

# Pluggable interface relays

## Ordering details



CR-M

2CDC 291 046 F0004

### Description

Interface relays are widely used in various industrial applications:

As an interface they link the electronic controlling, e.g. PLC (programmable logic controller), PC or field bus systems, to the sensor / actuator level. Here, they take on various functions: Switching of AC or DC loads with different resistive, inductive and capacitive parts, switching voltages from a few mV up to 250 V, switching currents from a few mA up to 16 A, amplification of weak control signals, electrical isolation of control and load circuits, and signal multiplying. In contrast to electronic switching devices, interface relays don't use additional internal protective circuits and thus are overload-proof against short-time variations like current or voltage peaks.

### Ordering details - CR-M range

Rated control supply voltage	Outputs	Contact ratings	Type	Order code	Price	Pkg qty	Weight (1 pce) kg (lb)				
12 V DC	2 c/o (SPDT) without LED	250 V, 12 A	CR-M012DC2	1SVR405611R4000		10	0.033 (0.073)				
24 V DC			<b>CR-M024DC2</b>	<b>1SVR405611R1000</b>							
48 V DC			CR-M048DC2	1SVR405611R6000							
60 V DC			CR-M060DC2	1SVR405611R4200							
110 V DC			CR-M110DC2	1SVR405611R8000							
125 V DC			CR-M125DC2	1SVR405611R8200							
220 V DC			CR-M220DC2	1SVR405611R9000							
24 V AC			<b>CR-M024AC2</b>	<b>1SVR405611R0000</b>							
48 V AC			CR-M048AC2	1SVR405611R5000							
110 V AC			<b>CR-M110AC2</b>	<b>1SVR405611R7000</b>							
120 V AC			CR-M120AC2	1SVR405611R2000							
230 V AC			<b>CR-M230AC2</b>	<b>1SVR405611R3000</b>							
12 V DC			3 c/o (SPDT) without LED	250 V, 10 A	CR-M012DC3			1SVR405612R4000		10	0.033 (0.073)
24 V DC					<b>CR-M024DC3</b>			<b>1SVR405612R1000</b>			
48 V DC	CR-M048DC3	1SVR405612R6000									
60 V DC	CR-M060DC3	1SVR405612R4200									
110 V DC	CR-M110DC3	1SVR405612R8000									
125 V DC	CR-M125DC3	1SVR405612R8200									
220 V DC	CR-M220DC3	1SVR405612R9000									
24 V AC	<b>CR-M024AC3</b>	<b>1SVR405612R0000</b>									
48 V AC	CR-M048AC3	1SVR405612R5000									
110 V AC	<b>CR-M110AC3</b>	<b>1SVR405612R7000</b>									
120 V AC	CR-M120AC3	1SVR405612R2000									
230 V AC	<b>CR-M230AC3</b>	<b>1SVR405612R3000</b>									
12 V DC	4 c/o (SPDT) without LED	250 V, 6 A			CR-M012DC4	1SVR405613R4000		10	0.033 (0.073)		
24 V DC					<b>CR-M024DC4</b>	<b>1SVR405613R1000</b>					
48 V DC			CR-M048DC4	1SVR405613R6000							
60 V DC			CR-M060DC4	1SVR405613R4200							
110 V DC			CR-M110DC4	1SVR405613R8000							
125 V DC			CR-M125DC4	1SVR405613R8200							
220 V DC			CR-M220DC4	1SVR405613R9000							
24 V AC			<b>CR-M024AC4</b>	<b>1SVR405613R0000</b>							
48 V AC			CR-M048AC4	1SVR405613R5000							
110 V AC			<b>CR-M110AC4</b>	<b>1SVR405613R7000</b>							
120 V AC			CR-M120AC4	1SVR405613R2000							
230 V AC			<b>CR-M230AC4</b>	<b>1SVR405613R3000</b>							

