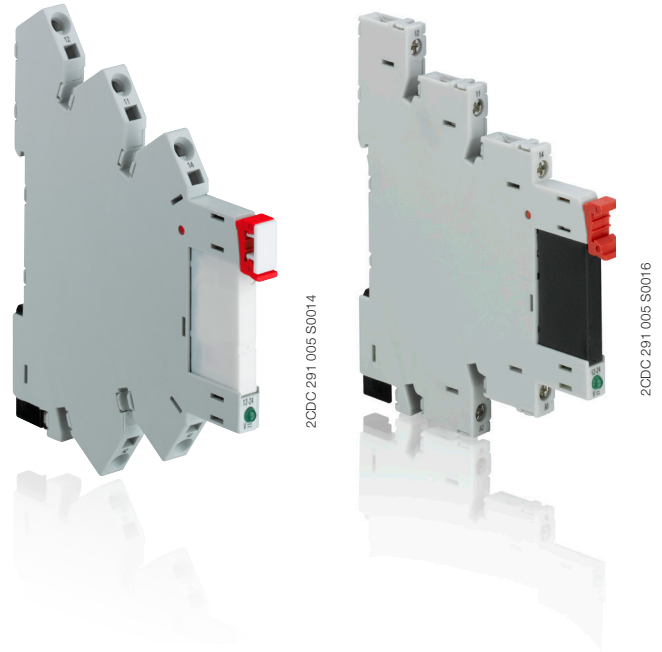


Pluggable interface relays and optocouplers CR-S

Slim relays, optocouplers and accessories

Pluggable interface relays and optocouplers are used for electrical isolation, amplification and signal matching between the electronic controlling, e.g. PLC (programmable logic controller), PC or field bus systems and the sensor / actuator level.



Characteristics

- Standard slim relays (5 mm), optocouplers (5 mm), sockets (6.2 mm) and accessories
- Combination of 9 different rated control supply voltages possible:
DC versions: 5 V, 12 V, 24 V
AC/DC versions: 12 V, 24 V, 48 V, 60 V, 110 V, 230 V
- Output relay: 1 c/o (SPDT) contact (6 A), standard and gold-plated
Output optocoupler: Transistor 100 mA - 48 V DC, MOS-FET 2 A - 24 V DC, Triac 2 A - 240 V AC
- Cadmium-free contact material
- All sockets with LED
- Screw and spring connection terminals
- Jumper bar (red, black, blue), marker and separator available as accessories

Approvals

- ANSI/UL 508, CAN/CSA C22.2 No.14
- CAN/CSA C22.2 No.14-13 (only relays and sockets)
relays also: CAN/CSA C22.2 No.0-10
- VDE (only relays and sockets with screw terminals)
- EAC (only relays and sockets)
- CQC

Marks

- CE (except relays)

Order data

Packing unit = 10 pieces

Pluggable interface relays, 1 c/o (SPDT) standard contacts: 250 V, 6 A

| Type | Rated control supply voltage U_s | Order code |
|--------------|------------------------------------|-----------------|
| CR-S005VDC1R | 5 V DC | 1SVR405501R1010 |
| CR-S012VDC1R | 12 V DC | 1SVR405501R2010 |
| CR-S024VDC1R | 24 V DC | 1SVR405501R3010 |
| CR-S048VDC1R | 48 V DC | 1SVR405501R4010 |
| CR-S060VDC1R | 60 V DC | 1SVR405501R5010 |

Pluggable interface relays, 1 c/o (SPDT) gold plated contacts: 12 V, 250 mA (3W)¹⁾

| | | |
|---------------|---------|-----------------|
| CR-S005VDC1RG | 5 V DC | 1SVR405501R1020 |
| CR-S012VDC1RG | 12 V DC | 1SVR405501R2020 |
| CR-S024VDC1RG | 24 V DC | 1SVR405501R3020 |
| CR-S048VDC1RG | 48 V DC | 1SVR405501R4020 |
| CR-S060VDC1RG | 60 V DC | 1SVR405501R5020 |

Pluggable interface optocouplers

| Type | Rated control supply voltage U_s | Output characteristics | Order code |
|----------------|------------------------------------|------------------------------|-----------------|
| CR-S024VDC1TRA | 24 V DC | Transistor, 100 mA - 48 V DC | 1SVR405510R3050 |
| CR-S024VDC1MOS | 24 V DC | MOS-FET, 2 A - 24 V DC | 1SVR405510R3060 |
| CR-S024VDC1TRI | 24 V DC | Triac, 2 A - 240 V AC | 1SVR405510R3070 |

Complete interface relays (relay + socket), 1 c/o (SPDT) standard contacts: 250 V, 6 A

| Type | Rated control supply voltage U_s | Connection | Order code |
|-----------------|------------------------------------|------------|-----------------|
| CR-S024VADC1CRS | 24 V AC/DC | Screw | 1SVR405541R3110 |
| CR-S024VADC1CRZ | 24 V AC/DC | Spring | 1SVR405541R3210 |
| CR-S110VADC1CRS | 110 V AC/DC | Screw | 1SVR405541R6110 |
| CR-S110VADC1CRZ | 110 V AC/DC | Spring | 1SVR405541R6210 |
| CR-S230VADC1CRS | 230 V AC/DC | Screw | 1SVR405541R7110 |
| CR-S230VADC1CRZ | 230 V AC/DC | Spring | 1SVR405541R7210 |

Complete interface relays (relay+socket), 1 c/o (SPDT) gold plated contacts: 12 V, 250 mA (3W)¹⁾

| | | | |
|------------------|-------------|--------|-----------------|
| CR-S024VADC1CRGS | 24 V AC/DC | Screw | 1SVR405541R3120 |
| CR-S024VADC1CRGZ | 24 V AC/DC | Spring | 1SVR405541R3220 |
| CR-S110VADC1CRGS | 110 V AC/DC | Screw | 1SVR405541R6120 |
| CR-S110VADC1CRGZ | 110 V AC/DC | Spring | 1SVR405541R6220 |
| CR-S230VADC1CRGS | 230 V AC/DC | Screw | 1SVR405541R7120 |
| CR-S230VADC1CRGZ | 230 V AC/DC | Spring | 1SVR405541R7220 |

