

# Pluggable interface relays CR-MX

## Miniature relays

The ABB CR-MX range comprises of pluggable interface relays. These relays are universally applicable and may be utilized in a diverse array of applications. CR-MX relays accomplish a significant element in contemporary industrial processes and are used in applications where galvanic isolation, signal separation, voltage coupling and signal amplification are required.



2CDC291006F0018

### Characteristics

- Standard miniature relays
- Eight different rated control supply voltages:
  - DC versions: 12 V, 24 V, 48 V, 110 V, 220 V
  - AC versions: 24 V, 110 V, 230 V
- Output:
  - 2 c/o (SPDT) contacts (7 A) or
  - 4 c/o (SPDT) contacts (5 A)
- With or without integrated test button for manual actuation and locking of the output contacts (blue = DC, orange = AC)
- Available with or without LED (green = DC, red = AC)
- Cadmium-free contact material
- Width on socket: 27 mm (1.063 in)
- Pluggable function modules available

### Approvals

ANSI/UL 508; CAN/CSA-C22.2 No.14

CQC

TUV

### Marks

CE

## Ordering details

Packing unit = 10 pieces

### Without LED, without test button, 2 c/o (SPDT), contact rating: 250 V, 7 A

Type	Rated control supply voltage $U_s$	Order code
CR-MX012DC2	12 V DC	1SVR405631R4000
CR-MX024DC2	24 V DC	1SVR405631R1000
CR-MX048DC2	48 V DC	1SVR405631R6000
CR-MX110DC2	110 V DC	1SVR405631R8000
CR-MX220DC2	220 V DC	1SVR405631R9000
CR-MX024AC2	24 V AC	1SVR405631R0000
CR-MX110AC2	110 V AC	1SVR405631R7000
CR-MX230AC2	230 V AC	1SVR405631R3000

### Without LED, with test button, 2 c/o (SPDT), contact rating: 250 V, 7 A

Type	Rated control supply voltage $U_s$	Order code
CR-MX012DC2T	12 V DC	1SVR405641R4000
CR-MX024DC2T	24 V DC	1SVR405641R1000
CR-MX048DC2T	48 V DC	1SVR405641R6000
CR-MX110DC2T	110 V DC	1SVR405641R8000
CR-MX220DC2T	220 V DC	1SVR405641R9000
CR-MX024AC2T	24 V AC	1SVR405641R0000
CR-MX110AC2T	110 V AC	1SVR405641R7000
CR-MX230AC2T	230 V AC	1SVR405641R3000

### Without LED, without test button, 4 c/o (SPDT), contact rating: 250 V, 5 A

Type	Rated control supply voltage $U_s$	Order code
CR-MX012DC4	12 V DC	1SVR405633R4000
CR-MX024DC4	24 V DC	1SVR405633R1000
CR-MX048DC4	48 V DC	1SVR405633R6000
CR-MX110DC4	110 V DC	1SVR405633R8000
CR-MX220DC4	220 V DC	1SVR405633R9000
CR-MX024AC4	24 V AC	1SVR405633R0000
CR-MX110AC4	110 V AC	1SVR405633R7000
CR-MX230AC4	230 V AC	1SVR405633R3000

### Without LED, with test button, 4 c/o (SPDT), contact rating: 250 V, 5 A

Type	Rated control supply voltage $U_s$	Order code
CR-MX012DC4T	12 V DC	1SVR405643R4000
CR-MX024DC4T	24 V DC	1SVR405643R1000
CR-MX048DC4T	48 V DC	1SVR405643R6000
CR-MX110DC4T	110 V DC	1SVR405643R8000
CR-MX220DC4T	220 V DC	1SVR405643R9000
CR-MX024AC4T	24 V AC	1SVR405643R0000
CR-MX110AC4T	110 V AC	1SVR405643R7000
CR-MX230AC4T	230 V AC	1SVR405643R3000

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**With LED, without test button, 2 c/o (SPDT), contact rating: 250 V, 7 A**

Type	Rated control supply voltage U <sub>s</sub>	Order code
CR-MX012DC2L	12 V DC	1SVR405631R4100
CR-MX024DC2L	24 V DC	1SVR405631R1100
CR-MX048DC2L	48 V DC	1SVR405631R6100
CR-MX110DC2L	110 V DC	1SVR405631R8100
CR-MX220DC2L	220 V DC	1SVR405631R9100
CR-MX024AC2L	24 V AC	1SVR405631R0100
CR-MX110AC2L	110 V AC	1SVR405631R7100
CR-MX230AC2L	230 V AC	1SVR405631R3100

