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



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

# Control relays

## Mini-control relays TeSys CA2 SK and CA3 SK

### Mini-control relay TeSys CA2 SKE with alternating contacts

PF5926254.tif

*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●●** |

PF5926255.tif


*CA2 SKE20●●*

## Mini-control relay with alternating contacts

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

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

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

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

| **Mini-control relays CA2 SK and CA2 SKE** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Volts ∼ 50/60 Hz** | **24** | **48** | **110** | **120** | **220** | **230** | **240** | **380** | **400** |
| **Code** | B7 | E7 | F7 | G7 | M7 | P7 | U7 | Q7 | V7 |
| **Mini-control relays CA3 SK** | | | | | | | | | |
| **Volts ⎓** | **12** | **24** | **36** | **48** | **72** | | | | |
| **Code** | JD | BD | CD | ED | SD | | | | |

Control relays

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

# Control relays

## Mini-control relays TeSys CA2 SK and CA3 SK

### Instantaneous auxiliary contacts and coil suppressor modules

PF526256.tif


*LA1 SK11*

## Instantaneous auxiliary contact blocks

**Clip-on front mounting**

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

PF526257.tif


*LA4 SK●1●*

## Suppressor modules

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

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

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



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

# Control relays

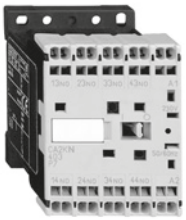
## TeSys K control relays

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

PF526247.tif

*CA2 KN40●●*

PF526248.tif



*CA2 KN403●●*

PF526249.tif

*CA3 KN407●●*



## Control relays for a.c. control circuit

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

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

## Control relays for d.c. control circuit

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

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

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

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

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

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

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

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

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

# Control relays

## TeSys K control relays

### For d.c. control circuit

PF5262250.tif

*CA4 KN40●●●*

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

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

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

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

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

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

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

# Control relays

## TeSys K control relays

### Instantaneous and time delay auxiliary contact blocks

PF526251.tif

*LA1 KN20*

PB111986.eps

*LA1 K●●●*

## Instantaneous auxiliary contact blocks

### Clip-on front mounting, 1 per control relay

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

## Electronic time delay contact blocks

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

PF526253.tif

*LA2 KT2●*

### Clip-on front mounting, 1 per control relay

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

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

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

Control relays

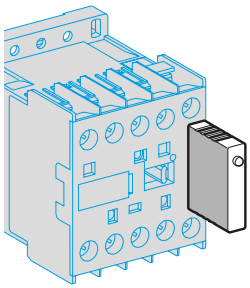
Characteristics : page B7/19
Dimensions : page B7/20
Schemes : page B7/21

# Control relays

## TeSys K control relays

### Mounting and marking accessories

DF533635.eps

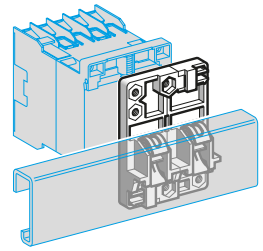


*LA4 K●●●*

## 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** |

DF533636.eps



*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

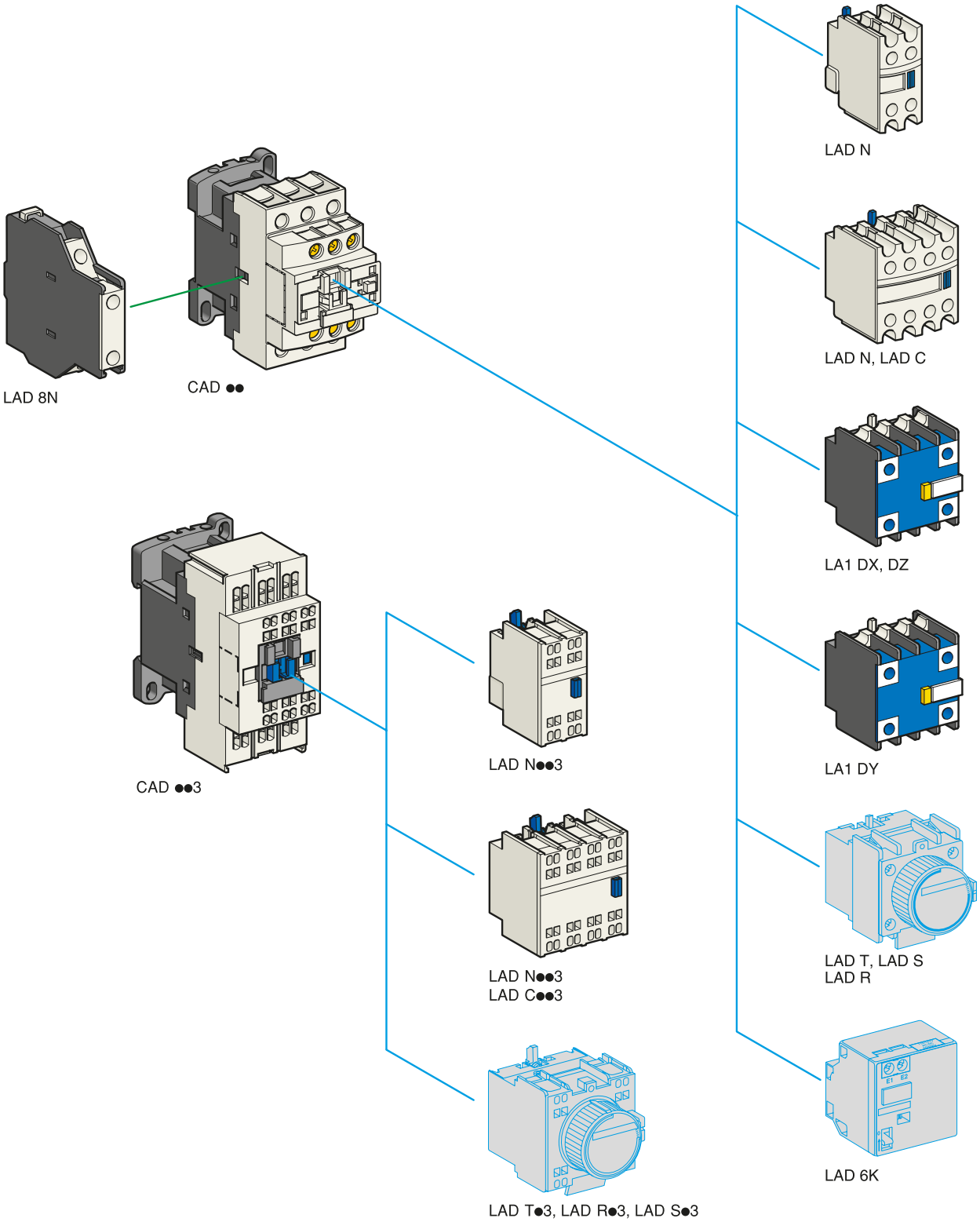
| Description | Application | | Sold in lots of | Unit reference |
|---|---|---|---|---|
| Marker holder | Clip-on fixing on front face | – | 100 | **LA9D90** |
| Clip-in markers | 4 maximum per relay | Strips of 10 identical numbers 0 to 9 | 25 | **AB1R●** (4) |
| | | Strips of 10 identical capital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



