TeSys SK, K, D
Control relays

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

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

PB121522.tif

CA2SK11●●

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●●**

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CA2SKE20●●

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 CA2SK and CA2SKE

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 CA3SK

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

Product references

PB111639_R.eps

LA1SK●●

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**

PB111640_R.eps

LA4SK●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: page B7/15
Dimensions: page B7/16
Schemes: page B7/17

PB121524.eps

CA2KN22●●

PB121526.eps

CA2KN●●5●●

PB121543.eps

CA3KN●●3●●

PB121525.eps

CA3KN●●7●●

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 CA2K (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 CA3K (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

PB121527.eps

CA4KN40●●●

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 CA4K (Wide range coil: 0.7...1.3 Uc)

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.

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

Product references


PB121528.eps

LA1KN22


PB111987_R.eps

LA1KN●●3


PB111988_R.eps

LA1KN●●7

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


PB121529.eps

LA2KT2E

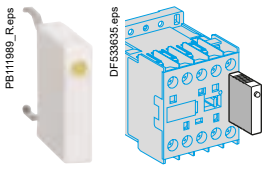
Voltage	Type	Timing range	Composition	Reference
V		s		
∼ or ⎓ 24...48	On-delay	1...30	1	**LA2KT2E**
∼ 110...240	On-delay	1...30	1	**LA2KT2U**

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

*(1) Block of 4 contacts for use on **CA2K** and **CA3K**.*

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

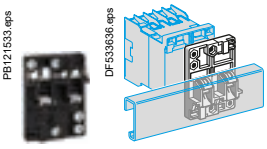
Product references



LA4KC1B

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**



LA9D973

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**

LA9D90

AB1R9

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
Schemes: page B7/21

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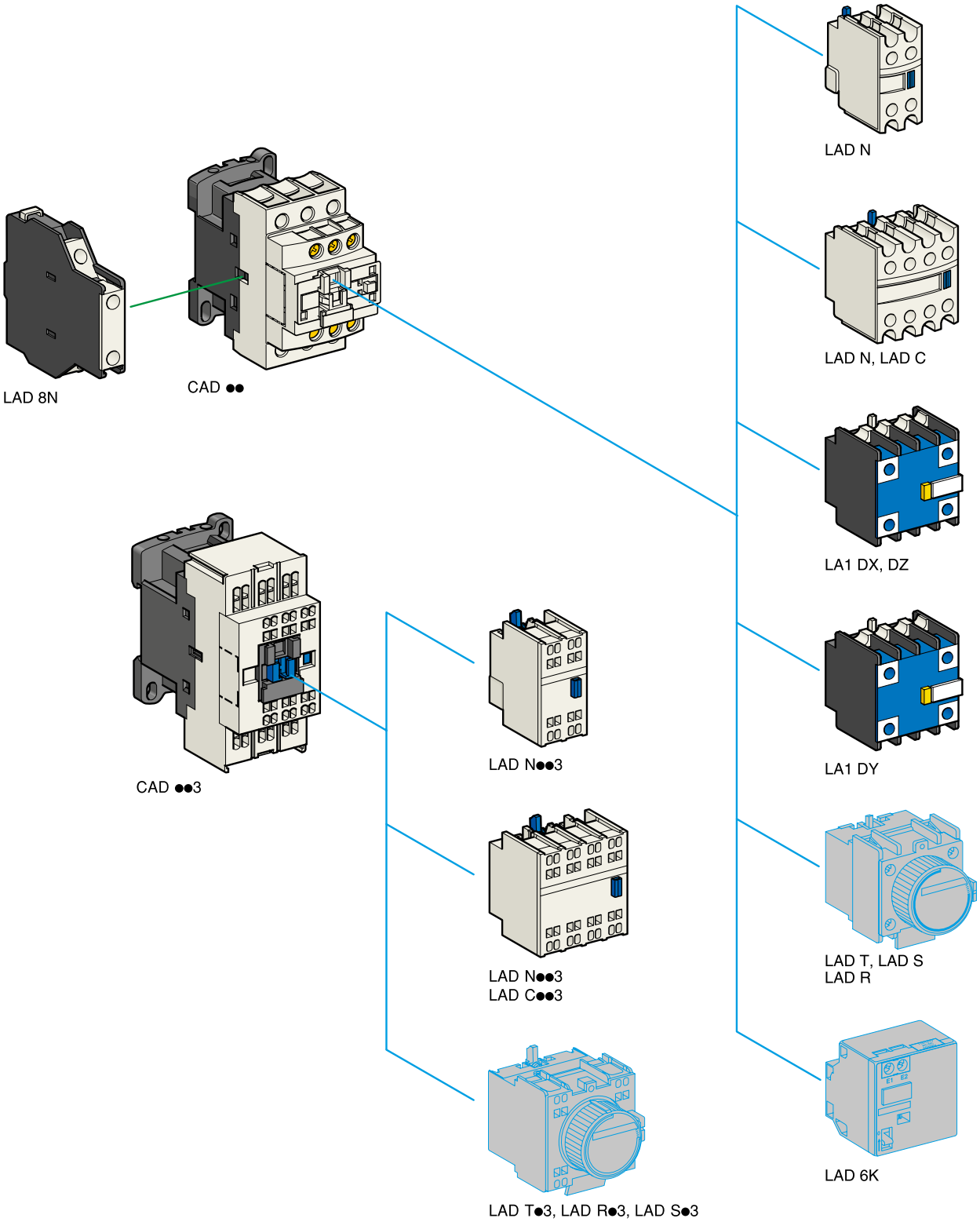