Bold printed products = stocked products

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Rated control supply voltage	Outputs	Contact ratings	Type	Order code	Price	Pkg qty	Weight (1 pce)				
							kg (lb)				
12 V DC	2 c/o (SPDT) with LED	250 V, 12 A	CR-M012DC2L	1SVR405611R4100		10	0.033 (0.073)				
24 V DC			<b>CR-M024DC2L</b>	<b>1SVR405611R1100</b>							
48 V DC			CR-M048DC2L	1SVR405611R6100							
60 V DC			CR-M060DC2L	1SVR405611R4300							
110 V DC			CR-M110DC2L	1SVR405611R8100							
125 V DC			CR-M125DC2L	1SVR405611R8300							
220 V DC			CR-M220DC2L	1SVR405611R9100							
24 V AC			<b>CR-M024AC2L</b>	<b>1SVR405611R0100</b>							
48 V AC			CR-M048AC2L	1SVR405611R5100							
110 V AC			<b>CR-M110AC2L</b>	<b>1SVR405611R7100</b>							
120 V AC			CR-M120AC2L	1SVR405611R2100							
230 V AC			<b>CR-M230AC2L</b>	<b>1SVR405611R3100</b>							
12 V DC			3 c/o (SPDT) with LED	250 V, 10 A	CR-M012DC3L			1SVR405612R4100		10	0.033 (0.073)
24 V DC					<b>CR-M024DC3L</b>			<b>1SVR405612R1100</b>			
48 V DC	CR-M048DC3L	1SVR405612R6100									
60 V DC	CR-M060DC3L	1SVR405612R4300									
110 V DC	CR-M110DC3L	1SVR405612R8100									
125 V DC	CR-M125DC3L	1SVR405612R8300									
220 V DC	CR-M220DC3L	1SVR405612R9100									
24 V AC	CR-M024AC3L	1SVR405612R0100									
48 V AC	CR-M048AC3L	1SVR405612R5100									
110 V AC	<b>CR-M110AC3L</b>	<b>1SVR405612R7100</b>									
120 V AC	CR-M120AC3L	1SVR405612R2100									
230 V AC	<b>CR-M230AC3L</b>	<b>1SVR405612R3100</b>									
12 V DC	4 c/o (SPDT) with LED	250 V, 6 A			CR-M012DC4L	1SVR405613R4100		10	0.033 (0.073)		
24 V DC					<b>CR-M024DC4L</b>	<b>1SVR405613R1100</b>					
48 V DC			CR-M048DC4L	1SVR405613R6100							
60 V DC			CR-M060DC4L	1SVR405613R4300							
110 V DC			CR-M110DC4L	1SVR405613R8100							
125 V DC			CR-M125DC4L	1SVR405613R8300							
220 V DC			CR-M220DC4L	1SVR405613R9100							
24 V AC			<b>CR-M024AC4L</b>	<b>1SVR405613R0100</b>							
48 V AC			CR-M048AC4L	1SVR405613R5100							
110 V AC			<b>CR-M110AC4L</b>	<b>1SVR405613R7100</b>							
120 V AC			CR-M120AC4L	1SVR405613R2100							
230 V AC2			<b>CR-M230AC4L</b>	<b>1SVR405613R3100</b>							
24 V DC			4 c/o (SPDT) LED and free-wheeling diode	250 V, 6 A	CR-M024DC4LD	1SVR405614R1100				10	0.033 (0.073)
24 V DC			4 (SPDT) c/o gold contacts	250 V, 6 A	CR-M024DC4G	1SVR405618R1000				10	0.033 (0.073)
24 V AC	CR-M024AC4G	1SVR405618R0000									
110 V AC	CR-M110AC4G	1SVR405618R7000									
230 V AC	CR-M230AC4G	1SVR405618R3000									

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# Pluggable interface relays