Dimensions :
page B7/20

DF5226461.eps




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

# TeSys control relays

## TeSys D control relays and add-on blocks

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

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, 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** |
| 4 (4) | 1 | 2 | – | – | 2 | – | **LA1DZ40** |
| | | 2 | – | – | 1 | 1 | **LA1DZ31** |

## Instantaneous auxiliary contact blocks for connection by spring terminals

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

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

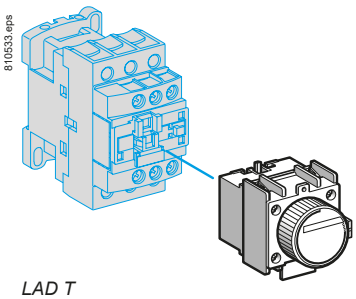
| **a.c. supply** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Volts ∿ | **24** | **42** | **48** | **110** | **115** | **220** | **230** | **240** | **380** | **400** | **415** | **440** |
| 50/60 Hz | B7 | D7 | E7 | F7 | FE7 | M7 | P7 | U7 | Q7 | V7 | N7 | R7 |

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

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

*(2) LC: low consumption.*
*(3) To order control relays with connection by lugs, add the digit **6** to the end of the selected reference.*
Example: CAD50●● becomes CAD506●●.
*(4) Blocks with 4 auxiliary contacts cannot be used on low consumption control relays.*
*(5) Product fitted with 4 earth screen continuity terminals.*
*(6) These contact blocks are allowed with AC coil control relay only.*
*(7) With red front face - for safety chain indication.*

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




*LAD T*

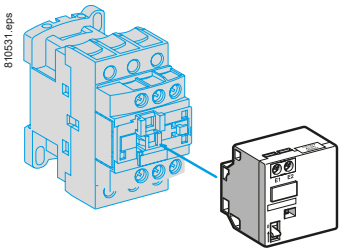
## Time delay auxiliary contact blocks for connection by screw clamp terminals (1)

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

(Sealing cover: see page B8/29)

## 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 | Basic reference to be completed (5) |
|---|---|---|
| | Front mounting | |
| **Manual or electric** | 1 | **LAD6K10●** |

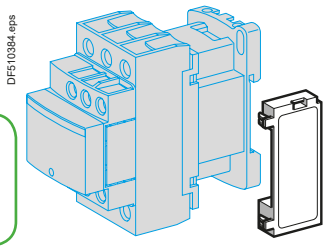
## Suppressor modules

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

### RC circuits (Resistor-Capacitor)

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

| For mounting on | Operational voltage | Reference |
|---|---|---|
| **CAD ∿** | ∿ 24…48 V | **LAD4RCE** |
| | ∿ 50…127 V | **LAD4RCG** |
| | ∿ 110…250 V | **LAD4RCU** |




*LAD 4●●*

### Varistors (peak limiting)

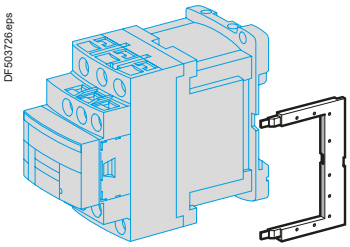
- Protection provided by limiting the transient voltage value to 2Uc maximum.
- Maximum reduction of transient voltage peaks.
- Slight time delay on drop-out (1.1 to 1.5 times the normal time).

