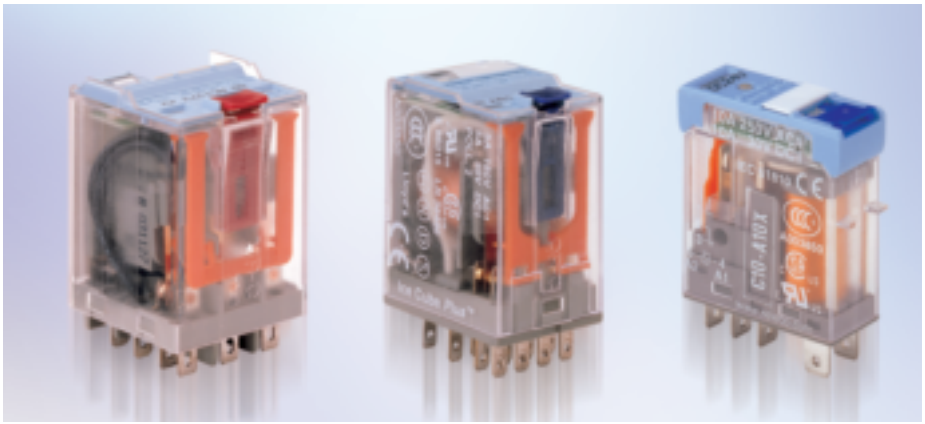
Relays



MRC
QRC
IRC

Notes

Product range
Releco offers a wide range of relay types and versions and associated sockets and accessories.

Standard (general-purpose) relay, MRC series
35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connector according to IEC 67 with 2 or 3 contacts up to 10 A and different contact types and contact materials.
Standard relay 35 x 35 mm with flat blade connectors with up to 4 contacts and up to 16 A with 3 contacts.

Miniature industrial relay, QRC series
22.5 mm series with up to 4 contacts and up to 10 A with 1 or 2 contacts.

Interface relay, IRC series
Overall width 13 mm with up to 2 electro-mechanical contacts, or fully electronic switches.

Special relays, remanence relays
While "normal" relays are monostable, i.e. they return to the idle state when the excitation is switched off, remanence relays are bistable, i.e. the current switching state is retained irrespective of the excitation. Relays of this type are available in different versions.

Electronic relay, CSS
In the IRC series different electronic DC or AC relays up to 3 A are available. For AC relays a distinction is made between synchronously (zero crossing) and asynchronously switching versions. For switching transformer loads we recommended using asynchronously switching semiconductor switches. For incandescent lamp loads etc. synchronously switching switches are ideal for avoiding high switch-on currents.

Accessories
Suitable sockets are available for the different relay series for DIN rail mounting or panel mounting. In addition, retaining clips are available for the relays, some of which are included in the scope of supply. Suitable bridges for cost-saving wiring in series are also available.

*** Special requirements**
H = Orange button. No lockable function
N = Black button. No function
P = Printing board pins

E = Lap transparent cover
Z = Close transparent cover
T = Close transparent cover (lamp)
M = Close transparent cover (lamp + button)

If other requeriments, please consult.

Basic identification principle (type designation code electromechanical relays)

C n(n) - T X y z(*)z /....V RF-nnnn

Ref. nnnn
Relays with a reference number are versions with special (e.g. customised) features. These features may relate to special test criteria, tolerances or other properties.
Availability of such relays may be limited to certain customers or applications.

Nominal coil voltage specification

AC ... V	AC 50/60 Hz, voltage 6 – 250 (400) V
AC ... V 60 Hz	AC 60 Hz, 120, 240 V
DC ... V	DC, voltage 5 – 220 V
UC ... V	AC/DC

X = Electric position indicating device with LED

Describes the options
D = Integrated freewheeling diode
F = Integrated freewheeling diode and series diode e.g. for common alarm circuits
R = RC connection for the coil
B = Bridge rectifier

Definition of contact material
This code may differ depending on type.
Examples:
0 in the standard range stands for AgNi
1–9 see contact material for each type

Number of contacts

Relay type
A = Standard (general-purpose) contact
E = Sensitive drive with 500 mW coil power
G = Refers to a NO contact
H = Single-point contact + twin contact load to signal current circuit for switching state feed back. Mixed contact configuration
M = Relay with highly effective neodimium blow magnet for fast quenching of the arc. This relay is particularly suitable for high DC loads.
N = Sensitive drive 800 mW coil power
R = Code for remanence relays, drive-specific ID
S = Sensitive drive with 250 mW exciter input
T = Twin contact for signal and control circuit
W = With tungsten contact for maximum switch-on currents
X = Relay high power, double make contact.

Basic type refers to the product line
Numbers between 2 and 12 are used.

Normal industrial relay code
Relays with code R are used for railway series.

MRC – QRC

Protection against transients
When the coil is disconnected from an electromagnet, peaks of inverse voltage appear at the terminals which can reach very high values. These pulses can be transmitted down the line associated with the coil and could possibly affect other components.
In the case of a realy being operated by such devices as transistors, triacs, etc; it may be necessary to protect against transients.

Transients carried in the line
High voltage surges can be carried in the supply line to the relay coil. These may appear in the form of peaks or bursts and are generated by the connection and disconnection of electric motors, transformers, capacitors etc.
Normally a relay is unaffected by these pulses, but if a diode is connected in association with the coil, it must be capable of withstanding an inverse voltage higher than those of the incoming peaks.

Protection circuits
A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1,2/50\mu s.}$)
Releco relays are available with integrated protection circuits or with modules plugged into sockets S3-MP or S3-MS.

X LED indication with rectifier.
For DC and AC relays up to 250 V
Surges of 1000 V up to 24 V
Surges of 2000 V from 25 to 60 V
Surges of 4000 V from 61 to 250 V
Note: LED connected, in series with the coil @ 220 VDC in QRC types.

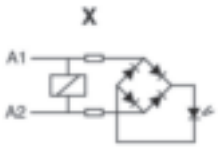
D Free-wheeling diode.
DX Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.
Surges of 2000 V up to 60 VDC
Surges of 4000 V from 61 to 250 VDC (*)

F Polarity + free wheeling diode.
FX Polarity + free wheeling diode + LED
A diode in series with the coil protects the relay from reverse connection.
Surges of 1000 V up to 60 VDC
Surges of 4000 V from 61 to 250 VDC (*)

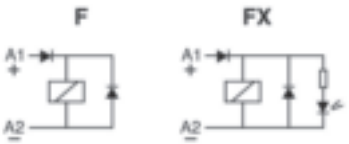
B Bridge rectifier incorporated
BX Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvience. Available only in voltages up to 60 V.
Surges of 1000 V

R Resistor and capacitor.
Suppressor for AC coils. Surges of 2000 V.
Available only in **MRC** types.

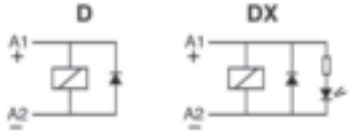
(*) Surges of 2000 V in **QRC** types.



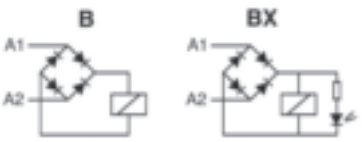
LED consumption: 1mA



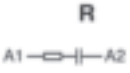
Increase release time approx. 4 times



Increases release time approx. 4 times



Increases release time approx. 3 times



IRC

LED and protection circuit connected to coil.

X LED with no polarity, (standard)
Coils ≤ 12 V CC y CA
LED rectifier bridge in parallel

X LED with no polarity, (standard)
Coils ≥ 24 V … CC y CA
LED rectifier bridge in series

FX LED with polarity **A1+** (option)
Every DC coil voltage
Polarity and Free-wheeling diodes

BX LED with no polarity, (option)
Only 24 V and 48 V ADC coils
Rectifier bridge for AC/DC relays

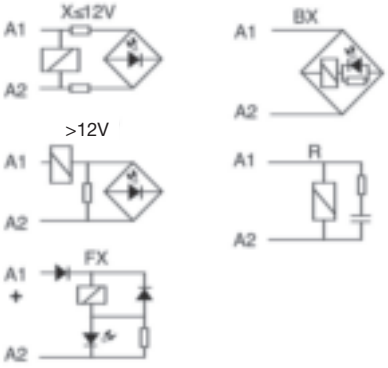
R LED not available (option)
RC protection against pulses on AC

Protection against pulses
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

If triac, transistor, etc. controls a relay, appropiate steps must be taken to avoid or decrease peaks down to a non risky level.

Both Polarity and Free-wheeling diodes (**FX**), must protect coils, to avoid malfunctions provided DC relays in battery are installed.

Making or breaking engines, transformers or contactors in an industrial environmental, may generate high voltage pulses, either isolated or burst, through the main line.
The voltage level of those pulse may be high enough to affect the isolation of the coil.



Contacts

There are different contact types. The main distinction is between single contacts and twin contacts. While single contacts are more suitable for higher loads, twin contacts are significantly more reliable at small loads, i.e. < 24 V, < 100 mA.

Contact Material

There is no all-purpose contact!
AgNi is used as standard material for a wide range of applications. AgNi contacts with hard gold plating (up to 10 µm) are offered for applications in aggressive atmosphere.
Relays with gold contacts are approved for relatively high currents (e.g. 6 A, 250 V), but in practice values of 200 mA, 30 V should not be exceeded for operation with intact gold plating.
Relays with a tungsten pre-contact are available for very high switch-on currents (up to 500 A, 2.5 ms). For some applications AgNi contacts with gold flashing (0.2 µm) are available. The purpose is corrosion protection during storage. There is no other purpose.
Tin oxide is specially appropiated for load with high-inrush current.

Minimum load

The minimum load value is a recommended value under normal conditions such as regular switching, no special ambient conditions, etc. Under these conditions reliable switching behaviour can be expected.

Contact resistance

Initial values of resistance of contact can vary with the use, load and others conditions. Typical values when the relay is new is about 50 mΩ.

Contact spacing

Normally all contacts have an air gap between 0,5 ... 1.5 mm when they are open. They are referred to as µ contacts. According to the Low-Voltage Directive and the associated standards these contacts are not suitable for safe disconnection.
For switching of DC loads large contact clearances are beneficial for quenching the arc. See special relays: series connections with a gap of 3 mm.

Switching capacity

The contact switching capacity is the product of switching voltage and switching current. For AC the permitted switching capacity is generally high enough to handle the max. continuous AC1 current over the whole voltage range. For DC the load limit curve must never be exceeded, because this would lead to a remaining switch-off arc and immediate destruction of the relay. The order of magnitude of the DC switching capacity is a few 100 W (DC 1).

Drive (coil)

The drive of a relay refers to the coil plus connections.
The coil has special characteristics, depending on the rated voltage and the type of current.

Coil design

The coil consists of a plastic former (resistant up to about 130 °C) and doubly insulated high-purity copper wire, temperature class F. The winding must withstand threshold voltages (EN 61000-4-5) of more than 2000 V. This is ensured through forced separation of the start and end of the winding.

Coil resistance and other properties

Each coil has an ohmic coil resistance that can be verified with an ohmmeter. The specified coil resistance applies to a temperature of 20 °C. The tolerance is ± 10 %.
For AC operation the coil current will not match the ohmic value, because self-inductance plays a dominant role. At 230 V this may reach more than 90 H. When a relay is switched off, self-inductance results in a self-induced voltage that may affect the switching source (destruction of transistors, EMC problems).

Drive voltages

A distinction is made between the standardised voltages according to EN 60947 as guaranteed values, and typical values that can be expected with a high degree of probability.

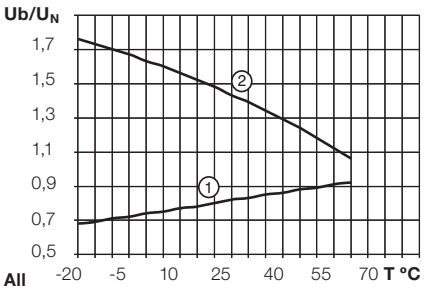
Pick-up voltage, Release voltage

The pick-up voltage is the voltage at which the relay engages safely. For DC the typical trip voltage is approx. 65 % of Unom, for AC approx. 75 %. The release voltage, on the other hand, is approx. 25 % or 60 % respectively.
For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu. This is not the case for AC, where the inductive resistance is the controlling factor, which is practically constant over a wide temperature range.
With AC, in a certain undervoltage range the relay may hum, and the armature may flutter. This voltage range must be avoided.

Operating voltage range

Unless specified otherwise, the following characteristic curve applies for the operating voltage range. The upper limit of the coil voltage is determined by self-heating and the ambient temperature. Self-heating through contacts under high load must not be underestimated. It may be higher than the power dissipation in the drive.

During intermittent operation significantly higher overvoltages temporary may occur for short periods. If in doubt please consult our specialists.



General design

RELECO relays are made from high-quality, carefully selected materials.
They comply with the latest environmental regulations such as RohS. Their meticulous design makes them particularly suitable for industrial applications and installation engineering.
They are particularly service-friendly through robust terminals, mechanical position indicating device a standard, manual operation, dynamic, permanent characteristics.
Colour coding for manual operation as a function of the coil voltage is another useful feature. Further options such as different coil connections, freewheeling diode, LED display, bridge rectifier for AC/DC drives etc., and short-term availability of special versions for practically any drive voltage up to DC 220 V / AC 400 V leave nothing to be desired.
Apart from a few special versions, the standard RELECO industrial relays feature manual operation (push/pull) and a mechanical position indicating device.
For safety reasons, manual operation may be replaced with a black button, if required.

Coil connections

Different coil connections can be integrated in the relay as an option.
For DC a cost-effective freewheeling diode is available. Please note that the stated release times are generally specified without the coil connection.
While an additional LED status indicator has practically no effect, a freewheeling diode (D) will lead to an increase in release time by a factor 2 to 5, or 0 ms to 30 ms. For AC VDRs or RC elements may be used. In this case resonance effects may have to be considered. VDRs and common RC elements may increase release times by < 5 ms.

Standards, conformities
While CE marking of relays/sockets is controversial, since relays are sometimes regarded as components to which the marking requirement does not apply, all RELECO relays feature the CE mark to indicate that CE standards may also be applied to the relays, e.g. 2 kV surge resistance according to EN 61000-4-5.
A significant and not generally available characteristic is that the coils and in particular the connections are able to withstand the voltage spikes that may occur in practice.
In addition, the relays feature various technical approvals depending on the respective relay code, and they comply with further standards and guidelines. The main technical approvals include cURus, CSA, and CCC.
The associated information is provided in the respective data sheets.

Switching classes
EN 60947 defines different switching classes that specify the suitability of contacts for different load types.

Examples:
AC1 = Ohmic AC load
AC5b = AC incandescent lamp loads
AC15 = Power contactors, solenoid valves, solenoids
DC1 = Ohmic DC load
DC6 = DC incandescent lamps
DC13 = DC contactors, solenoids

UL508 contains different technical approval criteria such as general purpose, control application etc. Switching classes are defined based on the electrical switching capacity, e.g. B600 etc.

Main technical approvals and standards

Country	Technical approval
China	Authority: CQC Specification GB14048.5-2001
Canada	Authority: CSA Specification C 22,2; UL 508
Russia	Authority: KORPORATSIA STANDART Specification GOST R 50030.5.1
USA	Authority: UL Specification C 22,2; UL 508
United Kingdom	Authority: GB Lloyd's Register of Shipping

Utilisation categories according to
EN 60947-4-1/-5-1

Pollution category
Cat. 1
Dry, non-conductive contamination without further effect

Cat. 2
Occasional conductive contamination, short duration due to moisture condensation

Cat. 3
Dry, non-conductive and conductive contamination with moisture condensation

Cat. 4
Contamination with persistent conductivity through conductive dust, rain

Protection class IP according to DIN 40050 and other standards. Industrial relays and their sockets can be classified as follows:
Socket IP20: Contact safety
Relay IP40/IP50: not watertight, but protected against ingress of coarse contaminants.

Further information and tips
The main operational criteria for relays such as number of cycles, switching frequency, ambient conditions, reliability requirements, load type, switch-on current, load switch-off energy must be clarified in order to ensure reliable operation and long service life.

Example
If the number of cycles is expected to exceed several 100,000 operations per year (e.g. clock generators, fast running machines), an electronic solution is no doubt more appropriate, although we also offer solutions for this type of application.
In AC applications crosstalk caused by long control leads is often problem and can result in constant humming of the relay or even inadvertent triggering due to interference. Here, too, we offer solutions.

Various, apparently harmless loads may lead to very high switch-on currents or switch-off energy values, resulting in an unacceptable reduction in service life.
Particularly tricky are DC loads, particularly if they are inductive.
Circuits with relays and their connections often require a level of developer skill that is frequently no longer offered during standard education and training.
Your supplier will be very happy to provide expert advice

Characteristics of various loads:

Heating circuits
No higher switch-on currents, no higher switch-off loads.

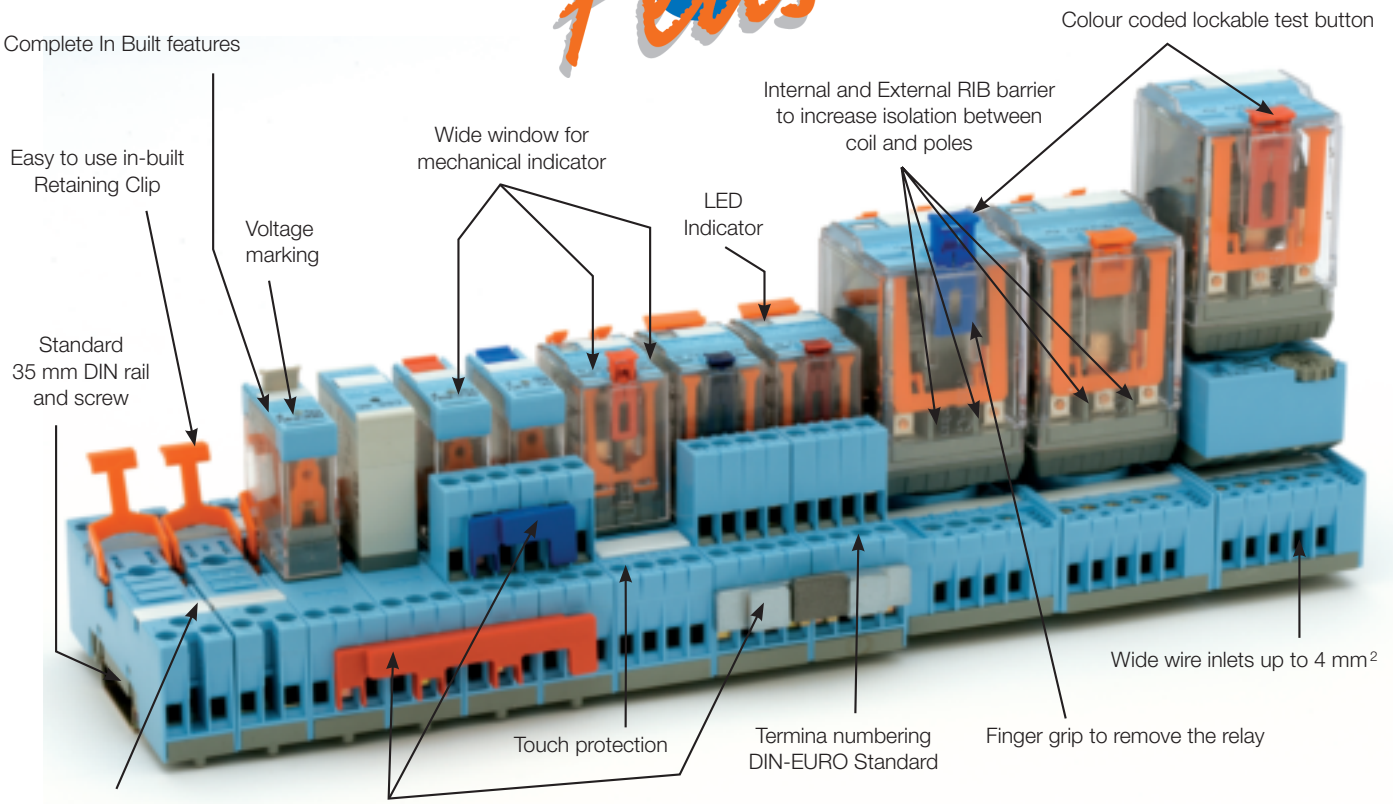
Incandescent lamps, halogen lamps
Switch-on currents during a few ms in the range 10 ... 18 x rated. Switch-off at rated load.

Low-energy lamps
Very high, but very short switch-on currents due to built-in decoupling capacitors.

Contacts have a tendency to fuse.

Transformers, AC contactors
Switching on during zero-transition may lead to switch-on currents of 8 ... 15 x rated.
High inductive switch-off energy is possible.
The load must be connected, not least due to EMC problems.

Full Features System Plus



Five colours for an easier identification of coil voltage

	AC	red: 230 VAC (North America 120 VAC)
	AC	dark red: others VAC
	AU	grey: VAC/DC
	DC	blue: 24 VDC
	DC	dark blue: others VDC

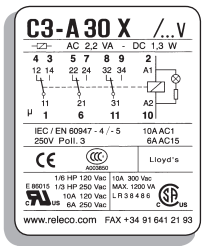
If you don´t want to have the lockable function, you can use the orange “orange - push button”. SO - OP for MRC - C and S9 - OP for QRC (5 pieces bag)

Orange - push button

A black blanking plug is available if you don´t want a test button. S= - NP for MR - C and S9 - NP for QRC (5 pieces bag)

Blanking plug

Comprehensive technical label



Part number
Coil details
Aditional circuit diagram for coil
Electric diagram showing all additions to the coil
Wiring diagram with sequential and DIN numbers
Maximum switching capacity according to EN 60947 (IEC 947)
Approvals

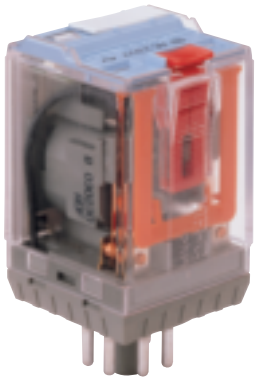
Country	Approval	Country	Approval
Canada	Authority: CSA Specification: C 22,2; UL 508	**United Kingdom**	Authority:Lloyd´s Register of Shipping
China	Authority: CQC Specification: GB14048.5-2001		
Russia	Authority: KORPORATSIA STANDART Specification: GOST R 50030.5.1	**USA**	Authority: UL Specification: C 22,2; UL 508

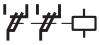
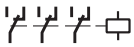
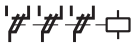
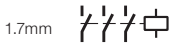
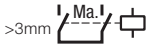
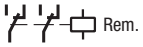
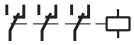
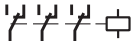
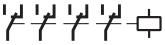
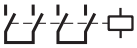
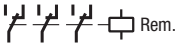
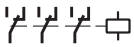
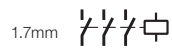
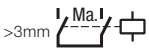
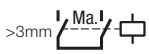
Notes

1.1 Plug-in Relays

1.1.1 Industrial Relays

MRC Series



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
C2 Series						
General purpose	C2-A2x			10 A / 250 V	0.5 A / 110 V	S2
Low switching load	C2-T2x			6 A / 250 V	6 A / 30 V	S2
DC load switching	C2-G2x			10 A / 250 V	1.2 A / 110 V	S2
C3 Series						
General purpose	C3-A3x			10 A / 250 V	0.5 A / 110 V	S3
Low switching load	C3-T3x			6 A / 250 V	6 A / 30 V	S3
DC load switching	C3-G3x		 1.7mm	10 A / 250 V	1.2 A / 110 V	S3
DC load switching with magnetic blow out	C3-M1x		 >3mm Ma.	10 A / 250 V	10 A / 220 V	S3
DC load switching double make	C3-X1x		 >3mm	10 A / 250V	7 A / 110 V	S3
Latching relay	C3-R2x		 Rem.	10 A /250 V	0.5 A / 110 V	S3
Sensitive Coil 250mW … 300mW	C3-S1x			6 A / 250 V	6 A / 30 V	S3
Sensitive Coil 500mW … 800mW	C3-E2x			6 A / 250	6 A / 30 V	S3
Sensitive Coil 500mW … 800mW	C3-N3x			6 A / 250	6 A / 30 V	S3
Railway application	R3-N3x			6 A / 250	6 A / 30 V	S3
C4 Series						
General purpose	C4-A4x			10 A / 250 V	0.5 A / 110 V	S4
DC load switching double make	C4-X2			10 A / 250 V	7 A / 110 V	S4
Latching relay	C4-R3		 Rem.	10 A / 250 V	0.5 A / 110 V	S4
C5 Series						
Power relay	C5-A2x			16 A / 400 V	0.5 A / 110 V	S5
Power relay	C5-A3x			16 A / 400 V	0.5 A / 110 V	S5
DC load switching	C5-G3x		 1.7mm	16 A / 400 V	1.2 A / 110 V	S5
DC load switching double make	C5-X1x		 >3mm	16 A / 400 V	7 A / 110 V	S5
DC load switching with magnetic blow out	C5-M1x		 >3mm Ma.	16 A / 400 V	10 A / 220 V	S5
DC load switching with magnetic blow out	C5-M2x		 >3mm Ma.	16 A / 250 V	7 A / 110 V	S5
Latching relay	C5-R2x		 Rem.	10 A / 400 V	10 A / 30 V	S5