See page opposite for mounting possibilities according to control relay type and rating

PB114200_R.eps

CAD50●●

PB114198_R.eps

CAD503●●

PB121539.eps

LADN22

PB121530.eps

LA1DY20

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**	**LADN22S** (7)
			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** (8)
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: **LADN11** becomes **LADN113**.

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

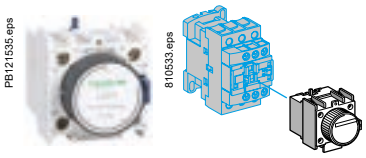
a.c. supply												
Volts ∿	**24**	**42**	**48**	**110**	**115**	**220**	**230**	**240**	**380**	**400**	**415**	**440**
50/60 Hz	B7	D7	E7	F7	FE7	M7	P7	U7	Q7	V7	N7	R7

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 are allowed with AC coil control relay only.
(7) With red front face - for safety chain indication.
(8) With 2 earth screen continuity poles.

Characteristics: pages B7/22 to B7/24
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27



LADT2

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**

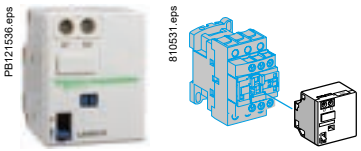
(Sealing cover: see page B8/28)

Time delay auxiliary contact blocks for connection by spring terminals

Add the digit **3** to the references selected above. Example: **LADT0** becomes **LADT03**.

Mechanical latch blocks (4)

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



LAD6K10

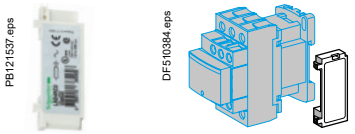
Suppressor modules

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**
	∿ 50…127 V	**LAD4RCG**
	∿ 110…250 V	**LAD4RCU**



LAD4RCU

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

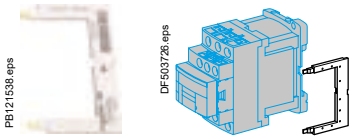
- No overvoltage or oscillating frequency.
- Increase in drop-out time (6 to 10 times the normal time).
- Polarised component.