## Technical data

Type	CR-P...1	CR-P...2	CR-M...2	CR-M...3	CR-M...4	CR-U...2	CR-U...3	
<b>Output circuit(s)</b>	11-12/14	11-12/14 21-22/24	11-12/14 21-22/24	11-12/14 21-22/24 31-32/34	11-12/14 21-22/24 31-32/34 41-42/44	11-12/14 31-32/34	11-12/14 21-22/24 31-32/34	
Kind of output	Relay, 1 c/o	Relay, 2 c/o	Relay, 2 c/o	Relay, 3 c/o	Relay, 4 c/o	Relay, 2 c/o	Relay, 3 c/o	
Contact material	AgNi	AgNi AgNi/Au 5 µm	AgNi	AgNi	AgNi AgNi/Au 5 µm	AgNi		
Rated operational voltage U <sub>e</sub> (VDE 0110, IEC 60947-1)				250 V				
Minimum switching voltage				5 V				
Maximum switching voltage	DC	300 V DC		250 V DC				
	AC	400 V AC		250 V AC				
Minimum switching current	5 mA (AgNi), 2 mA (AgNi/Au)							
Rated free air thermal current I <sub>th</sub>	16 A	8 A	12 A	10 A	6 A	10 A		
Rated operational current (IEC 60947-5-1)	AC12 (resistive) 230 V	16 A	8 A	12 A	10 A	6 A	10 A	
	AC15 (inductive) 230 V	1.5 A	1 A	1.5 A	1.5 A	1 A	1.5 A	
	DC12 (resistive) 24 V	16 A	8 A	12 A	10 A	6 A	10 A	
	DC13 (inductive) 24 V	2 A	2 A	8 A	8 A	6 A	2 A	
AC rating (UL 508)	Utilization category (Control Circuit Rating Code)					-	B 300	
	max. rated operational voltage					-	300 V AC	
	max. continuous thermal current at B 300					-	5 A	
	max. making / breaking apparent power at B 300					-	3600/360 VA	
	Utilization category General Purpose (single phase)					-	10 A, 250 V AC 10 A, 250 V AC	
	Utilization category (Resistive)	16 A, 250 V AC	8 A, 250 V AC	10 A, 250 V AC 12 A, 150 V AC	6 A, 250 V AC 10 A, 150 V AC	6 A, 250 V AC 10 A, 150 V AC	10 A, 250 V AC	-
	Minimum switching power	0.3 W (AgNi), 0.1 W (AgNi/Au)					0.3 W	
Maximum switching power AC-1	4000 VA	2000 VA	3000 VA	2500 VA	1500 VA	2500 VA		
Contact resistance	≤ 100 mΩ			≤ 100 mΩ				
Maximum switching capacity	rated load AC-1	600 switching cycles/h		1200 switching cycles/h				
	without load	72000 switching cycles/h		18000 switching cycles/h			12000 switching cycles/h	
Mechanical lifetime	> 3 x 10 <sup>7</sup> switching cycles			> 2 x 10 <sup>7</sup> switching cycles				
Electrical lifetime	AC1 (resistive)	> 10 <sup>9</sup> switching cycles		> 10 <sup>9</sup> switching cycles			> 10 <sup>9</sup> switching cycles	
		(16 A, 250 V) : (8 A, 250 V)	(12 A, 250 V) : (10 A, 250 V) : (6 A, 250 V)	(10 A, 250 V) : (6 A, 250 V)	(10 A, 250 V)			
	cos φ	see reduction factor F						
Response time	typ. 7 ms		typ. 13 ms (DC), 10 ms (AC)			typ. 18 ms (DC), 12 ms (AC)		
Release time	typ. 3 ms		typ. 3 ms (DC), 8 ms (AC)			typ. 7 ms (DC), 10 ms (AC)		
<b>Isolation data</b>								
Rated insulation voltage	400 V AC			250 V AC				
Insulation class	C250 / B400			C250 / B250		C250		
Rated impulse withstand voltage U <sub>imp</sub>	between coil and contacts	5 kV AC			2.5 kV AC			
	between open contacts	1 kV AC			1.5 kV AC			
	between c/o contacts	2.5 kV AC			2.5 kV AC	2 kV AC	2 kV AC	
Clearance	between coil and contacts	≥ 10 mm		≥ 2.5 mm	≥ 1.6 mm	≥ 3 mm		
Creepage distance	between coil and contacts	≥ 10 mm		≥ 4 mm	≥ 3.2 mm	≥ 4.2 mm		
Overvoltage category	III			III	II	III		
Pollution degree	3			3	2	3		
<b>General data</b>								
Dimensions (W x H x D) when mounted	12.7 x 29 x 15.7 mm		21.2 x 27.5 x 35.6 mm			35 x 35 x 54.4 mm		
Weight	14 g (0.031 lb)		35 g (0.077 lb)			83 g (0.18 lb)		
Mounting	on socket (see accessories)							
Mounting position	any							
Degree of protection	IP 67			IP 40				
<b>Electrical connection</b>								
Connection	by socket							