C2-A2x

8-pin standard relay, 2-pole, plug-in according to IEC 67-I-5a

Type	**C2-A2x/ ... V** Standard relay, 2 change-over contacts
Maximum contact load	**10 A/250 V AC1 0,5 A/110 V DC1** **10 A/30 V DC1 0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Max. switching current			10 A
Max. peak inrush current (20 ms.)			30 A
Max. switching voltage			250 V
Max. AC load (Fig 1 1)			2,5 kVA
Max. DC load			See Fig 2

Coils

Coil resistance	see table; tolerance ± 10 %
Pull-in voltage	≤ 0,8 x U_N
Pull-in voltage	≥ 0,1 x U_N
Nominal power	2,2 VA (AC)/1,3 W (DC)

Table

VAC	Ω	mA	VDC	Ω	mA
24	67	92	24	443	54
48	296	46	48	1K8	27
115	1K7	19	110	9K2	12
230	7K1	9,5	220	36K1	6

Insulation	Volt rms, 1 min
Open contact	1000 V
Between adjacent poles	2,5 kV
Between contacts and coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time + bounce time	16 ms/≤ 3 ms
Release time + bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 ops. switching cycles
Operating frequency at nominal load	≤1200/ops/h
Protection degree	IP40
Weight	90 g

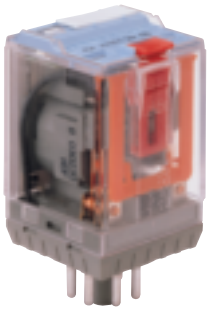
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C2-A20/AC ... V**	**C2-A28/AC ... V**	**C2-A29AC ... V**
LED	**C2-A20X/AC ... V**	**C2-A28X/AC ... V**	**C2-A29X/AC ... V**
RC Suppresor	**C2-A20R/AC ... V**	**C2-A28R/AC ... V**	**C2-A29R/AC ... V**
VDC 24, 48, 110, 220	**C2-A20/DC ... V**	**C2-A28/DC ... V**	**C2-A29/DC ... V**
LED	**C2-A20X/DC ... V**	**C2-A28X/DC ... V**	**C2-A29X/DC ... V**
Free wheeling diode	**C2-A20DX/DC ... V**	**C2-A28DX/DC ... V**	**C2-A29DX/DC ...V**
Polarity and free wheeling diode	**C2-A20FX/DC ... V**	**C2-A28FX/DC ... V**	**C2-A29FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C2-A20BX/UC ... V**	**C2-A28BX/UC ... V**	**C2-A29BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S2-B, S2-S, S2-L, S2-P, S2-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

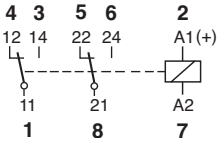


Fig. 1 AC voltage endurance

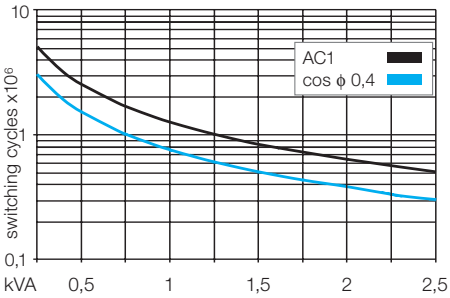
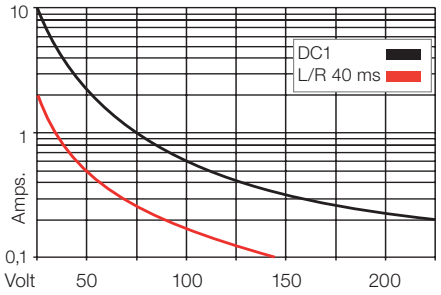
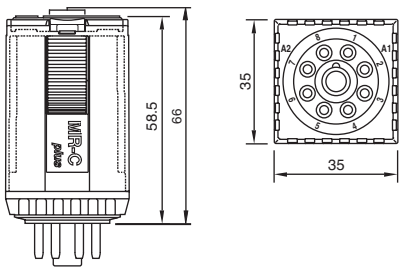


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

MRC series

C2-T2x

8-pin standard relay, 2-pole, twin contact, plug-in according to IEC 67-I-5a

Type			**C2-T2x/ ... V**		
			Standard relay for low level		
			2 Change-over contacts		
Maximum contact load			**6 A/250 V**	**AC1**	**6 A/30 V** **DC1**
Recommended minimum contact load			**5 mA/5 V**	**Code 1**	
			1 mA/5 V	**Code 2**	

Contacts

Material	Standard	Code 1	AgNi + 0,2 µ Au
	Optional	Code 2	AgNi + 10 µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1,2 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,2 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	67	92	24	443	54
48	296	46	48	1K8	27
115	1K7	19	110	9K2	12
230	7K1	9,5	220	36K1	6

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

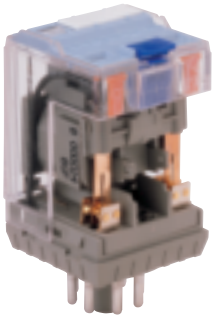
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C2-T21/AC ... V**	**C2-T22/AC ... V**
LED	**C2-T21X/AC ... V**	**C2-T22X/AC ... V**
RC Suppresor	**C2-T21R/AC ... V**	**C2-T22R/AC ... V**
VDC 24, 48, 110, 220	**C2-T21/DC ... V**	**C2-T22/DC ... V**
LED	**C2-T21X/DC ... V**	**C2-T22X/DC ... V**
Free wheeling diode	**C2-T21DX/DC ... V**	**C2-T22DX/DC ... V**
Polarity and free wheeling diode	**C2-T21FX/DC ... V**	**C2-T22FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C2-T21BX/UC ... V**	**C2-T22BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S2-B, S2-S, S2-L, S2-P, S2-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

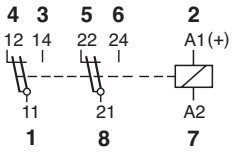


Fig. 1 AC voltage endurance

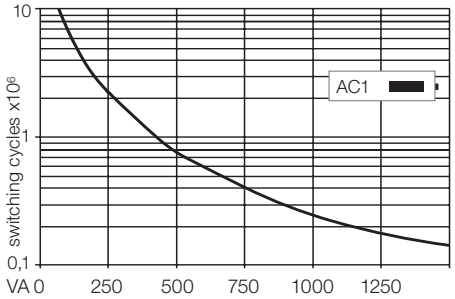
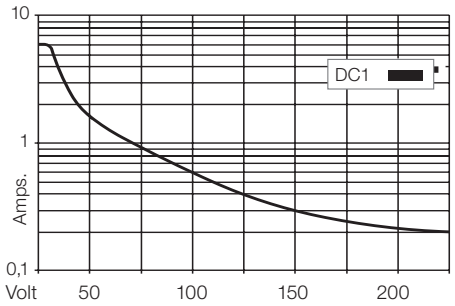
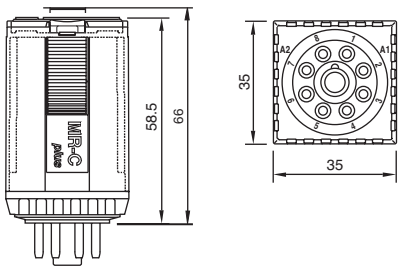


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C2-G2x

8-pin standard relay, 2-pole, plug-in according to IEC 67-I-5a

Type	**C2-G2x/ ... V** Standard relays, DC application 2 open contacts
Maximum contact load	**10 A/250 V AC1** **1,2 A/110 V DC1** **10 A/30 V DC1** **0,4 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,6 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	360	66
48	286	50	48	1K4	34
115	1K7	21	110	7K6	15
230	6K8	10	220	30K3	7,5

Insulation

	Volt rms, 1 min
Contact open	2000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, EN 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C2-G20/AC ... V**
LED	**C2-G20X/AC ... V**
RC Suppresor	**C2-G20R/AC ... V**
VDC 24, 48, 110, 220	**C2-G20/DC ... V**
LED	**C2-G20X/DC ... V**
Free wheeling diode	**C2-G20DX/DC ... V**
Polarity and free wheeling diode	**C2-G20FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C2-G20BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S2-B, S2-S, S2-L, S2-P, S2-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

Gap: 1,7 mm

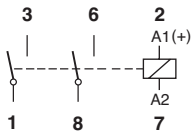


Fig. 1 AC voltage endurance

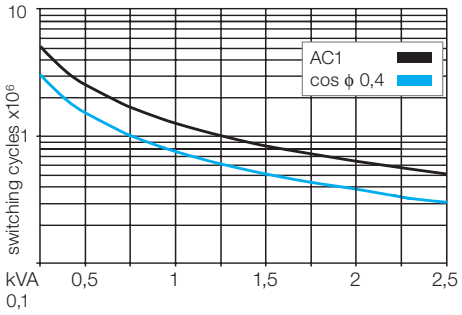
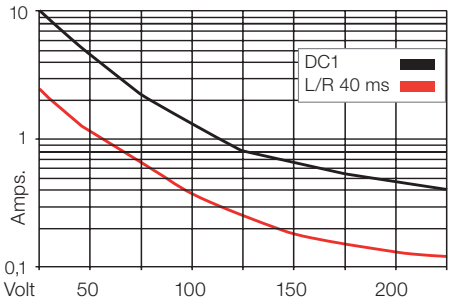
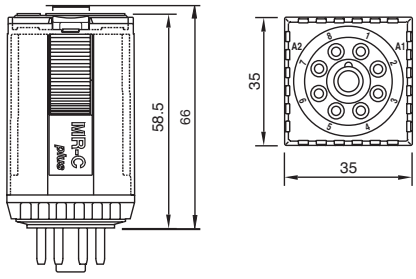


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

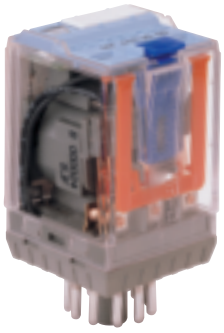
IEC 61810; EN 60947

MRC series

C3-A3x

11-pin standard relays, 3-pole, plug-in, according to IEC 67-I-18a

Type	**C3-A3x/ ... V** Standard relays, 3 change-over contacts
Maximum contact load	**10 A/250 ACI 0,5 A/110 V DC1** **10 A/30 DCI 0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**



Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,2 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC		mA
24	67	92	24	443	54
48	296	46	48	1K8	27
115	1K7	19	110	9K2	12
230	7K1	9,5	220	36K1	6

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥ 100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-A30/AC ... V**	**C3-A38/AC ... V**	**C3-A39/AC ... V**
LED	**C3-A30X/AC ... V**	**C3-A38X/AC ... V**	**C3-A39X/AC ... V**
RC Suppresor	**C3-A30R/AC ...V**	**C3-A38R/AC...V**	**C3-A39R/AC...V**
VDC 24, 48, 110, 220	**C3-A30/DC ... V**	**C3-A38/DC ... V**	**C3-A39/DC ... V**
LED	**C3-A30X/DC ... V**	**C3-A38X/DC ... V**	**C3-A39X/DC ... V**
Free wheeling diode	**C3-A30DX/DC ... V**	**C3-A38DX/DC ... V**	**C3-A39DX/DC ... V**
Polarity and free wheeling diode	**C3-A30FX/DC ... V**	**C3-A38FX/DC ... V**	**C3-A39FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C3-A30BX/UC ... V**	**C3-A38BX/UC ... V**	**C3-A39BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

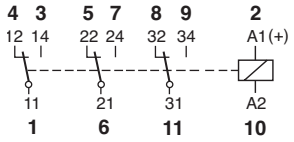


Fig. 1 AC voltage endurance

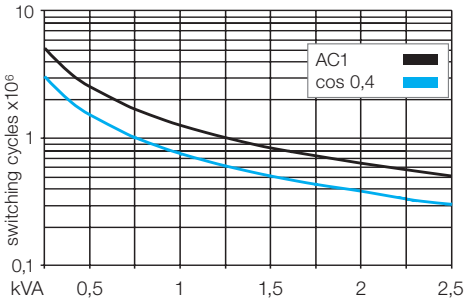
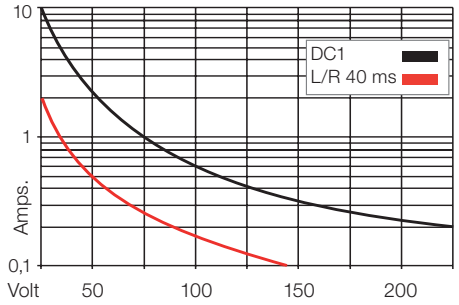
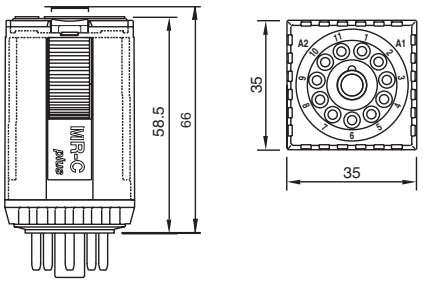


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Lloyd's

IEC 61810; EN 60947

C3-T3x

11-pin standard relay, 3-pole, twin contact, plug-in according to IEC 67-I-18a

Type			**C3-T3x/ ... V**			
			Standard relays for low level			
			3 change-over twin contacts			
Maximum contact load			**6 A/250 V**	**AC 1**	**6 A/30 V**	**DC1**
Recommended minimum contact load			**5 mA/5 V**	**Code 1**		
			1 mA/5 V	**Code 2**		
Contacts						
Material	Standard	Code 1	AgNi + 0,2 µ Au			
	Optional	Code 2	AgNi + 10 µ Au			
Rated current			6 A			
Switch-on current max. (20 ms)			15 A			
Switching voltage max.			250 V			
AC load (Fig 1)			1,2 kVA			
DC load			see Fig. 2			
Coil						
Coil resistance			see table; tolerance ± 10 %			
Pick-up voltage			≤ 0,8 x U_N			
Release voltage			≥ 0,1 x U_N			
Nominal power			2,2 VA (AC)/1,3 W (DC)			

Coil table

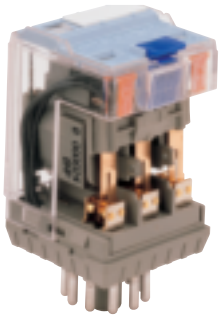
VAC	Ω	mA	VDC	Ω	mA
24	67	92	24	443	54
48	296	46	48	1K8	27
115	1K7	19	110	9K2	12
230	7K1	9,5	220	36K1	6

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, EN 61810-1	2,5 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types		
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-T31/AC ... V**	**C3-T32/AC ... V**
LED	**C3-T31X/AC ... V**	**C3-T32X/AC ... V**
RC Suppresor	**C3-T31R/AC ... V**	**C3-T32R/AC ... V**
VDC 24, 48, 110, 220	**C3-T31/DC ... V**	**C3-T32/DC ... V**
LED	**C3-T31X/DC ... V**	**C3-T32X/DC ... V**
Free wheeling diode	**C3-T31DX/DC ... V**	**C3-T32DX/DC ... V**
Polarity and free wheeling diode	**C3-T31FX/DC ... V**	**C3-T32FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C3-T31BX/UC ... V**	**C3-T32BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

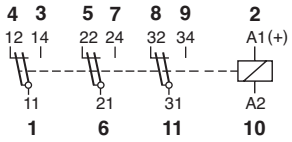


Fig. 1 AC voltage endurance

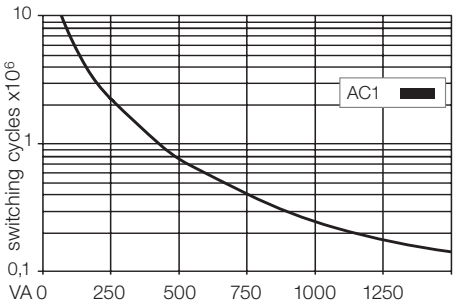
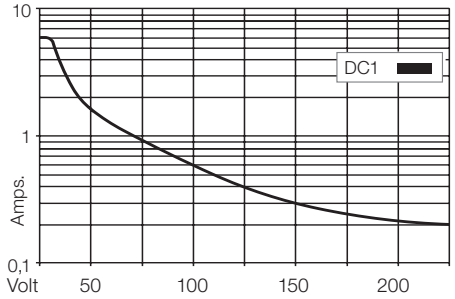
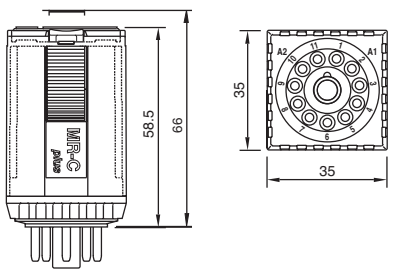


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C3-G3x

11-pin standard relay, 3-pole, open contact, according to IEC 67-I-18a

Type	**C3-G3x/ ... V** Standard relays, DC application 3 open contacts
Maximum contact load	**10 A 250 V AC 1** **1,2 A/110 V DC1** **10 A 30 V DC 1** **0,4 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,6 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	360	66
48	286	50	48	1K4	34
115	1K7	21	110	7K6	15
230	6K8	10	220	30K3	7,5

Insulation

	Volt rms, 1 min
Contact open	2000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 ºC /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/ h
Protection class	IP40
Weight	90 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-G30/AC ... V**
LED	**C3-G30X/AC ... V**
RC Suppresor	**C3-G30R/AC ... V**
VDC 24, 48, 110, 220	**C3-G30/DC ... V**
LED	**C3-G30X/DC ... V**
Free wheeling diode	**C3-G30DX/DC... V**
Polarity and free wheeling diode	**C3-G30FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C3-G30BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

Gap: 1,7 mm

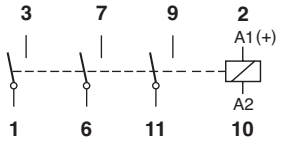


Fig. 1 AC voltage endurance

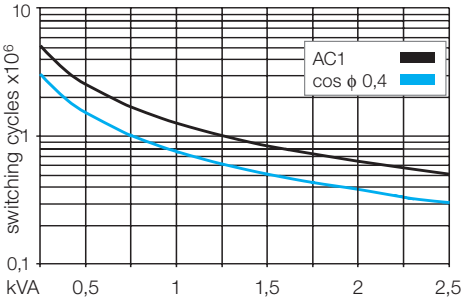
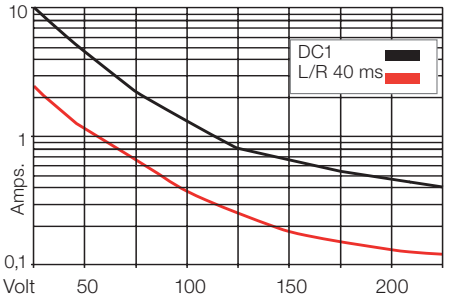
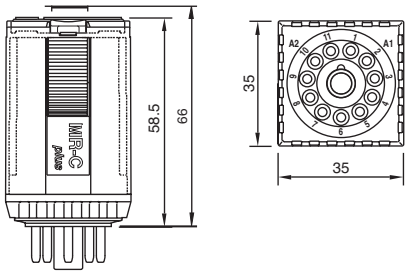


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C3-M1x

11-pin power relay, 1-pole, magnetic blow out, according to IEC 67-I-18a

Type	**C3-M1x/ ... V** Power relays, DC, application 1 pole, magnetic blow out
Maximum contact load	**10 A 250 V AC1 10 A 220 V DC1** **3,6 A 110 V L/R 40ms 2 A 220 V L/R 40ms**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC) / 1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	443	54
48	286	50	48	1K7	27
115	1K7	21	110	9K2	12
230	6K8	10	220	36K1	6

Insulation

	Volt rms, 1 min
Contact open	2500 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1:	2,5 KV / 3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Nominal coil power	2,4 VA (AC), 1,3 W (DC)
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Isolation: EN 60947, pollution rate 3, Gr C	250 V
Dielectric strength, Contact/Coil	2,5 KV

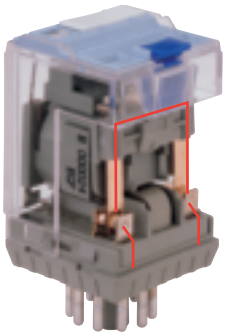
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-M10/AC ... V**
LED	**C3-M10X/AC ... V**
RC Suppresor	**C3-M10R/AC ... V**
VDC 24, 48, 110, 220	**C3-M10/DC ... V**
LED	**C3-M10X/DC ... V**
Free wheeling diode	**C3-M10DX/DC ... V**
Polarity and free wheeling diode	**C3-M10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C3-M10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

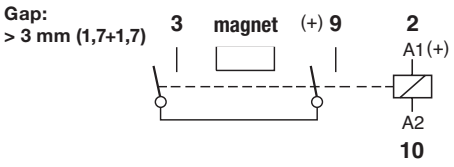


Fig. 1 AC voltage endurance

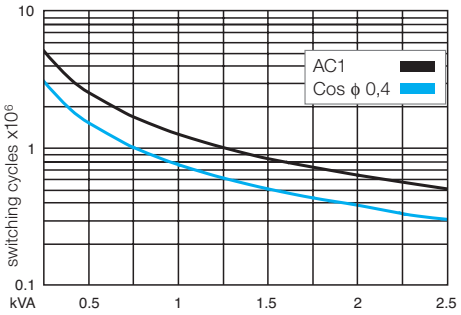
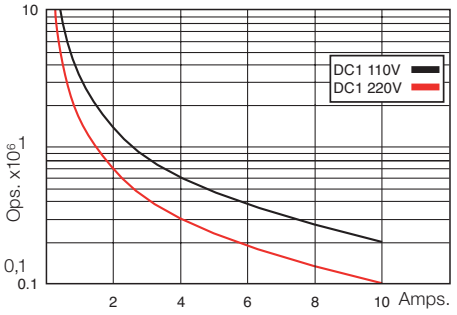
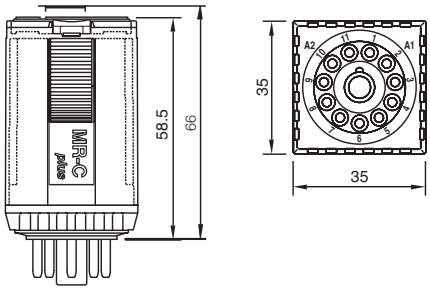


Fig. 2 DC voltage endurance



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C3-X1x

11-pin power relay, 1-pole, double make, according to IEC 67-I-18a

Type	**C3-X1x/ ... V** Power relays for DC application 1 pole, NO, double make
Maximum contact load	**10 A/250 V AC 1 — 7 A/110 V DC1** **10 A/30 V DC 1 — 1,2 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	443	54
48	286	50	48	1K7	27
115	1K7	21	110	9K2	12
230	6K8	10	220	36K1	6

Insulation

	Volt rms, 1 min
Contact open	2500 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

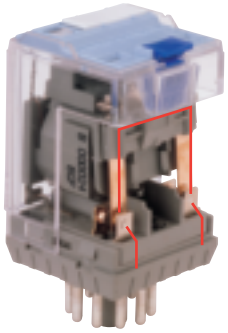
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-X10/AC ... V**
LED	**C3-X10X/AC ... V**
RC Suppresor	**C3-X10R/AC ... V**
VDC 24, 48, 110, 220	**C3-X10/DC ... V**
LED	**C3-X10X/DC ... V**
Free wheeling diode	**C3-X10DX/DC ... V**
Polarity and free wheeling diode	**C3-X10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C3-X10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

Gap:
> 3 mm (1,7 + 1,7)

