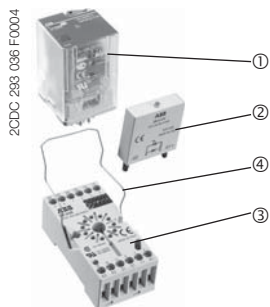


Pluggable interface relays CR-U

Universal relays

Data sheet



CR-U

- ① Interface relay
- ② Pluggable function module
- ③ Socket
- ④ Holder

Features

- Standard universal relays with mechanical status indication
- 10 different supply voltages:
DC versions: 12 V, 24 V, 48 V, 110 V, 125 V, 220 V
AC versions: 24 V, 48 V, 60 V, 110 V, 120 V, 230 V
- Output: 2 c/o (SPDT) contacts (10 A) or 3 c/o (SPDT) contacts (10 A)
- Available with or without LED
- Integrated test button for manual operation and locking of output contacts (blue = DC, orange = AC), that can be removed if necessary
- Cadmium-free contact material
- Width on socket: 38 mm
- Pluggable function modules: reverse polarity protection/free wheeling diode, LED indication, RC elements, overvoltage protection, multifunction time module

Approvals

- UL508
- CAN/CSA C22.2 No.14
- CAN/CSA C22.2 No.14
- VDE
- GOST
- Lloyds Register
- CCC
- RMRS

Marks

CE

Order data

| Type | Rated control supply voltage U_s | Order code |
|--|------------------------------------|---------------------------|
| Interface relays without LED, 2 c/o (SPDT) contacts: 250 V, 10 A | | |
| CR-U012DC2 | 12 V DC | 1SVR 405 621 R4000 |
| CR-U024DC2 | 24 V DC | 1SVR 405 621 R1000 |
| CR-U048DC2 | 48 V DC | 1SVR 405 621 R6000 |
| CR-U110DC2 | 110 V DC | 1SVR 405 621 R8000 |
| CR-U220DC2 | 220 V DC | 1SVR 405 621 R9000 |
| CR-U024AC2 | 24 V AC | 1SVR 405 621 R0000 |
| CR-U048AC2 | 48 V AC | 1SVR 405 621 R5000 |
| CR-U110AC2 | 110 V AC | 1SVR 405 621 R7000 |
| CR-U120AC2 | 120 V AC | 1SVR 405 621 R2000 |
| CR-U230AC2 | 230 V AC | 1SVR 405 621 R3000 |
| Interface relays without LED, 3 c/o (SPDT) contacts: 250 V, 10 A | | |
| CR-U012DC3 | 12 V DC | 1SVR 405 622 R4000 |
| CR-U024DC3 | 24 V DC | 1SVR 405 622 R1000 |
| CR-U048DC3 | 48 V DC | 1SVR 405 622 R6000 |
| CR-U110DC3 | 110 V DC | 1SVR 405 622 R8000 |
| CR-U125DC3 | 125 V DC | 1SVR 405 622 R8200 |
| CR-U220DC3 | 220 V DC | 1SVR 405 622 R9000 |
| CR-U024AC3 | 24 V AC | 1SVR 405 622 R0000 |
| CR-U048AC3 | 48 V AC | 1SVR 405 622 R5000 |
| CR-U060AC3 | 60 V AC | 1SVR 405 622 R5200 |
| CR-U110AC3 | 110 V AC | 1SVR 405 622 R7000 |
| CR-U120AC3 | 120 V AC | 1SVR 405 622 R2000 |
| CR-U230AC3 | 230 V AC | 1SVR 405 622 R3000 |

Bold printed products = stocked products. Packing unit = 10 pieces.

