

Pluggable interface relays CR-P

Pcb relays

Pluggable interface relays 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. They don't use additional internal protective circuits and thus are overload-proof against short-time variations like current or voltage peaks.



Characteristics

- Standard Pcb relays
- 9 different rated control supply voltages U_s :
DC versions: 12 V, 24 V, 48 V, 110 V
AC versions: 24 V, 48 V, 110 V, 120 V, 230 V
- Output: 1 c/o (SPDT) contact (16 A) or 2 c/o (SPDT) contacts (8 A), 2 c/o (SPDT) contact version optionally equipped with gold contacts
- Cadmium-free contact material
- Suited for logical and standard sockets
- Width on socket: 15.5 mm (0.610 in)
- Pluggable function modules: reverse polarity protection/ free wheeling diode, LED indication, RC elements, overvoltage protection

Approvals

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

Marks

- CE CE

Order data

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

1 c/o (SPDT) contact: 250 V, 16 A

Type	Rated control supply voltage U_s	Order code
CR-P012DC1	12 V DC	1SVR 405 600 R4000
CR-P024DC1	24 V DC	1SVR 405 600 R1000
CR-P048DC1	48 V DC	1SVR 405 600 R6000
CR-P110DC1	110 V DC	1SVR 405 600 R8000
CR-P024AC1	24 V AC	1SVR 405 600 R0000
CR-P048AC1	48 V AC	1SVR 405 600 R5000
CR-P110AC1	110 V AC	1SVR 405 600 R7000
CR-P120AC1	120 V AC	1SVR 405 600 R2000
CR-P230AC1	230 V AC	1SVR 405 600 R3000

2 c/o (SPDT) contacts: 250 V, 8 A

CR-P012DC2	12 V DC	1SVR 405 601 R4000
CR-P024DC2	24 V DC	1SVR 405 601 R1000
CR-P048DC2	48 V DC	1SVR 405 601 R6000
CR-P110DC2	110 V DC	1SVR 405 601 R8000
CR-P024AC2	24 V AC	1SVR 405 601 R0000
CR-P048AC2	48 V AC	1SVR 405 601 R5000
CR-P110AC2	110 V AC	1SVR 405 601 R7000
CR-P120AC2	120 V AC	1SVR 405 601 R2000
CR-P230AC2	230 V AC	1SVR 405 601 R3000

2 c/o (SPDT) with gold contacts: 250 V, 8 A

CR-P024DC2G	24 V DC	1SVR 405 606 R1000
CR-P024AC2G	24 V AC	1SVR 405 606 R0000
CR-P110AC2G	110 V AC	1SVR 405 606 R7000
CR-P230AC2G	230 V AC	1SVR 405 606 R3000

Accessories

Function modules

Type	Rated control supply voltage U_s	Version	Order code
Diode - Reverse polarity protection			
CR-P/M 22	6-230 V DC	A1+, A2-	1SVR 405 651 R0000

Diode and LED - Reverse polarity protection			
CR-P/M 42	6-24 V DC	red, A1+, A2-	1SVR 405 652 R0000
CR-P/M 42V	6-24 V DC	green, A1+, A2-	1SVR 405 652 R1000
CR-P/M 42B	24-60 V DC	red, A1+, A2-	1SVR 405 652 R4000
CR-P/M 42BV	24-60 V DC	green, A1+, A2-	1SVR 405 652 R4100
CR-P/M 42C	110-230 V DC	red, A1+, A2-	1SVR 405 652 R9000
CR-P/M 42CV	110-230 V DC	green, A1+, A2-	1SVR 405 652 R9100

RC element - Arc elimination			
CR-P/M 52B	6-24 V AC		1SVR 405 653 R0000
CR-P/M 52D	24-60 V AC		1SVR 405 653 R4000
CR-P/M 52C	110-230 V AC		1SVR 405 653 R1000