Sockets

| | | | |
|--------------------|-----------------|--------|-----------------|
| CR-S006/024VDC1SS | 6-24 V DC | Screw | 1SVR405521R1100 |
| CR-S006/024VDC1SZ | 6-24 V DC | Spring | 1SVR405521R1200 |
| CR-S012/024VADC1SS | 12-24 V AC/DC | Screw | 1SVR405521R3100 |
| CR-S012/024VADC1SZ | 12-24 V AC/DC | Spring | 1SVR405521R3200 |
| CR-S048/060VADC1SS | 48-60 V AC/DC | Screw | 1SVR405521R5100 |
| CR-S048/060VADC1SZ | 48-60 V AC/DC | Spring | 1SVR405521R5200 |
| CR-S110/125VADC1SS | 110-125 V AC/DC | Screw | 1SVR405521R6100 |
| CR-S110/125VADC1SZ | 110-125 V AC/DC | Spring | 1SVR405521R6200 |
| CR-S220/240VADC1SS | 220-240 V AC/DC | Screw | 1SVR405521R7100 |
| CR-S220/240VADC1SZ | 220-240 V AC/DC | Spring | 1SVR405521R7200 |

Accessories for CR-S range sockets

| Type | Version | Order code |
|----------------|---------------------------------|-----------------|
| CR-SJB20-BLUE | Jumper bar 20 pole, blue color | 1SVR405598R0700 |
| CR-SJB20-RED | Jumper bar 20 pole, red color | 1SVR405598R0800 |
| CR-SJB20-BLACK | Jumper bar 20 pole, black color | 1SVR405598R0900 |
| CR-SM | Marker block | 1SNB041391R0610 |
| CR-SSEP | Separator | 1SVR405599R0000 |

¹⁾ If specified maximum values exceeded, the gold plating is destroyed. The maximum values of the standard contacts are then valid.

Relay assemblies

| Control voltage | Connection terminal | Contact material | Socket type | Socket order code | Relay type | Relay order code |
|-----------------|---------------------|------------------|---|------------------------------------|---------------|------------------|
| 5 V DC | screw | standard | CR-S006/024VDC1SS | 1SVR405521R1100 | CR-S005VDC1R | 1SVR405501R1010 |
| | | gold plated | CR-S006/024VDC1SS | 1SVR405521R1100 | CR-S005VDC1RG | 1SVR405501R1020 |
| 12 V DC | spring | standard | CR-S006/024VDC1SZ | 1SVR405521R1200 | CR-S005VDC1R | 1SVR405501R1010 |
| | | gold plated | CR-S006/024VDC1SZ | 1SVR405521R1200 | CR-S005VDC1RG | 1SVR405501R1020 |
| | screw | standard | CR-S006/024VDC1SS or CR-S012/024VADC1SS | 1SVR405521R1100 or 1SVR405521R3100 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S006/024VDC1SS or CR-S012/024VADC1SS | 1SVR405521R1100 or 1SVR405521R3100 | CR-S012VDC1RG | 1SVR405501R2020 |
| 12 V AC | spring | standard | CR-S006/024VDC1SZ or CR-S012/024VADC1SZ | 1SVR405521R1200 or 1SVR405521R3200 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S006/024VDC1SZ or CR-S012/024VADC1SZ | 1SVR405521R1200 or 1SVR405521R3200 | CR-S012VDC1RG | 1SVR405501R2020 |
| | screw | standard | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S012VDC1RG | 1SVR405501R2020 |
| 24 V DC | spring | standard | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S012VDC1RG | 1SVR405501R2020 |
| | screw | standard | CR-S006/024VDC1SS or CR-S012/024VADC1SS | 1SVR405521R1100 or 1SVR405521R3100 | CR-S024VDC1R | 1SVR405501R3010 |
| | | gold plated | CR-S006/024VDC1SS or CR-S012/024VADC1SS | 1SVR405521R1100 or 1SVR405521R3100 | CR-S024VDC1RG | 1SVR405501R3020 |
| | spring | standard | CR-S006/024VDC1SZ or CR-S012/024VADC1SZ | 1SVR405521R1200 or 1SVR405521R3200 | CR-S024VDC1R | 1SVR405501R3010 |
| | | gold plated | CR-S006/024VDC1SZ or CR-S012/024VADC1SZ | 1SVR405521R1200 or 1SVR405521R3200 | CR-S024VDC1RG | 1SVR405501R3020 |
| 24 V AC | spring | standard | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1R | 1SVR405501R3010 |
| | | gold plated | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1RG | 1SVR405501R3020 |
| | screw | standard | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S024VDC1R | 1SVR405501R3010 |
| | | gold plated | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S024VDC1RG | 1SVR405501R3020 |
| | spring | standard | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1R | 1SVR405501R3010 |
| | | gold plated | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1RG | 1SVR405501R3020 |
| 48 V AC/DC | spring | standard | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S048VDC1R | 1SVR405501R4010 |
| | | gold plated | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S048VDC1RG | 1SVR405501R4020 |
| | screw | standard | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S048VDC1R | 1SVR405501R4010 |
| | | gold plated | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S048VDC1RG | 1SVR405501R4020 |
| | spring | standard | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S060VDC1RG | 1SVR405501R5020 |
| 60 V AC/DC | spring | standard | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S060VDC1RG | 1SVR405501R5020 |
| | screw | standard | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S048/060VADC1SS | 1SVR405521R5100 | CR-S060VDC1RG | 1SVR405501R5020 |
| | spring | standard | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S048/060VADC1SZ | 1SVR405521R5200 | CR-S060VDC1RG | 1SVR405501R5020 |
| 110-125 V AC/DC | spring | standard | CR-S110/125VADC1SS | 1SVR405521R6100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S110/125VADC1SS | 1SVR405521R6100 | CR-S060VDC1RG | 1SVR405501R5020 |
| | screw | standard | CR-S110/125VADC1SZ | 1SVR405521R6200 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S110/125VADC1SZ | 1SVR405521R6200 | CR-S060VDC1RG | 1SVR405501R5020 |
| | spring | standard | CR-S110/125VADC1SS | 1SVR405521R6100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S110/125VADC1SS | 1SVR405521R6100 | CR-S060VDC1RG | 1SVR405501R5020 |
| 220-240 V AC/DC | spring | standard | CR-S220/240VADC1SS | 1SVR405521R7100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S220/240VADC1SS | 1SVR405521R7100 | CR-S060VDC1RG | 1SVR405501R5020 |
| | screw | standard | CR-S220/240VADC1SZ | 1SVR405521R7200 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S220/240VADC1SZ | 1SVR405521R7200 | CR-S060VDC1RG | 1SVR405501R5020 |
| | spring | standard | CR-S220/240VADC1SS | 1SVR405521R7100 | CR-S060VDC1R | 1SVR405501R5010 |
| | | gold plated | CR-S220/240VADC1SS | 1SVR405521R7100 | CR-S060VDC1RG | 1SVR405501R5020 |