CAD ⎓	⎓ 5…600 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**



LAD4DDL

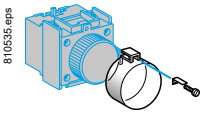
(1) These contact blocks cannot be used on low consumption control relays.
(2) With extended scale from 0.1 to 0.6 s.
(3) With switching time of 40 ms ±15 ms between opening of the N/C contact and closing of the N/O contact.
(4) Power should not be simultaneously applied or maintained to the mechanical 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 **LAD4DDL**. 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 to B7/24 | Illustrations: page B7/8 | Curves: page B7/25 | Dimensions: page B7/26 | Schemes: page B7/27

Product references



LA9D901

LAD9ET1S

LXD1

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), LADT		**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	LC1D09...38 LC1DT20...40 LADN (4 contacts) LADT, LAD R	100	**LAD90**
For protection			
Sealing cover	LADT, 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.

TeSys SK, K, D

Technical Data for Designers

Contents

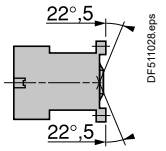
Characteristics

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

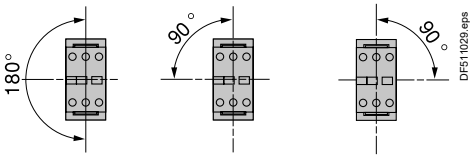
Operating position

Vertical axis



Without derating

Horizontal axis



Without derating

			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			**CA2SK**	**CA2SKE**	**CA3SK**
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
	Between coil energisation and 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
	Between coil de-energisation and 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

Ref.
Control relays

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

Characteristics

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 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).							**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**	**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

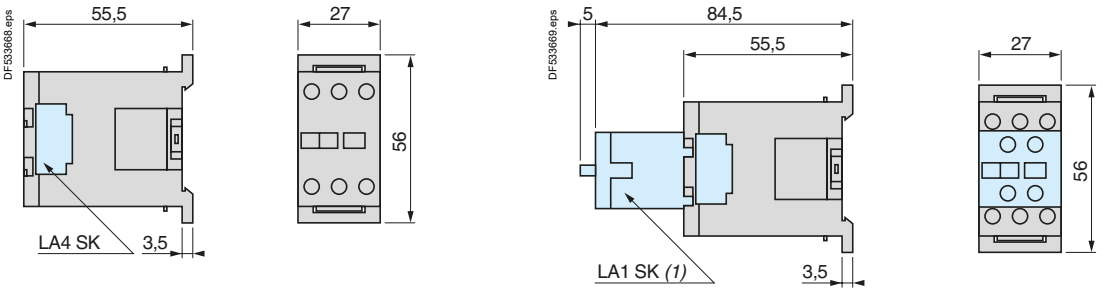
References: page B7/3
Dimensions: page B7/16
Schemes: page B7/17

Dimensions and mounting

Dimensions

Mini-control relays

CA2SK and CA3SK



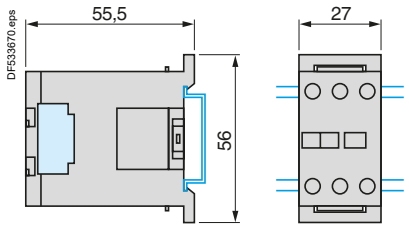
(1) Only on CA2SK20.

Mounting

Mini-control relays

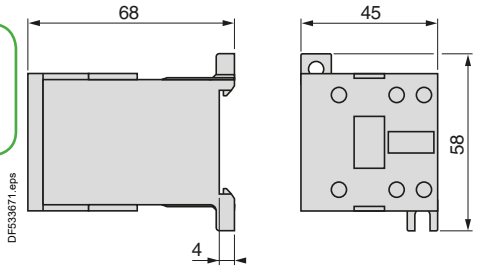
CA2SK and CA3SK

On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)



Dimensions

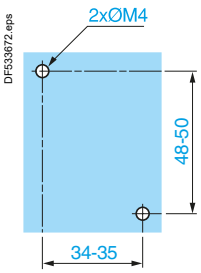
CA2SKE



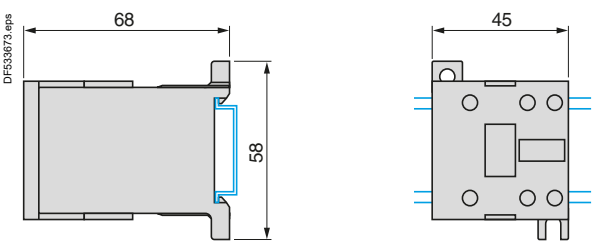
Mounting

CA2SKE

On panel



On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)