Pluggable interface relays CR-U

Universal relays

Data sheet

| Type | Rated control supply voltage U_s | Order code |
|--|------------------------------------|---------------------------|
| Interface relays with LED 2 c/o (SPDT) contacts: 250 V, 10 A | | |
| CR-U012DC2L | 12 V DC | 1SVR 405 621 R4100 |
| CR-U024DC2L | 24 V DC | 1SVR 405 621 R1100 |
| CR-U048DC2L | 48 V DC | 1SVR 405 621 R6100 |
| CR-U110DC2L | 110 V DC | 1SVR 405 621 R8100 |
| CR-U220DC2L | 220 V DC | 1SVR 405 621 R9100 |
| CR-U024AC2L | 24 V AC | 1SVR 405 621 R0100 |
| CR-U048AC2L | 48 V AC | 1SVR 405 621 R5100 |
| CR-U110AC2L | 110 V AC | 1SVR 405 621 R7100 |
| CR-U120AC2L | 120 V AC | 1SVR 405 621 R2100 |
| CR-U230AC2L | 230 V AC | 1SVR 405 621 R3100 |
| Interface relays with LED 3 c/o (SPDT) contacts: 250 V, 10 A | | |
| CR-U012DC3L | 12 V DC | 1SVR 405 622 R4100 |
| CR-U024DC3L | 24 V DC | 1SVR 405 622 R1100 |
| CR-U048DC3L | 48 V DC | 1SVR 405 622 R6100 |
| CR-U110DC3L | 110 V DC | 1SVR 405 622 R8100 |
| CR-U220DC3L | 220 V DC | 1SVR 405 622 R9100 |
| CR-U024AC3L | 24 V AC | 1SVR 405 622 R0100 |
| CR-U048AC3L | 48 V AC | 1SVR 405 622 R5100 |
| CR-U110AC3L | 110 V AC | 1SVR 405 622 R7100 |
| CR-U120AC3L | 120 V AC | 1SVR 405 622 R2100 |
| CR-U230AC3L | 230 V AC | 1SVR 405 622 R3100 |
| Interface relays with LED and freewheeling diode 3 c/o (SPDT) contacts: 250 V, 10 A | | |
| CR-U024DC3LD | 24 V DC | 1SVR 405 623 R1100 |

Order data - Accessories

Sockets

| Type | Version | Order code |
|------------------------------|------------------------------------|---------------------------|
| Sockets | | |
| CR-U2S | for 2 c/o (SPDT) contacts + module | 1SVR 405 670 R0000 |
| CR-U3S | for 3 c/o (SPDT) contacts + module | 1SVR 405 660 R0000 |
| CR-U3E | for 3 c/o (SPDT) contacts | 1SVR 405 660 R0100 |
| Small sockets | | |
| CR-U2SM | for 2 c/o (SPDT) contacts | 1SVR 405 670 R1100 |
| CR-U3SM | for 3 c/o (SPDT) contacts | 1SVR 405 660 R1100 |
| Accessories for CR-U sockets | | |
| CR-UH | Metall holder | 1SVR 405 669 R0000 |

Bold printed products = stocked products. Packing unit = 10 pieces.