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**With LED, with test button, 2 c/o (SPDT), contact rating: 250 V, 7 A**

Type	Rated control supply voltage U <sub>s</sub>	Order code
CR-MX012DC2LT	12 V DC	1SVR405641R4100
CR-MX024DC2LT	24 V DC	1SVR405641R1100
CR-MX048DC2LT	48 V DC	1SVR405641R6100
CR-MX110DC2LT	110 V DC	1SVR405641R8100
CR-MX220DC2LT	220 V DC	1SVR405641R9100
CR-MX024AC2LT	24 V AC	1SVR405641R0100
CR-MX110AC2LT	110 V AC	1SVR405641R7100
CR-MX230AC2LT	230 V AC	1SVR405641R3100

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**With LED, without test button, 4 c/o (SPDT), contact rating: 250 V, 5 A**

Type	Rated control supply voltage U <sub>s</sub>	Order code
CR-MX012DC4L	12 V DC	1SVR405633R4100
CR-MX024DC4L	24 V DC	1SVR405633R1100
CR-MX048DC4L	48 V DC	1SVR405633R6100
CR-MX110DC4L	110 V DC	1SVR405633R8100
CR-MX220DC4L	220 V DC	1SVR405633R9100
CR-MX024AC4L	24 V AC	1SVR405633R0100
CR-MX110AC4L	110 V AC	1SVR405633R7100
CR-MX230AC4L	230 V AC	1SVR405633R3100

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**With LED, with test button, 4 c/o (SPDT), contact rating: 250 V, 5 A**

Type	Rated control supply voltage U <sub>s</sub>	Order code
CR-MX012DC4LT	12 V DC	1SVR405643R4100
CR-MX024DC4LT	24 V DC	1SVR405643R1100
CR-MX048DC4LT	48 V DC	1SVR405643R6100
CR-MX110DC4LT	110 V DC	1SVR405643R8100
CR-MX220DC4LT	220 V DC	1SVR405643R9100
CR-MX024AC4LT	24 V AC	1SVR405643R0100
CR-MX110AC4LT	110 V AC	1SVR405643R7100
CR-MX230AC4LT	230 V AC	1SVR405643R3100

## Ordering details - Accessories

### Function modules

#### Diode - Reverse polarity protection / free-wheeling diode

Type	Rated control supply voltage $U_s$	Version	Order code
CR-P/M 22	6-220 V DC	A1+, A2-	1SVR405651R0000

#### Diode and LED - Reverse polarity protection / free-wheeling diode and LED to indicate energized coil

Type	Rated control supply voltage $U_s$	Version	Order code
CR-P/M 42	6-24 V DC	red, A1+, A2-	1SVR405652R0000
CR-P/M 42 V	6-24 V DC	green, A1+, A2-	1SVR405652R1000
CR-P/M 42 B	24-60 V DC	red, A1+, A2-	1SVR405652R4000
CR-P/M 42 BV	24-60 V DC	green, A1+, A2-	1SVR405652R4100
CR-P/M 42 C	110 V DC	red, A1+, A2-	1SVR405652R9000
CR-P/M 42 CV	110 V DC	green, A1+, A2-	1SVR405652R9100

#### RC element - Spark quenching

Type	Rated control supply voltage $U_s$	Order code
CR-P/M 52B	6-24 V AC/DC	1SVR405653R0000
CR-P/M 52D	24-60 V AC/DC	1SVR405653R4000
CR-P/M 52C	110-230 V AC/DC	1SVR405653R1000

#### Diode and LED - LED to indicate energized coil

Type	Rated control supply voltage $U_s$	Version	Order code
CR-P/M 62	6-24 V AC/DC	red, for DC: A1+, A2-	1SVR405654R0000
CR-P/M 62 V	6-24 V AC/DC	green, for DC: A1+, A2-	1SVR405654R1000
CR-P/M 62 E	24-60 V AC/DC	red, for DC: A1+, A2-	1SVR405654R4000
CR-P/M 62 EV	24-60 V AC/DC	green, for DC: A1+, A2-	1SVR405654R4100
CR-P/M 92	110-230 V AC/DC	red, for DC: A1+, A2-	1SVR405654R0100
CR-P/M 92 V	110-230 V AC/DC	green, for DC: A1+, A2-	1SVR405654R1100