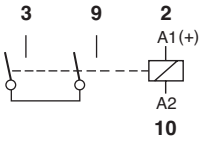


Fig. 1 AC voltage endurance

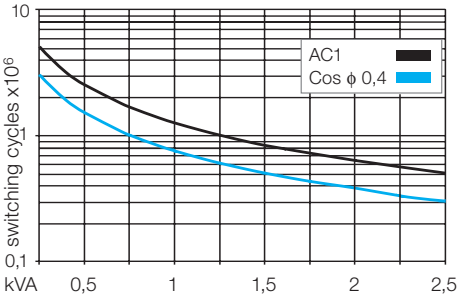
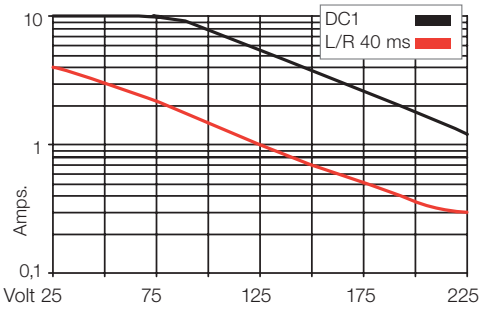
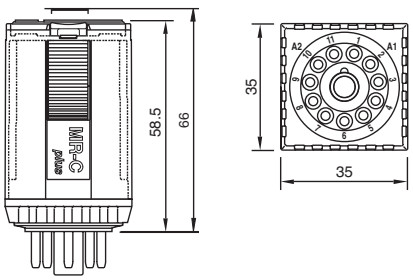


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C3-R2x

11-pin remanence relays, 2-pole, according to IEC 67-I-18a

Type	**C3-R2x/ ... V** Remanence plug-in relays, 2 change-over contacts
Maximum contact load	**10 A/250 V AC1 0,5 A/110 V DC1** **10 A/30 V DC1 0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**

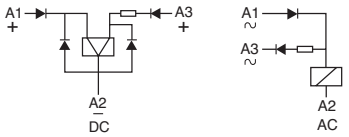
Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
ON pulse power	1,5 VA/W
OFF pulse power	0,5 VA/W
Pull-in ON/OFF	≤ 0,8 x U_N

Internal Diagram:



Coil table

VAC	mA ON	mA OFF	VDC	mA ON	mA OFF
24	75	12	12	125	41
48	38	6	24	63	21
115	16	2,5	48	31	10
230	8	1,3	110	14	4,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Minimum pulse length for ON/OFF	50 ms
Mechanical life ops	10 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	95 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C3-R20/AC ... V**	**C3-R28/AC ... V**	**C3-R29/AC ... V**
VDC 12, 24, 48, 110	**C3-R20/DC ... V**	**C3-R28/DC ... V**	**C3-R29/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

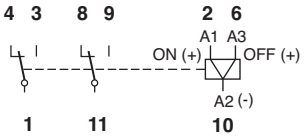


Fig. 1 AC voltage endurance

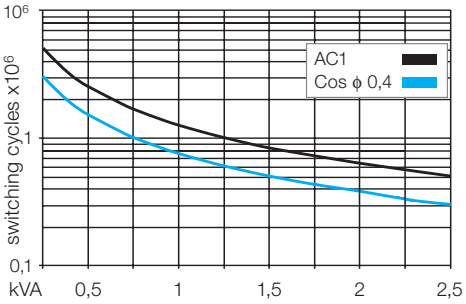
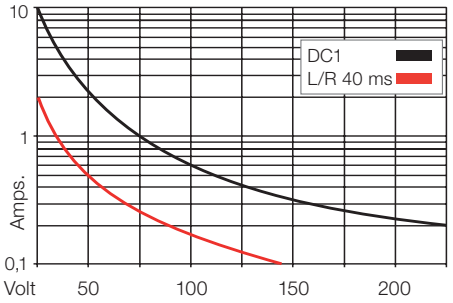
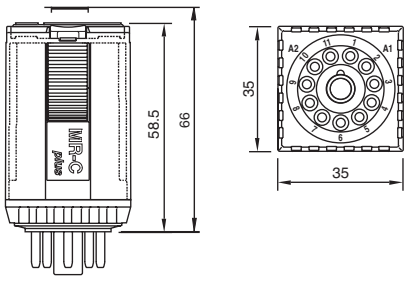


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C3-S1x

11-pin standard relays, sensitive, 1-pole, according to IEC 67-I-18a

Type	**C3-S1x/ DC... V** Sensitive relays, 250 mW, 1 change-over contacts
Operating range	**0,8 ... 2,5 x Un**
Maximum contact load	**6 A/250 V AC1 6 A/30 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 4** **5 mA/5 V Code 8**

Contacts

Material	Standard,	Code 4	AgNi + 0,2 µ Au
	Optional,	Code 8	AgNi + 10 µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	250 mW

Coil table

VDC	Ω	mA
6	140	43
12	536	22
24	2164	11
48	8651	5,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)....60 °C /-40 ... 80 °C
Pick-up time/bounce time	18 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	73 g

Standard types

VDC 12, 24, 48	**C3-S14/DC ... V**	**C3-S18/DC ... V**
Free wheeling diode	**C3-S14D/DC ... V**	**C3-S18D/DC ... V**
Polarity and free wheeling diode	**C3-S14F/DC ... V**	**C3-S18F/DC ... V**

Connection of diodes to the coil will increase the release time.
LED available upon request.

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

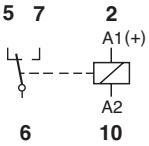


Fig. 1 AC voltage endurance

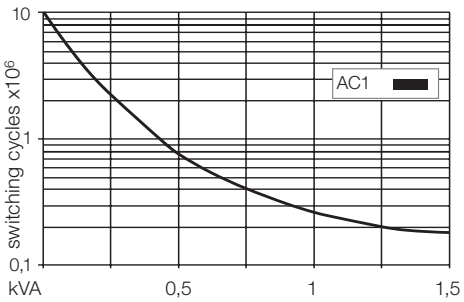
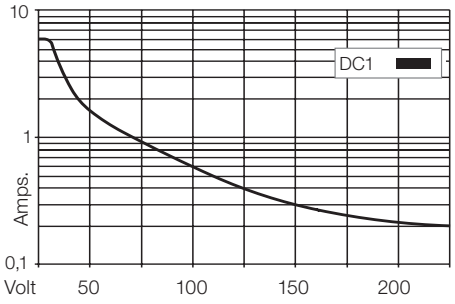
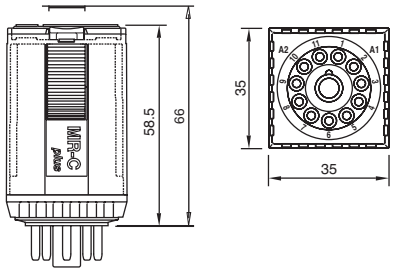


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C3-E2x

11-pin standard relays, sensitive, 2-pole, according to IEC 67-I-18a

Type	**C3-E2x/ DC... V** Sensitive relays, 500 mW, 2 change-over contacts
Operating range	**0,8 ... 1,7 x Un**
Maximum contact load	**6 A/250 V AC1 6 A/30 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 4** **5 mA/5 V Code 8**

Contacts

Material	Standard,	Code 4	AgNi + 0,2 µ Au
	Optional,	Code 8	AgNi + 10 µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	500 mW

Coil table

VDC	Ω	mA
24	1K1	21
48	4K6	10
60	7K2	8,3
110	24K2	4,5

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)....60 °C /-40 ... 80 °C
Pick-up time/bounce time	18 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types

VDC 24, 48, 60, 110	**C3-E24/DC ... V**	**C3-E28/DC ... V**
Free wheeling diode	**C3-E24D/DC ... V**	**C3-E28D/DC ... V**
Polarity and free wheeling diode	**C3-E24F/DC ... V**	**C3-E282F/DC ... V**

Connection of diodes to the coil will increase the release time.
LED available upon request.

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

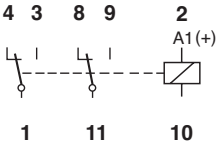


Fig. 1 AC voltage endurance

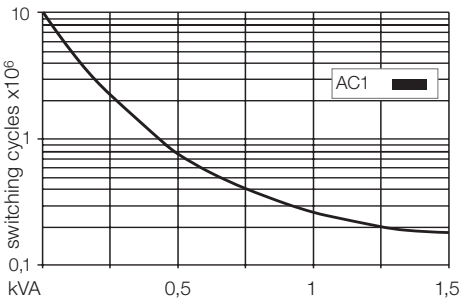
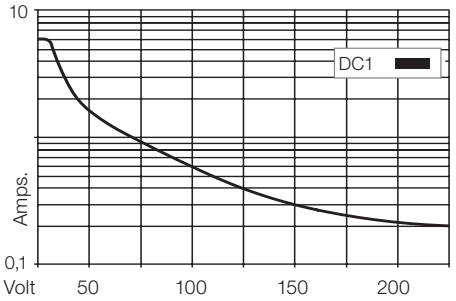
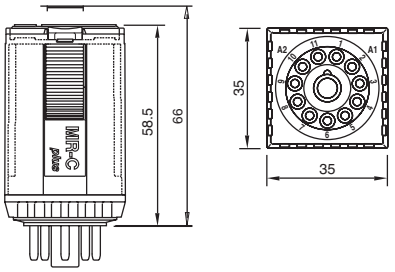


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C3-N3x

11-pin standard relays, sensitive, 3-pole, according to IEC 67-I-18a

Type	**C3-N3x/DC ... V** Sensitive relays, 800 mw 3 change-over contacts
Operating range	**0,8 ... 1,4 x Un**
Maximum contact load	**6 A/250 V AC 1 6 A/30 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 4** **5 mA/ 5 V Code 8**

Contacts

Material	Standard	Code 4	AgNi + 0,2 µ Au
	Optional	Code 8	AgNi + 10 µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	800 mW

Coil table

VDC	Ω	mA
24	720	33
48	2K8	17
60	4K5	13
110	15K	7

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-5	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	18 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types

VDC 24, 48, 60, 110		
Free wheeling diode	**C3-N34/DC ... V**	**C3-N38/DC ... V**
Polarity and free wheeling diode	**C3-N34D/DC ... V**	**C3-N38D/DC ... V**
	C3-N34F/DC ... V	**C3-N38F/DC ... V**

Connection of diodes to the coil will increase the release time.
LED available upon request.

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

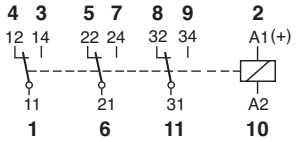


Fig. 1 AC voltage endurance

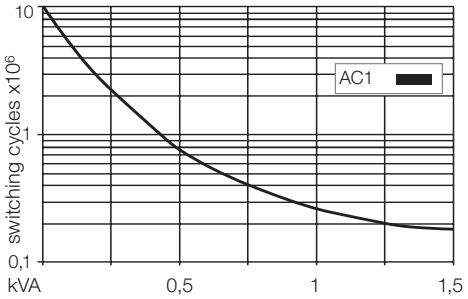
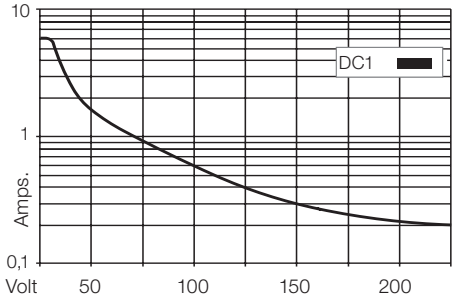
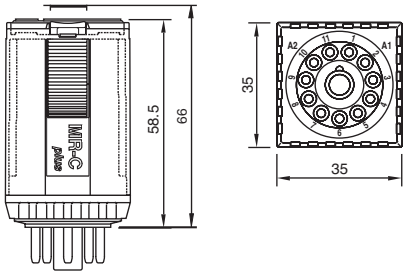


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

R3-N3xD

11-pin, special relay, 3-pole, according to IEC 67-I-18a
Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

Type	**R3-NxD/ ... V** Relays for Railway application 3 change-over contacts special wide range voltage
Maximum contact load	**6 A 250 V AC1 6 A 30 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 4** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 4	AgNi + 0,2µ Au
	Optional	Code 8	AgNi + 10µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
Max. AC load			see Fig. 1
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Operation range	0,7 U_N ...1,25 U_N
Nominal power	1,07 W

Coil table

VDC	Ω	mA
24	525	46
48	2133	22
72	4844	15
110	12900	9

Insulation

Pollution grade	PD3
With pulse (1,2 / 50 µs)/Dielectric streght (1Minute/V rms)	
Contact/coil	4 kV / 2220 V
Contact/contact	4 kV / 2220 V
Between contact and the same pole	1550 kV / 850 V

Specifications

Ambient temperature operation/storage	-25 (no ice)....70 °C /-40 ... 80 °C
Number of mechanical operations	≥ 10 millions
Thermic class	B (130 °C)
Vibration : category / class	1 / B Body mounted 5 - 150 Hz (3 axes)
Shock	5 g (3 axes)
Pick-up time/bounce time	18 ms/≤ 3 ms
Release time/bounce time (D version)	35 ms/≤ 1 ms
Weight	95 g
Weight avg. Relay + Socket (S3-B)	150 g
Protection class	IP 40

Standard types

DC 24, 48, 72, 110	**R3-N30/DC ... V**	**R3-N34/DC ... V**	**R3-N38/DC ... V**
Free wheeling diode	**R3-N30D/DC ... V**	**R3-N34D/DC ... V**	**R3-N38D/DC ... V**
LED	**R3-N30X/DC ... V**	**R3-N34X/DC ... V**	**R3-N38X/DC ... V**
LED + free wheeling diode	**R3-N30DX/DC ... V**	**R3-N34DX/DC ... V**	**R3-N38DX/DC ... V***

"..." Enter the voltage for full type designation

Accessories

Socket:	**S3-B, S3-S, S3-L, S3-P, S3-P0, S3-MP, S3-MS**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

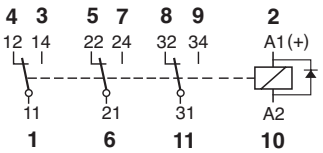


Fig. 1 AC voltage endurance

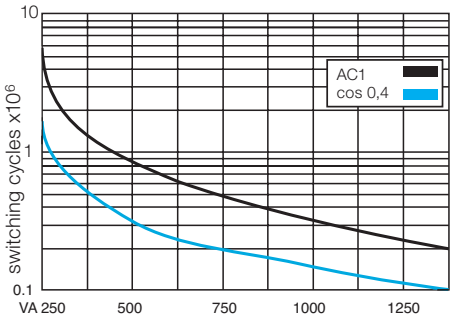
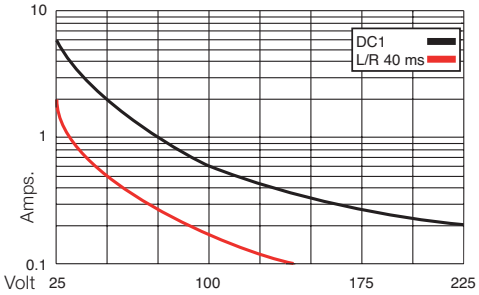
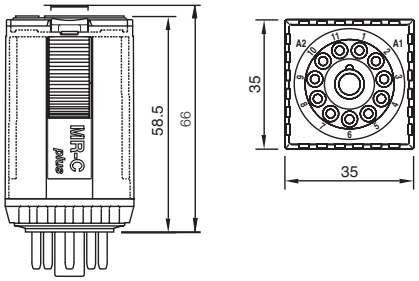


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 60077/EN60077-1-2/99; EN61373/99

MRC series

C4-A4x

14-pin, standard relay, 4-pole, plug-in, faston

Type	**C4-A4x/ ... V** Standard relays, 4 change-over contacts
Maximum contact load	**10 A/250 V AC1 0,5 A/110 V DC1** **10 A/30 V DC1 0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,4 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	414	58
48	286	50	48	1K6	30
115	1K7	21	110	8K1	13
230	6K8	10	220	35K7	6,2

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

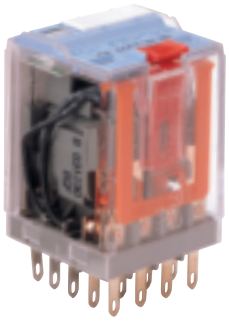
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C4-A40/AC ... V**	**C4-A48/AC ... V**
LED	**C4-A40X/AC ... V**	**C4-A48X/AC ... V**
RC suppresor	**C4-A40R/AC ... V**	**C4-A48R/AC ... V**
VDC 24, 48, 110, 220	**C4-A40/DC ... V**	**C4-A48/DC ... V**
LED	**C4-A40X/DC ... V**	**C4-A48X/DC ... V**
Free wheeling diode	**C4-A40DX/DC ... V**	**C4-A48DX/DC ... V**
Polarity and free wheeling diode	**C4-A40FX/DC ... V**	**C4-A48FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C4-A40BX/UC ... V**	**C4-A48BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S4-J, S4-L, S4-P, S4-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

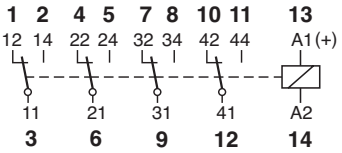


Fig. 1 AC voltage endurance

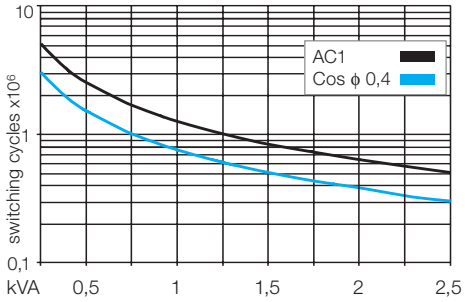
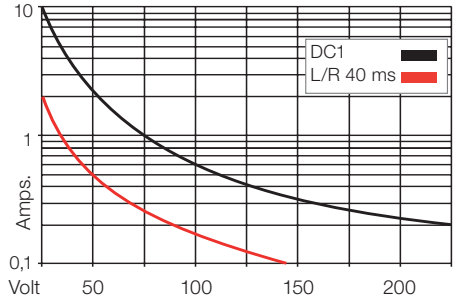
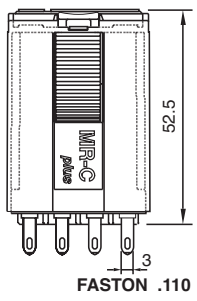
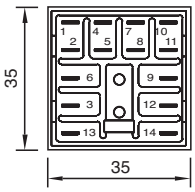


Fig. 2 DC load limit curve



Dimensions [mm]





Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

C4-X2x

14-pin, power relay, double-make, faston

Type	**C4-X2x/ ... V** Power relays, DC application 2-pole, NO, double make
Maximum contact load	**10 A/250 V AC 1** **7 A/110 V DC 1** **10 A/30 V DC 1** **1,2 A/220 V DC 1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	443	54
48	286	50	48	1K8	27
115	1K7	21	110	9K2	12
230	6k8	10	220	36K1	6

Insulation

	Volt rms, 1 min
Contact open	2500 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

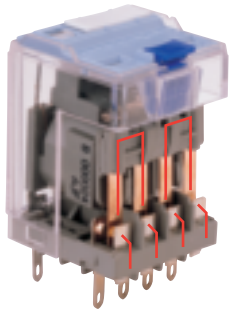
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C4-X20/AC ... V**
LED	**C4-X20X/AC ... V**
RC Suppresor	**C4-X20R/AC ... V**
VDC 24, 48, 110, 220	**C4-X20/DC ... V**
LED	**C4-X20X/DC ... V**
Free wheeling diode	**C4-X20DX/DC ... V**
Polarity and free wheeling diode	**C4-X20FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C4-X20BX/UC ... V**

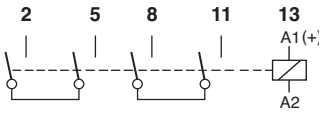
"..." Enter the voltage for full type designation

Accessories

Socket:	**S4-S, S4-L, S4-P, S4-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram



Gap:
> 3 mm (1,7 + 1,7)

Fig. 1 AC voltage endurance

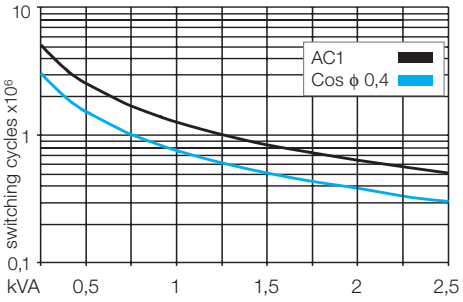
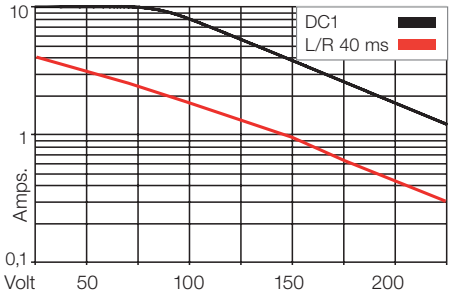
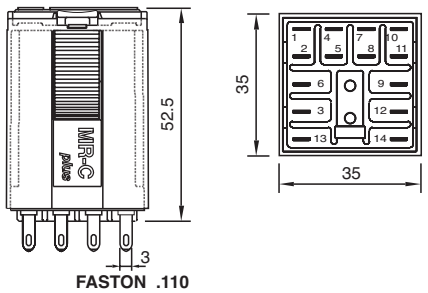


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C4-R3x

14-pin, remanence relay, 3-pole, faston

Type	**C4-R3x/ ... V** Magnetic remanence relay 3 change-over contact
Maximum contact load	**10 A/250 V AC 1 0,5 A/110 V DC1** **10 A/10 V DC 1 0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**

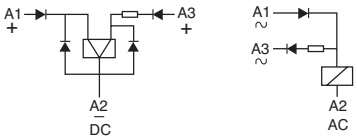
Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
ON pulse power	1,5 VA/W
OFF pulse power	0,5 VA/W
	1 Winding for AC, 2 Windings for DC
Pull-in ON/OFF	≤ 0,8 x U_N

Internal Diagram:



Coil table

VAC	mA ON	mA OFF	VDC	mA ON	mA OFF
24	75	12	12	125	41
48	38	6	24	63	21
115	16	2,5	48	31	10
230	8	1,3	110	14	4,5

Insulation

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Minimum pulse length for ON/OFF	50 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill. switching cycles
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	95 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)

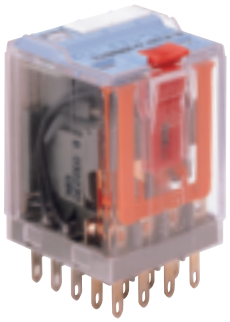
VDC 12, 24, 48, 110

C4-R30/AC ... V **C4-R30/DC ... V**	**C4-R38/AC ... V** **C4-R38/DC ... V**	**C4-R39/AC ... V** **C4-R39/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S4-J, S4-L, S4-P, S4-P0**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

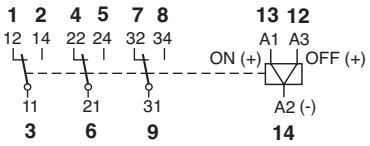


Fig. 1 AC voltage endurance

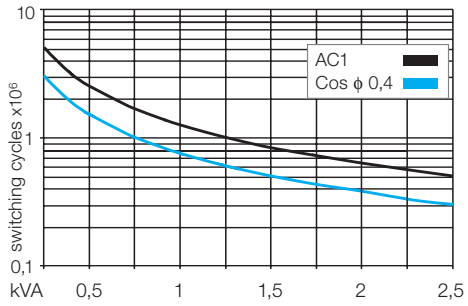
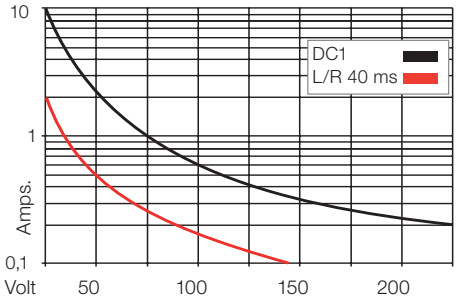
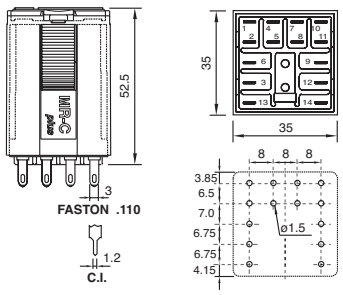


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C5-A2x

8-pin, power relay, 2-pole, plug-in, faston

Type			**C5-A2x/ ... V** Power relays, 2 change-over contacts
Maximum contact load			**16 A/400 V AC1 0,5 A/110 V DC1** **16 A/30 V DC1 0,2 A/220 V DC1**
Contacts			
Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2
Coil			
Coil resistance			see table; tolerance ± 10 %
Pick-up voltage			≤ 0,8 x U_N
Release voltage			≥ 0,1 x U_N
Nominal power			2,4 VA (AC)/1,4 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	414	58
48	286	50	48	1K6	30
115	1K7	21	110	8K1	13
230	6K8	10	220	35K6	6
400	18K8	6			

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥3 GΩ
Insulation, IEC 61810-1	4 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 ºC /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/ops/h
Protection class	IP40
Weight	90 g