Diode and LED			
CR-P/M 62	6-24 V AC/DC	red, for DC: A1+, A2-	1SVR 405 654 R0000
CR-P/M 62V	6-24 V AC/DC	green, for DC: A1+, A2-	1SVR 405 654 R1000
CR-P/M 62E	24-60 V AC/DC	red, for DC: A1+, A2-	1SVR 405 654 R4000
CR-P/M 62EV	24-60 V AC/DC	green, for DC: A1+, A2-	1SVR 405 654 R4100
CR-P/M 92	110-230 V AC/DC	red, for DC: A1+, A2-	1SVR 405 654 R0100
CR-P/M 92V	110-230 V AC/DC	green, for DC: A1+, A2-	1SVR 405 654 R1100

Varistor and LED - Overvoltage protection			
CR-P/M 62C	6-24 V AC/DC	red, for DC: A1+, A2-	1SVR 405 655 R0000
CR-P/M 62CV	6-24 V AC/DC	green, for DC: A1+, A2-	1SVR 405 655 R1000
CR-P/M 62D	24-60 V AC/DC	red, for DC: A1+, A2-	1SVR 405 655 R4000
CR-P/M 62DV	24-60 V AC/DC	green, for DC: A1+, A2-	1SVR 405 655 R4100
CR-P/M 92C	110-230 V AC/DC	red, for DC: A1+, A2-	1SVR 405 655 R0100
CR-P/M 92CV	110-230 V AC/DC	green, for DC: A1+, A2-	1SVR 405 655 R1100

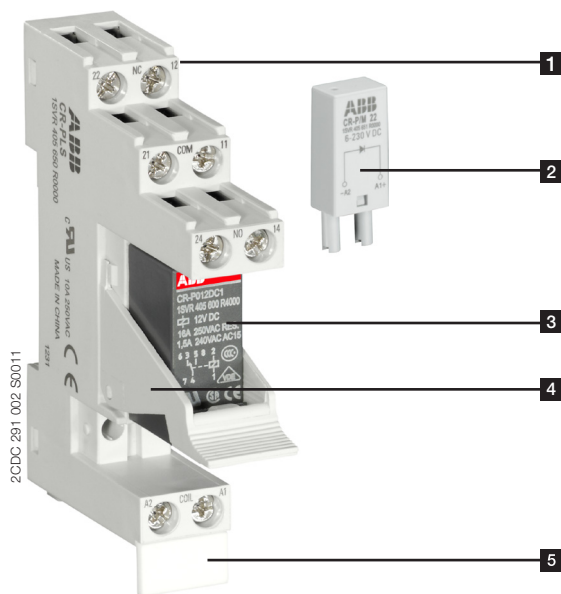
Varistor - Overvoltage protection			
CR-P/M 72	24 V AC		1SVR 405 656 R0000
CR-P/M 72A	115 V AC		1SVR 405 656 R1000
CR-P/M 82	230 V AC		1SVR 405 656 R2000

Sockets

Type	Version	Connection	Order code
Logical sockets			
CR-PLS	with protective separation	screw	1SVR 405 650 R0000
CR-PLSx		screw	1SVR 405 650 R0100
CR-PLC		spring	1SVR 405 650 R0200
Standard socket			
CR-PSS		screw	1SVR 405 650 R1000
Accessories for CR-P sockets			
CR-PH	Plastic holder		1SVR 405 659 R0000
CR-PJ	Jumper bar for sockets with screw connection		1SVR 405 658 R5000
Markers			
CR-PM	Marker		1SVR 405 658 R0000

Functions

Operating controls



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

Application

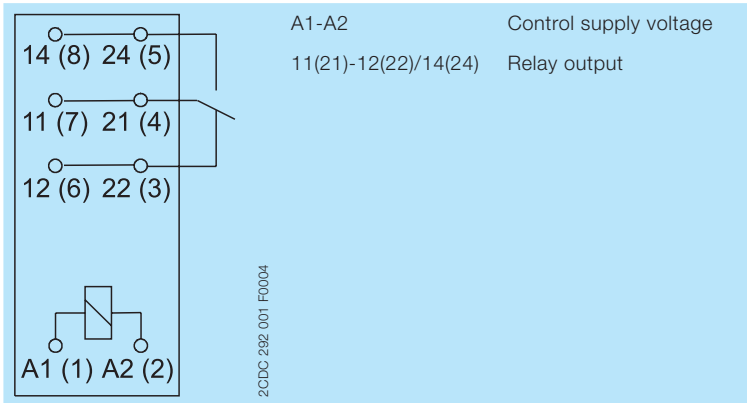
Interface relays are electromechanic and electronic input and output modules for electrical isolation, levelling, noise suppression or signal amplification between control unit and process.