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

### Freewheel diode

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

| | | |
|---|---|---|
| **CAD ⎓** | ⎓ 5…600 V | **LAD4DDL** |




*LAD 4●●*

### Bidirectional peak limiting diode (6)

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

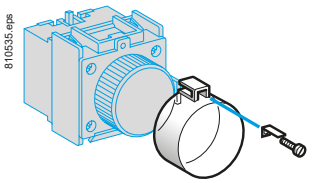
| | | |
|---|---|---|
| **CAD ∿** | ∿ 24 V | **LAD4TB** |
| | ∿ 72 V | **LAD4TS** |
| **CAD ⎓** | ⎓ 24 V | **LAD4TBDL** |
| | ⎓ 72 V | **LAD4TSDL** |
| | ⎓ 125 V | **LAD4TGDL** |
| | ⎓ 250 V | **LAD4TUDL** |
| | ⎓ 600 V | **LAD4TXDL** |

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

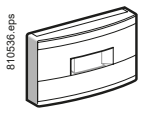
| Volts ∿ and ⎓ | 24 | 32/36 | 42/48 | 60/72 | 100 | 110/127 | 220/240 | 256/277 | 380/415 |
|---|---|---|---|---|---|---|---|---|---|
| **Code** | B | C | E | EN | K | F | M | U | Q |

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

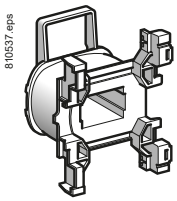
Characteristics: pages B7/22 and B7/25
Illustrations: page B7/8
Dimensions: page B7/26
Schemes: page B7/27



*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<br>LC1DT20...40<br>LADN (4 contacts)<br>LAD T, LAD R | 100 | **LAD90** |
| **For protection** | | | |
| Sealing cover | LAD T, LAD R | 1 | **LA9D901** |
| Safety cover preventing access to the moving contact carrier | CAD | 1 | **LAD9ET1** |
| Red cover (for safety chain indication) | CAD | 1 | **LAD9ET1S** |

## Spare parts: coils

**Specifications**

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

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

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



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

TeSys SK, K, D

# Technical Data for Designers



Contents

# Control relays

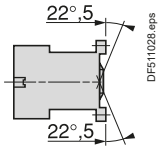
## Mini-control relays TeSys CA● SK and CA2 SKE

### Environment

| | | | |
|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947, VDE 0110 gr C, BS 5424, CSA 22-2 n° 14, UL 508 | **V** | 690 |
| Conforming to standards | | | IEC 60947, NF C 63-110, VDE 0660, BS 5424 |
| Approvals | | | cULus |
| Protective treatment | Conforming to IEC 60068 (DIN 50015) and IEC 60529 | | "TC" (Klimafest, Climateproof) IP2x |
| Degree of protection | Conforming to VDE 0106 | | Protection against direct finger contact |
| Ambient air temperature around the device | Storage | **°C** | -50…+70 |
| | Operation | **°C** | -20…+50 |
| Maximum operating altitude | Without derating | **m** | 2000 |

