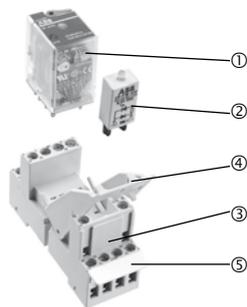


# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

2 CDC 293 035 F0004



CR-M

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

#### Features

- Standard miniature relays with mechanical status indication
- 12 different supply voltages:  
DC versions: 12 V, 24 V, 48 V, 60 V, 110 V, 125 V, 220 V  
AC versions: 24 V, 48 V, 110 V, 120 V, 230 V
- Output: 2 c/o (SPDT) contacts (12 A), 3 c/o (SPDT) contacts (10 A) or 4 c/o (SPDT) contacts (6 A)
- Available with or without LED
- 4-c/o (SPDT) version optionally equipped with gold contacts
- Integrated test button for manual actuation and locking of output contacts (blue = DC, orange = AC)
- Cadmium-free contact material
- Suited for logical and standard sockets
- Width on socket: 27 mm
- Pluggable function modules: reverse polarity protection/free wheeling diode, LED indication, RC elements, overvoltage protection, time modules

#### Approvals

	UL508	(except 60 V DC and 125 V DC devices with gold contacts)
	CAN/CSA C22.2 No.14	(except devices with gold contacts)
	CAN/CSA C22.2 No.14	(except 60 V DC and 125 V DC devices)
	VDE	(except 125 V DC devices)
	GOST	
	Lloyds Register	(only devices with 4 c/o (SPDT) contacts)
	CCC	
	RMRS	

#### Marks

CE CE

#### Order data

Type	Rated control supply voltage $U_s$	Order code
Interface relays without LED 2 c/o (SPDT) contacts: 250 V, 12 A		
CR-M012DC2	12 V DC	1SVR 405 611 R4000
<b>CR-M024DC2</b>	<b>24 V DC</b>	<b>1SVR 405 611 R1000</b>
CR-M048DC2	48 V DC	1SVR 405 611 R6000
CR-M060DC2	60 V DC	1SVR 405 611 R4200
CR-M110DC2	110 V DC	1SVR 405 611 R8000
CR-M125DC2	125 V DC	1SVR 405 611 R8200
CR-M220DC2	220 V DC	1SVR 405 611 R9000
<b>CR-M024AC2</b>	<b>24 V AC</b>	<b>1SVR 405 611 R0000</b>
CR-M048AC2	48 V AC	1SVR 405 611 R5000
<b>CR-M110AC2</b>	<b>110 V AC</b>	<b>1SVR 405 611 R7000</b>
CR-M120AC2	120 V AC	1SVR 405 611 R2000
<b>CR-M230AC2</b>	<b>230 V AC</b>	<b>1SVR 405 611 R3000</b>