Standard types	
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C5-A20/AC ... V**
LED	**C5-A20X/AC ... V**
RC suppresor (max 250 V)	**C5-A20R/AC ... V**
VDC 24, 48, 110, 220	**C5-A20/DC ... V**
LED	**C5-A20X/DC ... V**
Free wheeling diode	**C5-A20DX/DC ... V**
Polarity and free wheeling diode	**C5-A20FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-A20BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

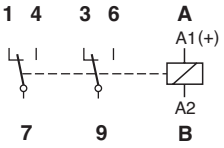


Fig. 1 AC voltage endurance

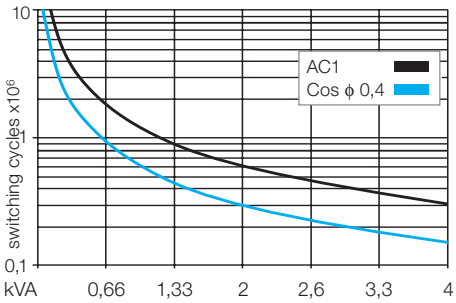
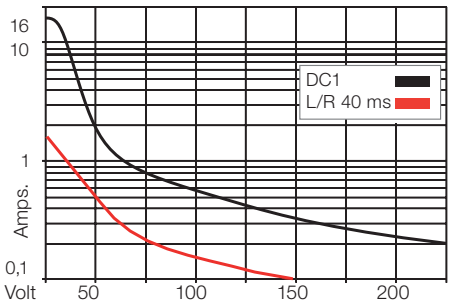
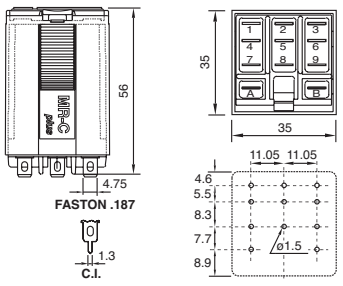


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C5-A3x

11-pin, power relay, 3-pole, plug-in, faston

Type	**C5-A3x/ ... V** Power relays, 3 change-over contacts
Maximum contact load	**16 A/400 V AC1 0,5 A/110 V DC1** **16 A/30 V DC1 0,2 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,4 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	24	414	58
48	286	50	48	1K6	30
115	1K7	21	110	8K1	13
230	6K8	10	220	35K6	6,2
400	18K8	6			

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥3 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	95 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C5-A30/AC ... V**
LED	**C5-A30X/AC ... V**
RC suppresor (max 250 V)	**C5-A30R/AC ... V**
VDC 24, 48, 110, 220	**C5-A30/DC ... V**
LED	**C5-A30X/DC ... V**
Free wheeling diode	**C5-A30DX/DC ... V**
Polarity and free wheeling diode	**C5-A30FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-A30BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

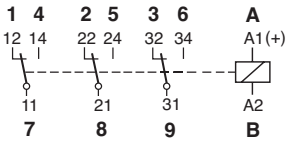


Fig. 1 AC voltage endurance

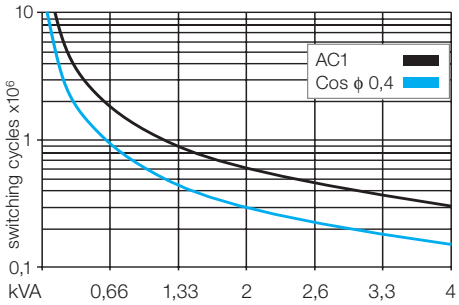
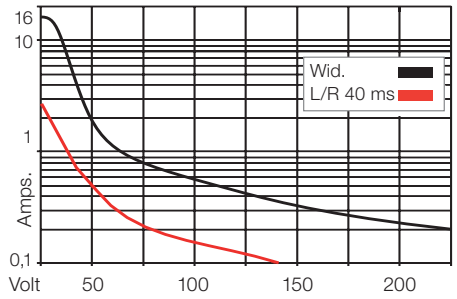
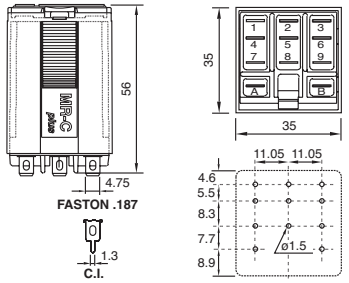


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947; IEC 61810

C5-G3x

8-pin, power relay, 3-pole, open contact plug-in, faston

Type	**C5-G3x/ ... V** Power relays, DC application. 3 open contacts
Maximum contact load	**16 A/400 V AC1** **1,2 A/110 V DC1** **16 A/30 V DC1** **0,4 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,6 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	12	90	133
48	286	50	24	373	66
115	1K7	21	48	1K4	34
230	6K8	10	110	7K6	15
400	18K8	6	220	30K3	7,5

Insulation

	Volt rms, 1 min
Contact open	2000 V
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥ 3 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	95 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C5-G30/AC ... V**
LED	**C5-G30X/AC ... V**
RC suppresor (max 250 V)	**C5-G30R/AC ... V**
VDC 12, 24, 48, 110, 220	**C5-G30/DC ... V**
LED	**C5-G30X/DC ... V**
Free wheeling diode	**C5-G30DX/DC ... V**
Polarity and free wheeling diode	**C5-G30FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-G30BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

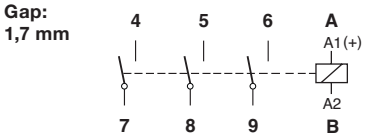


Fig. 1 AC voltage endurance

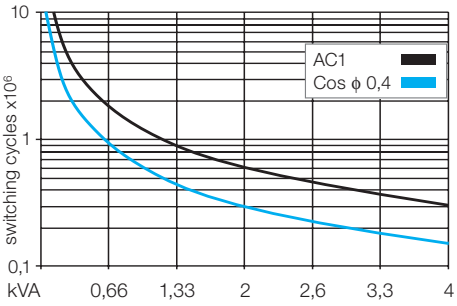
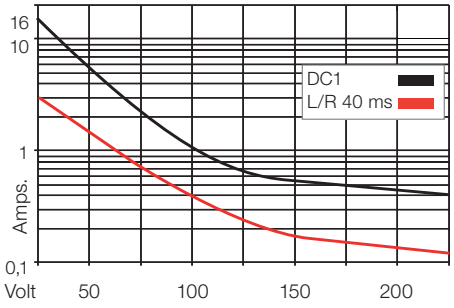
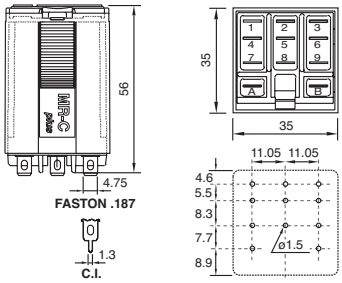


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947; IEC 61810

MRC series

C5-X1x

4-pin, power relay, 1-pole, double make, faston

Type	**C5-X1x/ ... V** Power relays, DC application 1 pole, NO, double make
Maximum contact load	**16 A/400 V AC1 — 7 A/110 V DC1** **16 A/30 V DC1 — 1,2 A/220V DC13**

Contacts

Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC)/1,3 W (DC))

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	12	110	108
48	286	50	24	443	54
115	1K7	21	48	1K7	27
230	6K8	10	110	9K2	12
400	18K8	6	220	34K5	6,2

Insulation

	Volt rms, 1 min
Contact open	4 kV
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥ 3 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	90 g

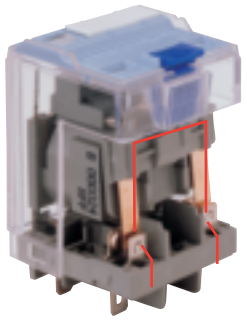
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C5-X10/AC ... V**
LED	**C5-X10X/AC ... V**
RC suppresor (max 250 V)	**C5-X10R/AC ... V**
VDC 12, 24, 48, 110, 220	**C5-X10/DC ... V**
LED	**C5-X10X/DC ... V**
Free wheeling diode	**C5-X10DX/DC ... V**
Polarity and free wheeling diode	**C5-X10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-X10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**



Connection diagram

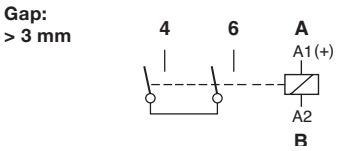


Fig. 1 AC voltage endurance

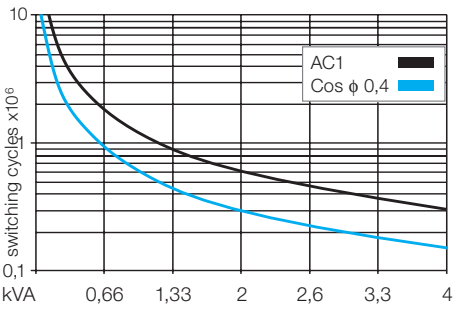
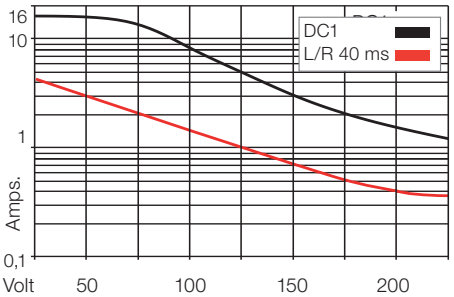
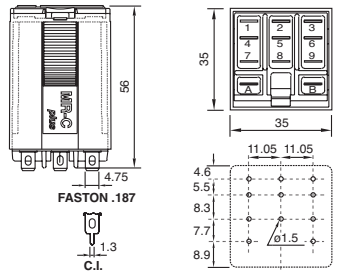


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C5-M1x

4-pin, power relay, 1-pole double make, magnetic blow out, faston

Type			**C5-M1x/ ... V** Power relays, DC application 1 pole, NO, magnetic blow out
Maximum contact load			**16 A/400 V AC1 10 A/220 V DC1** **3,6 A/110 V DC13 2 A/220 V DC13**
Contacts			
Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2
Coil			
Coil resistance			see table; tolerance ± 10 %
Pick-up voltage			≤ 0,8 x U_N
Release voltage			≥ 0,1 x U_N
Nominal power			2,4 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	12	110	108
48	286	50	24	443	54
115	1K7	21	48	1K7	27
230	6K8	10	110	9K2	12
400	18K8	6	220	34K5	6,2

Insulation	Volt rms, 1 min
Contact open	4000 V
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥3 GΩ
Insulation, IEC 61810-1	4 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 ºC /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance	see fig. 2
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	90 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C5-M10/AC ... V**
LED	**C5-M10X/AC ... V**
RC suppresor (max 250 V)	**C5-M10R/AC ... V**
VDC 12, 24, 48, 110, 220	**C5-M10/DC ... V**
LED	**C5-M10X/DC ... V**
Free wheeling diode	**C5-M10DX/DC ... V**
Polarity and free wheeling diode	**C5-M10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-M10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

Gap:
> 3 mm

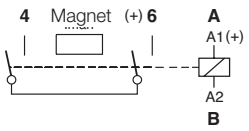


Fig. 1 AC voltage endurance

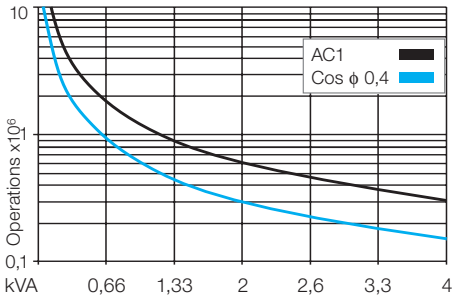
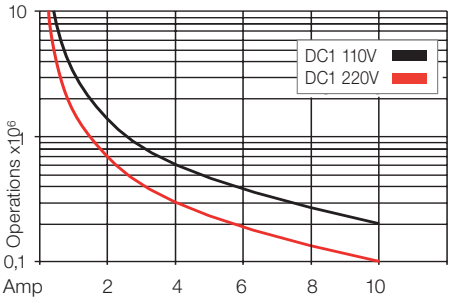
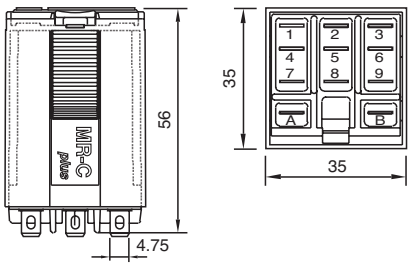


Fig. 2 DC voltage endurance



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

MRC series

C5-M2x

6-pin, power relay, 2-pole normally open, magnetic blow out, faston

Type	**C5-M2x/ ... V** Power relays, DC application double pole, NO, magnetic blow out
Maximum contact load	**16 A @ 250 V AC1** **7 A @ 110 V DC1** **3 A @ 220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			250 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≥ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	2,4 VA (AC) / 1,6 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	65	100	12	90	133
48	286	50	24	373	66
115	1K7	21	48	1K4	33
230	6K8	10.4	110	7K6	15

Insulation — Volt rms, 1 min

Contact open	2 kV
Contact/contact	4 kV
Contact/coil	3 kV
Insulation resistance at 500 V	≥ 3 GΩ
Insulation, EN 60947/IEC 61810-1:	4 KV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill. switching cycles
DC Rated load	≥ 75.000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	90 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C5-M20/AC ... V**
LED	**C5-M20X/AC ... V**
RC suppresor (max 250 V)	**C5-M20R/AC ... V**
VDC 12, 24, 48, 110, 220	**C5-M20/DC ... V**
LED	**C5-M20X/DC ... V**
Free wheeling diode	**C5-M20DX/DC ... V**
Polarity and free wheeling diode	**C5-M20FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C5-M20BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

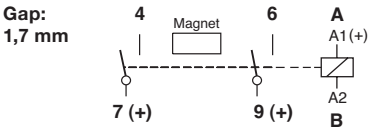


Fig. 1 AC voltage endurance

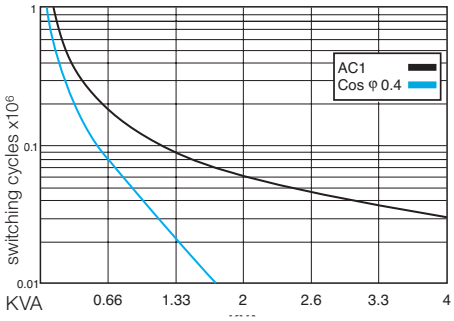
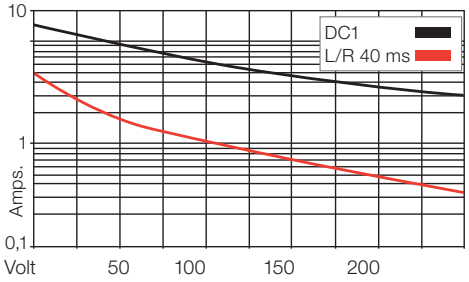
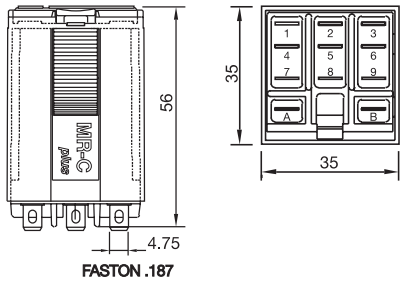


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C5-R2x

9-pin, remanence relay, 2-pole, faston

Type	**C5-R2x/ ... V** Magnetic latching – Remanence relays 2 change-over contact, 10A
Maximum contact load	**10 A/400 V AC1 10 A/30 V DC1** **0,2 A/250 V DC1 0,5 A/110 V DC1**

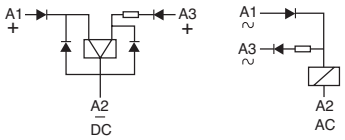
Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			400 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
ON pulse power	1,5 VA/W
OFF pulse power	0,5 VA/W
1 winding for AC, 2 winding for DC	
Pull-in ON/OFF	< 0,8 x U_N

Internal Diagram:



Coil table

VAC	mA ON	mA OFF	VDC	mA ON	mA OFF
24	75	12	12	125	41
48	38	6	24	63	21
115	16	2,5	48	31	10
230	8	1,3	110	14	4,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	4 kV
Contact/coil	4 kV
Insulation resistance at 500 V	≥3 GΩ
Insulation, EN 60947/IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Minimum pulse ON/OFF	50 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	95 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C5-R20/AC ... V**
VDC : 12, 24, 48, 110,	**C5-R20/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S5-S, S5-L, S5-P, S5-P0, S5-M**
Optional accessories (blanking plug):	**SO-NP, SO-OP**

Connection diagram

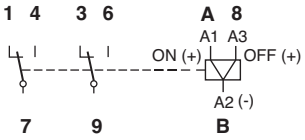


Fig. 1 AC voltage endurance

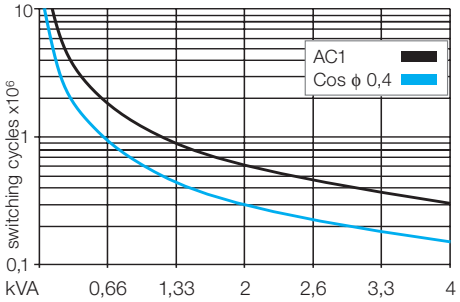
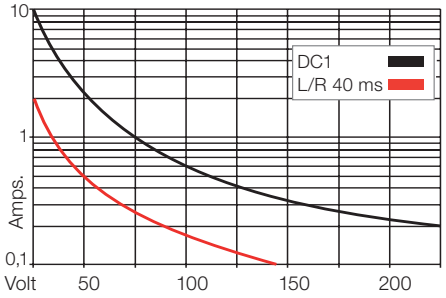
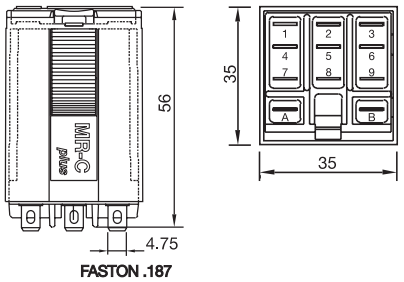


Fig. 2 DC load limit curves



Dimensions [mm]



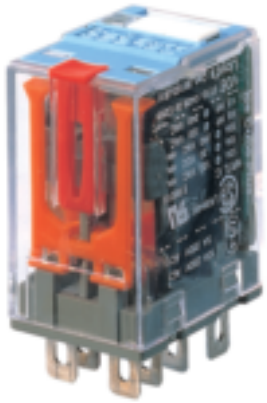
Technical approvals, conformities

IEC 61810, EN 60947

Notes

1.1.2 Miniature Industrial Relays

QRC Series



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
C7 Series						
Miniature power relay	C7-A1			16 A / 250 V	0.5 A / 110 V	S7
General purpose	C7-A2x			10 A / 250 V	0.5 A / 110 V	S7
Low switching load	C7-T2x			6 A / 250 V	6 A / 30 V	S7
DC load switching	C7-G2x			10 A / 250 V	0.8 A / 110 V	S7
DC load switching double make	C7-X1x		>3mm	10 A / 250 V	6 A / 110 V	S7
1 power and 1 signal contact	C7-H23			10 A / 250 V	6 A / 30 V	S7
Power relay for high inrush current	C7-W1x			10 A / 250 V 500 A / 2.5 ms inrush		S7
Railway application	R7-A2x			10 A / 250 V	10 A / 30 V	S7
Railway application	R7-T2x			6 A / 250 V	6 A / 30 V	S7
C9 Series						
Miniature relay	C9-A4x			5 A / 250 V	5 A / 30 V	S9
Sensitive Coil 500mW … 800mW	C9-E2x			5 A / 250 V	5 mA / 30 V	S9
Latching relay	C9-R2x			5 A / 120 V	5 A / 30 V	S9

QRC series

C7-A1x

5-pin, miniature relay, 1-pole, faston

Type	**C7-A1x/ ... V** Standard relay 1 change-over contact
Maximum contact load	**16 A/250 V AC1** **0,5 A/110 V DC1** **16 A/30 V DC1** **0,2 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			16 A
Switch-on current max. (20 ms)			40 A
Switching voltage max.			250 V
AC load (Fig 1)			4 kVA
DC load			see Fig. 2
Relay compatible with socket S7-16			

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,2 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	174	50	12	111	108
48	686	25	24	432	55
115	4K3	10,4	48	1K7	28
230	18K6	5,2	110	9K2	12

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-A10/AC ... V**
LED	**C7-A10X/AC ... V**
VDC 12, 24, 48, 110	**C7-A10/DC ... V**
LED	**C7-A10X/DC ... V**
Free wheeling diode	**C7-A10DX/DC ... V**
Polarity and free wheeling diode	**C7-A10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-A10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S7-16**

Connection diagram

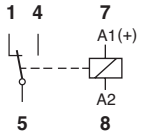


Fig. 1 AC voltage endurance

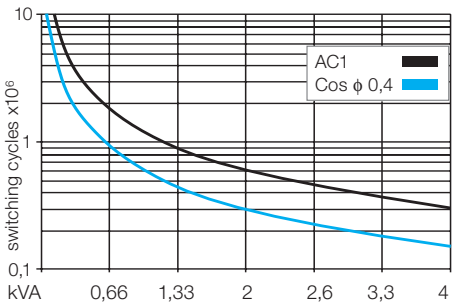
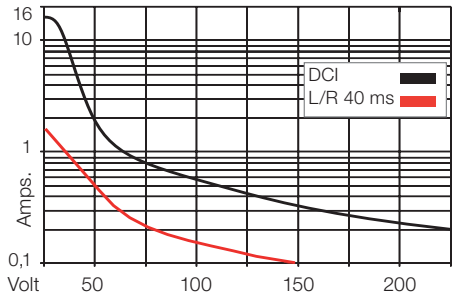
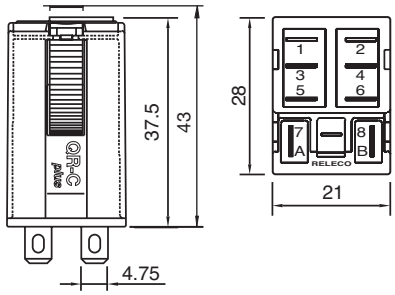


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C7-A2x

8-pin, miniature relay, 2-poles, faston

Type			**C7-A2x/ ... V** Standard relay 2 change-over contact
Maximum contact load			**10 A/250 V AC1 0,5 A/110 V DC1** **10 A/30 V DC1 0,2 A/220 V DC1**
Recommended minimum contact load			**10 mA/10 V Code 0, 9** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi + 10 µ Au
	Optional	Code 9	AgNi + 0,2 µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,2 VA (AC)/1 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	174	50	12	148	85
48	686	25	24	594	43
115	4K3	10,4	48	2K3	21
230	18K6	5,2	110	11K4	10

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-A20/AC ... V**	**C7-A28/AC ... V**	**C7-A29/AC ... V**
LED	**C7-A20X/AC ... V**	**C7-A28X/AC ... V**	**C7-A29X/AC ...V**
VDC 12, 24, 48, 110	**C7-A20/DC ... V**	**C7-A28/DC ... V**	**C7-A29/DC ... V**
LED	**C7-A20X/DC ... V**	**C7-A28X/DC ... V**	**C7-A29X/DC ... V**
Free wheeling diode	**C7-A20DX/DC ... V**	**C7-A28DX/DC ...V**	**C7-A29DX/DC .V**
Polarity and free wheeling diode	**C7-A20FX/DC ... V**	**C7-A28FX/DC ... V**	**C7-A29FX/DC ...V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-A20BX/UC ... V**	**C7-A28BX/UC ... V**	**C7-A29BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S7-M, S7-I/O, S7-L, S7-P, S7-P0**

Connection diagram

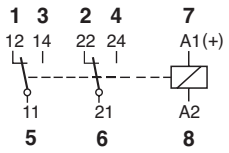


Fig. 1 AC voltage endurance

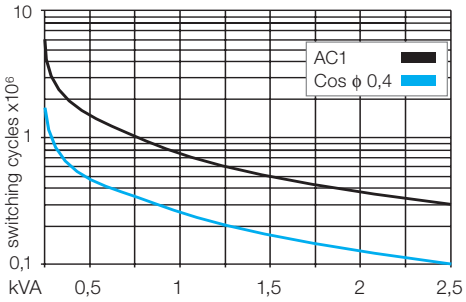
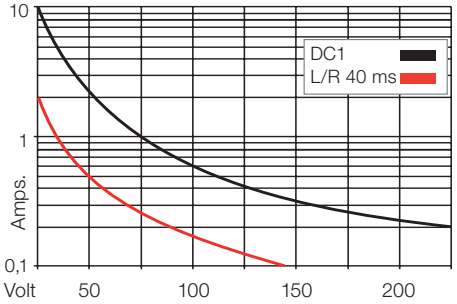
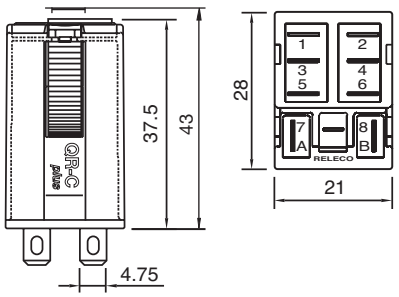