Optocoupler assemblies

| Control voltage | Connection terminal | Output characteristics | Socket type | Socket order code | Opto type | Opto order code |
|-----------------|---------------------|------------------------|--------------------|-------------------|----------------|-----------------|
| 24 V DC | screw | Transistor | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S024VDC1TRA | 1SVR405510R3050 |
| | | 100 mA - 48 V DC | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1TRA | 1SVR405510R3050 |
| | spring | MOS-FET | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S024VDC1MOS | 1SVR405510R3060 |
| | | 2 A - 24 V DC | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1MOS | 1SVR405510R3060 |
| | screw | Triac | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S024VDC1TRI | 1SVR405510R3070 |
| | | 2 A - 240 V AC | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S024VDC1TRI | 1SVR405510R3070 |

How to use the selection table

- Choose the desired control supply voltage from the column "Control voltage" e.g. 5 V DC.
- Choose the desired kind of connection terminal from the column "Connection Terminal" e.g. spring.
- Choose the desired material of contact from the column "Contact Material" e.g. gold plated.

| Control voltage | Connection terminal | Contact material | Socket type | Socket order code | Relay type | Relay order code |
|-----------------|---------------------|------------------|--------------------|-------------------|---------------|------------------|
| 5 V DC | screw | standard | CR-S006/024VDC1SS | 1SVR405521R1100 | CR-S005VDC1R | 1SVR405501R1010 |
| | | gold plated | CR-S006/024VDC1SS | 1SVR405521R1100 | CR-S005VDC1RG | 1SVR405501R1020 |
| | spring | standard | CR-S006/024VDC1SZ | 1SVR405521R1200 | CR-S005VDC1R | 1SVR405501R1010 |
| | | gold plated | CR-S006/024VDC1SZ | 1SVR405521R1200 | CR-S005VDC1RG | 1SVR405501R1020 |
| 12 V AC | screw | standard | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S012/024VADC1SS | 1SVR405521R3100 | CR-S012VDC1RG | 1SVR405501R2020 |
| | spring | standard | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S012VDC1R | 1SVR405501R2010 |
| | | gold plated | CR-S012/024VADC1SZ | 1SVR405521R3200 | CR-S012VDC1RG | 1SVR405501R2020 |

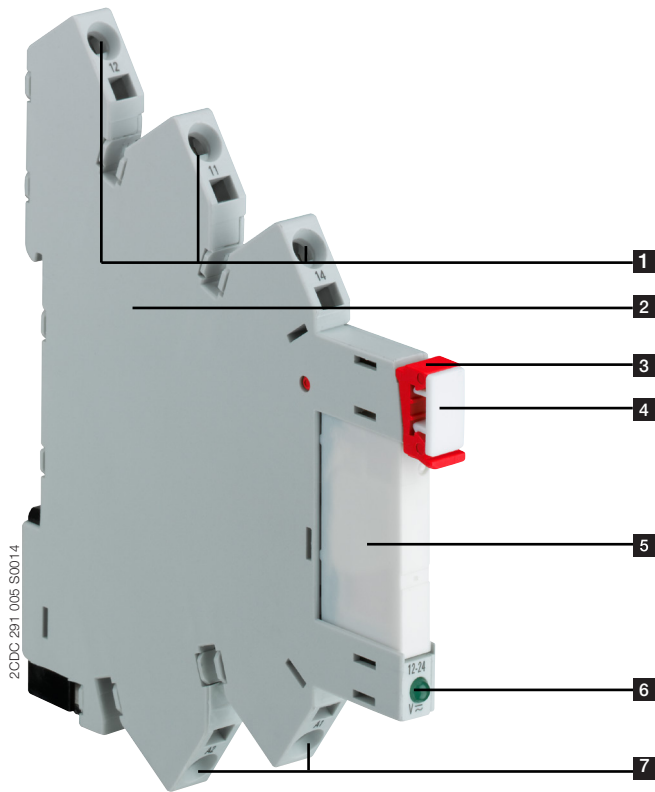
Example: When you have chosen **5 V DC** as Control supply voltage, **spring** connection as Connection Terminal and **gold plated** as Contact Material the following order codes and type designators are valid:

Socket: CR-S006/024VDC1SZ, 1SVR405521R1200

Relay: CR-S005VDC1RG, 1SVR405501R1020

Functions

Operating controls



- 1** Output contacts
- 2** Socket
- 3** Relay holder
- 4** Marker
- 5** Interface relay
- 6** LED green: Control supply voltage applied
- 7** Control supply voltage

Application

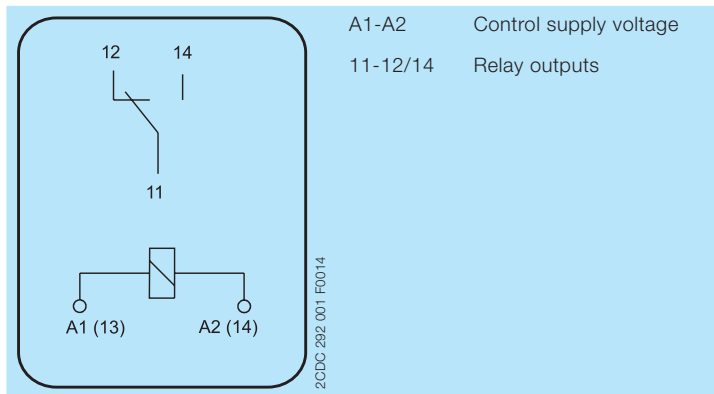
Interface relays are electromechanic and electronic input and output modules for electrical isolation, levelling, noise suppression or signal amplification between control unit and a process.