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

# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

Type	Rated control supply voltage $U_s$	Order code
Interface relays without LED 3 c/o (SPDT) contacts: 250 V, 10 A		
CR-M012DC3	12 V DC	1SVR 405 612 R4000
<b>CR-M024DC3</b>	<b>24 V DC</b>	<b>1SVR 405 612 R1000</b>
CR-M048DC3	48 V DC	1SVR 405 612 R6000
CR-M060DC3	60 V DC	1SVR 405 612 R4200
CR-M110DC3	110 V DC	1SVR 405 612 R8000
CR-M125DC3	125 V DC	1SVR 405 612 R8200
CR-M220DC3	220 V DC	1SVR 405 612 R9000
<b>CR-M024AC3</b>	<b>24 V AC</b>	<b>1SVR 405 612 R0000</b>
CR-M048AC3	48 V AC	1SVR 405 612 R5000
<b>CR-M110AC3</b>	<b>110 V AC</b>	<b>1SVR 405 612 R7000</b>
CR-M120AC3	120 V AC	1SVR 405 612 R2000
<b>CR-M230AC3</b>	<b>230 V AC</b>	<b>1SVR 405 612 R3000</b>
Interface relays without LED 4 c/o (SPDT) contacts: 250 V, 6 A		
CR-M012DC4	12 V DC	1SVR 405 613 R4000
<b>CR-M024DC4</b>	<b>24 V DC</b>	<b>1SVR 405 613 R1000</b>
CR-M048DC4	48 V DC	1SVR 405 613 R6000
CR-M060DC4	60 V DC	1SVR 405 613 R4200
CR-M110DC4	110 V DC	1SVR 405 613 R8000
CR-M125DC4	125 V DC	1SVR 405 613 R8200
CR-M220DC4	220 V DC	1SVR 405 613 R9000
<b>CR-M024AC4</b>	<b>24 V AC</b>	<b>1SVR 405 613 R0000</b>
CR-M048AC4	48 V AC	1SVR 405 613 R5000
<b>CR-M110AC4</b>	<b>110 V AC</b>	<b>1SVR 405 613 R7000</b>
CR-M120AC4	120 V AC	1SVR 405 613 R2000
<b>CR-M230AC4</b>	<b>230 V AC</b>	<b>1SVR 405 613 R3000</b>
Interface relays with LED 2 c/o (SPDT) contacts: 250 V, 12 A		
CR-M012DC2L	12 V DC	1SVR 405 611 R4100
<b>CR-M024DC2L</b>	<b>24 V DC</b>	<b>1SVR 405 611 R1100</b>
CR-M048DC2L	48 V DC	1SVR 405 611 R6100
CR-M060DC2L	60 V DC	1SVR 405 611 R4300
CR-M110DC2L	110 V DC	1SVR 405 611 R8100
CR-M125DC2L	125 V DC	1SVR 405 611 R8300
CR-M220DC2L	220 V DC	1SVR 405 611 R9100
<b>CR-M024AC2L</b>	<b>24 V AC</b>	<b>1SVR 405 611 R0100</b>
CR-M048AC2L	48 V AC	1SVR 405 611 R5100
<b>CR-M110AC2L</b>	<b>110 V AC</b>	<b>1SVR 405 611 R7100</b>
CR-M120AC2L	120 V AC	1SVR 405 611 R2100
<b>CR-M230AC2L</b>	<b>230 V AC</b>	<b>1SVR 405 611 R3100</b>

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

# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

Type	Rated control supply voltage U <sub>s</sub>	Order code
Interface relays with LED 3 c/o (SPDT) contacts: 250 V, 10 A		
CR-M012DC3L	12 V DC	1SVR 405 612 R4100
<b>CR-M024DC3L</b>	<b>24 V DC</b>	<b>1SVR 405 612 R1100</b>
CR-M048DC3L	48 V DC	1SVR 405 612 R6100
CR-M060DC3L	60 V DC	1SVR 405 612 R4300
CR-M110DC3L	110 V DC	1SVR 405 612 R8100
CR-M125DC3L	125 V DC	1SVR 405 612 R8300
CR-M220DC3L	220 V DC	1SVR 405 612 R9100
<b>CR-M024AC3L</b>	<b>24 V AC</b>	<b>1SVR 405 612 R0100</b>
CR-M048AC3L	48 V AC	1SVR 405 612 R5100
<b>CR-M110AC3L</b>	<b>110 V AC</b>	<b>1SVR 405 612 R7100</b>
CR-M120AC3L	120 V AC	1SVR 405 612 R2100
<b>CR-M230AC3L</b>	<b>230 V AC</b>	<b>1SVR 405 612 R3100</b>
Interface relays with LED 4 c/o (SPDT) contacts: 250 V, 6 A		
CR-M012DC4L	12 V DC	1SVR 405 613 R4100
<b>CR-M024DC4L</b>	<b>24 V DC</b>	<b>1SVR 405 613 R1100</b>
CR-M048DC4L	48 V DC	1SVR 405 613 R6100
CR-M060DC4L	60 V DC	1SVR 405 613 R4300
CR-M110DC4L	110 V DC	1SVR 405 613 R8100
CR-M125DC4L	125 V DC	1SVR 405 613 R8300
CR-M220DC4L	220 V DC	1SVR 405 613 R9100
<b>CR-M024AC4L</b>	<b>24 V AC</b>	<b>1SVR 405 613 R0100</b>
CR-M048AC4L	48 V AC	1SVR 405 613 R5100
<b>CR-M110AC4L</b>	<b>110 V AC</b>	<b>1SVR 405 613 R7100</b>
CR-M120AC4L	120 V AC	1SVR 405 613 R2100
<b>CR-M230AC4L</b>	<b>230 V AC</b>	<b>1SVR 405 613 R3100</b>
Interface relays with LED and gold contacts 4 c/o (SPDT) contacts: 250 V, 6 A		
CR-M012DC4LG	12 V DC	1SVR 405 618 R4100
<b>CR-M024DC4LG</b>	<b>24 V DC</b>	<b>1SVR 405 618 R1100</b>
CR-M048DC4LG	48 V DC	1SVR 405 618 R6100
CR-M060DC4LG	60 V DC	1SVR 405 618 R4300
CR-M110DC4LG	110 V DC	1SVR 405 618 R8100
CR-M125DC4LG	125 V DC	1SVR 405 618 R8300
CR-M220DC4LG	220 V DC	1SVR 405 618 R9100
<b>CR-M024AC4LG</b>	<b>24 V AC</b>	<b>1SVR 405 618 R0100</b>
CR-M048AC4LG	48 V AC	1SVR 405 618 R5100
<b>CR-M110AC4LG</b>	<b>110 V AC</b>	<b>1SVR 405 618 R7100</b>
CR-M120AC4LG	120 V AC	1SVR 405 618 R2100
<b>CR-M230AC4LG</b>	<b>230 V AC</b>	<b>1SVR 405 618 R3100</b>
Interface relays with LED and free wheeling diode 4 c/o (SPDT) contacts: 250 V, 6 A		
CR-M024DC4LD	24 V DC	1SVR 405 614 R1100