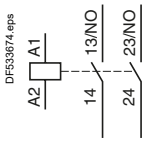
Ref.
Control relays

References:
pages B7/2 and B7/3
Characteristics:
pages B7/14 and B7/15
Schemes:
page B7/17

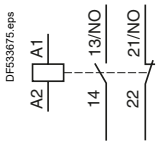
Schemes

Schemes

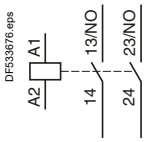
CA2SK20, CA3SK20
2 N/O



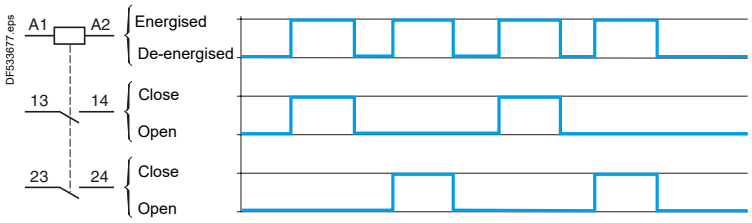
CA2SK11, CA3SK11
1 N/O + 1 N/C



CA2SKE
2 N/O

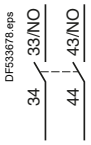


CA2SKE
Function diagram

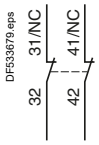


Instantaneous auxiliary contacts

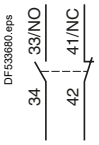
2 N/O
LA1SK20



2 N/C
LA1SK02



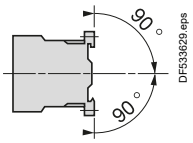
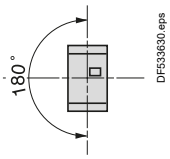
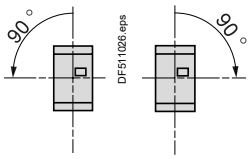
1 N/O + 1 N/C
LA1SK11



Ref.
Control relays

Characteristics

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 **CA2K** 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		
5...300 Hz	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			**CA2K**	**CA3K**	**CA4K**
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
	Between coil energisation and 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
	Between coil de-energisation and closing of the N/C contacts	**ms**	15...25	15	15...25
Maximum immunity to microbreaks		**ms**	2	2	2

Ref.
Control relays
References: pages B7/4 to B7/7
Dimensions: page B7/20
Schemes: page B7/21

Contact characteristics of control relays and instantaneous contact blocks

Number of auxiliary contacts	On **CA●K**		4
	On **LA1K**		2 or 4 for **CA2K** and **CA3K**, 2 for **CA4K**
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 LA1K: 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

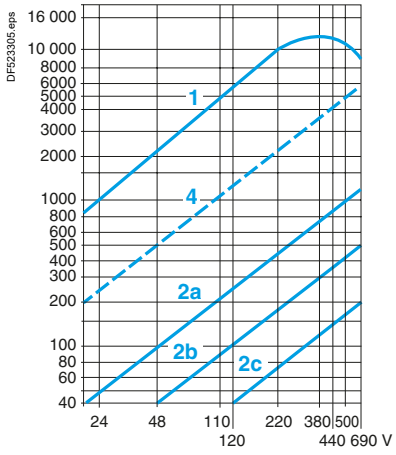
1 Breaking limit of contacts valid for:
■ maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).

