Data sheet

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.



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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

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

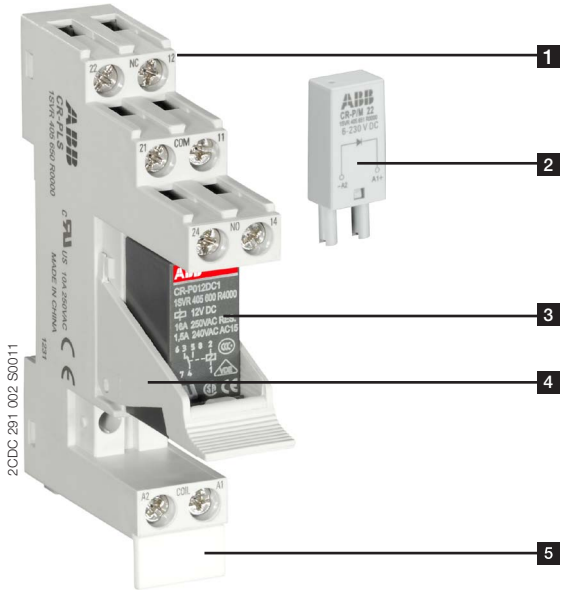
Type	Rated control supply voltage U_s	Version	Order code
Diode - Reverse polarity protection			
CR-P/M 22	**6-230 V DC**	**A1+, A2-**	**1SVR 405 651 R0000**
Diode and LED - Reverse polarity protection			
CR-P/M 42	**6-24 V DC**	**red, A1+, A2-**	**1SVR 405 652 R0000**
CR-P/M 42V	**6-24 V DC**	**green, 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 elemination			
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

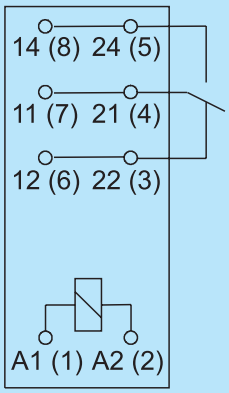
Interface relays are electromechanic and electronic input and output modules for electrical isolation, levelling, noise suppression or signal amplifi cation between control unit and process.

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

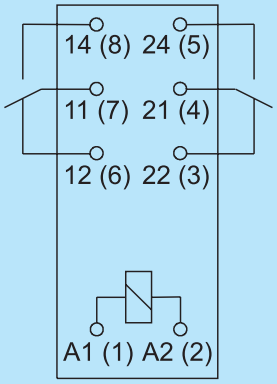


2CDC 292 001 F0004

A1-A2	Control supply voltage
11(21)-12(22)/14(24)	Relay output

Connection diagram

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



2CDC 292 008 F0004

A1-A2	Control supply voltage
11-12/14, 21-22/24	Relay outputs

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_e (VDE 0110, IEC 60947-1)			250 V	
Minimum switching voltage			5 V	
Maximum switching voltage			300 V DC / 440 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	1.5 A
	AC15 (inductive)	120 V	3 A	3 A
	DC12 (resistive)	24 V	16 A	8 A
	DC13 (inductive)	24 V	2.5 A	2 A
	DC13 (inductive)	120 V	0.22 A	0.22 A
	DC13 (inductive)	250 V	0.1 A	0.1 A
AC rating * (UL 508; NEMA ICS-5)	Utilization category (pilot duty) (Contact rating code designation)		B300	
	Max. rated operational voltage		300 V AC	
	Max. continuous thermal current at utilization category		5 A	
	Max. making / breaking apparent power at utilization category		3600 / 360 VA	
	Utilization category (resistive) (CSA22.2 No.14....)		16 A, 250 V AC	8 A, 250 V AC
DC rating * (UL 508; NEMA ICS-5)	Utilization category (pilot duty) (Contact rating code designation)		R300	
	Max. rated operational voltage		300 V DC	
	Max. continuous thermal current at utilization category		1 A	
	Max. making / breaking apparent power at utilization category		28 VA	
	Utilization category (resistive) (CSA22.2 No.14....)		-	10 A, 24 V DC
Maximum making (inrush) current			30 A	15 A
Minimum switching power			0.3 W	
Maximum switching (breaking) power		AC1 (resistive)	4000 VA	2000 VA

Contact resistance		≤ 100 mΩ	
Maximum operating frequency	rated load AC1	600 switching cycles/h	
	without load	72000 switching cycles/h	
Mechanical lifetime		> 3 x 10^7 switching cycles	
Electrical lifetime	AC1 (resistive)	> 0.7 x 10^5 switching cycles (16 A, 250 V)	> 10^5 switching cycles (8 A, 250 V)
	cos φ	see Reduction factor F	
Response time		typ. 7 ms	
Release time		typ. 3 ms	

*) Those ratings are based on different type tests but they are not covered by the cULus or CSA approvals

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	-	2.5 kV AC
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

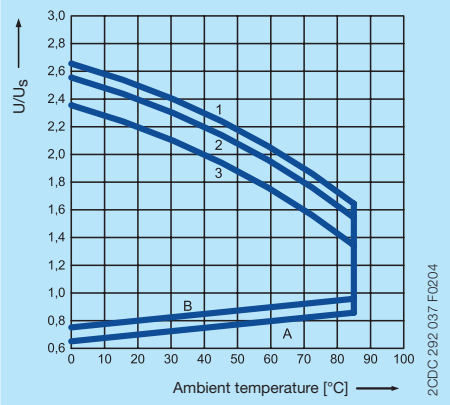
Type		**CR-P...1**	**CR-P...2**
Ambient temperature range	operation	DC: -40...+85 °C; AC: -40...+70 °C	
	storage	-40...+85 °C	
Vibration resistance (10-150 Hz)	n/o contact	10 g	
	n/c contact	10 g	5 g
Shock resistance	n/o contact	30 g	20 g
	n/c contact	30 g	20 g