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

# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

#### Ordering data - Accessories

#### Function modules

Type	Rated control supply voltage	Version	Order code
Diode - Reverse polarity protection			
<b>CR-P/M 22</b>	<b>6-230 V DC</b>	<b>A1+, A2-</b>	<b>1SVR 405 651 R0000</b>
Diode and LED - Reverse polarity protection			
<b>CR-P/M 42</b>	<b>6-24 V DC</b>	<b>red, A1+, A2-</b>	<b>1SVR 405 652 R0000</b>
<b>CR-P/M 42V</b>	<b>6-24 V DC</b>	<b>green, A1+, A2-</b>	<b>1SVR 405 652 R1000</b>
<b>CR-P/M 42B</b>	<b>24-60 V DC</b>	<b>red, A1+, A2-</b>	<b>1SVR 405 652 R4000</b>
<b>CR-P/M 42BV</b>	<b>24-60 V DC</b>	<b>green, A1+, A2-</b>	<b>1SVR 405 652 R4100</b>
<b>CR-P/M 42C</b>	<b>110-230 V DC</b>	<b>red, A1+, A2-</b>	<b>1SVR 405 652 R9000</b>
<b>CR-P/M 42CV</b>	<b>110-230 V DC</b>	<b>green, A1+, A2-</b>	<b>1SVR 405 652 R9100</b>
RC element - Arc elimination			
<b>CR-P/M 52B</b>	<b>6-24 V AC</b>		<b>1SVR 405 653 R0000</b>
<b>CR-P/M 52D</b>	<b>24-60 V AC</b>		<b>1SVR 405 653 R4000</b>
<b>CR-P/M 52C</b>	<b>110-230 V AC</b>		<b>1SVR 405 653 R1000</b>
Diode and LED			
<b>CR-P/M 62</b>	<b>6-24 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 654 R0000</b>
<b>CR-P/M 62V</b>	<b>6-24 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 654 R1000</b>
<b>CR-P/M 62E</b>	<b>24-60 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 654 R4000</b>
<b>CR-P/M 62EV</b>	<b>24-60 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 654 R4100</b>
<b>CR-P/M 92</b>	<b>110-230 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 654 R0100</b>
<b>CR-P/M 92V</b>	<b>110-230 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 654 R1100</b>
Varistor and LED - Overvoltage protection			
<b>CR-P/M 62C</b>	<b>6-24 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 655 R0000</b>
<b>CR-P/M 62CV</b>	<b>6-24 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 655 R1000</b>
<b>CR-P/M 62D</b>	<b>24-60 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 655 R4000</b>
<b>CR-P/M 62DV</b>	<b>24-60 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 655 R4100</b>
<b>CR-P/M 92C</b>	<b>110-230 V AC/DC</b>	<b>red, for DC: A1+, A2-</b>	<b>1SVR 405 655 R0100</b>
<b>CR-P/M 92CV</b>	<b>110-230 V AC/DC</b>	<b>green, for DC: A1+, A2-</b>	<b>1SVR 405 655 R1100</b>
Varistor - Overvoltage protection			
<b>CR-P/M 72</b>	<b>24 V AC</b>		<b>1SVR 405 656 R0000</b>
<b>CR-P/M 72A</b>	<b>115 V AC</b>		<b>1SVR 405 656 R1000</b>
<b>CR-P/M 82</b>	<b>230 V AC</b>		<b>1SVR 405 656 R2000</b>