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

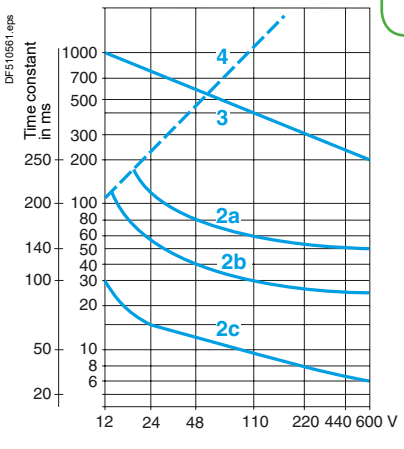
3 Breaking limit of contacts valid for:
■ maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

4 Thermal limit

Power broken in VA



Power broken in W



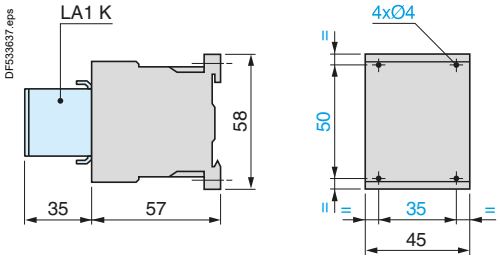
References: page B7/6
Dimensions: page B7/20
Schemes: page B7/21

Dimensions and mounting

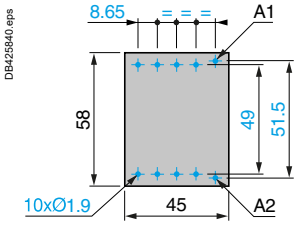
Control relays

CA2K, CA3K, CA4K

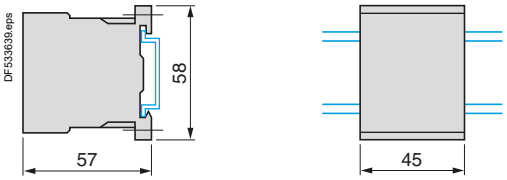
On panel



On printed circuit board

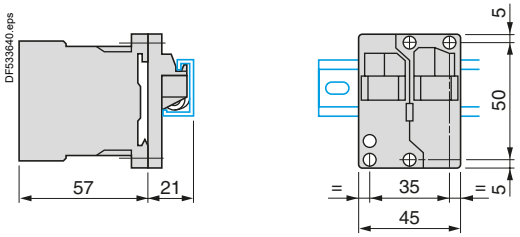


On mounting rail NSYDR200BD or NSYDR200 (⎓ 35 mm)



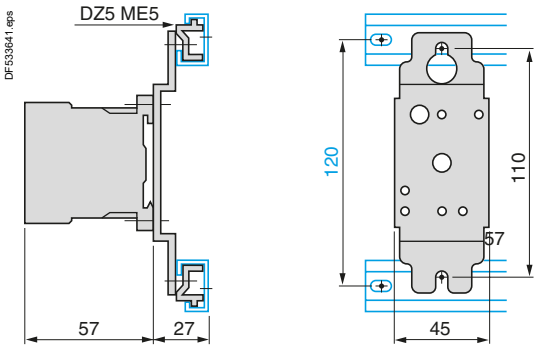
LA9D973

On asymmetrical rail with clip-on mounting plates



DX1AP25

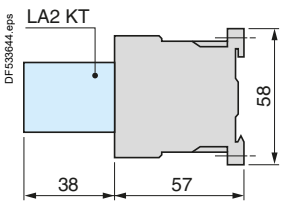
On asymmetrical rail with clip-on mounting plates



Electronic time delay contact blocks

LA2KT

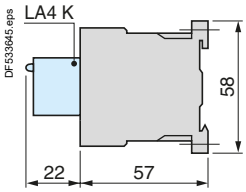
On control relay



Suppressor modules

LA4K

On control relay



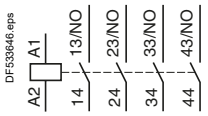
References:
pages B7/4 to B7/7
Characteristics:
pages B7/18 and B7/19
Schemes:
page B7/21

