+60...+70 at Uc to 1,●● x Uc		
Maximum operating altitude	Without derating	m	3000	3000	3000
Operating positions	Without derating in the following positions				
	Positions that are not allowed				
Shock resistance ⁽²⁾ 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 ⁽²⁾ 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	mm ²	1...4	1...4
		2 conductors	mm ²	1...4	1...4
	Flexible conductor with cable end	1 conductor	mm ²	1...4	1...4
		2 conductors	mm ²	1...2.5	1...2.5
	Solid conductor without cable end	1 conductor	mm ²	1...4	1...4
		2 conductors	mm ²	1...4	1...4
	Tightening torque		N.m	1.7	1.7
Spring terminal connections	1 or 2 flexible or rigid conductors without cable end	mm ²	1...2.5	1...2.5	1...2.5

(1) As per IEC60947-1, operating time and drop out voltage given and tested for -5...+40 °C.

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

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 - closing of the N/O contacts		ms	4...19	55 ± 15 % 67 ± 15 %
			ms	12...22	63 ± 15 % 77 ± 15 %
	Between coil de-energisation and - opening of the N/O contacts - closing of the N/C contacts		ms	4...12	20 ± 20 % 27 ± 20 %
			ms	6...17	25 ± 20 % 35 ± 20 %
Short supply failure	Maximum duration without affecting hold-in of the device		ms	2	2
Maximum operating rate	In operating cycles per second			3	3
Mechanical durability In millions of operating cycles	With coil 50/60 Hz (at 50 Hz)			30	–
	With standard coil --- wide range			–	30
Time constant L/R			ms	–	28 40

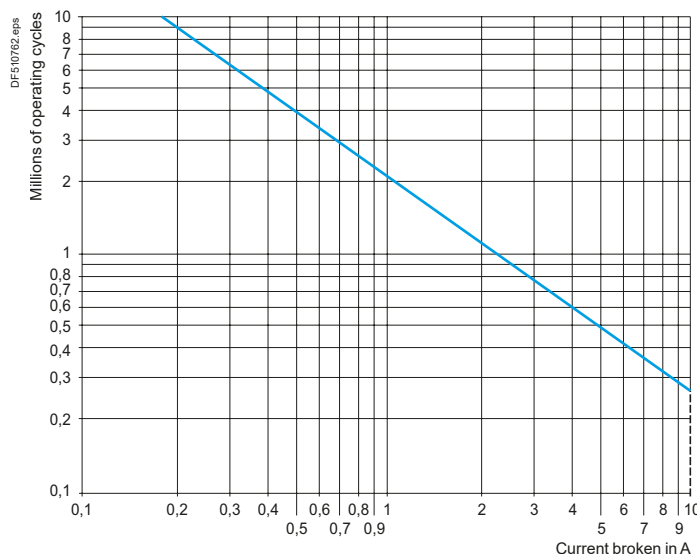
Characteristics of instantaneous contacts incorporated in the control relay				
Number of contacts				5
Rated operational voltage (Ue)	Up to	V		690
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1	V		690
	Conforming to UL, CSA	V		600
Conventional thermal current (Ith)	For ambient temperature ≤ 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		1.7
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.

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 ($\cos \varphi 0.7$) = 10 times the power broken ($\cos \varphi 0.4$).

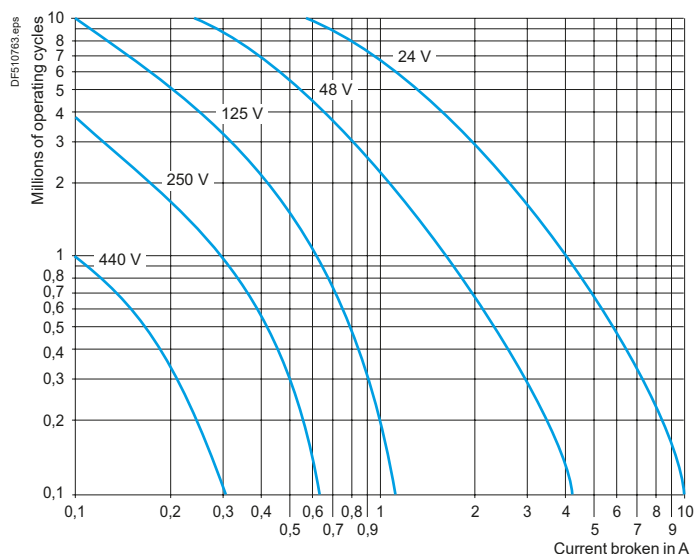
	V	24	48	115	230	400	440	600
1 million operating cycles	VA	60	120	280	560	960	1050	1440
3 million operating cycles	VA	16	32	80	160	280	300	420
10 million operating cycles	VA	4	8	20	40	70	80	100



d.c. supply, category DC-13

Electrical durability (valid 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.