#### Time modules

Type	Timing function	Order code
Time module		
<b>CR-P/M T1</b>	<b>ON-delay</b>	<b>1SVR 405 657 R0000</b>
<b>CR-P/M T2</b>	<b>Impulse-ON</b>	<b>1SVR 405 657 R0100</b>

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

# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

#### Sockets

Type	Version	Connection	Order code
Logical sockets			
<b>CR-M2LS</b>	for 2 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R1100</b>
<b>CR-M3LS</b>	for 3 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R2100</b>
<b>CR-M4LS</b>	for 2 or 4 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R3100</b>
<b>CR-M2LC</b>	for 2 c/o (SPDT) contacts	spring	<b>1SVR 405 651 R1200</b>
<b>CR-M4LC</b>	for 2 or 4 c/o (SPDT) contacts	spring	<b>1SVR 405 651 R3200</b>
Standard sockets			
<b>CR-M2SS</b>	for 2 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R1000</b>
<b>CR-M3SS</b>	for 3 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R2000</b>
<b>CR-M4SS</b>	for 2 or 4 c/o (SPDT) contacts	screw	<b>1SVR 405 651 R3000</b>
<b>CR-M2SF</b>	for 2 c/o (SPDT) contacts	fork type screw	<b>1SVR 405 651 R1300</b>
<b>CR-M4SF</b>	for 2 or 4 c/o (SPDT) contacts	fork type screw	<b>1SVR 405 651 R3300</b>
Accessories for CR-M sockets			
<b>CR-MH</b>	Plastic holder		<b>1SVR 405 659 R1000</b>
<b>CR-MH1</b>	Metall holder		<b>1SVR 405 659 R1100</b>
<b>CR-MJ</b>	Jumper bar		<b>1SVR 405 658 R6000</b>

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

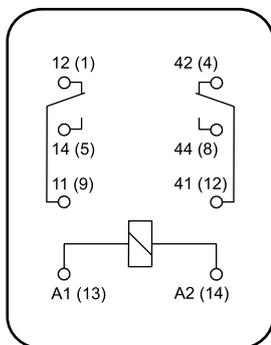
#### Application

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

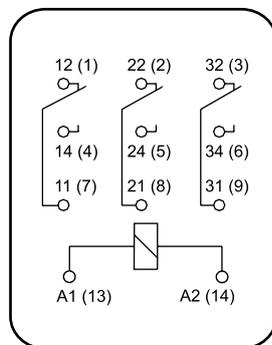
When power supply is applied, the output contacts get closed. When control supply voltage is switched off, the contacts fall back into their starting position. Manual operation and locking of the output relays is possible via the integrated test button.