Schemes

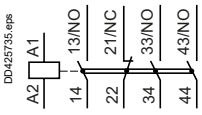
Control relays

CA2K, CA3K, CA4K

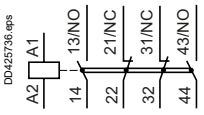
4 N/O



3 N/O + 1 N/C

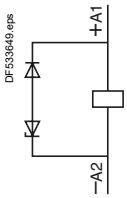


2 N/O + 2 N/C

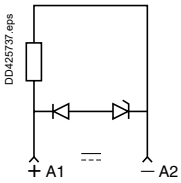


With integral suppression device

CA3K



CA4K

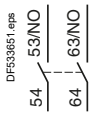


Instantaneous auxiliary contact blocks LA1K

For CA2K, CA3K, CA4K

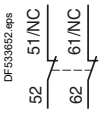
2 N/O

LA1KN20, LA1 KN207



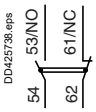
2 N/C

LA1KN02, LA1 KN027



1 N/O + 1 N/C

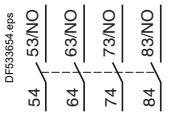
LA1KN11, LA1 KN117



For CA2K, CA3K

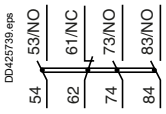
4 N/O

LA1KN40, LA1 KN407



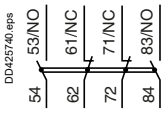
3 N/O + 1 N/C

LA1KN31, LA1 KN317



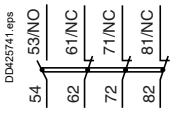
2 N/O + 2 N/C

LA1KN22, LA1KN227



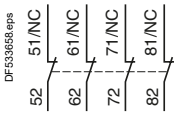
1 N/O + 3 N/C

LA1KN13, LA1KN137



4 N/C

LA1KN04, LA1KN047

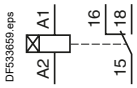


Electronic time delay contact blocks LA2KT

For CA2K, CA3K, CA4K

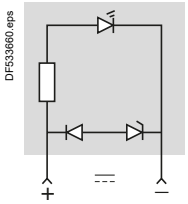
1 C/O

LA2KT2

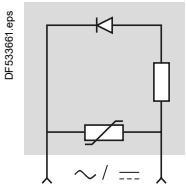


Suppressor modules

LA4KC



LA4KE



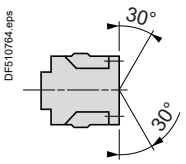
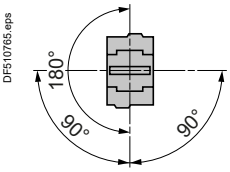
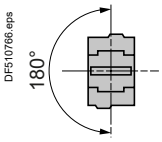
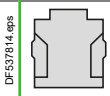
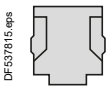
References:
pages B7/4 to B7/7

Characteristics:
pages B7/18 and B7/19

Dimensions:
page B7/20

Characteristics

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	**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) 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.

Ref.
Control relays

Characteristics

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

Ref.
Control relays

References: pages B7/9 to B7/11
Curves: page B7/25
Dimensions: page B7/26
Schemes: page B7/27

Characteristics

Characteristics of instantaneous contacts incorporated in the control relay

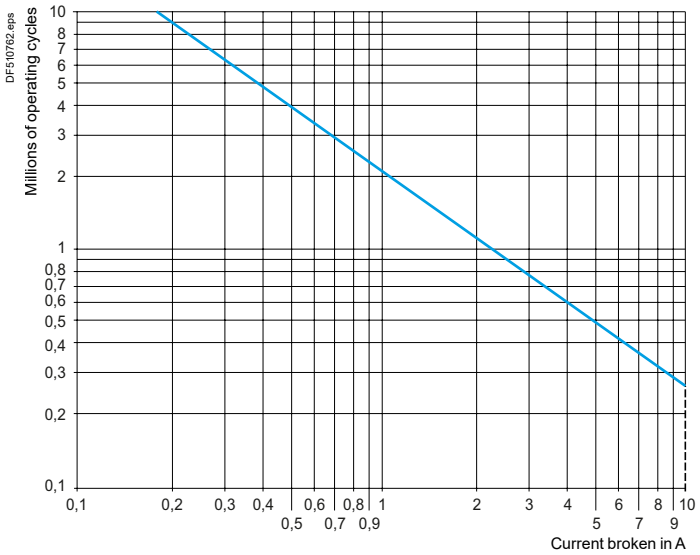
Number of contacts				5
Rated operational voltage (Ue)	Up to		**V**	690
Rated insulation voltage (Ui)	Conforming to IEC 60947-5-1		**V**	690
	Conforming to UL, CSA		**V**	600
Conventional thermal current (Ith)	For ambient temperature ≤ 60 °C		**A**	10
Frequency of the operational current			**Hz**	25...400
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 LADN
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 φ 0.7) = 10 times the power broken (cos φ 0.4).