Optocouplers are mostly used where high switching frequency is necessary. They have no moving parts thus operate bounce-free and immune to vibrations.

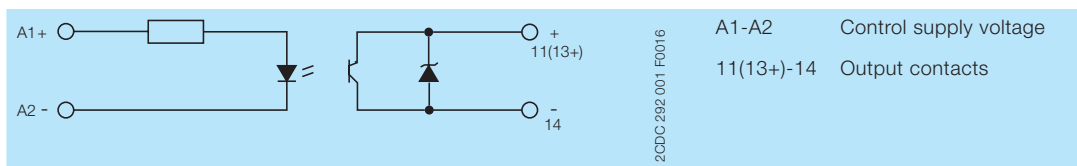
Operating mode

When control supply voltage is applied, the output contacts get closed. When control supply voltage is switched off, the contacts fall back into their starting position.

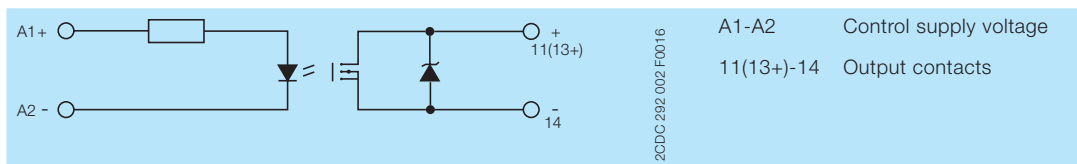
Electrical connection



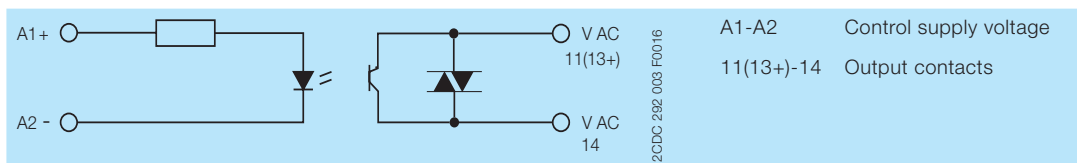
Connection diagram CR-S interface relay



Connection diagram CR-S optocoupler with transistor



Connection diagram CR-S optocoupler with MOS-FET



Connection diagram CR-S optocoupler with Triac

Technical data - CR-S Range relay

Input circuit - Coil data A1-A2

| | Rated control supply voltage U_s | Make voltage (at 23 °C) | Maxium voltage (at 55 °C) | Break voltage | Rated power | Coil resistance (at 23 °C) | Tolerance of coil resistance |
|-----------------|------------------------------------|-------------------------|---------------------------|---------------|-------------|----------------------------|------------------------------|
| CR-S005VDC1R(G) | 5 V DC | 3.75 V DC | 7.5 V DC | 0.25 V DC | 170 mW | 147 Ω | $\pm 10 \%$ |
| CR-S012VDC1R(G) | 12 V DC | 9 V DC | 18 V DC | 0.6 V DC | 170 mW | 848 Ω | $\pm 10 \%$ |
| CR-S024VDC1R(G) | 24 V DC | 18 V DC | 36 V DC | 1.2 V DC | 170 mW | 3390 Ω | $\pm 15 \%$ |
| CR-S048VDC1R(G) | 48 V DC | 36 V DC | 72 V DC | 2.4 V DC | 210 mW | 10600 Ω | $\pm 15 \%$ |
| CR-S060VDC1R(G) | 60 V DC | 45 V DC | 90 V DC | 3 V DC | 210 mW | 16600 Ω | $\pm 15 \%$ |

Output circuits

| | | |
|--|---|--|
| Output circuits | 11-12/14 | |
| Kind of output | 1 c/o (SPDT) | |
| Contact material | AgSnO ₂ / AgSnO ₂ /Au | |
| Rated operational voltage U_o (IEC/EN 60947-1) | 250 V AC | |
| Minimum switching voltage | 5 V at 100 mA (AgSnO ₂) / 5 V at 12 mA (AgSnO ₂ /Au) | |
| Maximum switching voltage | 400 V AC / 250 V DC | |
| Minimum switching current | 10 mA at 10 V (AgSnO ₂) / 3 mA at 20 V (AgSnO ₂ /Au) | |
| Rated free air thermal current I_{th} | 5 A | |
| Rated operational current (IEC/EN 60947-5-1) | AC12 (resistive) | 230 V 6 A |
| | AC15 (inductive) | 230 V 1.5 A |
| | AC15 (inductive) | 120 V 3 A |
| | DC12 (resistive) | 24 V 6 A |
| | DC13 (inductive) | 24 V 1 A |
| | DC13 (inductive) | 120 V 0.22 A |
| | DC13 (inductive) | 250 V 0.11 A |
| AC rating (UL 508; NEMA ICS-5) | Utilization category (pilot duty) (Contact rating code designation) | B300 |
| DC rating (UL 508; NEMA ICS-5) | Utilization category (pilot duty) (Contact rating code designation) | R300 |
| Maximum making (inrush) current | 15 A, 240 V AC | |
| Minimum switching power | 10 mA at 10 V (AgSnO ₂) / 60 mW (AgSnO ₂ /Au) | |
| Maximum switching (breaking) power | AC1 (resistive) | 1500 VA, 250 V AC |
| Contact resistance | 100 m Ω (at 1 A/ 6 V DC) | |
| Maximum operating frequency | rated load AC1 | 360 switching cycles/h |
| | without load | 18000 switching cycles/h |
| Mechanical lifetime | 1 x 10 ⁷ switching cycles | |
| Electrical lifetime | AC1 (resistive) | (n/c) 3 x 10 ⁴ switching cycles (at +85 °C) (n/o) 1 x 10 ⁴ switching cycles (at +85 °C) |
| Response time | 8 ms | |
| Release time | 4 ms | |