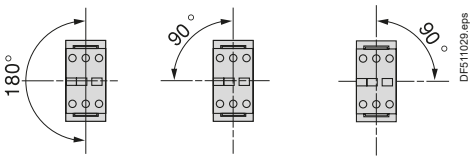
Operating position

**Vertical axis**




Without derating

**Horizontal axis**




Without derating

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

### Control circuit characteristics

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



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

# Control relays

## Mini-control relays TeSys CA● SK and CA2 SKE

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

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

### Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

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

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

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

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



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

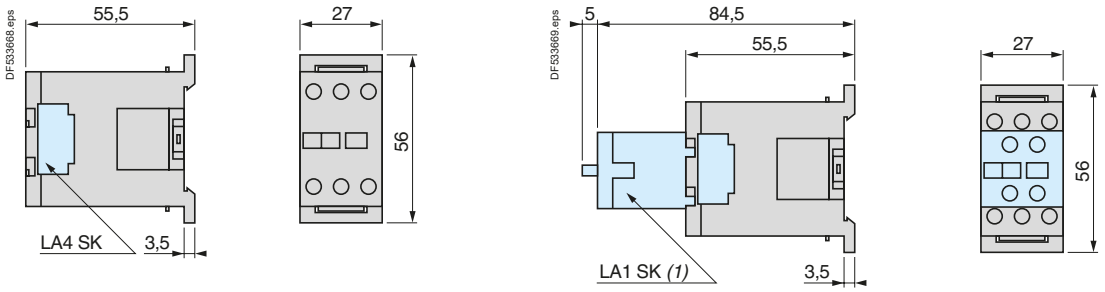
# Control relays

## Mini-control relays TeSys CA● SK and CA2 SKE

## Dimensions

### Mini-control relays

#### CA2 SK and CA3 SK



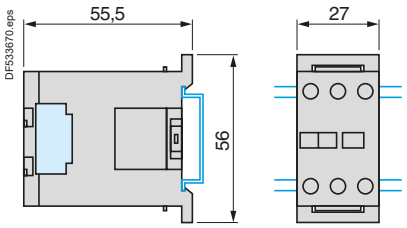

*(1) Only on CA2 SK20.*

## Mounting

### Mini-control relays

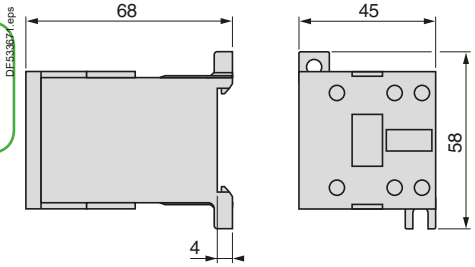
#### CA2 SK and CA3 SK

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




## Dimensions

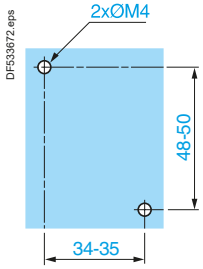
### CA2 SKE



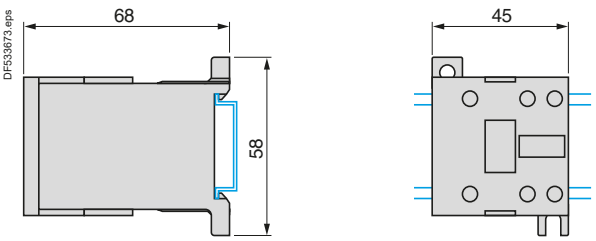

## Mounting

### CA2 SKE

**On panel**




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




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

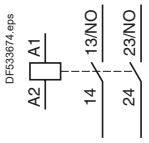
# Control relays

## Mini-control relays TeSys CA● SK and CA2 SKE

## Schemes

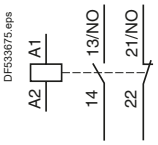
### CA2 SK20, CA3 SK20

**2 N/O**



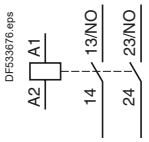

### CA2 SK11, CA3 SK11

**1 N/O + 1 N/C**



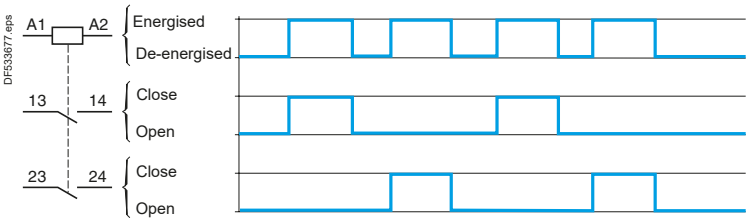

### CA2 SKE

**2 N/O**




### CA2 SKE

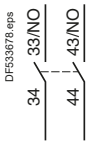
**Function diagram**




### Instantaneous auxiliary contacts

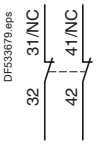
**2 N/O**

**LA1 SK20**



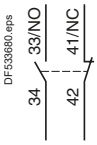

**2 N/C**

**LA1 SK02**




**1 N/O + 1 N/C**

**LA1 SK11**




Control relays

References:
pages B7/2 and B7/3

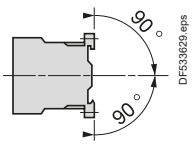
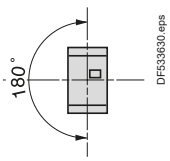
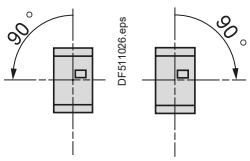
Characteristics:
pages B7/14 and B7/15

Dimensions:
page B7/16

# Control relays

## TeSys K control relays

## Environment

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

## Control circuit characteristics

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

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 **LA1 K** | | 2 or 4 for **CA2 K** and **CA3 K**, 2 for **CA4 K** |
| Rated operational voltage (Ue) | Up to | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to BS 5424 | **V** | 690 |
| | Conforming to IEC 60947 | **V** | 690 |
| | Conforming to VDE 0110 group C | **V** | 750 |
| | Conforming to CSA C 22-2 n° 14 | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 50 °C | **A** | 10 |
| Frequency of the operational current | | **Hz** | Up to 400 |
| Minimum switching capacity | U min (DIN 19 240) | **V** | 17 |
| | I min | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947 and VDE 0660, gG fuse | **A** | 10 |
| Rated making capacity | Conforming to IEC 60947 | | |
| | I rms | **A** | 110 |
| Short-time rating | Permissible for | | |
| | 1 s | **A** | 80 |
| | 500 ms | **A** | 90 |
| | 100 ms | **A** | 110 |
| Insulation resistance | | **MΩ** | > 10 |
| Non-overlap distance | CA● K and LA1 K: linked contacts conforming to INRS, BIA and CNA specifications | **mm** | 0.5 (see schemes page B7/21) |

## Operational power of contacts conforming to IEC 60947

**a.c. supply, category AC-15**

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

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

**d.c. supply, category DC-13**

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

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

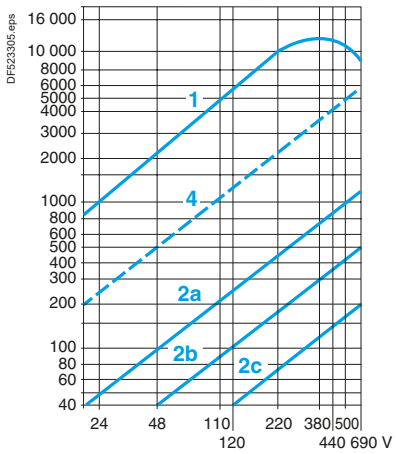
**1** Breaking limit of contacts valid for:
■ maximum of 50 operating cycles at 10 s intervals (power broken = making current x cos φ 0.7).