#### Varistor and LED - Overvoltage protection and LED to indicate energized coil

Type	Rated control supply voltage $U_s$	Version	Order code
CR-P/M 62 C	6-24 V AC/DC	red, for DC: A1+, A2-	1SVR405655R0000
CR-P/M 62 CV	6-24 V AC/DC	green, for DC: A1+, A2-	1SVR405655R1000
CR-P/M 62 D	24-60 V AC/DC	red, for DC: A1+, A2-	1SVR405655R4000
CR-P/M 62 DV	24-60 V AC/DC	green, for DC: A1+, A2-	1SVR405655R4100
CR-P/M 92 C	110-230 V AC/DC	red, for DC: A1+, A2-	1SVR405655R0100
CR-P/M 92 CV	110-230 V AC/DC	green, for DC: A1+, A2-	1SVR405655R1100

#### Varistor - Overvoltage protection

Type	Rated control supply voltage $U_s$	Order code
CR-P/M 72	24 V AC	1SVR405656R0000
CR-P/M 72 A	115 V AC	1SVR405656R1000
CR-P/M 82	230 V AC	1SVR405656R2000

### Sockets

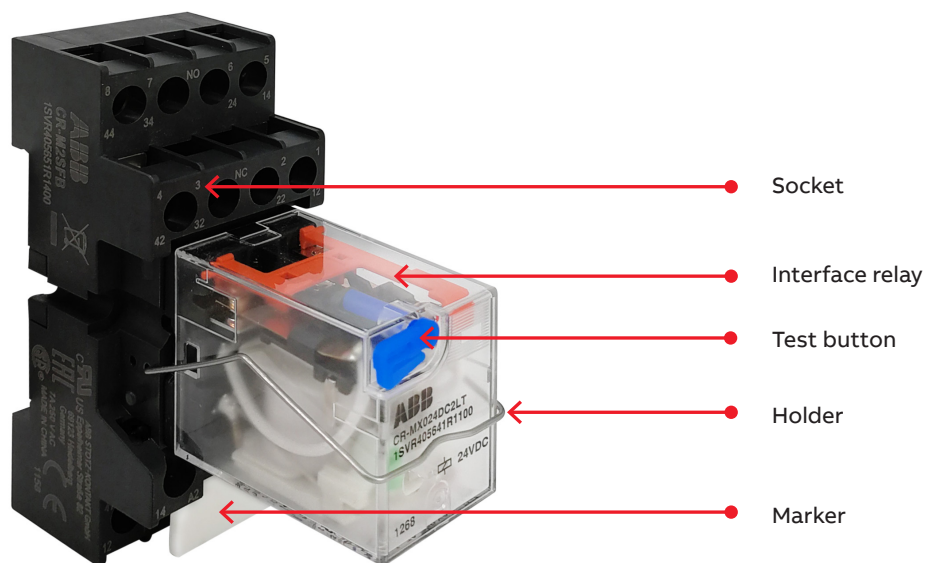
Type	Version	Connection	Order code
CR-M2SFB	for 2 c/o (SPDT) contacts, black	fork type screw	1SVR405651R1400
CR-M4SFB	for 2 or 4 c/o (SPDT) contacts, black	fork type screw	1SVR405651R3400

Type	Version	Order code
CR-MH1	Metal holder	1SVR405659R1100

## Functions

### Operating controls



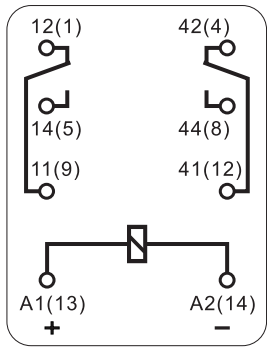
## Application

Relays are universally applicable and are utilized in a diverse array of applications. These electro-mechanical input/output modules play a significant role in contemporary industrial processes. They are particularly used in applications where galvanic isolation, signal separation, voltage coupling and signal amplification are required.

## Operating mode

When a control supply voltage is applied to the input terminals of the relay, the relay contacts change status. When this control supply voltage is switched off, the contacts revert to their default fault position. The test button can also be used to switch the status of the output contacts, in the absence of an applied control supply voltage.