Isolation data

| | | |
|---|---------------------------|-------------------|
| Rated insulation voltage | 250 V AC | |
| Rated impulse withstand voltage U_{imp} | between coil and contacts | 4 kV 1 min |
| | between open contacts | 1 kV 1 min |
| Clearance | between coil and contacts | 5.5 mm (0.217 in) |
| Creepage distance | between coil and contacts | 8 mm (0.315 in) |
| Overtoltage category | III | |
| Pollution degree | 2 | |

General data

| | |
|------------------------|---|
| Dimensions (W x H x D) | 28 x 5 x 15 mm (1.102 x 0.196 x 0.590 in) |
| Weight | 5 g (0.011 lb) |
| Mounting | on socket |
| Mounting position | any |
| Degree of protection | RT II and RT III |

Electrical connection

| | |
|------------|-----------|
| Connection | by socket |
|------------|-----------|

Environmental data

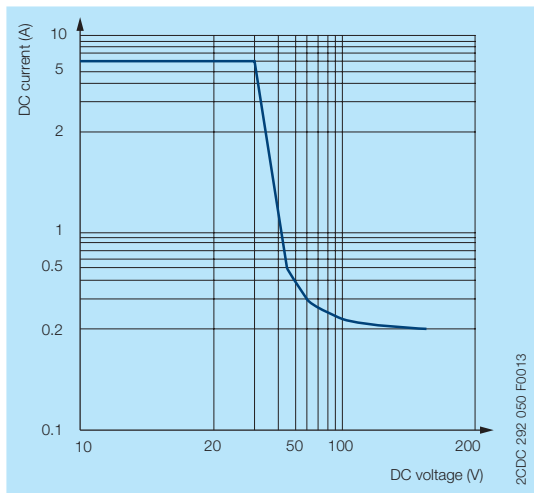
| | | |
|----------------------------------|-------------|---|
| Ambient temperature range | operation | -40...+85 °C |
| | storage | -40...+85 °C |
| Vibration resistance (10-150 Hz) | n/o contact | 10 Hz to 55 Hz 1mm DA |
| | n/c contact | 10 Hz to 55 Hz 1mm DA |
| Shock resistance | n/o contact | Functional 49 m/s ² / Destructive 980 m/s ² |
| | n/c contact | Functional 49 m/s ² / Destructive 980 m/s ² |

Standards / Directives

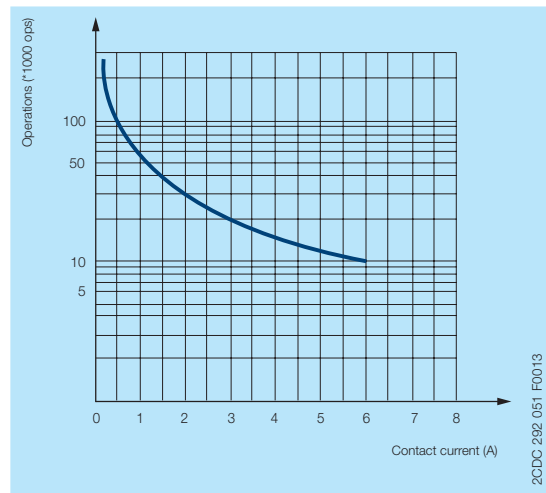
| | |
|----------------|----------------|
| Standards | IEC/EN 61810-1 |
| RoHS Directive | 2011/65/EU |

Technical diagrams

Load limit curves - Max. DC load breaking capacity



Endurance curve



Technical data - CR-S Range optocoupler

Input circuit

| Type | CR-S024VDC1TRA | CR-S024VDC1MOS | CR-S024VDC1TRI |
|-------------------------|----------------|----------------|----------------|
| Input resistance | 3400 Ω | 3400 Ω | 3400 Ω |
| Rated control voltage | 24 V DC | 24 V DC | 24 V DC |
| Pull-in voltage | 15 V DC | 15 V DC | 15 V DC |
| Maximum input voltage | 30 V DC | 30 V DC | 30 V DC |
| Nominal input current | 7 mA | 7 mA | 7 mA |
| Input power | 168 mW | 168 mW | 168 mW |
| Typical switch-on time | < 40 μs | < 60 μs | < 1/2 cycle |
| Typical switch-off time | < 600 μs | < 600 μs | < 1/2 cycle |

Output circuit ¹⁾

| | | | |
|--|---------------|---------------|---------------|
| Output circuits | 11 (13+) - 14 | 11 (13+) - 14 | 11 (13+) - 14 |
| Kind of output | Transistor | MOS-FET | Triac |
| Rated operational voltage | 48 V DC | 24 V DC | 240 V AC |
| Maximum switching voltage | 48 V DC | 24 V DC | 275 V AC |
| Minimum switching current | 50 μA | 50 μA | 22 mA |
| Maximum switching current continuously | 100 mA | 2 A | 2 A |
| Leakage current at maximum switching voltage | <1 μA | <1 μA | < 1.5 mA |
| Voltage drop at rated current | < 120 mV DC | < 120 mV DC | < 1.6 V AC |

¹⁾ The output circuit should not exceed 30 m.