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

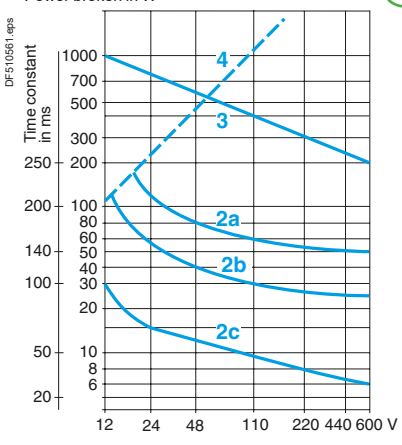
**3** Breaking limit of contacts valid for:
■ maximum of 20 operating cycles at 10 s intervals with current passing for 0.5 s per operating cycle.

**4** Thermal limit

Power broken in VA




Power broken in W




Control relays

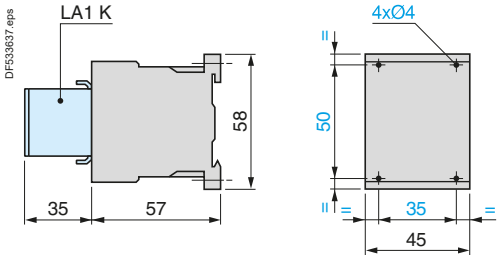
# Control relays

## TeSys K control relays

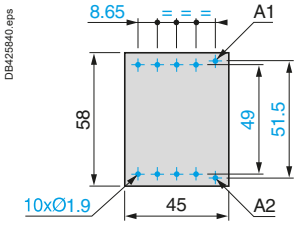
### Control relays

#### CA2 K, CA3 K, CA4 K

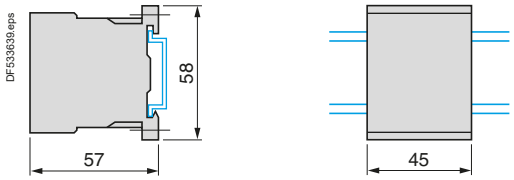
**On panel**




**On printed circuit board**

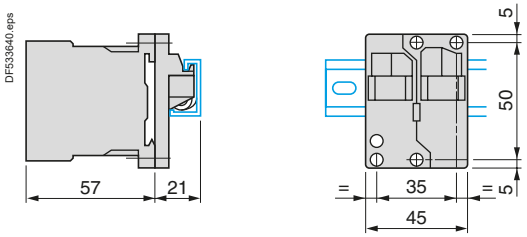



**On mounting rail AM1 DP200 or AM1 DE200 (, 35 mm)**



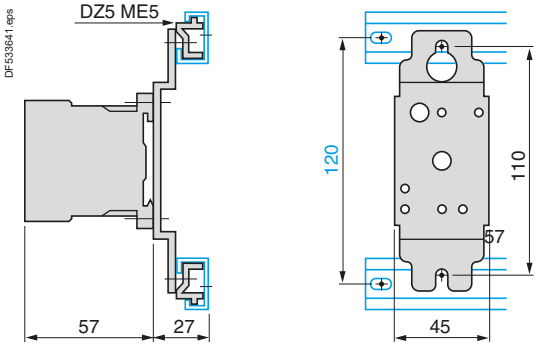

#### LA9 D973

**On asymmetrical rail with clip-on mounting plates**




#### DX1 AP25

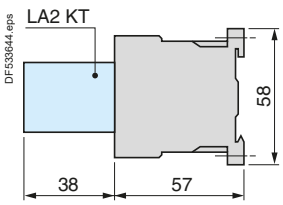
**On asymmetrical rail with clip-on mounting plates**