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

QRC series

C7-T2x

8-pin, miniature relay, 2-poles, twin contact, faston

Type			**C7-T2x/ ... V**			
			Standard relays for low level			
			2 change-over bifurcated contacts			
Maximum contact load			**6 A/250 V**	**AC1**	**6 A/30 V**	**DC1**
Recommended minimum contact load			**5 mA/5 V**	**Code 1**		
			1 mA/5 V	**Code 2**		
Contacts						
Material	Standard	Code 1	AgNi + 0,2 µ Au			
	Optional	Code 2	AgNi + 10 µ Au			
Rated current			6 A			
Switch-on current max. (20 ms)			15 A			
Switching voltage max.			250 V			
AC load (Fig 1)			1,2 kVA			
DC load			see fig. 2			
Coil						
Coil resistance			see table; tolerance ± 10 %			
Pick-up voltage			≤ 0,8 x U_N			
Release voltage			≥ 0,1 x U_N			
Nominal power			1,2 VA (AC)/1 W (DC)			

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	174	50	12	148	85
48	686	25	24	594	43
115	4K3	10,4	48	2K3	21
230	18K6	5,2	110	11K4	10

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	16 ms/≤ 3 ms
Release time/bounce time	8 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types		
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-T21/AC ... V**	**C7-T22/AC ... V**
LED	**C7-T21X/AC ... V**	**C7-T22X/AC ... V**
VDC 12, 24, 48, 110	**C7-T21/DC ... V**	**C7-T22/DC ... V**
LED	**C7-T21X/DC ... V**	**C7-T22X/DC ... V**
Free wheeling diode	**C7-T21DX/DC ... V**	**C7-T22DX/DC ...V**
Polarity and free wheeling diode	**C7-T21FX/DC ... V**	**C7-T22FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-T21BX/UC ... V**	**C7-T22BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S7-M, S7-I/O, S7-L, S7-P, S7-P0**

Connection diagram

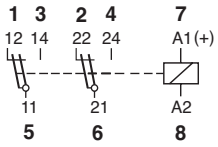


Fig. 1 AC voltage endurance

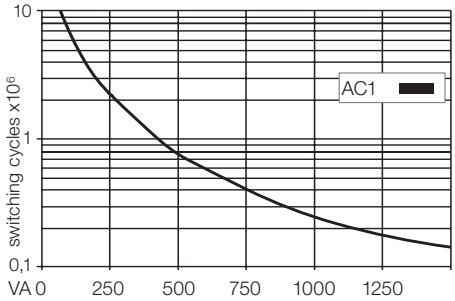
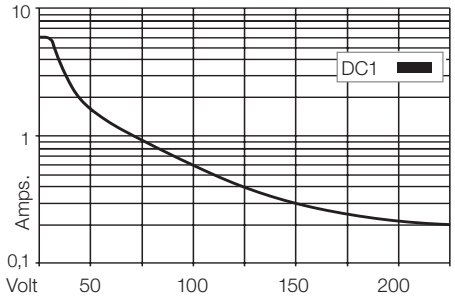
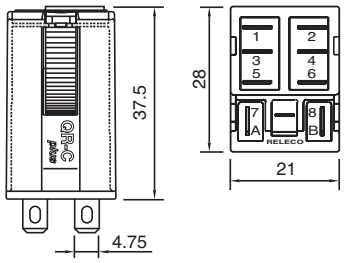


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C7-G2x

6-pin, miniature power relay, 2-poles, faston

Type			**C7-G2x/ ... V** Power relay, DC application 2 open contacts, gap 1,5mm
Maximum contact load			**10 A/250 V AC1** **0,8 A/110 V DC1** **10 A/30 V DC1** **0,4 A/220 V DC1**
Contacts			
Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max			250 V
AC load (Fig 1)			2,5 kVA
DC load			see fig. 2
Coil			
Coil resistance			see table; tolerance ± 10 %
Pick-up voltage			≤ 0,8 x U_N
Release voltage			≥ 0,1 x U_N
Nominal power			1,5 VA (AC)/1,5 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	153	62	12	99	121
48	611	31	24	388	61
115	3K6	13	48	1K5	32
230	14K6	6,5	110	8K	14

Insulation	Volt rms, 1 min
Contact open	2000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types	
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-G20/AC ... V**
LED	**C7-G20X/AC ... V**
VDC 12, 24, 48, 110	**C7-G20/DC ... V**
LED	**C7-G20X/DC ... V**
Free wheeling diode	**C7-G20DX/DC ... V**
Polarity and free wheeling diode	**C7-G20FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-G20BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S7-M, S7-I/O, S7-L, S7-P, S7-P0**

Connection diagram

Gap: 1,5 mm

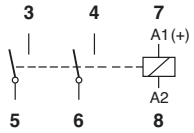


Fig. 1 AC voltage endurance

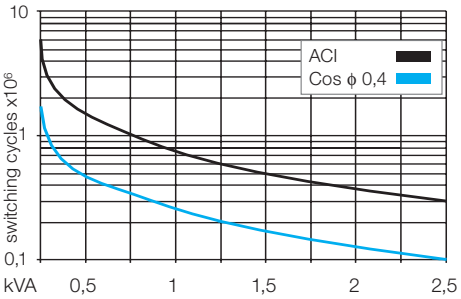
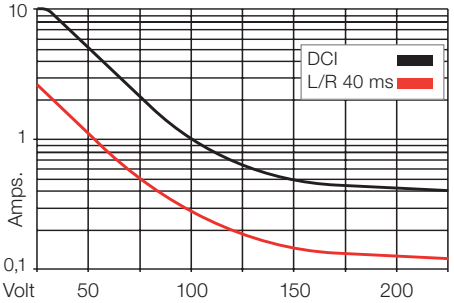
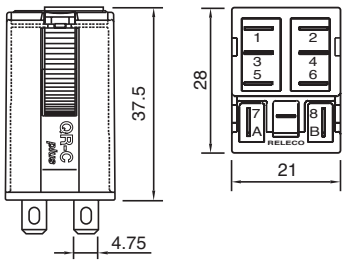


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

QRC series

C7-X1x

4-pin, miniature power relay, 1-pole, double make contact, faston

Type	**C7-X1x/ ... V** Power relay, DC application 1 pole, NO, double make
Maximum contact load	**10 A/250 V AC1 — 6 A/110 V DC1** **10 A/30 V DC1 — 1 A/220 V DC1**

Contacts

Material	Standard	Code 0	AgNi
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,5 VA (AC)/1,3 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	153	62	12	111	108
48	611	31	24	432	55
115	3K6	13	48	1K7	27
230	14K6	6,5	110	9K2	12

Insulation

	Volt rms, 1 min
Contact open	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

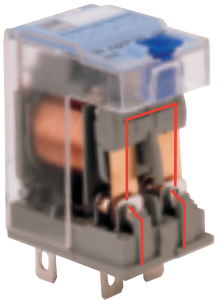
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-X10/AC ... V**
LED	**C7-X10X/AC ... V**
VDC 12, 24, 48, 110	**C7-X10/DC ... V**
LED	**C7-X10X/DC ... V**
Free wheeling diode	**C7-X10DX/DC ... V**
Polarity and free wheeling diode	**C7-X10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-X10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S7-M, S7-I/O, S7-L, S7-P, S7-P0**



Connection diagram

Gap:
3 mm (1,5 + 1,5)

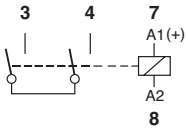


Fig. 1 AC voltage endurance

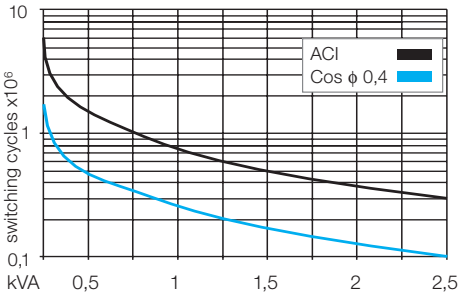
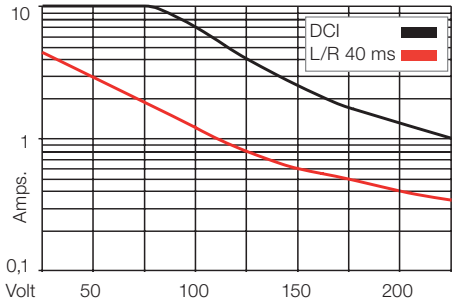
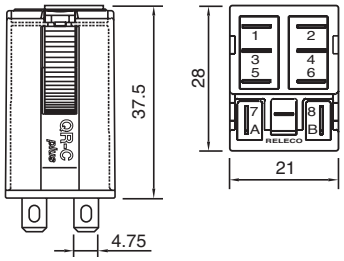


Fig. 2 DC load limit curve



Dimensions [mm]



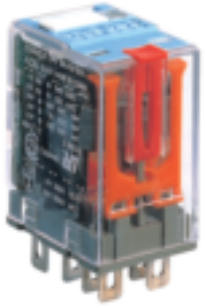
Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

C7-H23

8-pin, miniature relay, 2-pole, faston



Type	**C7-H23/ ... V** Special relays 1 x CO power contact 1 x CO twin contact
Maximum contact load	**10 A 250 V AC1 6 A 250 V AC1** **10 A 30 V DC1 6 A 30 V DC1**
Recommended minimum contact load	**10 mA/10 V (Power contacts)** **5 mA/5V (twin contacts)**

Contacts

Power contact

Standard material	AgNi
Rated current	10 A
Switch-on current max. (20 ms)	30 A
Switching voltage max.	2,5 kV
AC load (Fig 1)	2,5 VA
DC load	see fig. 2

Twin contact

Standard material	AgNi + 0,2 µ Au
Rated current	6 A
Switch-on current max. (20 ms)	15 A
Switching voltage max.	250 V

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,2 VA (AC) /1 W (DC)

Coil table

VAC	Ω ± 10%	mA	VDC	Ω ± 10%	mA
24	174	50	12	148	81
48	686	25	24	594	40
115	4K3	10.4	48	2K3	21
230	18K6	5.2	110	11K4	10

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation, IEC 61810-1:	2,5 kV/3

Specifications

Ambient temperature operation/storage	40 (no ice)….60 °C /-40 ... 80 °C
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
Protection class	IP40
Weight	43 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-H23/AC ... V**
LED	**C7-H23X/AC ... V**
VDC 12,24, 48, 110	**C7-H23/DC ... V**
LED	**C7-H23X/DC ... V**
Free wheeling diode	**C7-H23DX/DC ... V**
Polarity and free wheeling diode	**C7-H23FX/DC ... V**
UC 24 V, 48 V, 60 V	**C7-H23BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S7-M, S7-I/O, S7-L, S7-P, S7-P0**

Connection diagram

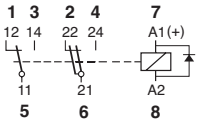


Fig. 1 AC voltage endurance

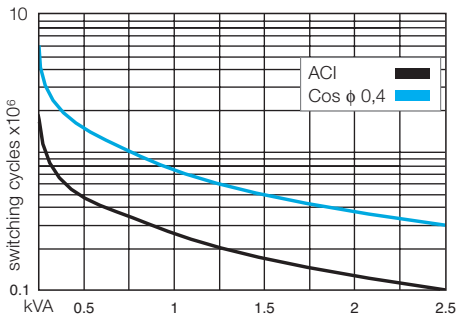
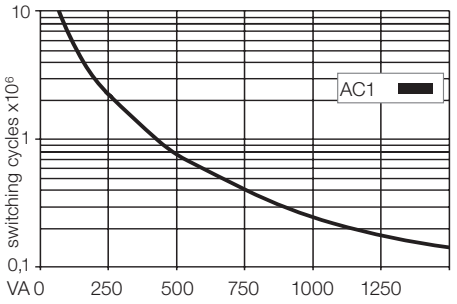
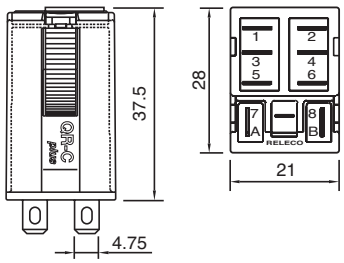


Fig. 2 AC voltage endurance



Dimensions [mm]



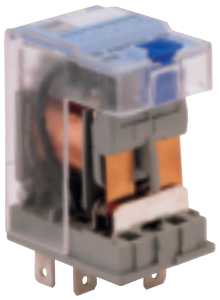
Technical approvals, conformities

IEC 61810; EN 60947

QRC series

C7-W1x

4-pin, miniature relay, 1-pole, tungsten contact, faston



Type:	**C7-W1x/ ... V** Power relay for high inrush current 1 pole normally open
Maximum contact load:	**10 A/250 V AC 6 A/250 V AC5a/b**
Recommended minimum contact load:	**10 mA/10 V**

Contacts

Material	Standard	Code 0	AgNi/W
Rated current			10 A
Switch-on current max. (2,5 ms)			500 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,5 VA (AC)/1,5 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	153	62	12	99	121
48	611	31	24	388	61
115	3K6	13	48	1K5	32
230	14K5	6,5	110	8K	14

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	20 ms/≤ 3 ms
Release time/bounce time	10 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C7-W10/AC ... V**
LED	**C7-W10X/AC ... V**
VDC 12, 24, 48, 110	**C7-W10/DC ... V**
LED	**C7-W10X/DC ... V**
Free wheeling diode	**C7-W10DX/DC ... V**
Polarity and free wheeling diode	**C7-W10FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C7-W10BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S7-M, S7-I/O, S7-L, S7-P, S7-P0**
Optional accessories (blanking plug):	**S9-NP, S9-OP**

Connection diagram

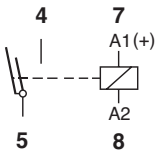


Fig. 1 AC voltage endurance

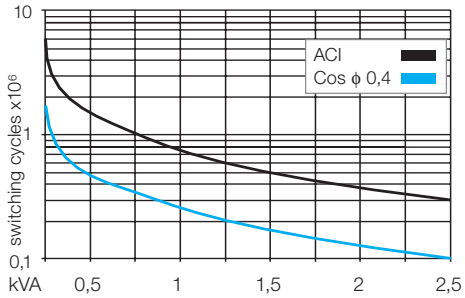
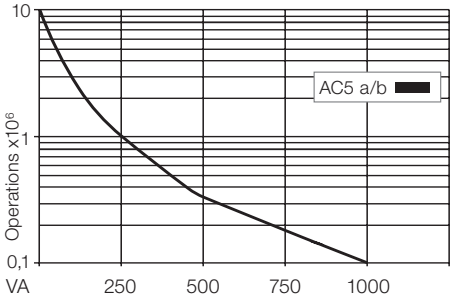
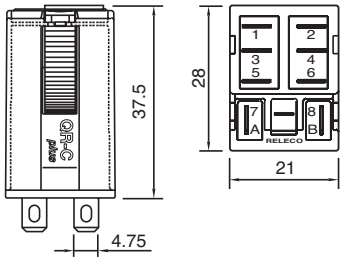


Fig. 2 AC voltage endurance



Dimensions [mm]



Technical approvals, conformities

Lloyd´s

IEC 61810; EN 60947

R7-A2x

8-pin, miniature standard relay, 2-pole, plug-in
Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

Type	**R7-A2x/DC ... V** Railway application Sensitive, 2 change-over contacts
Maximum contact load:	**10 A/250 V AC1 10A/30V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0, 4** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 4	AgNi + 0,2µ Au
	Optional	Code 8	AgNi + 10µ Au
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load			see fig. 1
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	0,7 U_N ... 1,25 U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,07 W

Coil table

Voltage	Ω ± 10%	mA
24	535	45
48	2004	24
72	4750	15
110	11337	10

Insulation	Volt rms, 1 min
Pollution grade	PD3
Pulse (1,2 /50µs) Dielectric streght (1Minute/V rms)	
Contact/coil	4KV / 2200V
Between different poles	4KV / 2200V
Between contact and the same pole	1550 / 850V

Specifications

Ambient temperature operation/storage	-25 (no ice)....70 °C /-40 ... 80 °C
Number of mechanical operations	>20millions
Thermic class	B (130° C)
Vibration : category / class	1 / B Body mounted
Vibration	5-150Hz (3 axes)
Shock	5g (3 axes)
Operation (UN) / release time	10 ms/ 15 ms
Weight	35 g
Weight avg. Relay + Socket (S7-M)	75g
Protection class	IP40

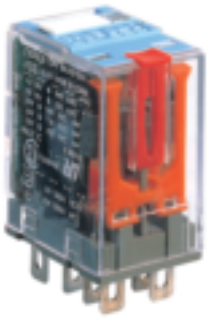
Standard types

VDC 24, 48, 72, 110	**R7-A20/DC ... V**	**R7-A24/DC ... V**	**R7-A28/DC ... V**
LED	**R7-A20X/DC ... V**	**R7-A24X/DC ... V**	**R7-A28X/DC ... V**
Free wheeling diode	**R7-A20D/DC ... V**	**R7-A24D/DC ... V**	**R7-A28D/DC ... V**
LED + free wheeling diode	**R7-A20DX/DC ... V**	**R7-A24DX/DC ... V**	**R7-A28DX/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S7-M, S7-I/O, S7-L, S7-P, S7-P0**



Connection diagram

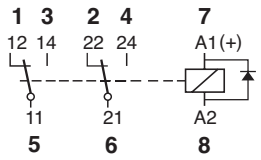


Fig. 1 AC voltage endurance

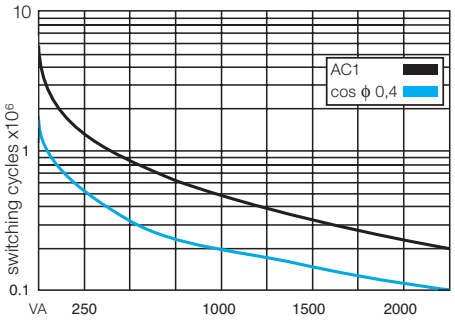
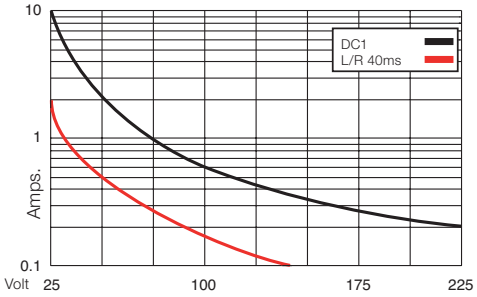
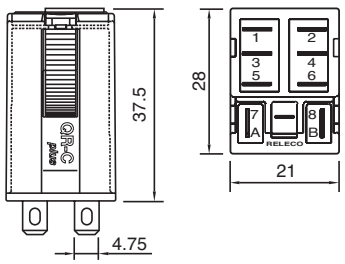


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60077-1-2/99; EN 61373/99

QRC series

R7-T2x

8-pin, miniature industrial relay, 2-pole, change-over contact, faston
Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

Type			**R7-T2x/DC ... V** Railway application Sensitive, 2 change-over contact
Maximum contact load			**6 A 250 V AC1 6 A 30 V DC1**
Recommended minimum contact load			**5 mA/5 V Code 1** **1 mA/5 V Code 2**

Contacts

Material	Standard	Code 1	AgNi + 0,2µ Au
	Optional	Code 2	AgNi + 10µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load			see fig. 1
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Contact open	0,7 U_N ... 1,25 U_N
Operation range	≥ 0,1 x U_N
Nominal power	1,07 W

Coil table

Voltage	Ω ± 10%	mA
24	535	45
48	2004	24
72	4750	15
110	11337	10

Insulation

	Volt rms, 1 min
Pollution grade	PD3
Pulse (1,2 /50hs) Dielectric streght (1Minute/V rms)	
Contact/coil	4KV / 2200V
Between different poles	4KV / 2200V
Between contact and the same pole	1550 / 850V

Specifications

Ambient temperature operation/storage	-25 (no ice)....70 °C /-40 ... 80 °C
Number of mechanical operations	≥ 20 millions
Thermic class	B (130° C)
Vibration : category / class	1 / B Body mounted
Vibration	5-150Hz (3 axes)
Shock	5g (3 axes)
Operation (UN) / release time	10 ms/ 15 ms
Weight	35 g
Weight avg. Relay + Socket (S7-M)	75g
Protection class	IP40

Standard types

VDC 24, 48, 72, 110	**R7-T21/DC ... V**	**R7-T22/DC ... V**
LED	**R7-T21X/DC ... V**	**R7-T22X/DC ... V**
Free wheeling diode	**R7-T21D/DC ... V**	**R7-T22D/DC ... V**
LED + free wheeling diode	**R7-T21DX/DC ... V**	**R7-T22DX/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S7-M, S7-I/O, S7-L, S7-P, S7-P0**

Connection diagram

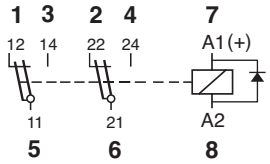


Fig. 1 AC voltage endurance

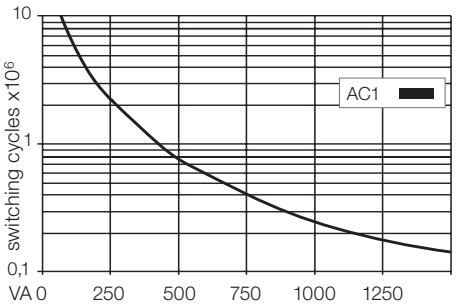
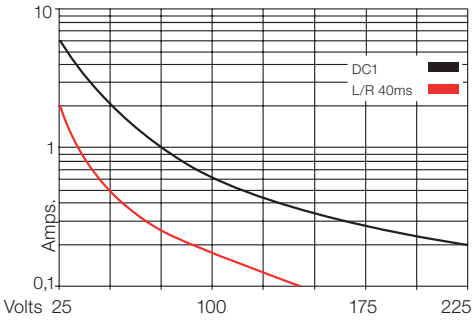
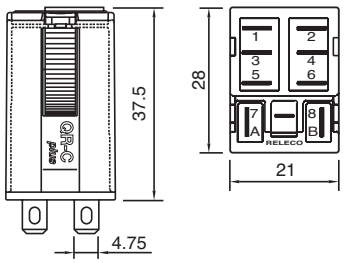


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 60077; EN 60077-1-2/99; EN 61373/99

C9-A4x

14-pin, miniature relay, 4-pole, plug-in, faston

Type			**C9-A4x/ ... V** Standard relays 4 change-over contacts
Maximum contact load			**5 A/250 V AC 1 5 A/30 V DC1**
Recommended minimum contact load			**10 mA/10 V Code 1** **5 mA/5 V Code 2**
Contacts			
Material	Standard	Code 1	AgNi + 0,2 µ Au
	Optional	Code 2	AgNi + 10 µ Au
Rated current			5 A
Switch-on current max. (20 ms)			15 A
Switching voltage max (same polarity)			250 V
AC load (Fig 1)			1,250 kVA
DC load			see Fig. 2
Coil			
Coil resistance			see table; tolerance ± 10 %
Pick-up voltage			≤ 0,8 x U_N
Release voltage			≥ 0,1 x U_N
Nominal power			1,2 VA (AC)/1 W (DC)

Coil table

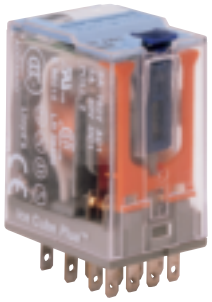
VAC	Ω	mA	VDC	Ω	mA
24	174	50	12	148	81
48	686	25	24	594	40
115	4K3	10,4	48	2K3	21
230	18K6	5,2	110	11K4	11

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 3 ms
Release time/bounce time	6 ms/≤ 1 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

Standard types		
VAC 50 Hz/60 Hz: 24, 48, 115, 230 (240)	**C9-A41/AC ... V**	**C9-A42/AC ... V**
LED	**C9-A41X/AC ... V**	**C9-A42X/AC ... V**
VDC 12, 24, 48, 110	**C9-A41/DC ... V**	**C9-A42/DC ... V**
LED	**C9-A41X/DC ... V**	**C9-A42X/DC ... V**
Free wheeling diode	**C9-A41DX/DC ... V**	**C9-A42DX/DC ... V**
Polarity and free wheeling diode	**C9-A41FX/DC ... V**	**C9-A42FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C9-A41BX/UC ... V**	**C9-A42BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S9-M, S9-L, S9-P, S9-P0**
Optional accessories (blanking plug):	**S9-NP, S9-OP**