Standards

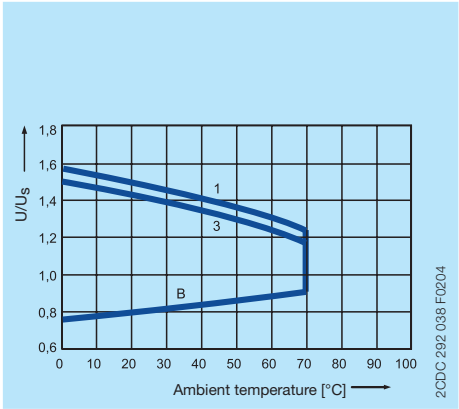
Type	**CR-P...1**	**CR-P...2**
Product standard	EN 61810-1, EN 60255-23, IEC 60664-1	
Low Voltage Directive	2006/95/EC	

Technical diagrams

Operating range of coils



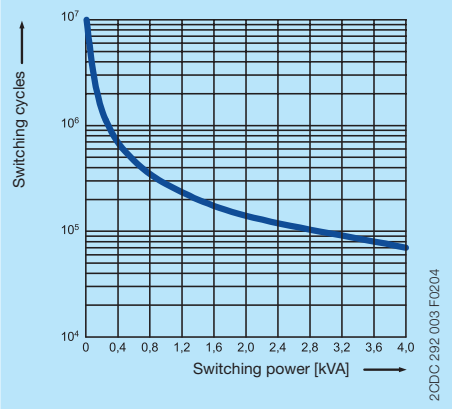
Operating range of DC coil



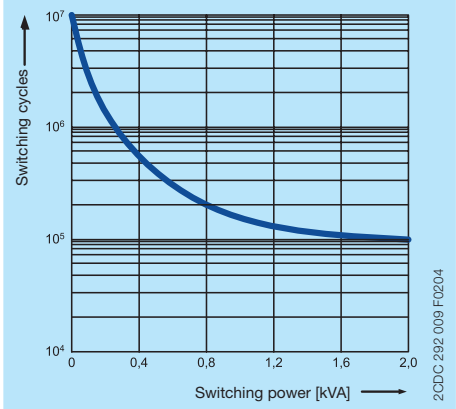
Operating range of AC coil

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 x U_s
1	at unloaded contacts
2	at 50 % rated load
3	at rated load

Load limit curves - Electrical lifetime at resistive AC load

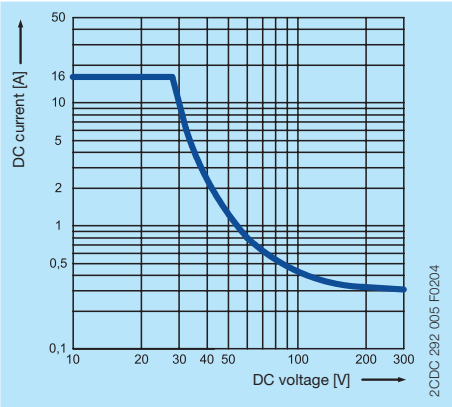


Versions with 1 c/o (SPDT) contact (CR-P ... 1)

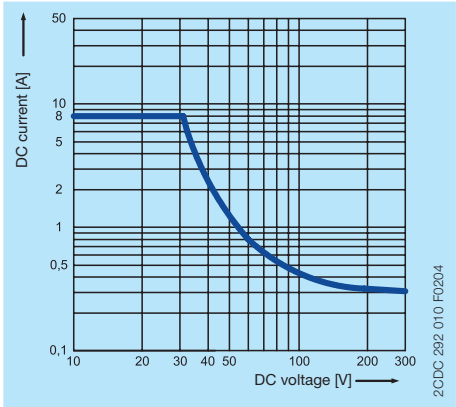


Versions with 2 c/o (SPDT) contacts (CR-P ... 2)

Load limit curves - Maximum switching power at resistive DC load

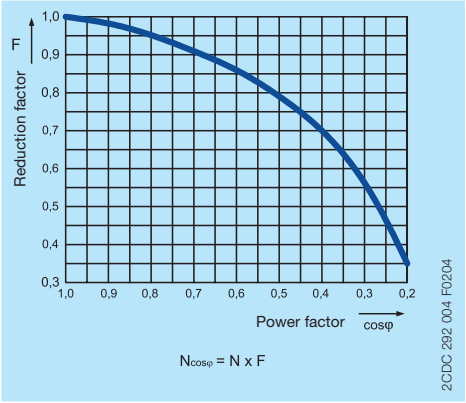


Versions with 1 c/o (SPDT) contact (CR-P ... 1)



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

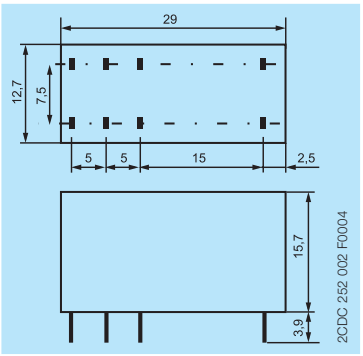
Reduction factor F at inductive AC load



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 C02xx
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.

Contact us

ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80
69006 Heidelberg, Germany
Phone: +49 (0) 6221 7 01-0
Fax: +49 (0) 6221 7 01-13 25
E-mail: info.desto@de.abb.com

You can find the address of your
local sales organization on the
ABB home page
http://www.abb.com/contacts
-> Low Voltage Products and Systems

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