Isolation data

| | | | |
|---|--------|--------|--------|
| Rated insulation voltage (input/output) | 2.5 kV | 2.5 kV | 2.5 kV |
| Insulation class | 2 | 2 | 2 |
| Clearance distance (input/output) | 14 mm | 14 mm | 14 mm |
| Creepage (input/output) | 14 mm | 14 mm | 14 mm |
| Overvoltage category | III | III | III |
| Pollution degree | 2 | 2 | 2 |

General data

| | | | |
|------------------------|--|--|--|
| Dimensions (W x H x D) | 28 x 5 x 15 mm (1.102 x 0.196 x 0.590 in) | 28 x 5 x 15 mm (1.102 x 0.196 x 0.590 in) | 28 x 5 x 15 mm (1.102 x 0.196 x 0.590 in) |
| Weight | 3.5 g (0.007 lb) | 3.5 g (0.007 lb) | 3.5 g (0.007 lb) |
| Mounting | on socket | on socket | on socket |

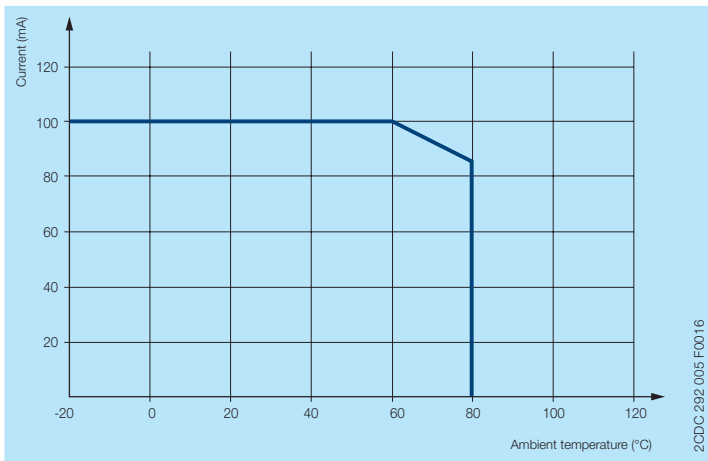
Environmental data

| | | | | |
|---------------------|-------------|---------------|---------------|---------------|
| Ambient temperature | operational | -30...+80 °C | -30...+80 °C | -30...+80 °C |
| | storage | -40...+100 °C | -40...+100 °C | -40...+100 °C |

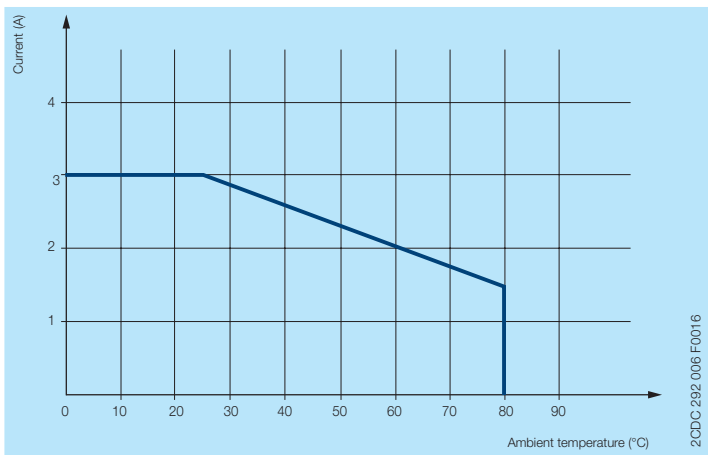
Standards / Directives

| | | | |
|----------------|--------------|--------------|--------------|
| Standards | IEC/EN 62314 | IEC/EN 62314 | IEC/EN 62314 |
| EMC Directive | 2014/30/EU | 2014/30/EU | 2014/30/EU |
| RoHS Directive | 2011/65/EU | 2011/65/EU | 2011/65/EU |

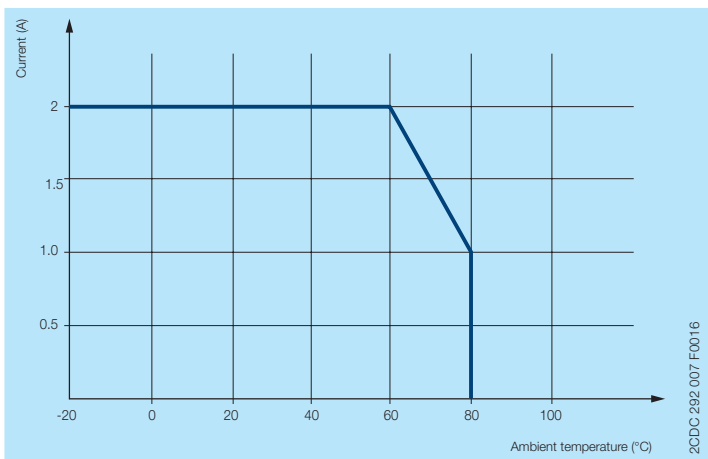
Technical diagrams



Derating curve transistor output



Derating curve MOS-FET output



Derating curve Triac output

Technical data - CR-S range sockets with screw connection terminal

Input circuits

| Type | CR-S006/024VDC1SS | CR-S012/024VADC1SS | CR-S048/060VADC1SS | CR-S110/125VADC1SS | CR-S220/240VADC1SS |
|--|-------------------|-----------------------------|--------------------|--------------------|--------------------|
| Rated control supply voltage U_s | 6-24 V DC | 12-24 V AC/DC ¹⁾ | 48-60 V AC/DC | 110-125 V AC/DC | 220-240 V AC/DC |
| Rated control supply voltage U_s tolerance | (0.8-1.2) U_n | (0.8-1.1) U_n | | | |
| Typical current | 11-29 mA | 11-16 mA | 3.6-4.5 mA | 3.6 mA | 3.6 mA |
| Response time | 8 ms | | | | |
| Release time | 4 ms | | | | |
| Status device | green LED | | | | |
| Protective circuit | yes | | | | |

¹⁾ In combination with optocouplers, only DC supply is allowed.