Connection diagram

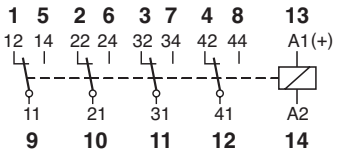


Fig. 1 AC voltage endurance

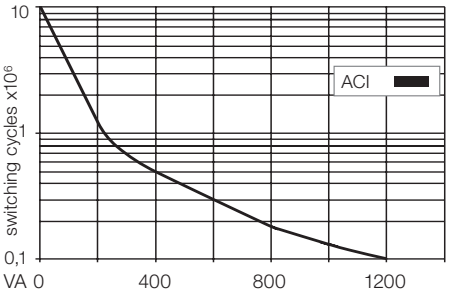
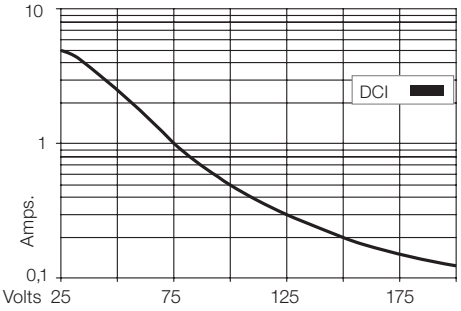
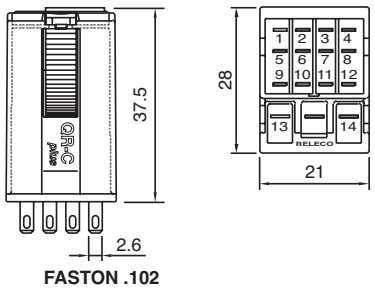


Fig. 2 DC load limit curve



Dimensions [mm]



FASTON .102

Technical approvals, conformities

Lloyd´s

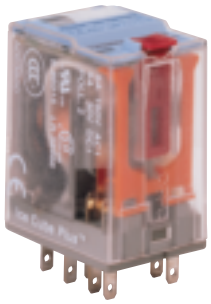
IEC 61810; EN 60947

QRC series

C9-E2x

8-pin, miniature relay, 2-pole, plug-in, faston

Type	**C9-E2x/ ... V** Sensitive relay, 500 mW 2 change-over contacts
DC operating range	**0,8 ...1,7 x U_N**
Maximum contact load	**5 A/250 V AC1 5 A/30 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 1** **5 mA/5 V Code 2**



Contacts

Material	Standard	Code 1	AgNi + 0,2 µ Au
	Optional,	Code 2	AgNi + 10 µ Au
Rated current			5 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1200 VA
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	0,8 VA (AC)/0,5 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	238	33	12	288	42
48	1K	17	24	1K1	21
115	5K9	7	48	4K6	10
230	23K9	3,5	110	24K2	4,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2,5 kV
Contact/coil	2,5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 3 ms
Release time/bounce time	6 ms/≤ 1 ms
Mechanical life	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	40 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, 230 (240)	**C9-E21/AC ... V**	**C9-E22/AC ... V**
LED	**C9-E21X/AC ... V**	**C9-E22X/AC ... V**
VDC 12, 24, 48, 110, 220	**C9-E21/DC ... V**	**C9-E22/DC ... V**
LED	**C9-E21X/DC ... V**	**C9-E22X/DC ... V**
Free wheeling diode	**C9-E21DX/DC ... V**	**C9-E22DX/DC ... V**
Polarity and free wheeling diode	**C9-E21FX/DC ... V**	**C9-E22FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V, 60 V	**C9-E21BX/UC ... V**	**C9-E22BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S9-M, S9-L, S9-P, S9-P0**
Optional accessories (blanking plug):	**S9-NP, S9-OP**

Connection diagram

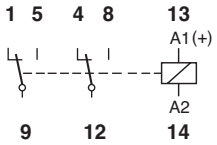


Fig. 1 AC voltage endurance

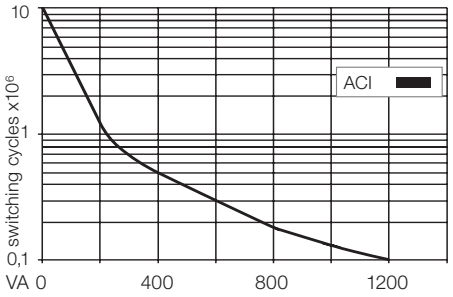
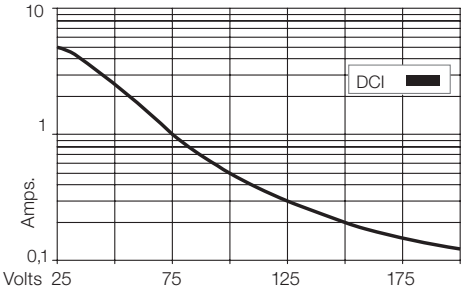
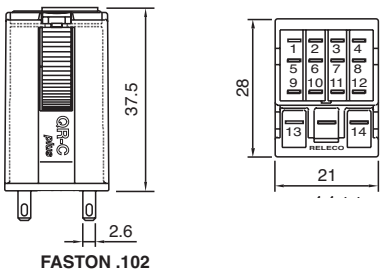


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Lloyd's

IEC 61810; EN 60947

C9-R2x

9-pin, miniature remanence relay, 2-pole, plug-in, faston

Type	**C9-R2x/ ... V** Magnetic latching relay 2 change-over contacts
Maximum contact load	**5 A/120V AC1** **5 A/30 V DC1**
Recommended minimum contact load	**10 mA/10 V**

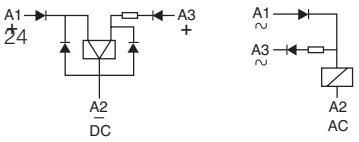
Contacts

Material	Standard	Code 1	AgNi + 0,2 µ Au
Rated current			5 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			120V
AC load			600 VA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
ON pulse power	1,2 VA/W
OFF pulse power	0,3 VA/W
1 winding for AC, 2 winding for DC	

Internal Diagram:



Coil table

VAC	mA ON	mA OFF	VDC	mA ON	mA OFF
24	50	8	12	100	25
48	25	4	24	50	12
115	10	2	48	25	6
230	5	1	60	20	5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	2 kV
Contact/coil	2 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	2,5 kV/2

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Minimum pulse ON/OFF	50 ms
Mechanical life	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	43 g

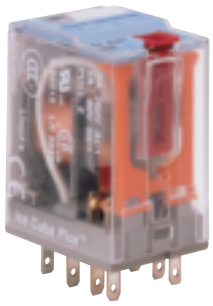
Standard types

AC 50 Hz/60 Hz: 24, 48, 115, (120), 230	**C9-R21/AC ... V**
DC 12, 24, 48, 60	**C9-R21/DC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S9-M, S9-L, S9-P, S9-P0**
Optional accessories (blanking plug):	**S9-NP, S9-OP**



Connection diagram

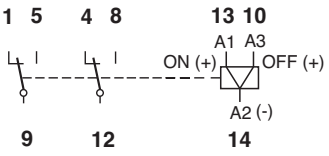


Fig. 1 AC voltage endurance

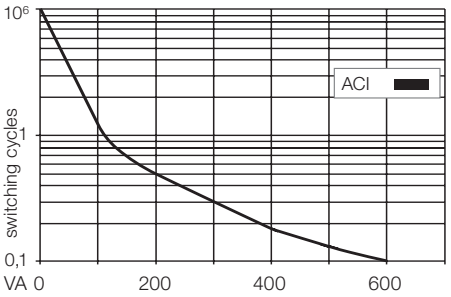
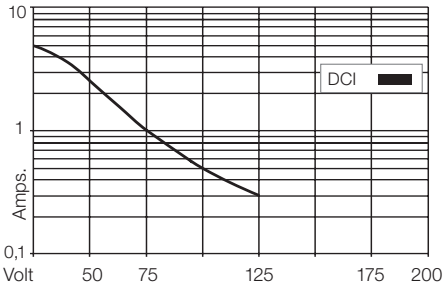
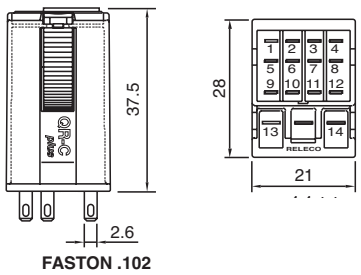


Fig. 2 DC load limit curve



Dimensions [mm]



FASTON .102

Technical approvals, conformities

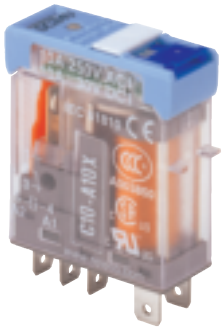
Lloyd´s

IEC 61810; EN 60947

Notes

1.1.3 Interface Relays

IRC Series

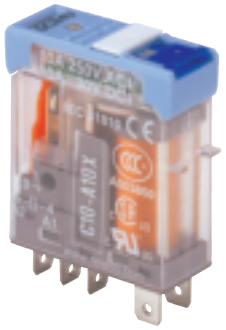


Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
C10 Series						
Interface standard relay	C10-A1x			10 A / 250 V	10 A / 30 V	S10
DC load switching	C10-G1x			10 A / 250 V	10 A / 30 V	S10
Low switching load	C10-T1xx			6 A / 250 V	6 A / 30 V	S10
Low switching load	C10-GTxx			6 A / 250 V	6 A / 30 V	S10
C12 Series						
Interface relay	C12-A2x			5 A / 250 V	5 A / 30 V	S12
Interface DC relay	C12-G2x			5 A / 250 V	5 A / 30 V	S12

IRC series

C10-A1x

5-pin, Interface relays, 1-pole, plug-in, faston



Type	**C10-A1x/ ... V**		
	Standard relay, 1 change-over contact		
	Contact Ag Sn O2 to high inrush		
Maximum contact load	**10 A/250 V**	**AC1**	**0,5 A/110 V DC1**
	10 A/30 V	**DC1**	**0,2 A/220 V DC1**
	13 A/250 V	**AC1**	
Recommended minimum contact load	**10 mA/10 V**	**Code 0,5**	
	5 mA/5 V	**Code 8**	

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi+ 10 µ Au
	Optional	Code 5	Ag Sn O2
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,1 VA (AC)/0,7 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)....70 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/ ≤ 1 ms
Release time/bounce time	5 ms/ ≤ 3 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	21 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C10-A10/AC ... V**	**C10-A18/AC ... V**	**C10-A15/AC ... V**
LED	**C10-A10X/AC ... V**	**C10-A18X/AC ... V**	**C10-A15X/AC ... V**
RC suppresor	**C10-A10R/AC ... V**	**C10-A18R/AC ... V**	**C10-A15R/AC ... V**
VDC 12, 24, 48, 110	**C10-A10/DC ... V**	**C10-A18/DC ... V**	**C10-A15/DC ... V**
LED	**C10-A10X/DC ... V**	**C10-A18X/DC ... V**	**C10-A15X/DC ... V**
Polarity and free wheeling diode	**C10-A10FX/DC ... V**	**C10-A18FX/DC ... V**	**C10-A15FX/DC ... V**
VAC/DC bridge rectifier 24 V, 48 V	**C10-A10BX/UC ... V**	**C10-A18BX/UC ... V**	**C10-A15BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S10, S10-M, S10-P**

Connection diagram

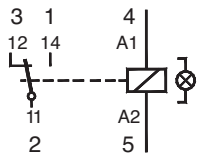


Fig. 1 AC voltage endurance

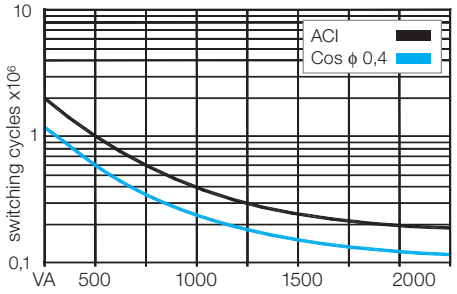
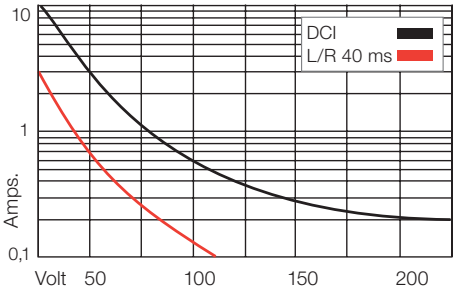
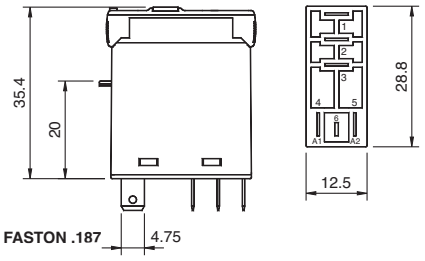


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C10-G1x

4-pin, Interface relays, 1-pole, normally open plug-in, faston

Type	**C10-G1X/ ... V** Standard relay 1 open contact for high DC load Contact Ag Sn O2 to high inrush
Maximum contact load	**10 A/250 V AC1** **0,8 A/110 V DC1** **10 A/30 V DC1** **0,4 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V Code 0,5** **5 mA/5 V Code 8**

Contacts

Material	Standard	Code 0	AgNi
	Optional	Code 8	AgNi +10 µ Au
	Optional	Code 5	Ag SnO2
Rated current			10 A
Switch-on current max. (20 ms)			30 A
Switching voltage max.			250 V
AC load (Fig 1)			2,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,1 VA (AC)/0,7 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

Insulation

	Volt rms, 1 min
Contact open	2000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)....70 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 1 ms
Release time/bounce time	8 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	21 g

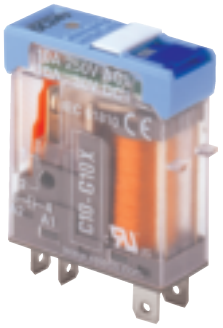
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C10-G10/AC ... V**	**C10-G15/AC ... V**
LED	**C10-G10X/AC ... V**	**C10-G15X/AC ... V**
RC suppresor	**C10-G10R/AC...V**	**C10-G15R/AC...V**
VDC 12, 24, 48, 110	**C10-G10/DC ... V**	**C10-G15/DC ... V**
LED	**C10-G10X/DC ... V**	**C10-G15X/DC ... V**
Polarity and free wheeling diode	**C10-G10FX/DC ... V**	**C10-G15FX/DC... V**
AC/DC bridge rectifier 24 V, 48 V	**C10-G10BX/DC ... V**	**C10-G15BX/UC... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S10, S10-M, S10-P**



Connection diagram

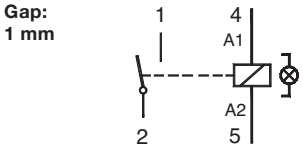


Fig. 1 AC voltage endurance

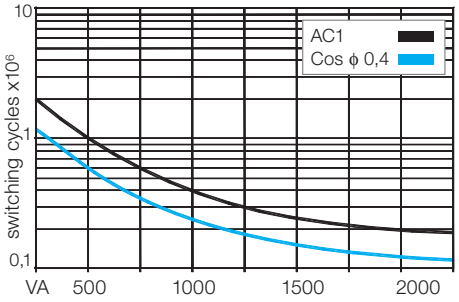
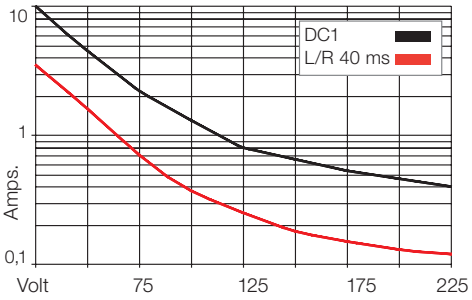
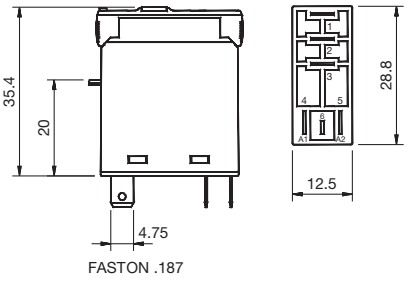


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

IRC series

C10-T1x

5-pin, Interface relays, 1-pole, twin contact, plug-in faston

Type			**C10-T1x/ ... V**		
			Standard relay for low power application		
Maximum contact load			**6 A/250 V**	**AC1**	**0,5 A/110 V** **DC1**
			6 A/30 V	**DC1**	**0,2 A/220 V** **DC1**
Recommended minimum contact load			**5 mA/5 V**	**Code 3**	
			1 mA/5 V	**Code 2**	
Contacts					
Material	Standard	Code 3	AgNi + 3 µ Au		
	Optional	Code 2	AgNi + 10 µ Au		
Rated current			6 A		
Switch-on current max. (20 ms)			15 A		
Switching voltage max			250 V		
AC load (Fig 1)			1,5 kVA		
DC load			see fig. 2		
Coil					
Coil resistance			see table; tolerance ± 10 %		
Pick-up voltage			≤ 0,8 x U_N		
Release voltage			≥ 0,1 x U_N		
Nominal power			1,1 VA (AC)/0,7 W (DC)		

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

Insulation	Volt rms, 1 min
Contact open	1000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3
Specifications	
Ambient temperature operation/storage	-40 (no ice)…70 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 1 ms
Release time/bounce time	5 ms/≤ 3 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	1200/h
Protection class	IP40
Weight	21 g

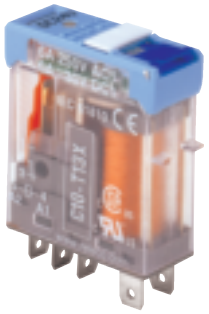
Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C10-T13/AC ... V**	**C10-T12/AC ... V**
LED	**C10-T13X/AC ... V**	**C10-T12X/AC ... V**
RC suppresor	**C10-T13R/AC...V**	**C10-T12R/AC...V**
VDC12, 24, 48, 110	**C10-T13/DC ... V**	**C10-T12/DC ... V**
LED	**C10-T13X/DC ... V**	**C10-T12X/DC ... V**
Polarity and free wheeling diode	**C10-T13FX/DC ... V**	**C10-T12FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V	**C10-T13BX/UC ... V**	**C10-T12BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S10, S10-M, S10-P**



Connection diagram

Gap: 0,5 mm

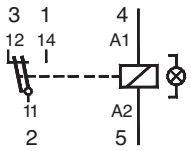


Fig. 1 AC voltage endurance

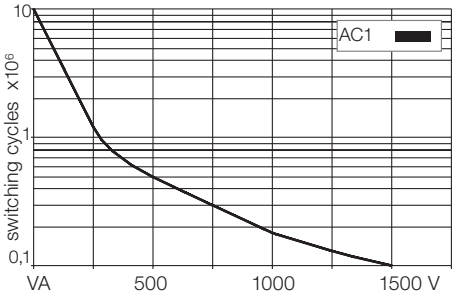
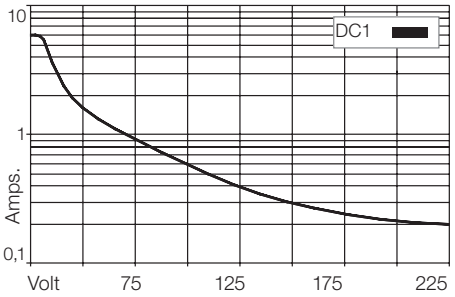
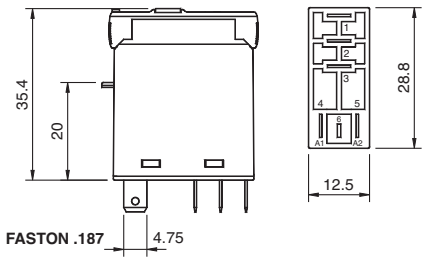


Fig. 2 DC load limit curve



Dimensions [mm]

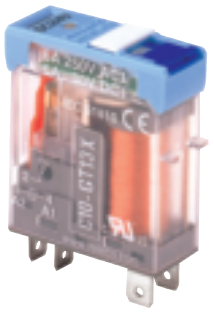


Technical approvals, conformities

IEC 61810; EN 60947

C10-GT1x

4-pin, Interface relays, 1-pole, twin open contact, plug-in faston



Type	**C10-GT1x/ ... V**		
	Standard relay for low power application		
	1 open contact		
Maximum contact load	**6 A/250 V**	**AC1**	**0,8 A/110 V** **DC1**
	6 A/30 V	**DC1**	**0,4 A/220 V** **DC1**
Recommended minimum contact load	**5 mA/5 V**	**Code 3**	
	1 mA/5 V	**Code 2**	

Contacts

Material	Standard	Code 3	AgNi + 3 µ
	Optional	Code 2	AgNi + 10 µ Au
Rated current			6 A
Switch-on current max. (20 ms)			15 A
Switching voltage max			250 V
AC load (Fig 1)			1,5 kVA
DC load			see Fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,1 VA (AC)/0,7 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

Insulation

	Volt rms, 1 min
Contact open	2000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)…70 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 1 ms
Release time/bounce time	5 ms/≤ 3 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	21 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C10-GT13/AC ... V**	**C10-GT12/AC ... V**
LED	**C10-GT13X/AC ... V**	**C10-GT12X/AC ... V**
RC suppresor	**C10-GT13R/AC ... V**	**C10-GT12R/AC ...V**
VDC 12, 24, 48, 110	**C10-GT13/DC ... V**	**C10-GT12/DC ... V**
LED	**C10-GT13X/DC ... V**	**C10-GT12X/DC ... V**
Polarity and free wheeling diode	**C10-GT13FX/DC ... V**	**C10-GT12FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V	**C10-GT13BX/UC ... V**	**C10-GT12BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket: **S10, S10-M, S10-P**

Connection diagram

Gap: 1 mm

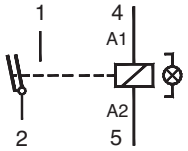


Fig. 1 AC voltage endurance

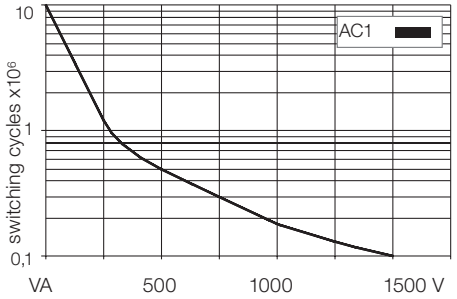
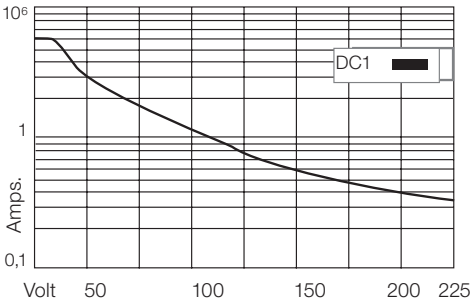
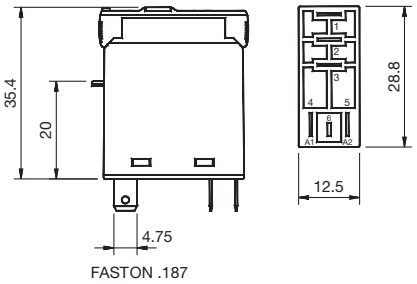


Fig. 2 DC load limit curve



Dimensions [mm]



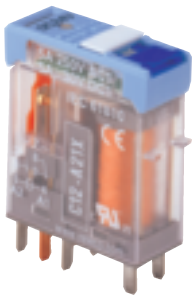
Technical approvals, conformities

IEC 61810; EN 60947

IRC series

C12-A2x

8-pin, Interface relays, 2-pole, plug-in faston



Type	**C12-A2x/ ... V**		
	Standard relay		
	2 change-over contact		
Maximum contact load	**5 A/250 V**	**AC1**	**0,5 A/110 V DC1**
	5 A/30 V	**DC1**	**0,2 A/220 V DC1**
Recommended minimum contact load	**10 mA/10 V**	**Code 1**	
	5 mA/5 V	**Code 2**	

Contacts

Material	Standard	Code 1	AgNi + 0,2 µ Au
	Optional	Code 2	AgNi + 10 µ Au
Rated current			5 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Fig 1)			1,2 kVA
DC load			see fig. 2

Coil

Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≤ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,1 VA (AC)/0,7 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

Insulation

	Volt rms, 1 min
Contact open	1000 V
Contact/contact	3000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Ambient temperature operation/storage	-40 (no ice)….60 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 1 ms
Release time/bounce time	5 ms/≤ 3 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	21 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	**C12-A21/AC ... V**	**C12-A22/AC ... V**
LED	**C12-A21X/AC ... V**	**C12-A22X/AC ... V**
RC suppresor	**C12-A21R/AC ... V**	**C12-A22R/AC ... V**
VDC 12, 24, 48, 110	**C12-A21/DC ... V**	**C12-A22/DC ... V**
LED	**C12-A21X/DC ... V**	**C12-A22X/DC ... V**
Polarity and free wheeling diode	**C12-A21FX/DC ... V**	**C12-A22FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V	**C12-A21BX/UC ... V**	**C12-A22BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories