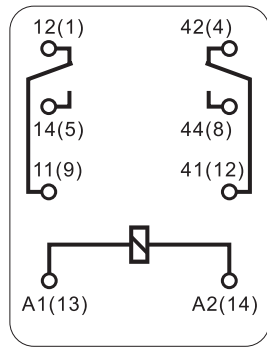
# Electrical connection



2CDC292004F0018

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

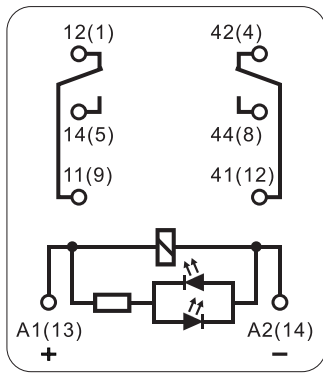
CR-MX with 2 c/o (SPDT) contacts with DC coil without LED



2CDC292006F0018

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

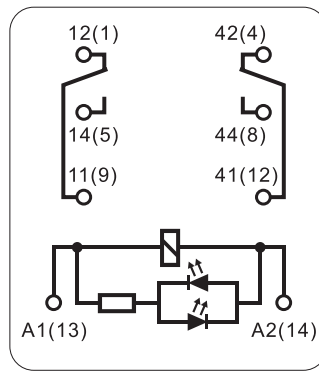
CR-MX with 2 c/o (SPDT) contacts with AC coil without LED



2CDC292007F0018

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

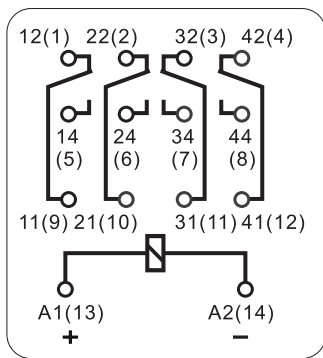
CR-MX with 2 c/o (SPDT) contacts with DC coil and LED



2CDC292008F0018

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

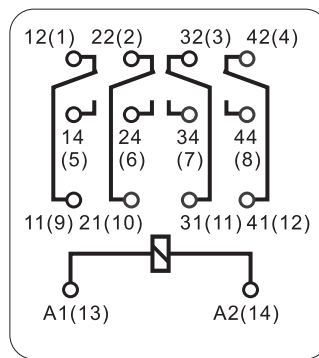
CR-MX with 2 c/o (SPDT) contacts with AC coil and LED



2CDC292009F0018

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

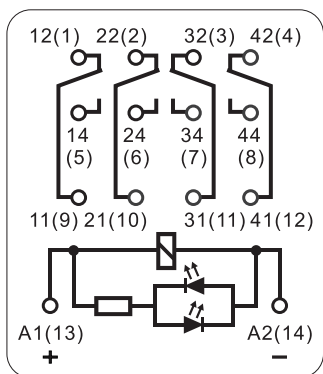
CR-MX with 4 c/o (SPDT) contacts with DC coil without LED



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A1-A2 Control supply voltage  
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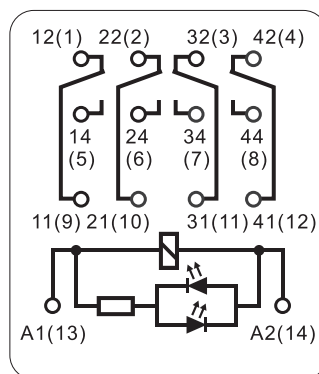
CR-MX with 4 c/o (SPDT) contacts with AC coil without LED



2CDC292011F0018

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

CR-MX with 4 c/o (SPDT) contacts with DC coil and LED



2CDC292012F0018

A1-A2 Control supply voltage  
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CR-MX with 4 c/o (SPDT) contacts with AC coil and LED