Operating mode

When 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.

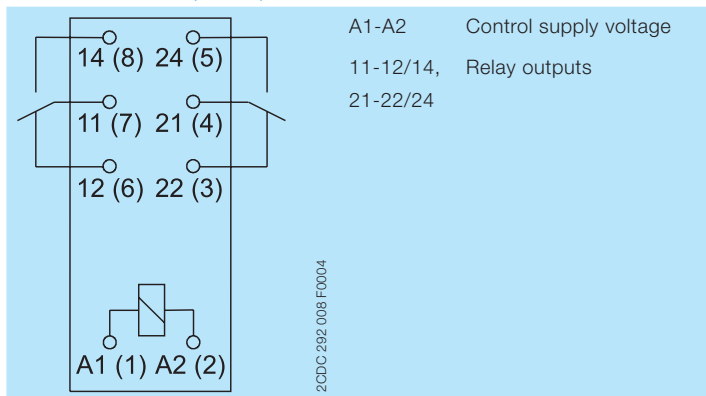
Electrical connection

CR-P with 1 c/o (SPDT) contact



Connection diagram

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



Connection diagram

Technical data

Input circuit - Supply circuit 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	-	8.4 V DC	30.6 V DC	0.1 U_s	0.4-0.48 W	360 Ω	10 %
	24 V DC	-	16.8 V DC	61.2 V DC	0.1 U_s	0.4-0.48 W	1440 Ω	10 %
	48 V DC	-	33.6 V DC	122.4 V DC	0.1 U_s	0.4-0.48 W	5700 Ω	10 %
	110 V DC	-	77.0 V DC	280.0 V DC	0.1 U_s	0.4-0.48 W	25200 Ω	10 %
AC Coils	24 V AC	50 / 60 Hz	19.2 V AC	28.8 V AC	0.15 U_s	0.75 VA	400 Ω	10 %
	48 V AC	50 / 60 Hz	38.4 V AC	57.6 V AC	0.15 U_s	0.75 VA	1550 Ω	10 %
	110 V AC	50 / 60 Hz	88.0 V AC	132.0 V AC	0.15 U_s	0.75 VA	8900 Ω	10 %
	120 V AC	50 / 60 Hz	96.0 V AC	144.0 V AC	0.15 U_s	0.75 VA	10200 Ω	10 %
	230 V AC	50 / 60 Hz	184.0 V AC	276.0 V AC	0.15 U_s	0.75 VA	38500 Ω	10 %

Output circuits

Type	CR-P...1		CR-P...2	
Output circuit(s) - Relay contact(s)	11-12/14		11-12/14, 21-22/24	
Kind of output	Relay, 1 c/o (SPDT) contact		Relay, 2 c/o (SPDT) contacts	
Contact material	AgNi			
Rated operational voltage U_o (VDE 0110, IEC 60947-1)	250 V			
Minimum switching voltage	5 V			
Maximum switching voltage	DC	300 V DC		
	AC	400 V AC		
Minimum switching current	5 mA			
Rated free air thermal current I_{th}	16 A		8 A	
Rated operational current (IEC 60947-5-1)	AC12 (resistive)	230 V	16 A	8 A
	AC15 (inductive)	230 V	1.5 A	1 A
	DC12 (resistive)	24 V	16 A	8 A
	DC13 (inductive)	24 V	2 A	2 A
Minimum switching power	0.3 W			
Maximum switching power	AC1	4000 VA	2000 VA	
Contact resistance	$\leq 100 \text{ m}\Omega$			
Maximum switching capacity	rated load AC1	600 switching cycles/h		
	without load	72000 switching cycles/h		
Mechanical lifetime	$> 3 \times 10^7$ switching cycles			
Electrical lifetime	AC1 (resistive)	$> 0.7 \times 10^5$ switching cycles (16 A, 250 V)		$> 10^5$ switching cycles (8 A, 250 V)
	$\cos \varphi$	see Reduction factor F		
Response time	typ. 7 ms			
Release time	typ. 3 ms			