Pluggable interface relays CR-U

Universal relays

Data sheet

Function modules

| Type | Rated control supply voltage U_s | Version | Order code |
|---|------------------------------------|--------------------------------|---------------------------|
| Diode - Reverse polarity protection | | | |
| CR-U 21 | 6-230 V DC | A1+, A2- | 1SVR 405 661 R0000 |
| Diode and LED - Reverse polarity protection | | | |
| CR-U 41 | 6-24 V DC | red, A1+, A2- | 1SVR 405 662 R0000 |
| CR-U 41V | 6-24 V DC | green, A1+, A2- | 1SVR 405 662 R1000 |
| CR-U 41B | 24-60 V DC | red, A1+, A2- | 1SVR 405 662 R4000 |
| CR-U 41BV | 24-60 V DC | green, A1+, A2- | 1SVR 405 662 R4100 |
| CR-U 41C | 110-230 V DC | red, A1+, A2- | 1SVR 405 662 R9000 |
| CR-U 41CV | 110-230 V DC | green, A1+, A2- | 1SVR 405 662 R9100 |
| RC element - Arc elimination | | | |
| CR-U 51B | 6-24 V AC | | 1SVR 405 663 R0000 |
| CR-U 51D | 24-60 V AC | | 1SVR 405 663 R4000 |
| CR-U 51C | 110-230 V AC | | 1SVR 405 663 R1000 |
| Diode and LED | | | |
| CR-U 61 | 6-24 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 664 R0000 |
| CR-U 61V | 6-24 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 664 R1000 |
| CR-U 61E | 24-60 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 664 R4000 |
| CR-U 61EV | 24-60 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 664 R4100 |
| CR-U 91 | 110-230 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 664 R0100 |
| CR-U 91V | 110-230 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 664 R1100 |
| Varistor and LED - Overvoltage protection | | | |
| CR-U 61C | 6-24 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 665 R0000 |
| CR-U 61CV | 6-24 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 665 R1000 |
| CR-U 61D | 24-60 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 665 R4000 |
| CR-U 61DV | 24-60 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 665 R4100 |
| CR-U 91C | 110-230 V AC/DC | red, for DC: A1+, A2- | 1SVR 405 665 R0100 |
| CR-U 91CV | 110-230 V AC/DC | green, for DC: A1+, A2- | 1SVR 405 665 R1100 |
| Varistor - Overvoltage protection | | | |
| CR-U 71 | 24 V AC | | 1SVR 405 666 R0000 |
| CR-U 71A | 115 V AC | | 1SVR 405 666 R1000 |
| CR-U 81 | 230 V AC | | 1SVR 405 666 R2000 |

Multifunction time module

| Type | Rated control supply voltage U_s | Order code |
|----------------------------|------------------------------------|---|
| Multifunction timer module | | |
| CR-U T | 24-240 V AC/DC | pluggable onto CR-U2S and CR-U3S |

All CR-U modules can be plugged onto sockets CR-U2S and CR-U3S.

Bold printed products = stocked products. Packing unit = 10 pieces.

Pluggable interface relays CR-U

Universal relays

Data sheet

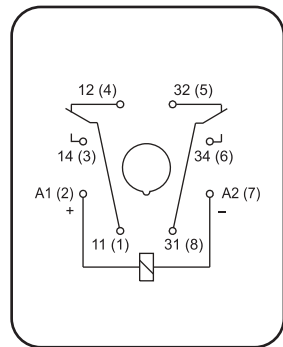
Application

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

Operating mode

When power supply is applied, the output contacts get closed. When control supply voltage is switched off, the contacts fall back into their starting position. Manual operation and locking of the output relays is possible via the integrated test button.