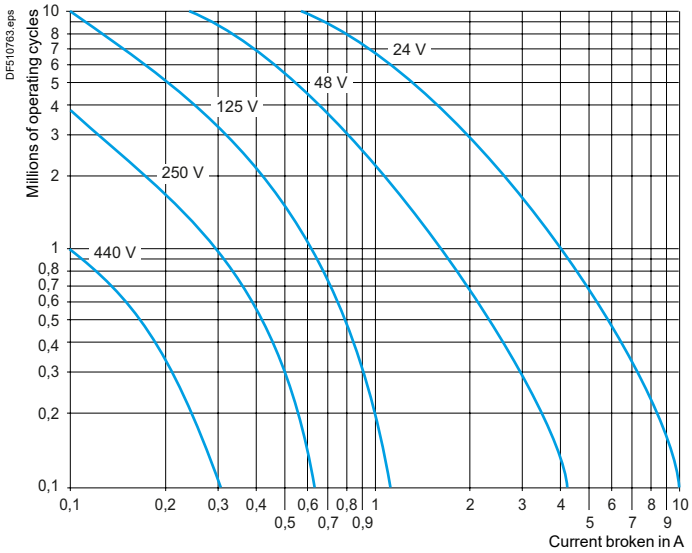
	V	24	48	115	230	400	440	600
1 million operating cycles	**VA**	60	120	280	560	960	1050	1440
3 million operating cycles	**VA**	16	32	80	160	280	300	420
10 million operating cycles	**VA**	4	8	20	40	70	80	100



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.

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	–	–

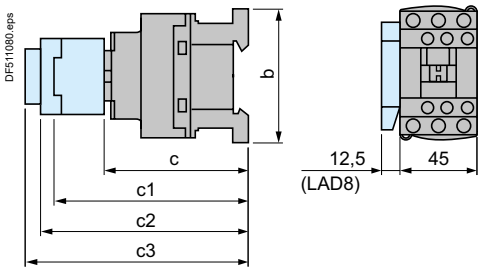


Ref.
Control relays

Dimensions and mounting

Dimensions

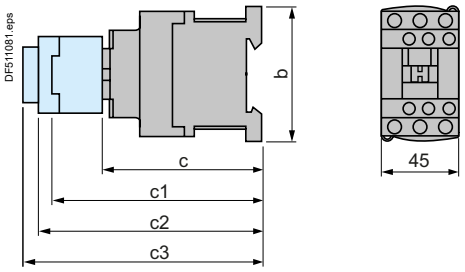
CAD ∼



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 LADN or C (2 or 4 contacts)	117	117
c2	with LAD6K10	129	129
c3	with LADT, R, S	137	137
	with LADT, 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)

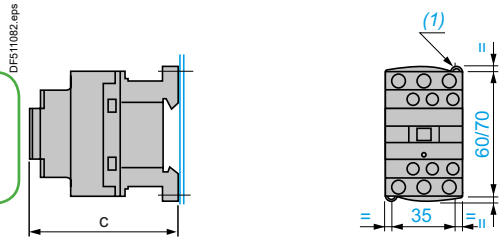


CAD		32 50	323 503
b		77	99
c	without cover or add-on blocks	93	93
	with cover, without add-on blocks	95	95
c1	with LADN or C (2 or 4 contacts)	126	126
c2	with LAD6K10	138	138
c3	with LADT, R, S	146	146
	with LADT, R, S and sealing cover	150	150

Mounting

CAD

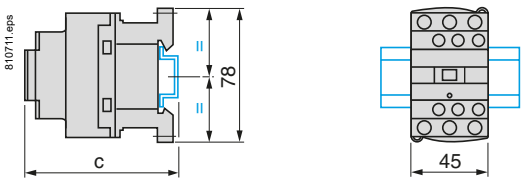
Panel mounted



		CAD ∼	CAD ⎓ or LC
c	with cover	86	95

(1) 2 elongated holes 4.5 x 9.