Socket:	**S12, S12-P**

Connection diagram

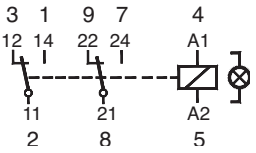


Fig. 1 AC voltage endurance

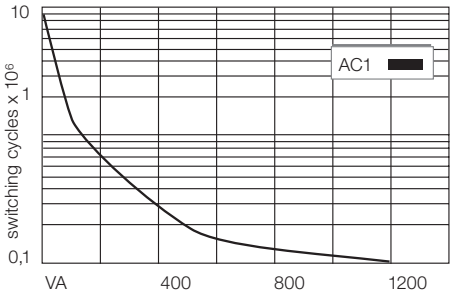
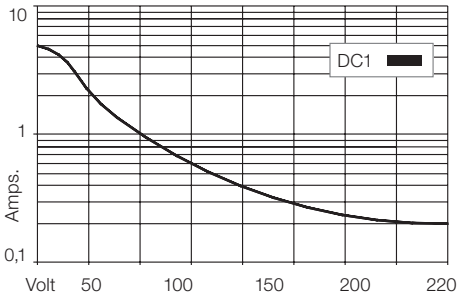
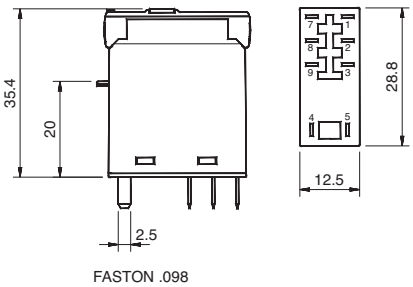


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

IEC 61810; EN 60947

C12-G2x

6-pin, Interface relays, 2-pole, plug-in faston

Type	**C12-G2x/ ... V**		
	Standard relay		
	2 open contacts		
Maximum contact load	**5 A/250 V**	**AC1**	**0,8 A/110 V** **DC1**
	5 A/30 V	**DC1**	**0,4 A/220 V** **DC1**
Recommended minimum contact load	**10 mA/10 V**	**Code 1**	
	5 mA/5 V	**Code 2**	

Contacts			
Material	Standard	Code 1	AgNi + 0,2 µ Au
	Optional	Code 2	AgNi + 10 µ Au
Rated current			5 A
Switch-on current max. (20 ms)			15 A
Switching voltage max.			250 V
AC load (Flg 1)			1,2 kVA
DC load			see Fig. 2

Coil	
Coil resistance	see table; tolerance ± 10 %
Pick-up voltage	≥ 0,8 x U_N
Release voltage	≥ 0,1 x U_N
Nominal power	1,1 VA (AC)/0,7 W (DC)

Coil table

VAC	Ω	mA	VDC	Ω	mA
24	290	45	12	224	53
48	1200	23	24	742	32
115	7.300	9,5	48	3.500	13,7
230	28.800	4,7	110	19.900	5,5

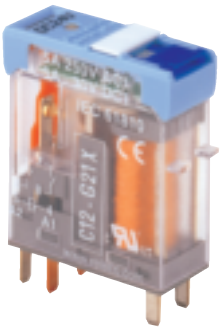
Insulation	Volt rms, 1 min
Contact open	2000 V
Contact/contact	3000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications	
Ambient temperature operation/storage	-40 (no ice)....60 °C /-40 ... 80 °C
Pick-up time/bounce time	10 ms/≤ 1 ms
Release time/bounce time	5 ms/≤ 3 ms
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.
DC voltage endurance at rated load	≥100000 switching cycles
Switching frequency at rated load	≤ 1200/h
Protection class	IP40
Weight	21 g

Standard types		
VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	**C12-G21/AC ... V**	**C12-G22/AC ... V**
LED	**C12-G21X/AC ... V**	**C12-G22X/AC ... V**
RC suppresor	**C12-G21R/AC ... V**	**C12-G22R/AC ... V**
VDC 12, 24, 48, 110	**C12-G21/DC ... V**	**C12-G22/DC ... V**
LED	**C12G21X/DC ... V**	**C12-G22X/DC ... V**
Polarity and free wheeling diode	**C12-G21FX/DC ... V**	**C12-G22FX/DC ... V**
AC/DC bridge rectifier 24 V, 48 V	**C12-G21BX/UC ... V**	**C12-G22BX/UC ... V**

"..." Enter the voltage for full type designation

Accessories	
Socket:	**S12, S12-P**



Connection diagram

Gap: 1 mm

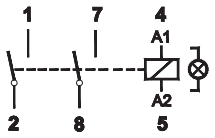


Fig. 1 AC voltage endurance

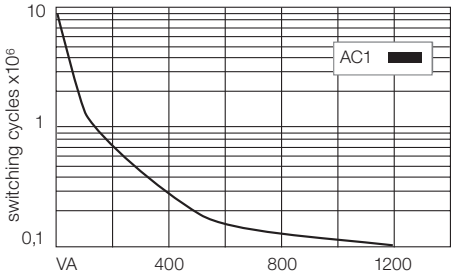
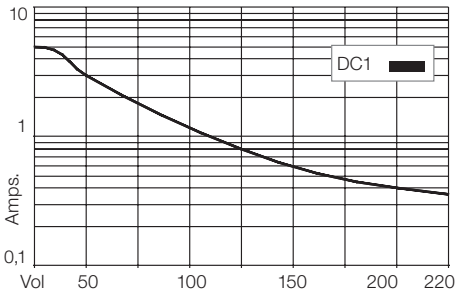
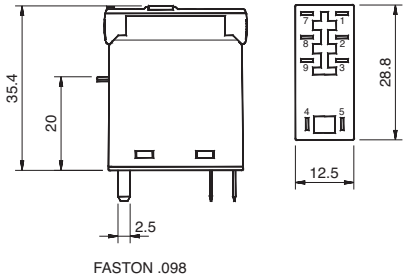


Fig. 2 DC load limit curve



Dimensions [mm]



FASTON .098

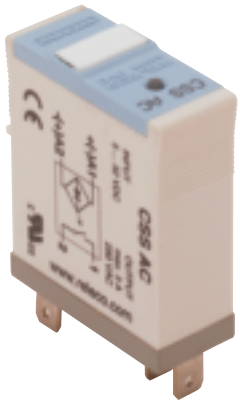
Technical approvals, conformities

IEC 61810; EN 60947

Notes

1.1.4 Solid State Relays

CSS Series

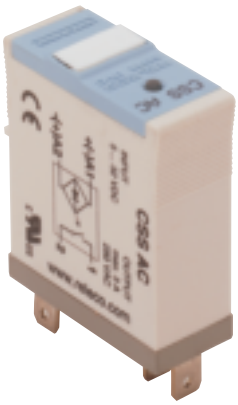


Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
CSS Series						
AC Solid state relay, Instantaneous switching	CSS-AC			3 A / 250 V		S10
AC Solid state relay synchronized to zero	CSS-AZ			3 A / 250 V		S10
NPN Solid state relay	CSS-DCN				2 A / 50 V	S10
PNP Solid state relay	CSS-DCP				2 A / 50 V	S10

IRC series

CSS-AC

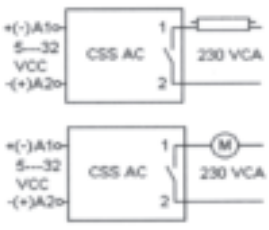
4-pin, Interface solid state relay, 1-pole, plug-in faston



Type	**CSS-AC**
	Solid state relay
	For switching resistive and inductive AC loads
	Instantaneous
Output	**1 N/O contact**
Operating range	**3 A, 24 ... 250 VAC, 50/60 Hz**
Minimum contact load	**50 mA**
Control circuit	
Input voltage range	5 ... 32 VDC
Release voltage	< 2,5 VDC
Input current	5 ... 15 mA
Stabilised current regulator	yes
Input voltage protection	IEC-1000-4-5 level 1
Output circuit	Instantaneous
Max. output current	3 A
Min. output current	50 mA
Output voltage range	24...250 VAC
Inrush current	30 A/10 ms
Max. release voltage	< 1,5 VAC
Residual current	≤ 0,55 mA
di/dt	≤ 50 A µs
I^2t value	50 A^2s
Specifications	
Ambient temperature operation/storage	-25 ... 60 °C /-40 ... 80 °C
Test voltage between input/output	4 kV rms/1min
Pick-up time	max. 1/2 wave
Release time	2 ms + 1/2 wave
Weight	28 g

Applications

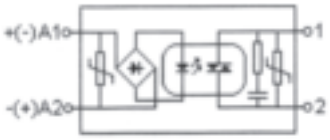
It is specially suitable to switch inductive loads up to 3A/250 VAC.
For switching loads with a high inrush or overcurrent (max. Di/dt 50A/µs) as transformers, motors or fluorescents, the maximum output current will limit to 2 A.



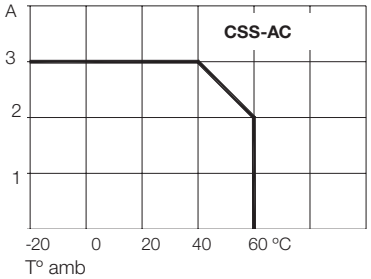
Accessories

Socket:	**S10, S10-M, S10-P**

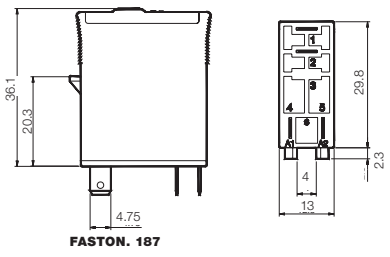
Fig. 1 CSS-AC diagram



Tab. 2 AC load limit curve



Dimensions [mm]



Technical approvals, conformities

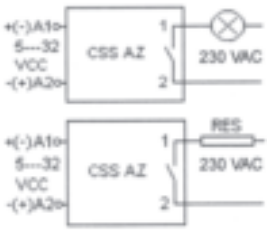
CSS-AZ

4-pin, Interface solid state relay, 1-pole, plug-in faston

Type	**CSS-AZ** Solid state relay For switching resistive lamps and AC loads Synchronized to zero
Output	**1 N/O contact**
Operating range	**3 A, 24 ... 250 VAC, 50/60 Hz**
Minimum contact load	**50 mA**
Control parameters	
Input voltage range	5 ... 32 VDC
Release voltage	< 2,5 VDC
Input current	5 ... 15 mA
Stabilised current regulator	yes
Input voltage protection	IEC-1000-4-5 Level 1
Output	Synchronized zero
Max. output current	3 A
Min. output current	50 mA
Output voltage range	24 ... 250 VAC
Inrush current	30 A/10 ms
Max. release voltage	< 1,5 VAC
Residual current	≤ 0,55 mA
du/dt//di/dt	≤ 50 A µs
I^2t value	50 A^2s
Specifications	
Ambient temperature operation/storage	-25….60 ºC /-40 ... 80 °C
Test voltage between input/output	4 kV rms/1min
Pick-up time	max. 1/2 cycle
Release time	2 ms + 1/2 cycle
Weight	28 g

Applications

Switches ohmic AC loads up to 3 A/250 VAC in the zero-point of the tension and avoids any overcurrent peak in the connection.
Suitable for switching resistors, incandescent lamps, signalling equipment, etc. Not suitable for inductive loads



Accessories

Socket:	**S10, S10-M, S10-P**

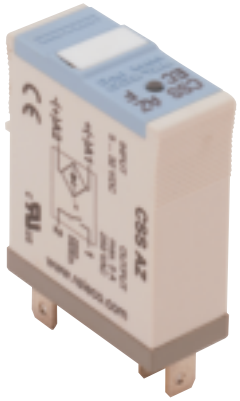
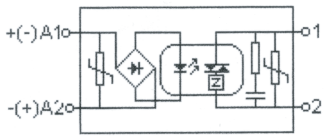
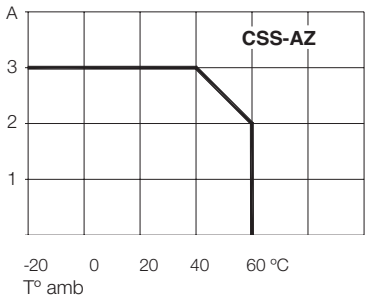


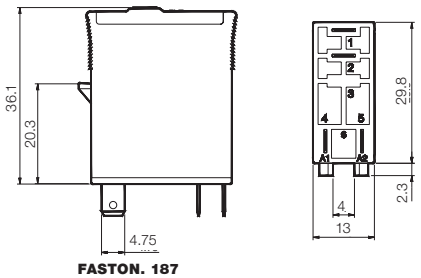
Fig. 1 CSS-AZ diagram



Tab. 2 AC load limit curve



Dimensions [mm]



Technical approvals, conformities

IRC series

CSS-DCN

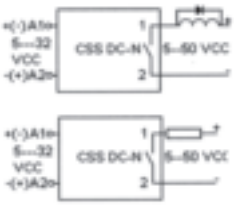
4-pin, Interface solid state relay, 1-pole, plug-in faston

Type	**CSS-DCN** NPN solid state relay Terminal commun 2 negative (S10 socket)
Output	1 N/O contact
Operating range	**2 A, 5 ... 50 VDC**
Minimum contact load	**1 mA**
Control parameters	
Input voltage range	5 ... 32 VDC
Release voltage	< 2,5 VDC
Input current	3 ± 1 mA
Stabilised current regulator	yes
Input voltage protection	IEC-1000-4-5 Level 1
Output	
Type	NPN
Max. output current	2 A
Output voltage range	5 ... 50 VDC
Switch-on current max.	5 A/ 350µs
Max. release voltage	≤ 1,3 VDC
Residual current	< 100 µA/48 VDC
EMC protection	IEC-1000-4-5 Level 1
Inverse current	≤ 1 A
Specifications	
Ambient temperature operation/storage	-25 ... 60 °C/-40 ... 80 °C
Test voltage between input/output	4 kV rms/1 min.
Turn-on delay	1 ms
Release delay	≤ 2 ms
Weight	28 g

Applications

For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 50 VDC).

Inductive loads must be shunted with an antiparallel diode.



Accessories	
Socket:	**S10, S10-M, S10-P**

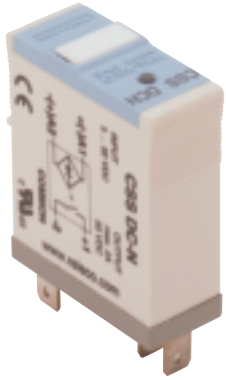
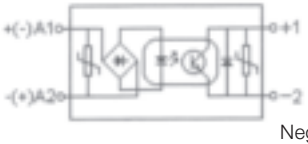
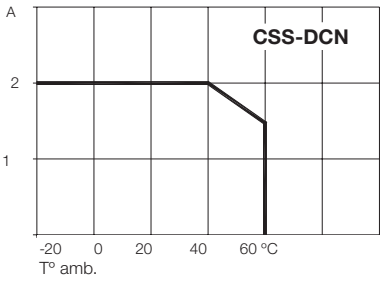


Fig. 1 CSS-DCN diagram

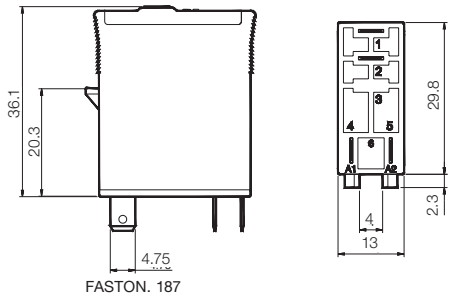


Negative Common

Tab. 2 DC load limit curve



Dimensions [mm]



FASTON. 187

Technical approvals, conformities

CSS-DCP

4-pin, Interface solid state relay, 1-pole, plug-in faston

Type	**CSS-DCP** NPN solid state relay Terminal commun 2 positive (S10 socket)
Output	1 N/O contact
Operating range	**2 A, 5 ... 50 VDC**
Minimum contact load	**1 mA**

Control parameters	
Input voltage range	5 ... 32 VDC
Release voltage	< 2,5 VDC
Input current	3 ± 1 mA
Stabilised current regulator	yes
Input voltage protection	IEC-1000-4-5 Level 1

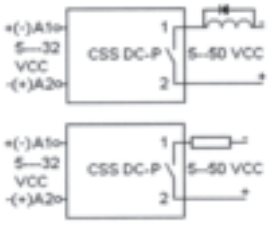
Output	
Type	NPN
Max. output current	2 A
Output voltage range	5 ... 50 VDC
Max. switch-on current	5 A/ 350µs
Max. release voltage	≤ 1,3 VDC
Residual current	< 100 µA/48 VDC
EMC protection	IEC-1000-4-5 Level 1
Inverse current	≤ 1 A

Specifications	
Ambient temperature operation/storage	-25....60 °C /-40 ... 80 °C
Test voltage between input/output	4 kV rms/1 min.
Turn-on delay	1 ms
Release delay	≤ 2 ms
Weight	28 g

Applications

For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 50 VDC).

Inductive loads must be shunted with an antiparallel diode.



Accessories	
Socket:	**S10, S10-M, S10-P**

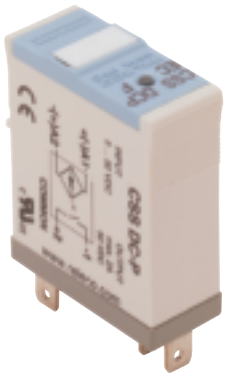
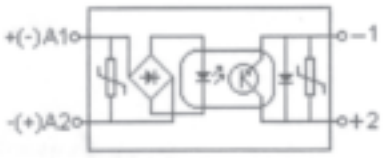
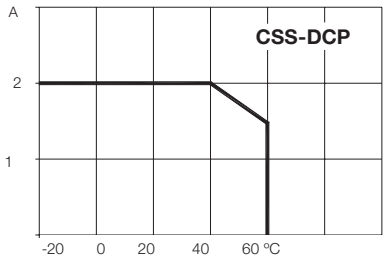


Fig. 1 CSS-DCP diagram

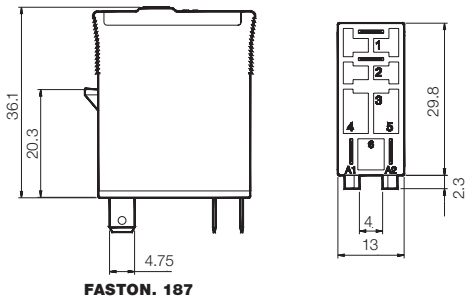


positive comon

Tab. 2 DC load limit curve



Dimensions [mm]



FASTON. 187

Technical approvals, conformities

In combination with I/O sockets and the plug-in jumpers, the IRC relay series permits low-cost, clearly arranged and reliable realisation of interface circuits for the input and output ends of PLC and control systems.

S10-M and S12 sockets with one and two contacts, with inputs in series and identical arrangement of the contacts.

Identical order of coil and contacts on both sockets.

Coil terminal at level 1:
(A2, A2, A1)

Power terminals at level 1:
(12, 11, 14)

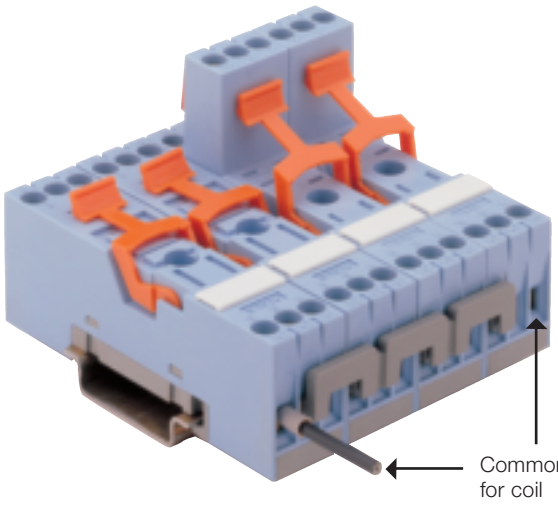
Power terminals at level 2:
(22, 21, 24)

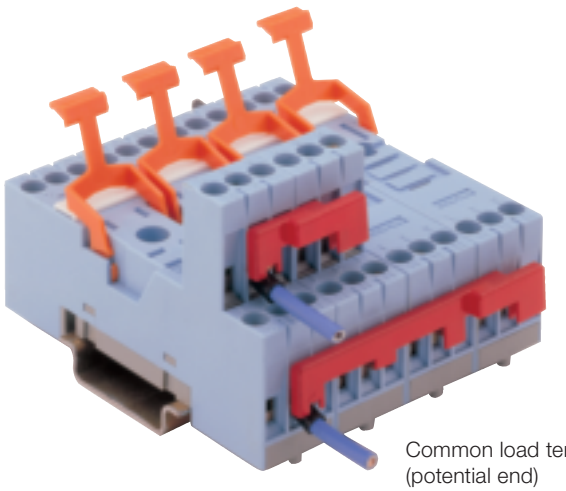
General

All plug-in jumpers are insulated. The plug-in jumpers at the drive end (coil) can be split manually to the required length, thus enabling the creation of any required interface groups.

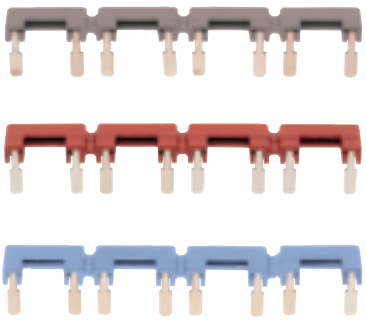
The jumpers are available in the colours grey, blue and red. .

Options:
Colours used by RELECO in the relays' test buttons:
- Blue for DC circuits
- Red for AC circuits

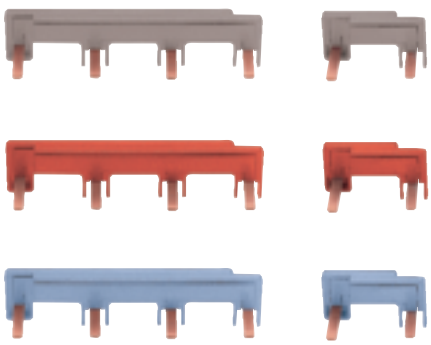




B20 plug-in jumpers for the control end



V40 and V10 plug-in jumpers for the power end



V40, V10

Power bridge bars for sockets S10-M and S12

V40 bridges join four similar points in four aside adjacent sockets. They can join up either among themselves or to V10 units, to bridge an unlimited number of sockets S10-M and S12 in any combination.

V10 bridges are units to connect a single socket to the next one, so you bridge less or more than 4 sockets.
Made of copper with a current capacity of 40 A.

B20

Coil bridge bars for sockets S10-M and S12

B20 bridges points A2, internally connected, of every aside adjacent socket S10-M or S12.

Each element connects point 6 of the first socket to point 5 of the next one, always leaving free the point 5 of the first socket and the point 6 of the last one, to connect the common polarity cable.

V40-G

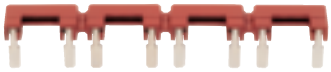
V10-G

B20-G

V40-R

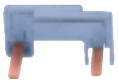
V10-R

B20-R



V40-A

V10-A



B20-A

Jumper connection on S1O-M and S12 sockets

The S10-M and S12 sockets and the new connection jumpers B20, V10 and V40 enable easy and fast wiring of rows of relays. The jumpers can be used in a mixed configuration of S10-M and S12 sockets.

Different jumper colours allow clear identification. This results in fewer errors, lower assembly costs and easier inspection and maintenance work. Available in grey (standard), red (AC) and blue (DC), in conformity with the colour coding used by RELECO for test buttons for relay identification.