Isolation data

Type	CR-P...1	CR-P...2
Rated insulation voltage	400 V AC	
Insulation class	C250 / B400	
Rated impulse withstand voltage U_{imp}	between coil and contacts	5 kV AC
	between open contacts	1 kV AC
	between c/o (SPDT) contacts	-
Clearance	between coil and contacts	≥ 10 mm
Creepage distance	between coil and contacts	≥ 10 mm
Overvoltage category	III	
Pollution degree	3	

General data

Type	CR-P...1	CR-P...2
Dimensions (W x H x D) when mounted	12.7 x 29 x 15.7 mm (0.500 x 1.142 x 0.618)	
Weight	14 g (0.031 lb)	
Type of connection	by socket	
Mounting	on socket (see accessories)	
Mounting position	any	
Degree of protection	IP 67	

Environmental data

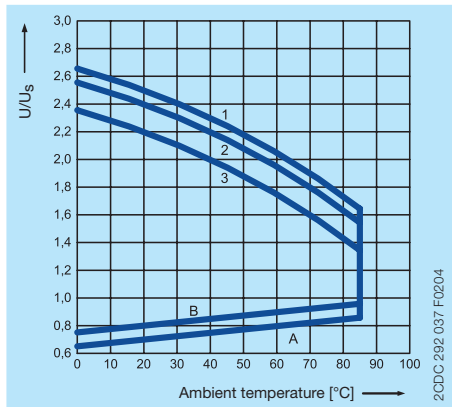
Type	CR-P...1	CR-P...2
Ambient temperature range	operation	DC
		AC
	storage	
Vibration resistance (10-150 Hz)	n/o contact	10 g
	n/c contact	10 g
		5 g
Shock resistance	n/o contact	30 g
	n/c contact	30 g
		20 g
		20 g

Standards

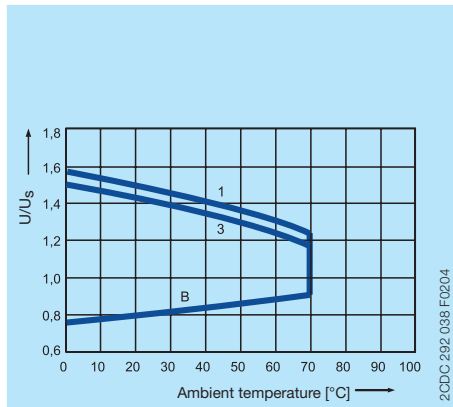
Type	CR-P...1	CR-P...2
Product standard	EN 61810-1, EN 60255-23, IEC 60664-1	
Low Voltage Directive	2006/95/EC	

Technical diagrams

Operating range of coils



Operating range of DC coil



Operating range of AC coil

A unloaded contacts, coil temperature = ambient temperature

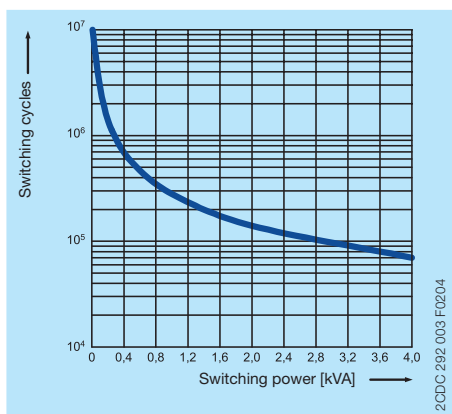
B continued with I_{th} (16 A at CR-P ... 1 and 8 A at CR-P ... 2) loaded contacts coil heated with $1,1 \times U_s$