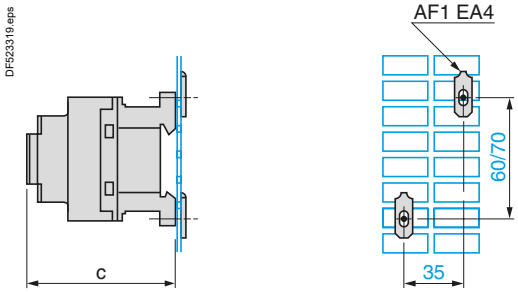
Mounted on rail NSYDR200BD or NSYDR200



		CAD ∼	CAD ⎓ or LC
c	(NSYDR200BD) (2)	88	97
c	(NSYDR200BD) (2)	96	105

(2) With cover.

Mounted on plate AM1P



		CAD ∼	CAD ⎓ or LC
c	with cover	86	95

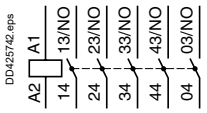
References:
pages B7/9 to B7/11
Illustration:
page B7/8
Characteristics:
pages B7/22 to B7/24
Curves:
page B7/25
Schemes:
page B7/27

Schemes

Instantaneous auxiliary contacts

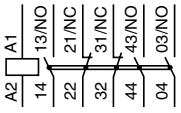
5 N/O

CAD50



3 N/O + 2 N/C

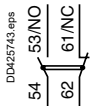
CAD32



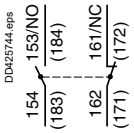
Instantaneous auxiliary contact blocks

1 N/O + 1 N/C

LADN11



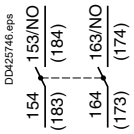
LAD8N11 (1)



2 N/O

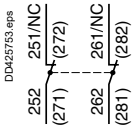
LADN20

LAD8N20 (1)

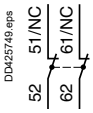


2 N/C

LAD8N02



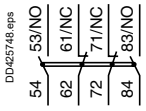
LADN02



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

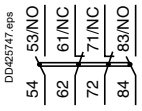
2 N/O + 2F N/C

LADN22



1 N/O + 3 N/C

LADN13

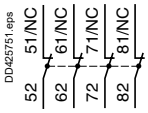


4 N/O

LADN40

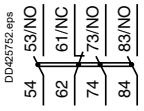
4 N/C

LADN04



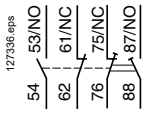
3 N/O + 1 N/C

LADN31



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

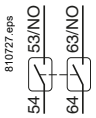
LADC22



With dust and damp protected contacts

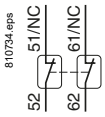
2 N/O protected

LA1DX20



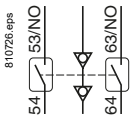
2 N/C protected

LA1DX02



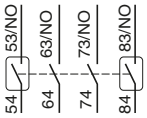
2 N/O protected (2) **with 2 cable screen terminals**

LA1DY20



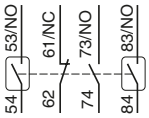
2 N/O protected + 2 N/O non protected

LA1DZ40



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

LA1DZ31

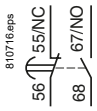


(2) Product fitted with 4 earth screen continuity terminals.

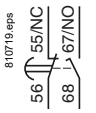
Time delay auxiliary contact blocks

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

LADT

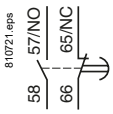


LADS



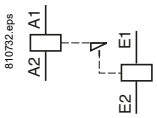
Off-delay 1 N/O + 1 N/C

LADR



Mechanical latch blocks

LAD6K10



Ref.
Control relays