# Technical data

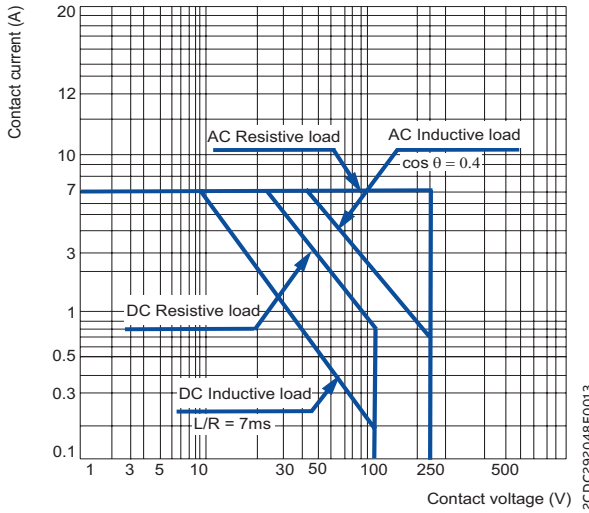
## Input circuit- Coil data A1-A2

	Rated control supply voltage $U_s$	Make voltage (at 23 °C)	Maximum 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	1.2 V DC	0.9 W	160 Ω	± 10 %
	24 V DC	19.2 V DC	26.4 V DC	2.4 V DC	0.9 W	640 Ω	± 10 %
	48 V DC	38.4 V DC	52.8 V DC	4.8 V DC	0.9 W	2560 Ω	± 15 %
	110 V DC	88 V DC	121 V DC	11 V DC	1.0 W	12250 Ω	± 15 %
	220 V DC	176 V DC	242 V DC	22 V DC	0.9 W	53360 Ω	± 15 %
AC coils (50/60 Hz)	24 V AC	19.2 V AC	26.4 V AC	7.2 V AC	1.12 VA	177 Ω	± 15 %
	110 V AC	96 V AC	121 V AC	36 V AC	1.26 VA	3400 Ω	± 15 %
	230 V AC	176 V AC	264 V AC	72 V AC	1.26 VA	16300 Ω	± 15 %

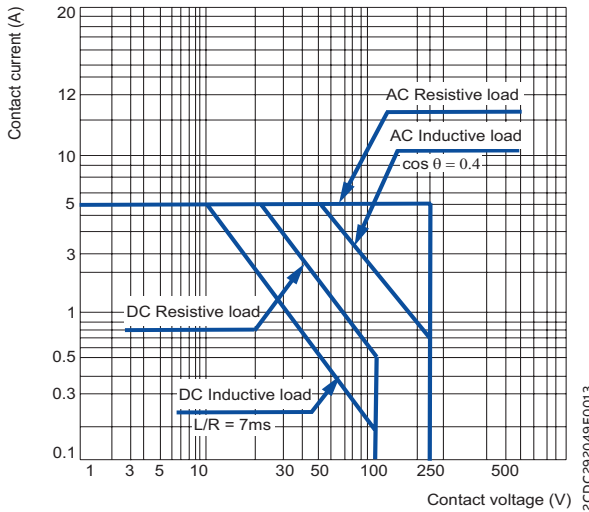
Type	CR-MX...2(L)(T)	CR-MX...4(L)(T)
<b>Output circuits</b>		
Output circuits - contacts	11-12/14 41-42/44	11-12/14 21-22/24 31-32/34 41-42/44
Kind of output	relay, 2 c/o (SPDT) contacts	relay, 4 c/o (SPDT) contacts
Contact material	silver alloy	
Rated operational voltage $U_e$ (VDE 0110, IEC 60947-1)	250 V	
Minimum switching voltage	5 V	
Maximum switching voltage	250 V AC / 110 V DC	
Minimum switching current	5 mA	
Rated free air thermal current $I_{th}$	7 A	5 A
Rated operational current (IEC/EN 60947-5-1)	AC-12 (resistive) 250 V	7 A
	AC-15 (inductive) 250 V	0.8 A
	DC-12 (resistive) 30 V	7 A
	DC-13 (inductive) 30 V	1.5 A
AC rating (UL 508)	Utilization category (resistive)	7 A / 250 V AC
Minimum switching power	6 W	
Maximum switching (breaking) power	AC-1 (resistive)	1750 VA / 210 W
Contact resistance	100 mΩ (at 1 A / 6 V DC)	
Maximum operating frequency	rated load AC-1 without load	1800 switching cycles/h 18000 switching cycles/h ≥ 2 x 10 <sup>7</sup> switching cycles
Mechanical lifetime	≥ 1 x 10 <sup>5</sup> switching cycles	
Electrical lifetime	AC-1 (resistive)	≥ 1 x 10 <sup>5</sup> switching cycles (7 A / 250 V AC)
	cos φ	≥ 6050 switching cycles (5 A / 250 V AC)
Response time	≤ 20 ms	
Release time	≤ 15 ms (DC coil) / ≤ 25 ms (AC coil)	
<b>Isolation data</b>		
Rated insulation voltage	300 V AC	250 V AC
Insulation class	F	
Rated impulse withstand voltage $U_{imp}$	between coil and contacts	1.5 kV AC
	between open contacts	1.5 kV AC
	between c/o (SPDT) contacts	1.0 kV AC
Clearance	between coil and contacts	2.5 mm
Creepage distance	between coil and contacts	5.6 mm
Overvoltage category	II	
Pollution degree	2	
<b>General data</b>		
Dimensions	see "Dimensional drawings"	
Weight	about 35 g (0.077 lb)	
Mounting	on socket (see accessories)	
Mounting position	any	
Degree of protection	IP40	
<b>Electrical connection</b>		
Connection	by socket	
<b>Environmental data</b>		
Ambient temperature range	operation	-40...+70 °C (no ice, no condensation)
	storage	-40...+70 °C
Vibration resistance	n/o contact	10 to 55 Hz 1 mm DA
	n/c contact	10 to 55 Hz 1 mm DA
Shock resistance	n/o contact	10 g
	n/c contact	10 g
<b>Standards / Directives</b>		
Standards	IEC/EN 61810-1, IEC/EN 61810-7, UL 508	
Low Voltage Directive	2014/35/EU	
RoHS Directive	2011/65/EU	