Output circuits

| | |
|-----------------|----------|
| Output circuits | 11-12/14 |
| Number of poles | 1 |
| Rated voltage | 250 V AC |
| Rated current | 6 A |

General data

| Type | CR-S006/024VDC1SS | CR-S012/024VADC1SS | CR-S048/060VADC1SS | CR-S110/125VADC1SS | CR-S220/240VADC1SS |
|---|---|--------------------|--------------------|--------------------|--------------------|
| Dimensions without holder (L x W x H) | 88.3 x 6.3 x 70.9 mm (3.476 x 0.248 x 2.789 in) | | | | |
| Degree of protection (EN 60529) | IP20 (terminals) | | | | |
| Temperature range | operation -40...+70 °C | | | -40...+55 °C | |
| | storage -40...+85 °C | | | | |
| Connection type | Screw | | | | |
| Maximum number of wires per connection terminal | 2 | | | | |
| Connecting capacity | rigid 2 x 0.5-1.5 mm ² (2 x 20-16 AWG) | | | | |
| | fine-strand with wire end ferrule 2 x 0.5-1.0 mm ² (2 x 20-18 AWG) | | | | |
| Tightening torque | 0.5 Nm (4.426 lb.in) | | | | |
| Stripping length | 7 mm (0.276 in) | | | | |
| Minimum clamping force for fine-strand wire | with 0.2 mm ² 10 N | | | | |
| | with 1.5 mm ² 40 N | | | | |
| Mounting (IEC/EN 60715) | DIN rail | | | | |
| Material | socket PA6 +GF-V2 | | | | |
| | contacts CuZn36 | | | | |
| | contact surface 3 μ Ni/Sn | | | | |
| | terminals CuZn40, 3 μ Ni | | | | |
| | combi screw M3 Fe | | | | |

Isolation data

| | |
|-------------------------------------|--------------|
| Isolation between coil and contacts | 5000 V AC |
| Resistance to shock coil to contact | 1000 MΩ |
| Clearance and creepage distance | IEC/EN 61984 |

Standards / Directives

| | |
|-----------------------|--------------|
| Standards | IEC/EN 61984 |
| Low Voltage Directive | 2014/35/EU |
| RoHS Directive | 2011/65/EU |

Technical data - CR-S range sockets with spring connection terminal

Input circuits

| Type | CR-S006/024VDC1SZ | CR-S012/024VADC1SZ | CR-S048/060VADC1SZ | CR-S110/125VADC1SZ | CR-S220/240VADC1SZ |
|--|-------------------|-----------------------------|--------------------|--------------------|--------------------|
| Rated control supply voltage U_s | 6-24 V DC | 12-24 V AC/DC ¹⁾ | 48-60 V AC/DC | 110-125 V AC/DC | 220-240 V AC/DC |
| Rated control supply voltage U_s tolerance | (0.8-1.2) U_n | (0.8-1.1) U_n | | | |
| Typical current | 11-29 mA | 11-16 mA | 3.6-4.5 mA | 3.6 mA | 3.6 mA |
| Response time | 8 ms | | | | |
| Release time | 4 ms | | | | |
| Status device | green LED | | | | |
| Protective circuit | yes | | | | |

¹⁾ In combination with optocouplers, only DC supply is allowed.

Output circuits

| | |
|-----------------|----------|
| Output circuits | 11-12/14 |
| Number of poles | 1 |
| Rated voltage | 250 V AC |
| Rated current | 6 A |

General data

| Type | CR-S006/024VDC1SZ | CR-S012/024VADC1SZ | CR-S048/060VADC1SZ | CR-S110/125VADC1SZ | CR-S220/240VADC1SZ |
|---|---|--------------------|--------------------|--------------------|--------------------|
| Dimensions without holder (L x W x H) | 94.7 x 6.2 x 73.2 mm (3.728 x 0.244 x 2.881 in) | | | | |
| Degree of protection (EN 60529) | IP20 (terminals) | | | | |
| Temperature operation range | -40...+70 °C | | | -40...+55 °C | |
| Temperature storage range | -40...+85 °C | | | | |
| Connection type | spring | | | | |
| Maximum number of wires per connection terminal | 1 | | | | |
| Connecting capacity | 0.75-2.5 mm ² (20-14 AWG) rigid, fine-strand and with wire end ferrule | | | | |
| Stripping length | 7 mm (0.276 in) | | | | |
| Mounting (IEC/EN 60715) | DIN rail | | | | |
| Material socket | PA6 +GF-V2 | | | | |
| Material contacts | CuZn36 | | | | |
| Material contact surface | 3 μ Ni/Sn | | | | |
| Material spring terminals | SUS301 | | | | |

Isolation data

| | |
|-------------------------------------|--------------|
| Isolation between coil and contacts | 5000 V AC |
| Resistance to shock coil to contact | 1000 MΩ |
| Clearance and creepage distance | IEC/EN 61984 |

Standards / Directives

| | |
|-----------------------|--------------|
| Standards | IEC/EN 61984 |
| Low Voltage Directive | 2014/35/EU |
| RoHS Directive | 2011/65/EU |

Technical data - CR-S range jumper bar

Rated operational voltage / current

| | |
|---------------------------|----------|
| Rated operational voltage | 250 V AC |
| Rated operational current | 36 A |

Electrical connection

| | | |
|---|---------------------|--------------------|
| Jumper bar cross section | 123.2 mm (4.850 in) | |
| Step distance | 6.3 mm (0.248 in) | |
| Rail length | with isolation | 16.7 mm (0.657 in) |
| | without isolation | 6.7 mm (0.264 in) |
| Stripping length of a connection wire that is used in combination with a jumper bar | 7 mm (0.276 in) | |

Environmental data

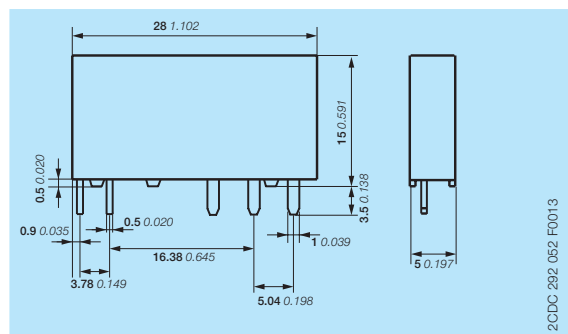
| | | |
|---------------------------|-----------|----------------|
| Ambient temperature range | operation | -40 ... +70 °C |
|---------------------------|-----------|----------------|