### Electronic time delay contact blocks

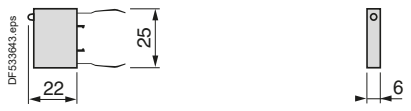
#### LA2 KT


**On control relay**

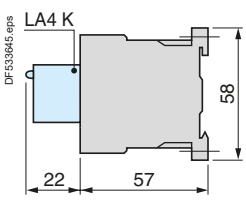



### Suppressor modules

#### LA4 K




**On control relay**




Control relays

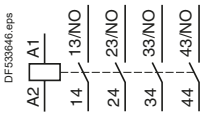
# Control relays

## TeSys K control relays

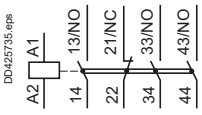
### Control relays

#### CA2 K, CA3 K, CA4 K

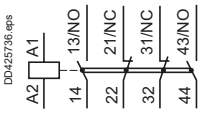
**4 N/O**




**3 N/O + 1 N/C**

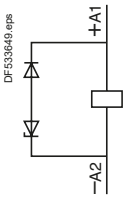



**2 N/O + 2 N/C**

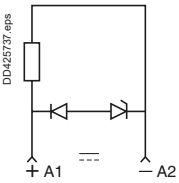



### With integral suppression device

**CA3 K**




**CA4 K**

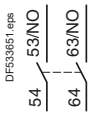



### Instantaneous auxiliary contact blocks LA1 K

#### For CA2 K, CA3 K, CA4 K

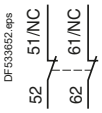
**2 N/O**

**LA1 KN20, LA1 KN207**




**2 N/C**

**LA1 KN02, LA1 KN027**




**1 N/O + 1 N/C**

**LA1 KN11, LA1 KN117**

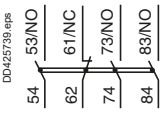

#### For CA2 K, CA3 K

**4 N/O**

**LA1 KN40, LA1 KN407**

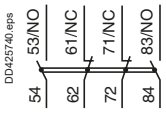

**3 N/O + 1 N/C**

**LA1 KN31, LA1 KN317**



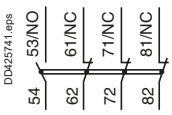

**2 N/O + 2 N/C**

**LA1 KN22, LA1 KN227**



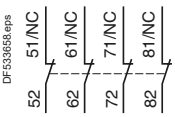

**1 N/O + 3 N/C**

**LA1 KN13, LA1 KN137**




**4 N/C**

**LA1 KN04, LA1 KN047**

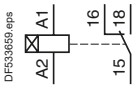



### Electronic time delay contact blocks LA2 KT

#### For CA2 K, CA3 K, CA4 K

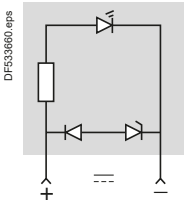
**1 C/O**

**LA2 KT2**

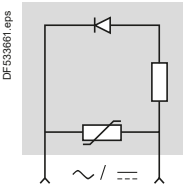



### Suppressor modules

**LA4 KC**

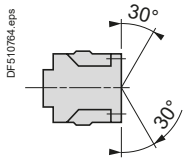
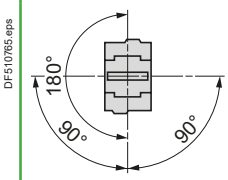
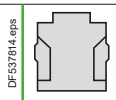
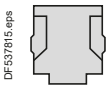



**LA4 KE**




Control relays

## Environment

| Control relay type | | | CAD ∿ | CAD ⎓ | CAD ⎓ low consumption |
|---|---|---|---|---|---|
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 Overvoltage category III and degree of pollution 3 | **V** | 690 | 690 | 690 |
| | Conforming to UL, CSA | **V** | 600 | 600 | 600 |
| Rated impulse withstand voltage (Uimp) | Conforming to IEC 60947 | **kV** | 6 | 6 | 6 |
| Separation of electrical circuits | Conforming to IEC 60536 and VDE 0106 | | Reinforced insulation up to 400 V | | |
| Conforming to standards | | | IEC 60947-5-1, N-F C 63-140, VDE 0660, BS 4794, EN 60947-5 | | |
| Product certifications | | | UL, CSA | | |
| Protective treatment | Conforming to IEC 60068 | | "TH" | | |
| Degree of protection | Conforming to VDE 0106 | | Front face protected against direct finger contact IP 2X | | Protection against direct finger contact |
| Ambient air temperature around the device | Storage | **°C** | -60…+80 | -60…+80 | -60…+80 |
| | Operation, conforming to IEC 60255 (0.8…1.1 UC) | **°C** | -5…+60 | -5…+60 | -5…+60 |
| | For operation at Uc | **°C** | -40…+70 | -40…+70 | -40…+70 |
| Maximum operating altitude | Without derating | **m** | 3000 | 3000 | 3000 |
| Operating positions | Without derating in the following positions | |   |   | |
| | Positions that are not allowed | | |   |   |
| Shock resistance (1) half sine wave for 11ms | Control relay open | | 10 gn | 10 gn | 10 gn |
| | Control relay closed | | 15 gn | 15 gn | 15 gn |
| Vibration resistance (1) 5…300 Hz | Control relay open | | 2 gn | 2 gn | 2 gn |
| | Control relay closed | | 4 gn | 4 gn | 4 gn |
| Screw clamp connections | Flexible conductor without cable end — 1 conductor | **mm²** | 1…4 | 1…4 | 1…4 |
| | Flexible conductor without cable end — 2 conductors | **mm²** | 1…4 | 1…4 | 1…4 |
| | Flexible conductor with cable end — 1 conductor | **mm²** | 1…4 | 1…4 | 1…4 |
| | Flexible conductor with cable end — 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 |
| | Solid conductor without cable end — 2 conductors | **mm²** | 1…4 | 1…4 | 1…4 |
| | Tightening torque | **N.m** | 1.7 | 1.7 | 1.7 |
| Spring terminal connections | 1 or 2 flexible or rigid conductors without cable end | **mm²** | 1…2.5 | 1…2.5 | 1…2.5 |