# Technical diagrams

Load limit curves - Maximum switching power



2 Form C/3 Form C

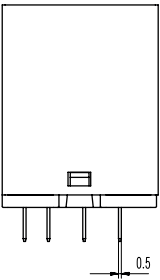
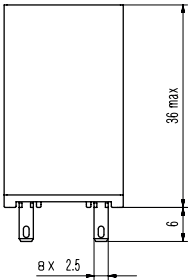
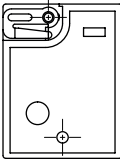
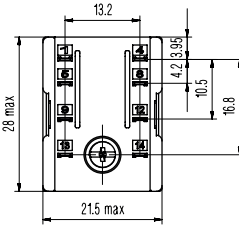
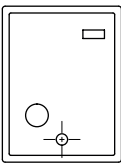
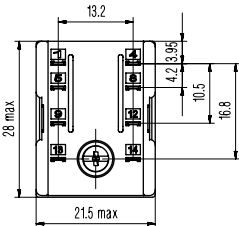


4 Form C

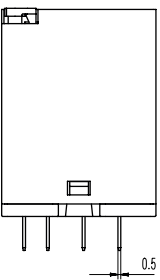
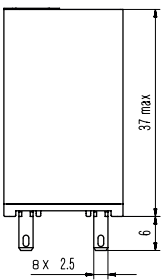


# Dimensional drawings

in mm



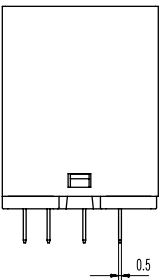
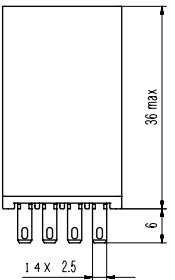
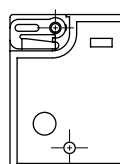
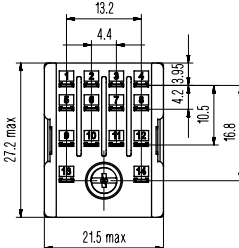
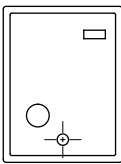
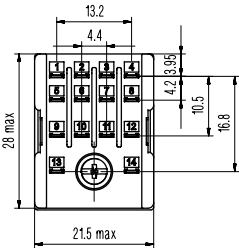
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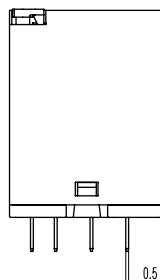
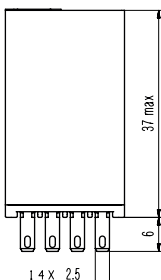
2CDC292014F0018

Versions with 2 c/o (SPDT) contacts, without test button

Versions with 2 c/o (SPDT) contacts and test button



2CDC292015F0018



2CDC292016F0018

Versions with 4 c/o (SPDT) contacts, without test button

Versions with 4 c/o (SPDT) contacts and test button



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