#### Connection diagrams



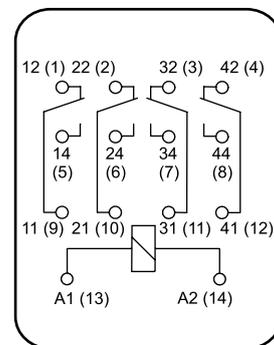
**CR-M with 2 c/o (SPDT) contacts**

A1-A2 Control supply voltage  
11-12/14 Relay outputs  
41-42/44



**CR-M with 3 c/o (SPDT) contacts**

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



**CR-M with 4 c/o (SPDT) contacts**

A1-A2 Control supply voltage  
11-12/14 Relay outputs  
21-22/24  
31-32/34  
41-42/44

# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

#### Technical data

##### Input circuit - Coil data A1-A2

	Rated voltage	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
<b>DC coils</b>	12 V DC	-	9.6 V DC	13.2 V DC	$\geq 0.1 U_n$	0.9 W	160 $\Omega$	$\pm 10 \%$
	24 V DC	-	19.2 DC	26.4 V DC	$\geq 0.1 U_n$	0.9 W	640 $\Omega$	$\pm 10 \%$
	48 V DC	-	38.4 V DC	52.8 V DC	$\geq 0.1 U_n$	0.9 W	2600 $\Omega$	$\pm 10 \%$
	60 V DC	-	48.0 V DC	66.0 V	$\geq 0.1 U_n$	0.9 W	4000 $\Omega$	$\pm 10 \%$
	110 V DC	-	88 V DC	121 V DC	$\geq 0.1 U_n$	0.9 W	13600 $\Omega$	$\pm 10 \%$
	125 V DC	-	100 V DC	137.5 V DC	$\geq 0.1 U_n$	0.9 W	16000 $\Omega$	$\pm 10 \%$
	220 V DC	-	176 V DC	242 V DC	$\geq 0.1 U_n$	0.9 W	54000 $\Omega$	$\pm 10 \%$
<b>AC coils</b>	24 V AC	50 / 60 Hz	19.2 V AC	26.4 V AC	$\geq 0.2 U_n$	1.6 VA	158 $\Omega$	$\pm 10 \%$
	48 V AC	50 / 60 Hz	38.4 V AC	52.8 V AC	$\geq 0.2 U_n$	1.6 VA	640 $\Omega$	$\pm 10 \%$
	110 V AC	50 / 60 Hz	88 V AC	121 V AC	$\geq 0.2 U_n$	1.6 VA	3450 $\Omega$	$\pm 10 \%$
	120 V AC	50 / 60 Hz	96 V AC	132 V AC	$\geq 0.2 U_n$	1.6 VA	3770 $\Omega$	$\pm 10 \%$
	230 V AC	50 / 60 Hz	184 V AC	253 V AC	$\geq 0.2 U_n$	1.6 VA	16100 $\Omega$	$\pm 10 \%$

Type		CR-M...2	CR-M...3	CR-M...4
<b>Output circuits - relay contacts</b>		<b>11-12/14 21-22/24</b>	<b>11-12/14 21-22/24 31-32/34</b>	<b>11-12/14 21-22/24 31-32/34 41-42/44</b>
Number of contacts		2 c/o (SPDT)	3 c/o (SPDT)	4 c/o (SPDT)
Contact material		AgNi	AgNi	AgNi AgNi/Au 5 $\mu\text{m}$
Rated operational voltage $U_o$ (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 (AgNi), 2 mA (AgNi/Au)		
Conventional free-air thermal current $I_{th}$		12 A	10 A	6 A
Rated operational current (IEC 60947-5-1)	AC12 (resistive)	230 V	12 A	10 A
	AC15 (inductive)	230 V	1.5 A	1.5 A
	DC12 (resistive)	24 V	12 A	10 A
	DC13 (inductive)	24 V	8 A	8 A
Min. switching power		0.3 W (AgNi), 0.1 W (AgNi/Au)		
Max. switching power	AC1	3000 VA	2500 VA	1500 VA
Contact resistance		$\leq 100 \text{ m}\Omega$		
Max. switching capacity	rated load AC1	1200 switching cycles/h		
	without load	18000 switching cycles/h		
Lifetime	mechanical	$> 2 \times 10^7$ switching cycles		
	electrical AC1 (resistive)	$> 10^5$ switching cycles		
		(12 A, 250 V)	(10 A, 250 V)	(6 A, 250 V)
	$\cos \varphi$	see curve „Reduction factor“		
Response time		typ. 13 ms (DC), typ. 10 ms (AC)		
Release time		typ. 3 ms (DC), typ. 8 ms (AC)		