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

Control relays

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

## 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 |



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

## Characteristics of instantaneous contacts incorporated in the control relay

| | | | | |
|---|---|---|---|---|
| Number of contacts | | | | 5 |
| Rated operational voltage (Ue) | Up to | | **V** | 690 |
| Rated insulation voltage (Ui) | Conforming to IEC 60947-5-1 | | **V** | 690 |
| | Conforming to UL, CSA | | **V** | 600 |
| Conventional thermal current (Ith) | For ambient temperature ≤ 60 °C | | **A** | 10 |
| Frequency of the operational current | | | **Hz** | 25...400 |
| Minimum switching capacity | U min | | **V** | 17 |
| | I min | | **mA** | 5 |
| Short-circuit protection | Conforming to IEC 60947-5-1 | | | gG fuse: 10 A |
| Rated making capacity | Conforming to IEC 60947-5-1 | I rms | | ∼ 140, ⎓ 250 |
| Short-time rating | Permissible for | 1 s | **A** | 100 |
| | | 500 ms | **A** | 120 |
| | | 100 ms | **A** | 140 |
| Insulation resistance | | | **MΩ** | > 10 |
| Non-overlap time | Guaranteed between N/C and N/O contacts | | **ms** | 1.5 (on energisation and on de-energisation) |
| Tightening torque | Philips head n° 2 and Ø6 | | **N.m** | 1.2 |
| Non-overlap distance | | | | Linked contacts in association with auxiliary contacts LAD N |
| Mechanically linked contacts | Conforming to IEC 60947-5-1 | | | The 3 N/O contacts and the 2 N/C contacts of CAD N32 are linked mechanically by one mobile contact carrier. |



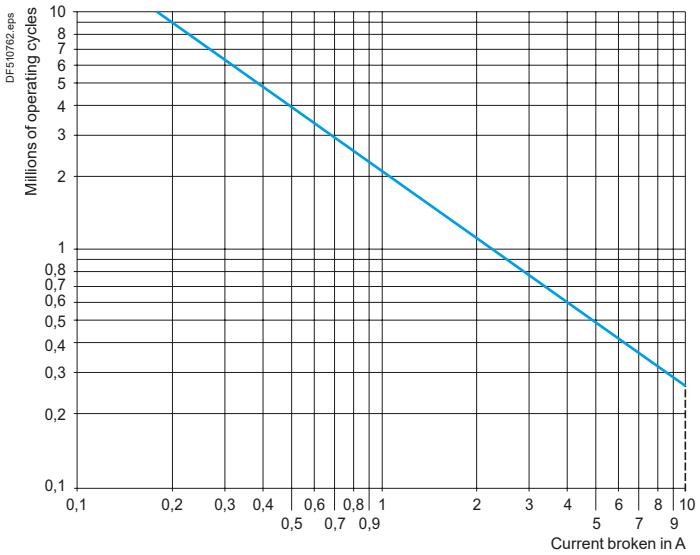
References:
pages B7/9 to B7/11
Dimensions:
page B7/26
Schemes:
page B7/27

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

### a.c. supply, categories AC-14 and AC-15

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

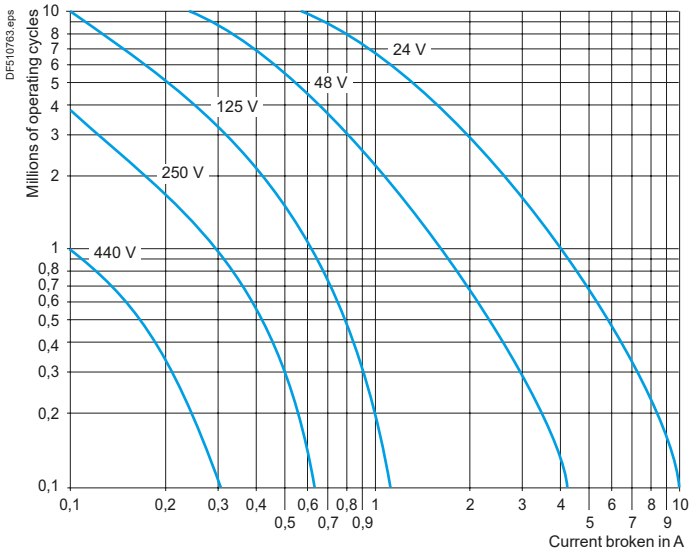
| | V | 24 | 48 | 115 | 230 | 400 | 440 | 600 |
|---|---|---|---|---|---|---|---|---|
| 1 million operating cycles | VA | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles | VA | 16 | 32 | 80 | 160 | 280 | 300 | 420 |
| 10 million operating cycles | VA | 4 | 8 | 20 | 40 | 70 | 80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