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	—	—

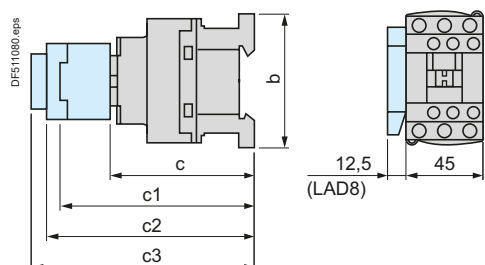


TeSys control relays

TeSys D control relays and add-on blocks

Dimensions

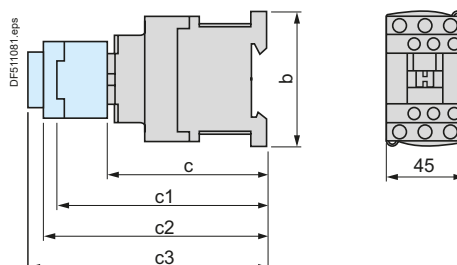
CAD ~



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

Operating 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

CAD --- or LC (low consumption)

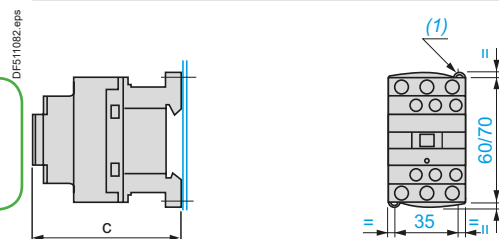


CAD	32 50	323 503
b	77	99
c without cover or add-on blocks	93	93
with cover, without add-on blocks	95	95
c1 with LAD N or C (2 or 4 contacts)	126	126
c2 with LAD 6K10	138	138
c3 with LAD T, R, S	146	146
with LAD T, R, S and sealing cover	150	150

Mounting

CAD

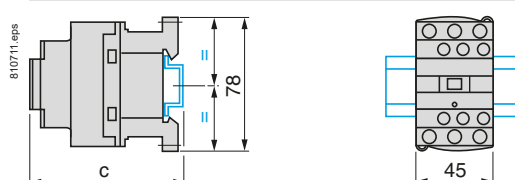
Panel mounted



	CAD ~	CAD --- or LC
c with cover	86	95

(1) 2 elongated holes 4.5 x 9.

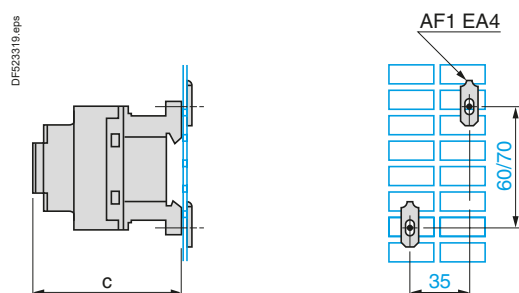
Mounted on rail AM1 DP200 or DE200



	CAD ~	CAD --- or LC
c (AM1 DP200) (2)	88	97
c (AM1 DP200) (2)	96	105

(2) With cover.

Mounted on plate AM1 P



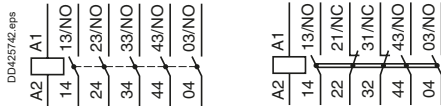
	CAD ~	CAD --- or LC
c with cover	86	95

Instantaneous auxiliary contacts

5 N/O 3 N/O + 2 N/C

CAD 50

CAD 32



Instantaneous auxiliary contact blocks

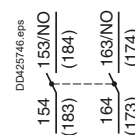
1 N/O + 1 N/C

LAD N11

LAD 8N11 ⁽¹⁾

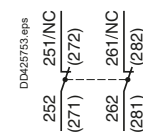
2 N/O

LAD N20

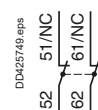
LAD 8N20 ⁽¹⁾

2 N/C

LAD 8N02

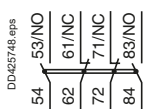


LAD N02

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

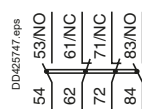
2 N/O + 2F N/C

LAD N22



1 N/O + 3 N/C

LAD N13



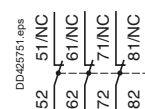
4 N/O

LAD N40



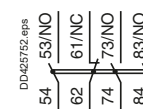
4 N/C

LAD N04

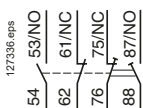


3 N/O + 1 N/C

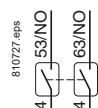
LAD N31

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

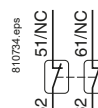
LAD C22

With dust and damp protected contacts
2 N/O protected 2 N/C protected

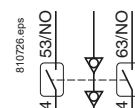
LA1 DX20



LA1 DX02

2 N/O protected ⁽²⁾
with 2 cable screen
terminals

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.

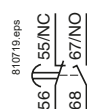
Time delay auxiliary contact blocks

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

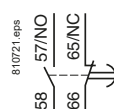
LAD T



LAD S

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

LAD R



Mechanical latch blocks

LAD 6K10