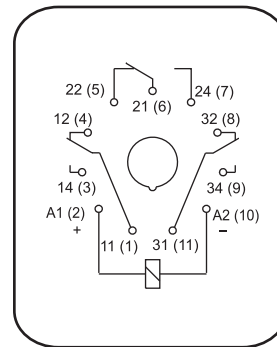
Connection diagrams



2CDC 282 024 F0004

CR-U with 2 c/o (SPDT) contacts

A1-A2 Control supply voltage
11-12/14 Relay outputs
31-32/34



2CDC 282 030 F0004

CR-U with 3 c/o (SPDT) contacts

A1-A2 Control supply voltage
11-12/14 Relay outputs
21-22/24
31-32/34

Technical data

Input circuit - Coil data A1-A2

| | Rated control supply voltage U_s | Rated frequency | Make voltage (at 20 °C) | Maxium voltage (at 55 °C) | Break voltage | Rated power | Coil resistance (at 20 °C) | Tolerance of coil resistance |
|-----------------|------------------------------------|-----------------|-------------------------|---------------------------|-----------------|----------------------------------|----------------------------|------------------------------|
| DC coils | 12 V DC | - | 9.6 V DC | 13.2 V DC | $\geq 0.1 U_s$ | 1.5 W | 110 Ω | $\pm 10\%$ |
| | 24 V DC | - | 19.2 V DC | 26.4 V DC | $\geq 0.1 U_s$ | 1.5 W | 430 Ω | $\pm 10\%$ |
| | 48 V DC | - | 38.4 V DC | 52.8 V DC | $\geq 0.1 U_s$ | 1.5 W | 1750 Ω | $\pm 10\%$ |
| | 110 V DC | - | 88.0 V DC | 121.0 V DC | $\geq 0.1 U_s$ | 1.5 W | 9200 Ω | $\pm 10\%$ |
| | 125 V DC | - | 96.0 V DC | 132.0 V DC | $\geq 0.1 U_s$ | 1.5 W | 11000 Ω | $\pm 10\%$ |
| | 220 V DC | - | 176.0 V DC | 242.0 V DC | $\geq 0.1 U_s$ | 1.5 W | 37000 Ω | $\pm 10\%$ |
| AC coils | 24 V AC | 50 / 60 Hz | 19.2 V AC | 26.4 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 75 Ω | $\pm 10\%$ |
| | 48 V AC | 50 / 60 Hz | 38.4 V AC | 52.8 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 305 Ω | $\pm 10\%$ |
| | 60 V AC | 50 / 60 Hz | 48.0 V AC | 66.0 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 475 Ω | $\pm 10\%$ |
| | 110 V AC | 50 / 60 Hz | 88.0 V AC | 121.0 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 1700 Ω | $\pm 10\%$ |
| | 120 V AC | 50 / 60 Hz | 96.0 V AC | 132.0 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 1910 Ω | $\pm 10\%$ |
| | 230 V AC | 50 / 60 Hz | 184.0 V AC | 253.0 V AC | $\geq 0.15 U_s$ | 2.8 VA (50 Hz) 2.5 VA (60 Hz) | 7080 Ω | $\pm 10\%$ |

Pluggable interface relays CR-U

Universal relays

Data sheet

| Type | CR-U...2 | | CR-U...3 |
|---|-----------------------------------|----------|--|
| Output circuits | 11-12/14, 31-32/34 | | 11-12/14, 21-22/24, 31-32/34 |
| Kind of output | Relay, 2 c/o contacts | | Relay, 3 c/o contacts |
| Contact material | AgNi | | |
| Rated operational voltage U_b (VDE 0110, IEC 60947-1) | 250 V | | |
| Min. switching voltage | 5 V | | |
| Max. switching voltage | DC | 250 V DC | |
| | AC | 250 V AC | |
| Min. switching current | 5 mA | | |
| Conventional free-air thermal current I_{th} | 10 A | | |
| Rated operational current (IEC 60947-5-1) | AC12 (resistive) | 230 V | 10 A |
| | AC15 (inductive) | 230 V | 1.5 A |
| | DC12 (resistive) | 24 V | 10 A |
| | DC13 (inductive) | 24 V | 2 A |
| Max. making current | 20 A | | |
| Min. switching power | 0.3 W | | |
| Max. switching power | AC1 | 2500 VA | |
| Contact resistance | ≤ 100 m Ω | | |
| Max. switching capacity | rated load AC1 | | 1200 switching cycles / h |
| | without load | | 12000 switching cycles / h |
| Lifetime | mechanical | | $\geq 2 \times 10^7$ switching cycles |
| | electrical AC1 (resistive) | | $\geq 10^5$ switching cycles (10 A, 250 V) |
| | cos φ | | see reduction factor F |
| Response time | typ. 18 ms (DC) / typ. 12 ms (AC) | | |
| Release time | typ. 7 ms (DC) / typ. 10 ms (AC) | | |
| Isolation data | | | |
| Rated insulation voltage | 250 V AC | | |
| Insulation class | C250 | | |
| Rated impulse withstand voltage U_{imp} between | coil and contacts | | 2.5 kV AC |
| | open contacts | | 1.5 kV AC |
| | c/o (SPDT) contacts | | 2 kV AC |
| Clearance | between coil and contacts | | ≥ 3 mm |
| Creepage distance | between coil and contacts | | ≥ 4.2 mm |
| Overvoltage category | III | | |
| Pollution degree | 3 | | |
| General data | | | |
| Dimensions (W x H x D) when mounted | 35 x 35 x 54.4 mm | | |
| Weight | 83 g (0.18 lb) | | |
| Mounting | on socket (see accessories) | | |
| Mounting position | any | | |
| Degree of protection | IP 40 | | |
| Electrical connection | | | |
| Connection | by socket | | |
| Environmental data | | | |
| Ambient temperature range | operation | DC | -40...+70 °C |
| | | AC | -40...+55 °C |
| | storage | | -40...+85 °C |
| Vibration resistance (10-150 Hz) | n/o contacts | | 5 g |
| | n/c contacts | | 5 g |
| Shock resistance | n/o contacts | | 10 g |
| | n/c contacts | | 10 g |
| Standards | | | |
| Product standards | EN 60255-1-00 | | |
| Low Voltage Directive | 73/23/EEC | | |