### d.c. supply, category DC-13

Electrical durability (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

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



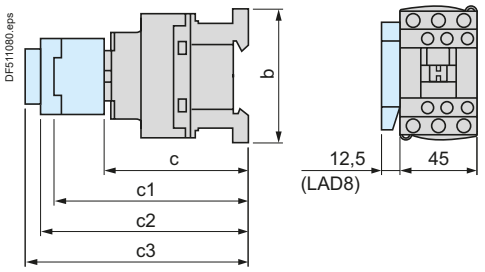

Control relays

# TeSys control relays

## TeSys D control relays and add-on blocks

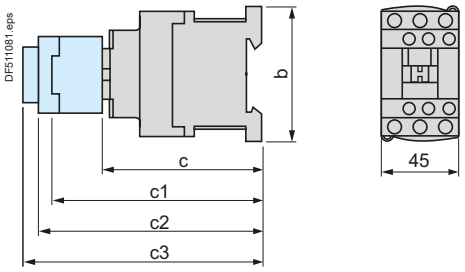
## Dimensions

### CAD ∼




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

### CAD ⎓ or LC (low consumption)

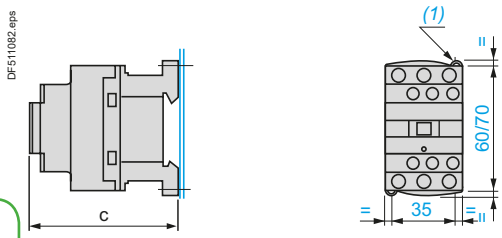



| CAD | | 32<br>50 | 323<br>503 |
|---|---|---|---|
| b | | 77 | 99 |
| c | without cover or add-on blocks | 93 | 93 |
| | with cover, without add-on blocks | 95 | 95 |
| c1 | with LAD N or C (2 or 4 contacts) | 126 | 126 |
| c2 | with LAD 6K10 | 138 | 138 |
| c3 | with LAD T, R, S | 146 | 146 |
| |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

## Mounting

### CAD

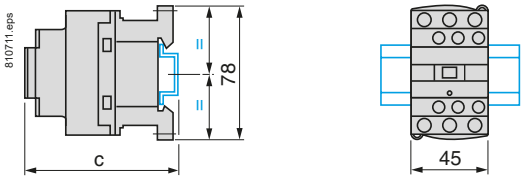
#### Panel mounted




| | | CAD ∼ | CAD ⎓ or LC |
|---|---|---|---|
| c | with cover | 86 | 95 |

*(1) 2 elongated holes 4.5 x 9.*

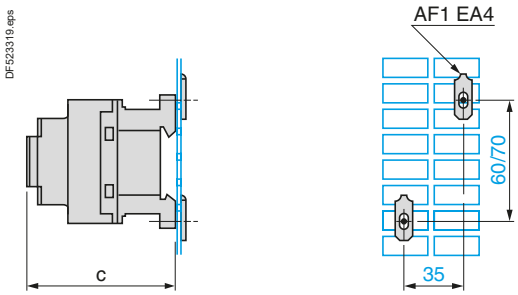
#### Mounted on rail AM1 DP200 or DE200




| | | 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 |

Control relays

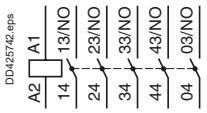
# TeSys control relays

## TeSys D control relays and add-on blocks

### Instantaneous auxiliary contacts

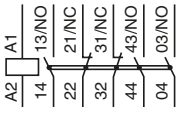
**5 N/O**

**CAD 50**




**3 N/O + 2 N/C**

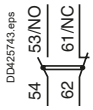
**CAD 32**



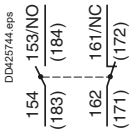

### Instantaneous auxiliary contact blocks

**1 N/O + 1 N/C**

**LAD N11**



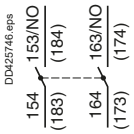

**LAD 8N11** (1)




**2 N/O**

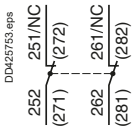
**LAD N20**


**LAD 8N20** (1)

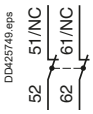



**2 N/C**

**LAD 8N02**



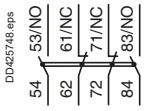

**LAD N02**




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

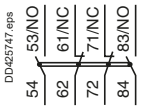
**2 N/O + 2F N/C**

**LAD N22**




**1 N/O + 3 N/C**

**LAD N13**

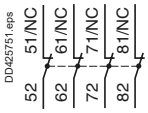



**4 N/O**

**LAD N40**

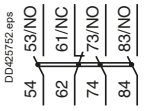

**4 N/C**

**LAD N04**



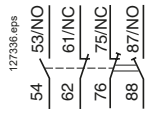

**3 N/O + 1 N/C**

**LAD N31**




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

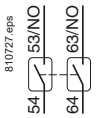
**LAD C22**




**With dust and damp protected contacts**

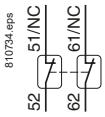
**2 N/O protected**

**LA1 DX20**



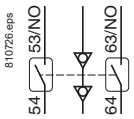

**2 N/C protected**

**LA1 DX02**



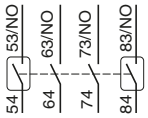

**2 N/O protected (2) with 2 cable screen terminals**

**LA1 DY20**



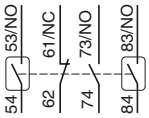

**2 N/O protected + 2 N/O non protected**

**LA1 DZ40**




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

**LA1 DZ31**

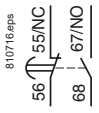



*(2) Product fitted with 4 earth screen continuity terminals.*

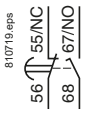
### Time delay auxiliary contact blocks

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

**LAD T**

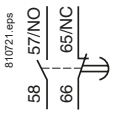



**LAD S**



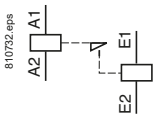

**Off-delay 1 N/O + 1 N/C**

**LAD R**




### Mechanical latch blocks

**LAD 6K10**






References: pages B7/9 to B7/11
Illustration: page B7/8
Characteristics: pages B7/22 and B7/25
Dimensions: page B7/26