1 at unloaded contacts

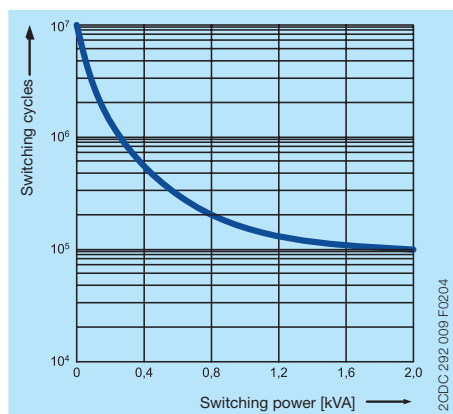
2 at 50 % rated load

3 at rated load

Load limit curves - Electrical lifetime at resistive AC load

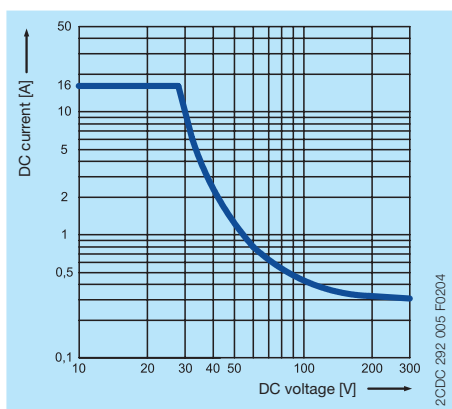


Versions with 1 c/o (SPDT) contact
(CR-P ... 1)

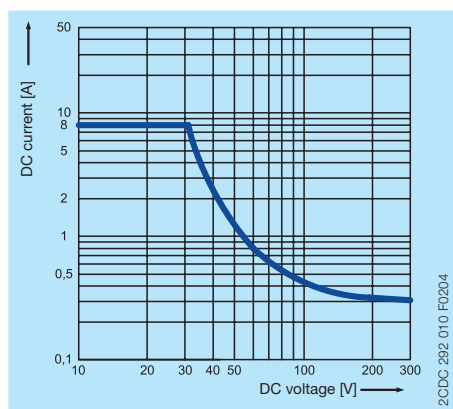


Versions with 2 c/o (SPDT) contacts
(CR-P ... 2)

Load limit curves - Maximum switching power at resistive DC load

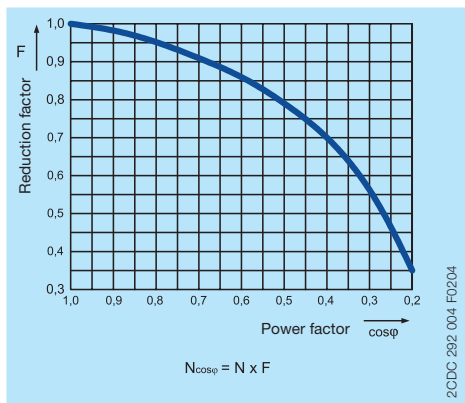


Versions with 1 c/o (SPDT) contact
(CR-P ... 1)



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

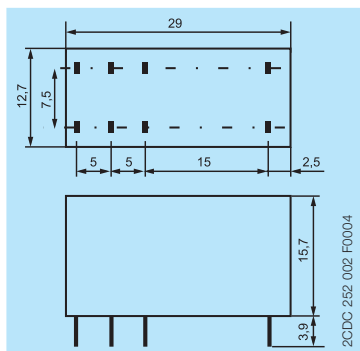
Reduction factor F at inductive AC load



Versions with 1 or 2 c/o (SPDT) contacts
(CR-P ... 1 and CR-P ... 2)

Dimensions

in mm



Further documentation

Document title	Document type	Document number
Electronic Products and Relays	Technical catalogue	2CDC 110 004 C020x
Sockets CR-P	Data sheet	2CDC 117 004 D020x
Jumper bar CR-PJ	Data sheet	2CDC 117 015 D020x
Pluggable function modules CR-P/M	Data sheet	2CDC 117 007 D020x

You can find the documentation on the internet at www.abb.com/lowvoltage -> Control Products -> 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/PARTcommunity/Portal/abb-control-products> -> Low Voltage Products & Systems -> Control Products -> Electronic Relays and Controls -> Interface Relays and Optocouplers -> CR-P - Pluggable Interface Relays.

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