# Pluggable interface relays CR-M

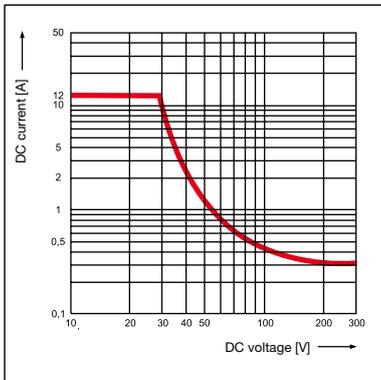
## Miniature relays

### Data sheet

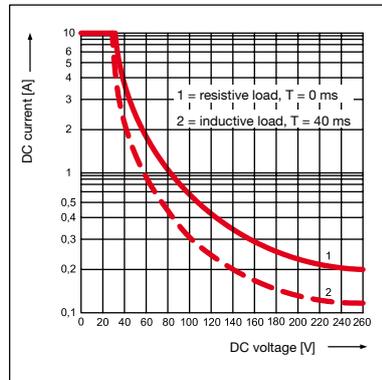
Isolation data			
Rated insulation voltage		250 V AC	
Insulation class		C250 / B250	
Rated impulse withstand voltage $U_{imp}$ between	coil and contacts	2.5 kV AC	
	open contacts	1.5 kV AC	
	c/o (SPDT) contacts	2.5 kV AC / 2 kV AC	
Clearance/creepage distance	betw. coil and contacts	$\geq 4$ mm / $\geq 3.2$ mm	
General data			
Dimensions (L x W x H)		27.5 x 21.2 x 35.6 mm	
Weight		35 g (0.077 lb)	
Mounting position		any	
Degree of protection		IP 40	
Temperature range	operation	DC	-40...+70 °C
		AC	-40...+55 °C
	storage	-40...+85 °C	
Connection		by socket	
Mounting		on socket (see accessories)	
Vibration resistance (10-150 Hz)	n/o, n/c	10 g / 5 g	
Shock resistance		5 g	
Standards			
Product standard		EN 60810-1, EN 60255-23, IEC 61810-7	
Low Voltage Directive		73/23/EEC	

#### Technical diagrams

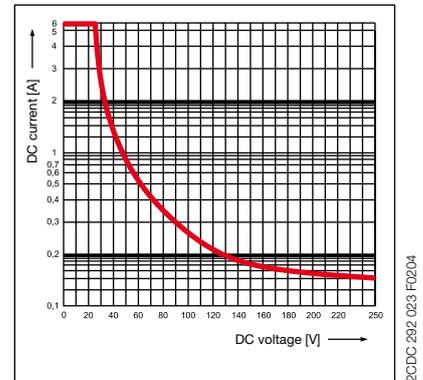
#### Load limit curves - Maximum switching power at resistive DC load



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

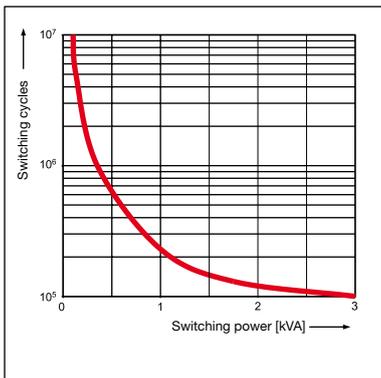


Versions with 3 c/o (SPDT) contacts (CR-M ... 3)

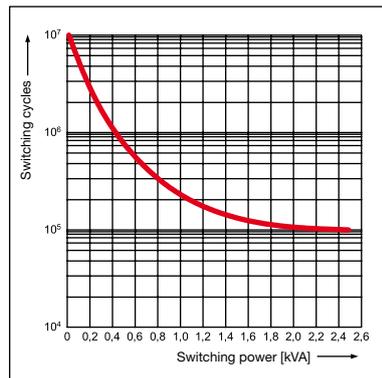


Versions with 4 c/o (SPDT) contacts (CR-M ... 4)