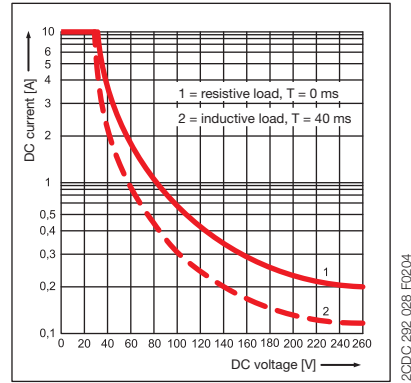
Pluggable interface relays CR-U

Universal relays

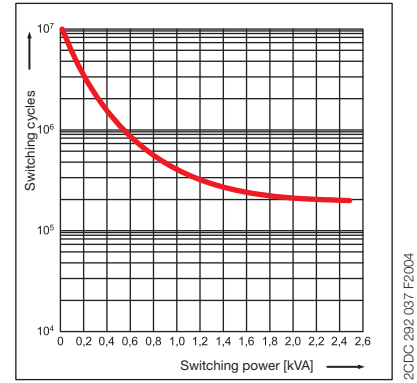
Data sheet

Technical diagrams

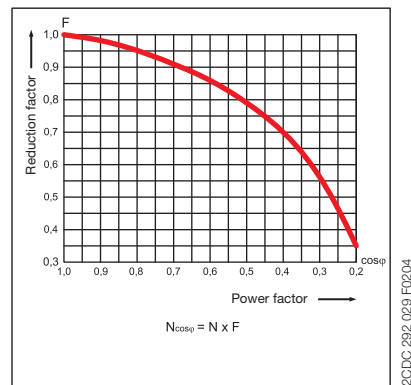
Load limit curve -
Maximum switching power
at resistive DC load



Load limit curve -
Electrical lifetime
at resistive AC load

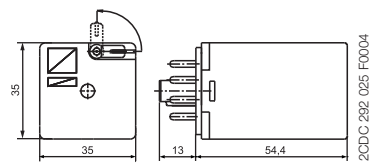


Reduction factor F at inductive AC load

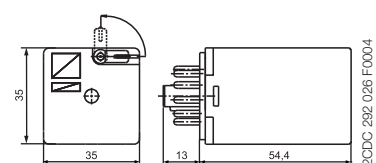


Dimensions

in mm



Versions with 2 c/o contacts (CR-U ... 2)



Versions with 3 c/o contacts (CR-U ... 3)

Further documentation

| Document title | Document type | Document number |
|--|---------------|--------------------|
| Sockets CR-U | Data sheet | 2CDC 117 006 D010x |
| Pluggable function modules CR-U | Data sheet | 2CDC 117 008 D010x |
| Pluggable multifunction time module CR-U T | Data sheet | 2CDC 117 010 D010x |



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