General data

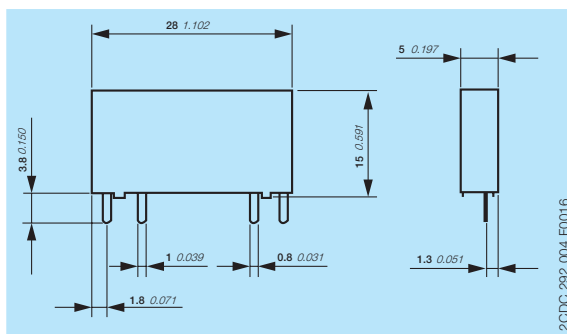
| | |
|------------------|----|
| Material of rail | Cu |
| Number of pins | 20 |
| Flammability | V0 |

Dimensions

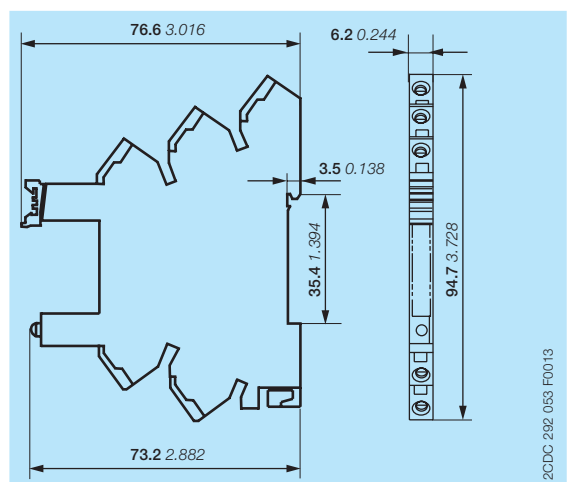
in **mm** and *inch*



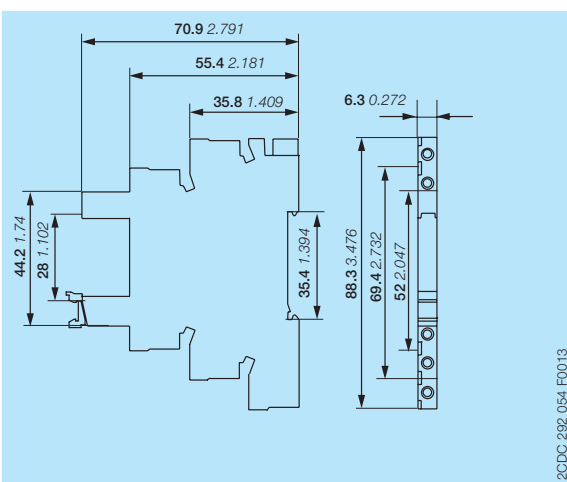
CR-S range interface relays



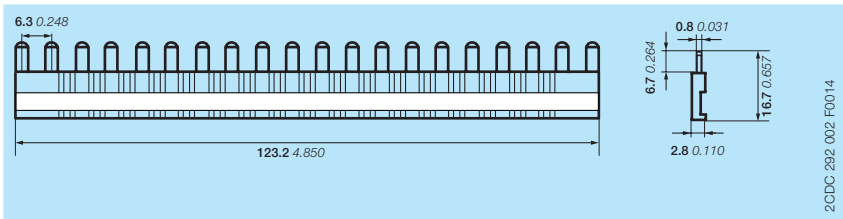
CR-S range optocouplers



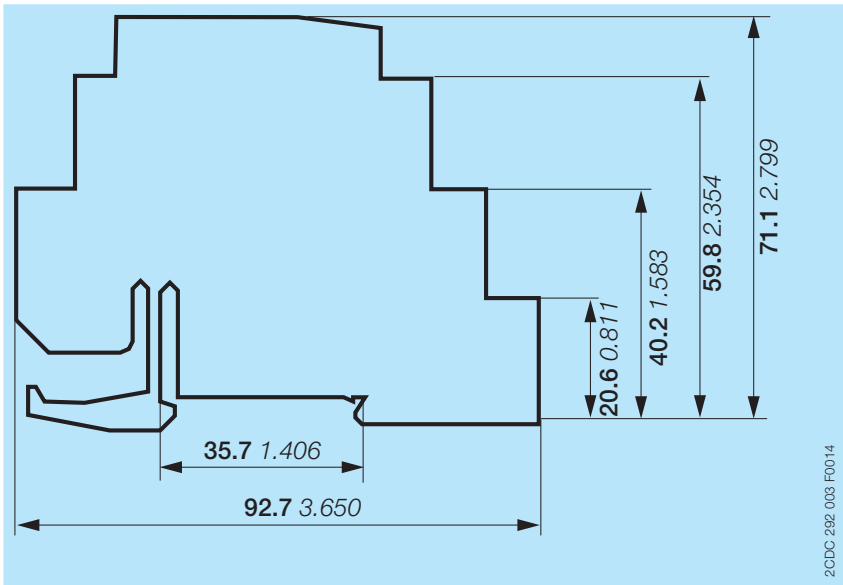
Spring socket for CR-S range interface relays



Screw socket for CR-S range interface relays



Jumper bar



Separator

Further documentation

| Document title | Document type | Document number |
|--------------------------------|---------------------|--------------------|
| Electronic Products and Relays | Technical catalogue | 2CDC 110 004 C02xx |

You can find the documentation on the internet at www.abb.com/lowvoltage
 -> Automation, control and protection -> Electronic relays and controls
 -> Interface relays and optocouplers.

CAD system files

You can find the CAD files for CAD systems at <http://abb-control-products.partcommunity.com>
 -> Low Voltage Products & Systems -> Control Products -> Electronic Relays and Controls.

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