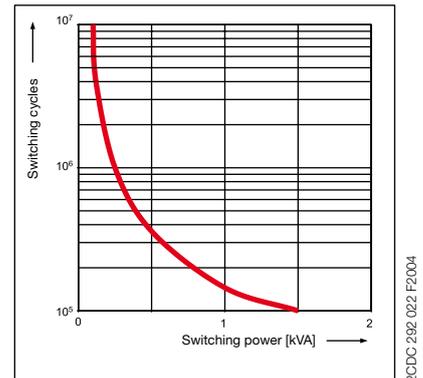
#### Load limit curves - Electrical lifetime at resistive AC load



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



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



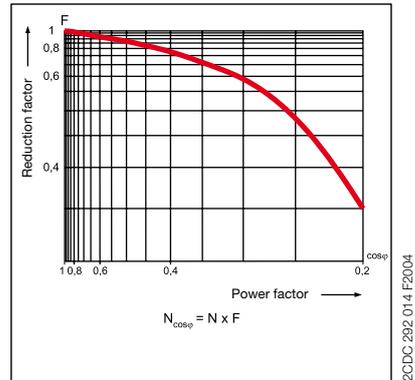
Versions with 4 c/o (SPDT) contacts (CR-M ... 4)

# Pluggable interface relays CR-M

## Miniature relays

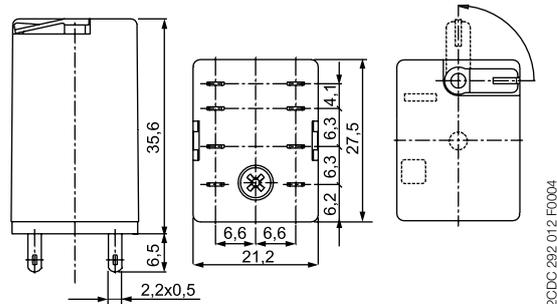
### Data sheet

Reduction factor F at inductive AC load

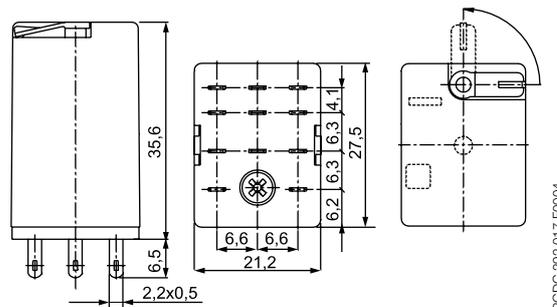


Dimensions

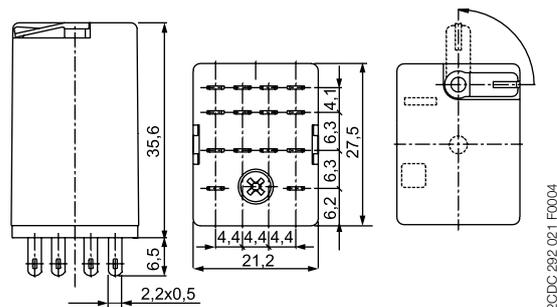
in mm



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



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



Versions with 4 c/o (SPDT) contacts (CR-M ... 4)

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# Pluggable interface relays CR-M

## Miniature relays

### Data sheet

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#### Further documentation

Document title	Document type	Document number
Sockets CR-M	Data sheet	2CDC 117 005 D0203
Jumper bar CR-MJ	Data sheet	2CDC 117 015 D0201
Pluggable function modules CR-P/M	Data sheet	2CDC 117 007 D0204
Pluggable time modules CR-PM T	Data sheet	2CDC 117 011 D0201



As part of the on-going product improvement, ABB reserves the right to modify the characteristics of the products described in this document. The information given is non-contractual.

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Document number: 2CDC 117 002 D0203 (02/2008)

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