# Pluggable interface relays

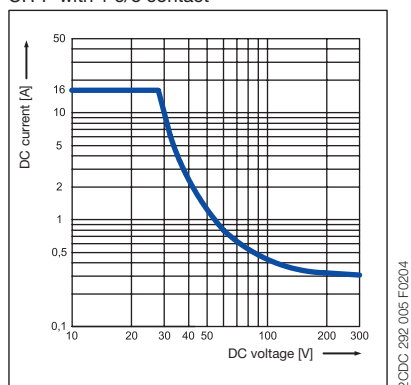
## Technical data, Load limit curves

Type		CR-P...1	CR-P...2	CR-M...2	CR-M...3	CR-M...4	CR-U...2	CR-U...3
<b>Environmental data</b>								
Ambient temperature range	operation DC	-40 ... +85 °C			-40 ... +70 °C			
	operation AC	-40 ... +70 °C			-40 ... +55 °C			
	storage				-40 ... +85 °C			
Vibration resistance 10-150 Hz	n/o contact	10 g		5 g		5 g		
	n/c contact	10 g	5 g	5 g		5 g		
Shock resistance	n/o contact	30 g	20 g	10 g		10 g		
	n/c contact	30 g	20 g	5 g		10 g		
<b>Standards</b>								
Product standard		EN 61810-1, EN 60255-23 IEC 60664-1		EN 60810-1, EN 60255-23 IEC 61810-7			EN 60255-1-00	
Low Voltage Directive		73/23/EEC						

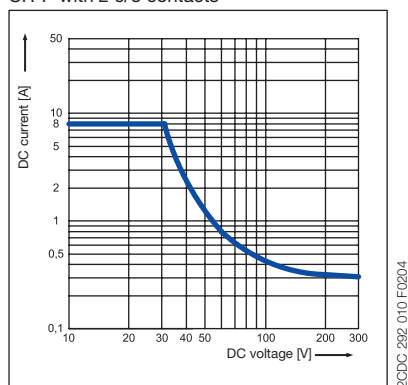
Approvals see page 5/6.

### Load limit curves - Maximum switching power at resistive DC load

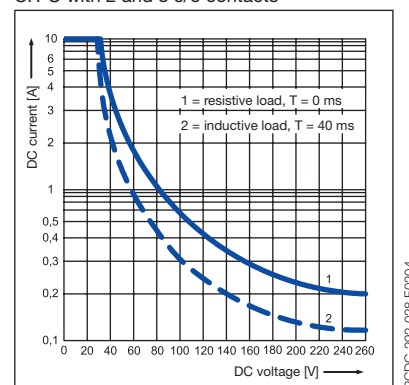
CR-P with 1 c/o contact



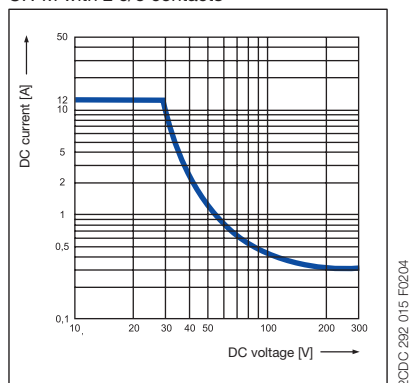
CR-P with 2 c/o contacts



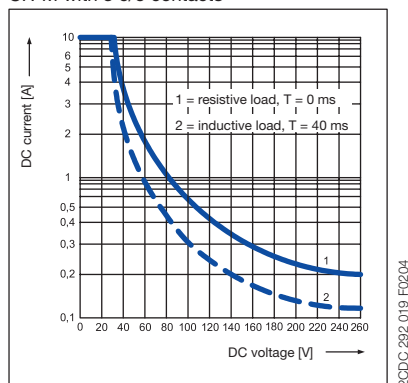
CR-U with 2 and 3 c/o contacts



CR-M with 2 c/o contacts



CR-M with 3 c/o contacts



CR-M with 4 c/o contacts