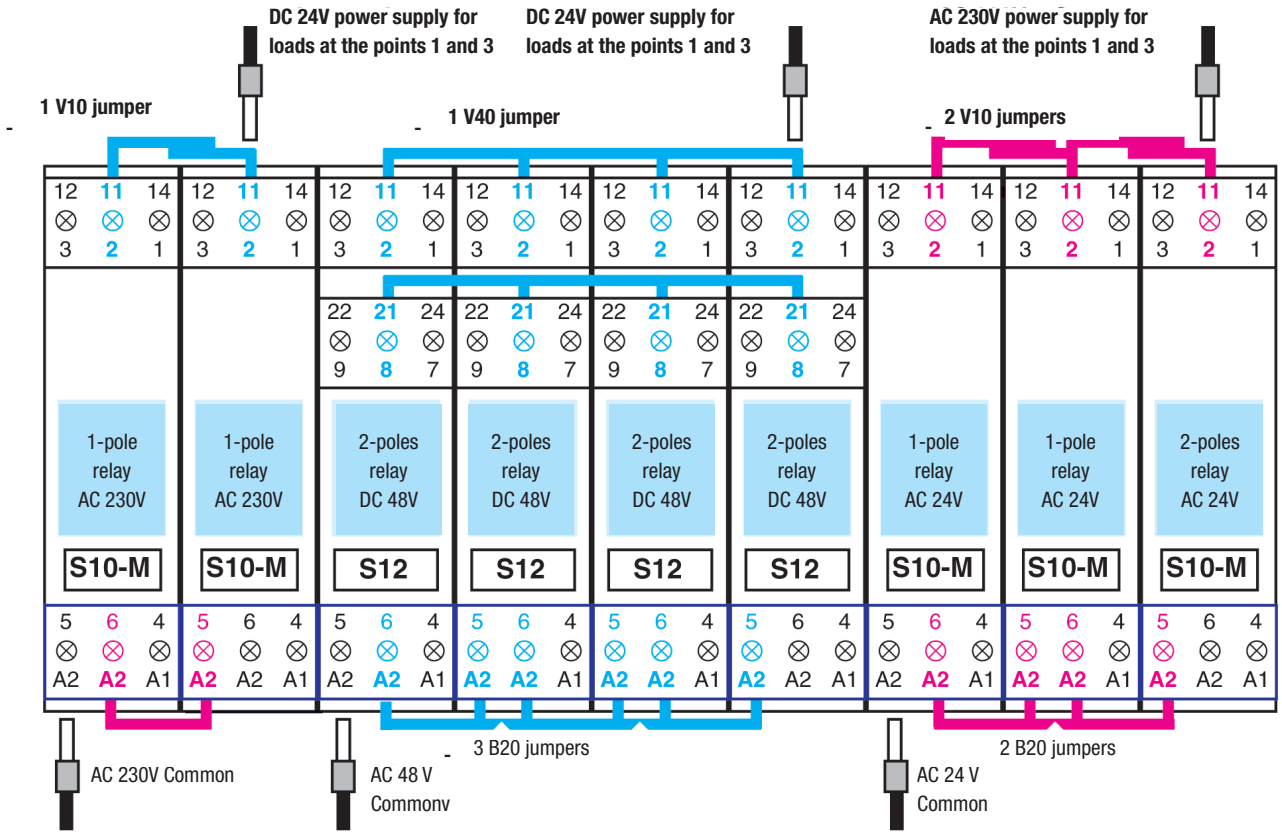
Attention needs to be paid only to the total current. At higher currents and also for safety reasons, a current supply at the start and end of a jumpered connection is recommended.

V40 plug-in jumpers for the power end

Contacts can be linked to the power ends with the aid of these jumpers. Normally, these are the changeover contacts, terminal 11 or 21. The jumpers can also be used to jumper NC or NO plug-in terminals. V40 jumpers link four identical contacts of four neighbouring sockets. They can either be linked to one another or to V10 jumpers to jumper a number of sockets in any combination.

V10 plug-in jumpers for the power end

V10 jumpers can be used to link individual sockets to one another in groups. A combination of V40 and V10 jumpers is possible, depending on the number of sockets.



B20 plug-in jumpers for the control end

The sockets S10-M and S12 are accessible via the plug-in terminals 5 and 6 for A2 (internal connection). Each element links terminal 6 of the first socket to 5 of the next socket, and 5 of the first socket and 6 of the last socket are always left free to connect the cable. The jumper B20 consists of four coherent parts, which can be separated, however.

Semiconductor relays as an interface to PLC and control systems

Input

Application

The CSS semiconductor switches have a useful life that is practically unlimited in terms of switching cycles. They operate without bounce and permit a high switching frequency

Drive

All versions feature an electrically isolated input for 5 to 32 V DC. The inputs are characterised by a minimum delay with a simultaneously high interference immunity.

DC semiconductor switches

There are two versions with identical performance data.

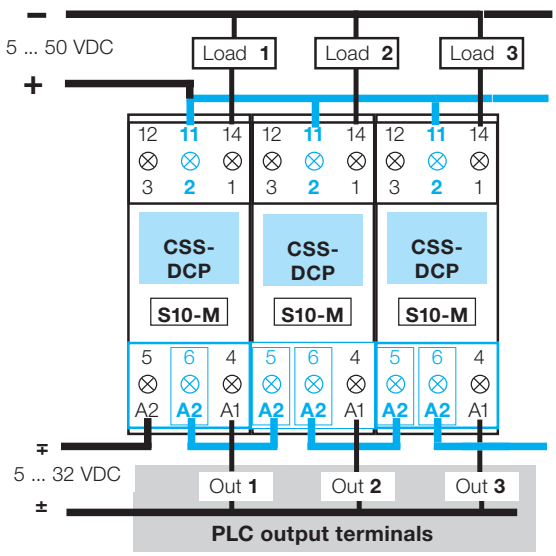
The CSS-DCN version has the common negative terminal 2, and the load is connected to terminal 1. The CSS-DCP has the common positive terminal at terminal 2. The load is connected to terminal 1. This corresponds to an NPN or PNP switch.

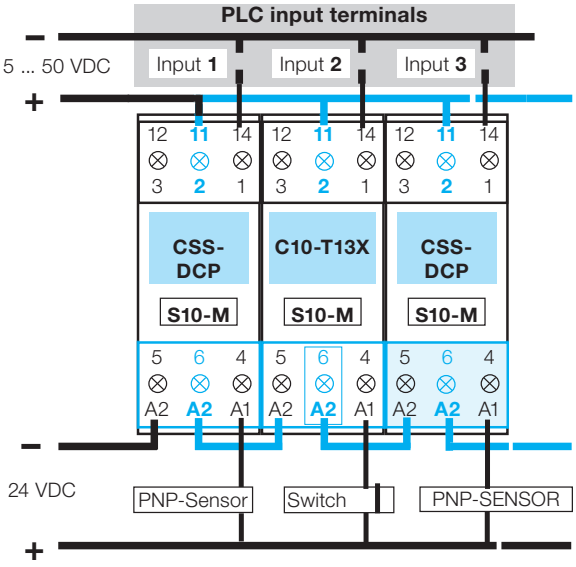
AC switches

The CSS-AZ version switches synchronously, i.e. it switches during the passage through zero. The CSS-AC version switches asynchronously, i.e. the semiconductor switch switches through, independently of the phase, at the moment of detected triggering.

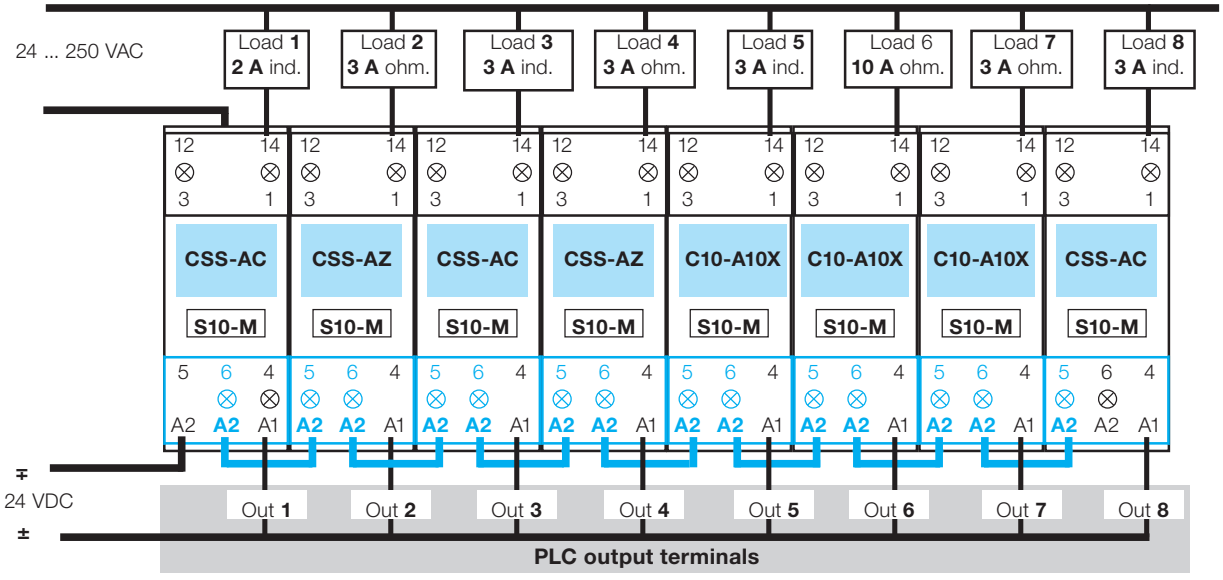
DC applications with mixed components

DC applications with mixed components





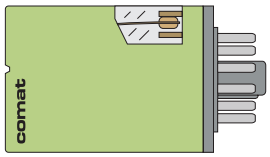
AC applications with mixed components

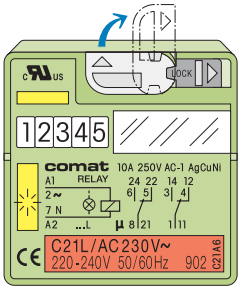


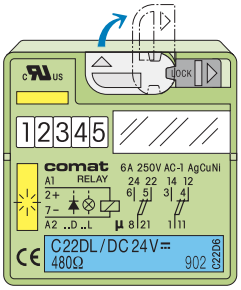
Notes

1.1.5 Long Life Relays (Railway)

Long Life Series







Application	Types	Pins	Contacts	Contact ratings	Socket
C20 Series					
Long Life standard	C21	8		10 A / 250 V	S2
Low switching load	C22	8		5 A / 250 V	S2
C30 Series					
Long Life, Railway	C31	11		10 A / 250 V	S3
Long life. low switching load, Railway	C32	11		5 A / 250 V	S3

Long life series

C21 with single contacts

8 pin plug-in relay, 2-pole, according to IEC 67-I-5a

Type	**C21/...V**
	Long Life Relay
	2 change over contacts
	Types with LED status indicator
	Types with free wheeling diode
	Manual actuator and mech. status indicator
Maximum contact load	**10 A / 250 V AC-1, 4 A / 440 V AC-1**
	10 A / 30 V DC-1
Recommended minimum contact load	**50 mA / 10 V**

Contacts

Type	single contact micro disconnection
Material	AgCuNi
Rated operational current	10 A
Max. inrush current (20 ms)	40 A
Rated/Max. switching voltage AC-1	250 V / 440 V
Max. AC load	2500 VA AC-1
Max. DC load 30 V / 230 V DC-1 (Fig. 2)	300 W / 90 W

Coils (Values are valid at 20 °C)

Pick-up voltage	≤ 0.8 x V_N
Release voltage AC / DC	> 0.15 x V_N / > 0.05 x V_N
Nominal power AC / DC	2.5 VA / 1.2 W

Coil Table

V_N AC	Ω	mA	V_N DC	Ω	mA
24	52	104	**12**	115	104
48	240	55	**24**	480	50
115	1350	23	**48**	1850	26
230	5600	11.5	**110**	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 … 10 mA @ < 80 V

Insulation

Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1 minute
Test voltage between contacts and coil	2 kVrms, 1 minute

General Specifications

Ambient temperature operation, storage	-40 … +70 °C
Pickup time AC / DC	3 … 10 ms / ≤ 12 ms
Release time AC / DC	2 … 15 ms / ≤ 3.5 ms
Bounce time NO contact AC / DC	3 … 6 ms / approx. 3.5 ms
Mechanical life	≥ 10^8 operations
Operating frequency at nominal load	≤ 360 operations / h
Ingress Protection degree	IP 40
Weight	80 g

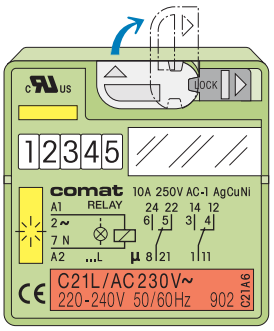
Standard types

AC 50 Hz / 60 Hz: 24, 48, 115, 230	**C21/AC...V**
LED	**C21L/AC...V**
DC: 12, 24, 48, 110, 220	**C21/DC...V**
Free wheeling diode	**C21D/DC...V**
LED + Free wheeling diode	**C21DL/DC...V**

"..." enter the voltage for full type designation

Accessories

Socket:	**EC-8, S2-B, S2-S, S2-L, S2-P, S2-PO**



Connection diagram

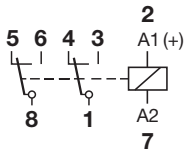


Fig.1 AC voltage endurance

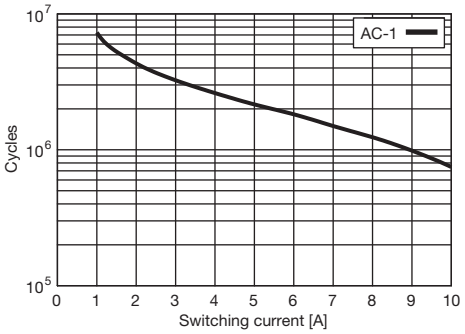
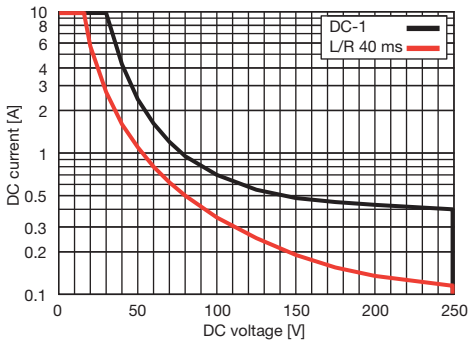
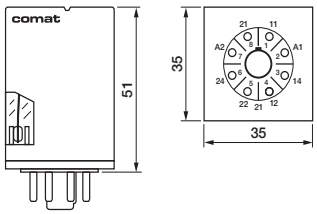


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

C22 with double contacts

8 pin plug-in relay, 2-pole, according to IEC 67-I-5a

Type	**C22/...V** Long Life Relay 2 change over double contacts Types with LED status indicator Types with free wheeling diode Manual actuator and mech. status indicator
Maximum contact load	**6 A / 250 V AC-1** **6 A / 30 V DC-1**
Recommended minimum contact load	**10 mA / 5 V**

Contacts

Type	double contact micro disconnection
Material	AgCuNi
Rated operational current	6 A
Max. inrush current (20 ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load	1500 VA AC-1
Max. DC load 30V / 230V DC-1 (Fig. 2)	200 W / 90 W

Coils (Values are valid at 20 °C)

Pick-up voltage	≤ 0.8 x V_N
Release voltage AC / DC	> 0.15 x V_N / > 0.05 x V_N
Nominal power AC / DC	2.5 VA / 1.2 W

Coil Table

V_N AC	Ω	mA	V_N DC	Ω	mA
24	52	104	**12**	115	104
48	240	55	**24**	480	50
115	1350	23	**48**	1850	26
230	5600	11.5	**110**	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 ... 10 mA @ < 80 V

Insulation

Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1minute
Test voltage between contacts and coil	2 kVrms, 1minute

General Specifications

Ambient temperature operation, storage	-40 ... +70 °C
Pickup time AC / DC	3 ... 10 ms / ≤ 12 ms
Release time AC / DC	2 ... 15 ms / ≤ 3.5 ms
Bounce time NO contact AC / DC	3 ... 6 ms / approx. 3.5 ms
Mechanical life	≥ 10^8 operations
Operating frequency at nominal load	≤ 360 operations / h
Ingress Protection degree	IP 40
Weight	80 g

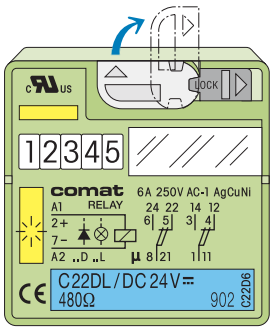
Standard types

AC 50 Hz / 60 Hz: 24, 48, 115, 230	**C22/AC...V**
LED	**C22L/AC...V**
DC: 12, 24, 48, 110, 220	**C22/DC...V**
Free wheeling diode	**C22D/DC...V**
LED + Free wheeling diode	**C22DL/DC...V**

"..." enter the voltage for full type designation

Accessories

Socket: **EC-8, S2-B, S2-S, S2-L, S2-P, S2-PO**



Connection diagram

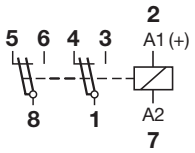


Fig.1 AC voltage endurance

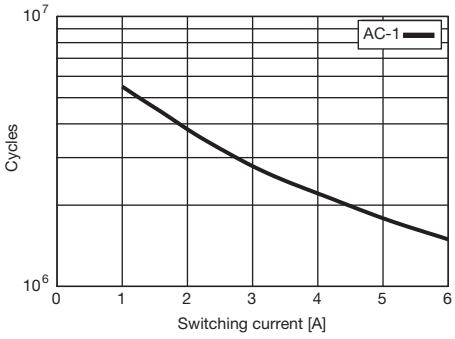
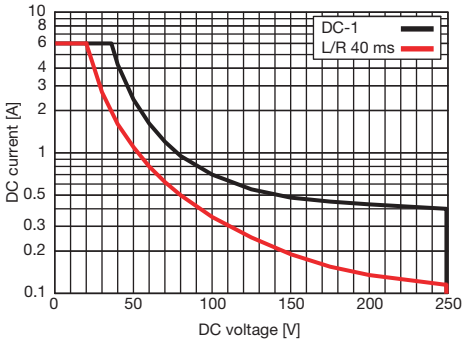
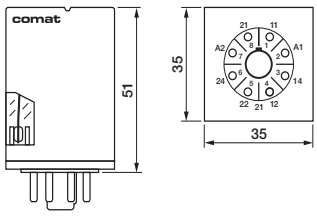


Fig. 2 DC load limit curve



Dimensions [mm]

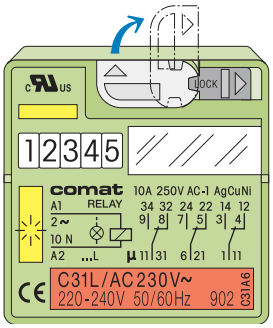


Technical approvals, conformities

Long life series (Railway) EN 50155

C31 with single contacts

11 pin plug-in relay, 3-pole, according to IEC 67-I-18a



Type	**C31/...V**
	Long Life Relay, according to EN 50 155 Railway
	3 change over contacts
	Types with LED status indicator
	Types with free wheeling diode
	Manual actuator and mech. status indicator
Maximum contact load	**10 A / 250 V AC-1, 4 A / 440 V AC-1**
	10 A / 30 V DC-1
Recommended minimum contact load	**50 mA / 10 V**

Contacts

Type	single contact micro disconnection
Material	AgCuNi
Rated operational current	10 A
Max. inrush current (20 ms)	40 A
Rated/max. switching voltage	250 V / 440 V
Max. AC load	2500 VA AC-1
Max. DC load 30V / 230V DC-1 (Fig. 2)	300W / 90 W

Coils (Values are valid at 20 °C)

Pick-up voltage	≤ 0.8 x V_N
Release voltage AC / DC	> 0.15 x V_N / > 0.05 x V_N
Nominal power AC / DC	2.5 VA / 1.2 W

Coil Table

V_N AC	Ω	mA	V_N DC	Ω	mA
24	52	104	**12**	115	104
48	240	55	**24**	480	50
115	1350	23	**48**	1850	26
230	5600	11.5	**110**	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 … 10 mA @ < 80 V

Insulation

Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1minute
Test voltage between contacts and coil	2 kVrms,1minute

General Specifications

Ambient temperature operation, storage	-40 … +70 °C
Pickup time AC / DC	3 … 10 ms / ≤ 12 ms
Release time AC / DC	2 … 15 ms / ≤ 3.5 ms
Bounce time NO contact AC / DC	3 … 6 ms / approx. 3.5 ms
Mechanical life	≥ 10^8 operations
Operating frequency at nominal load	≤ 360 operations / h
Ingress Protection degree	IP 40
Weight	80 g

Standard types

AC 50 Hz / 60 Hz: 24, 48, 115, 230 (240)	**C31/AC...V**
LED	**C31L/AC...V**
DC: 12, 24, 48, 110, 220	**C31/DC...V**
Free wheeling diode	**C31D/DC...V**
LED + Free wheeling diode	**C31DL/DC...V**
Railway NFF16101/2; ISO9125/2	**C31DR/DC...V**

"..." enter the voltage for full type designation

Accessories

Socket:	**EC-11, EC11A, S3-B, S3-S, S3-L, S3-P, S3-PO**

Connection diagram

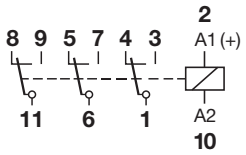


Fig.1 AC voltage endurance

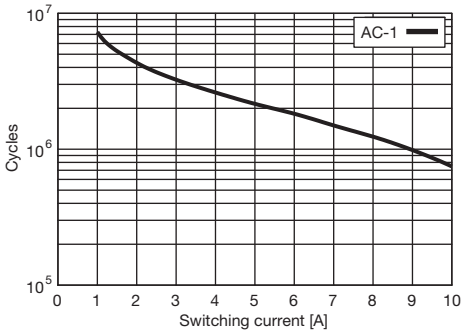
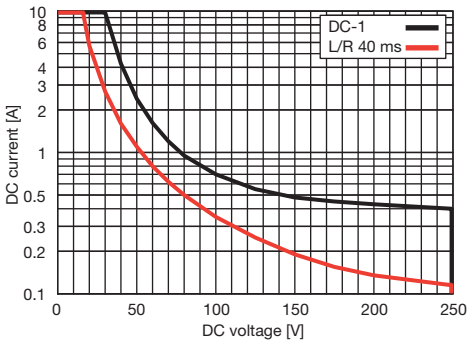
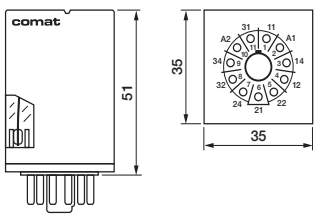


Fig. 2 DC load limit curve



Dimensions [mm]



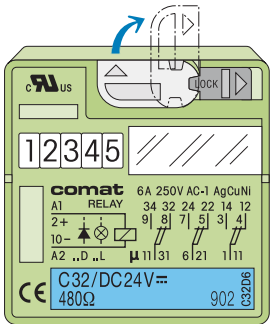
Technical approvals, conformities

Long life series (Railway) EN 50155

C32 with double contacts

11 pin plug-in relay, 3-pole, according to IEC 67-I-18a

Type	**C32/...V** Long Life Relay, according to EN 50 155 Railway 3 change over double contacts Types with LED status indicator Types with free wheeling diode Manual actuator and mech. status indicator
Maximum contact load	**6 A / 250 V AC-1** **6 A / 30 V DC-1**
Recommended minimum contact load	**10 mA / 5 V**



Contacts

Type	double contact micro disconnection
Rated operational current	6 A
Max. inrush current (20 ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load	1500 VA AC-1
Max. DC load 30V / 230V DC-1 (Fig. 2)	200 W / 90 W

Coils (Values are valid at 20 °C)

Pick-up voltage	≤ 0.8 x V_N
Release voltage AC / DC	> 0.15 x V_N / > 0.05 x V_N
Nominal power AC / DC	2.5 VA / 1.2 W

Coil Table

V_N AC	Ω	mA	V_N DC	Ω	mA
24	52	104	**12**	115	104
48	240	55	**24**	480	50
115	1350	23	**48**	1850	26
230	5600	11.5	**110**	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 … 10 mA @ < 80 V

Insulation

Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1 minute
Test voltage between contacts and coil	2 kVrms, 1 minute

General Specifications

Ambient temperature operation, storage	-40 … +70 °C
Pickup time AC / DC	3 … 10 ms / ≤ 12 ms
Release time AC / DC	2 … 15 ms / ≤ 3.5 ms
Bounce time NO contact AC / DC	3 … 6 ms / approx. 3.5 ms
Mechanical life	≥ 10^8 operations
Operating frequency at nominal load	≤ 360 operations / h
Ingress Protection degree	IP 40
Weight	80 g

Standard types

AC 50 Hz / 60 Hz: 24, 48, 115, 230 (240)	**C32/AC...V**
LED	**C32L/AC...V**
DC: 12, 24, 48, 110, 220	**C32/DC...V**
Free wheeling diode	**C32D/DC...V**
LED + Free wheeling diode	**C32DL/DC...V**
Railway NFF16101/2; ISO9125/2	**C32DR/DC...V**

" ..." enter the voltage for full type designation

Accessories

Socket:	**EC-11, EC11A, S3-B, S3-S, S3-L, S3-P, S3-PO**

Connection diagram

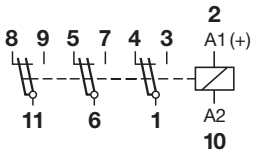


Fig.1 AC voltage endurance

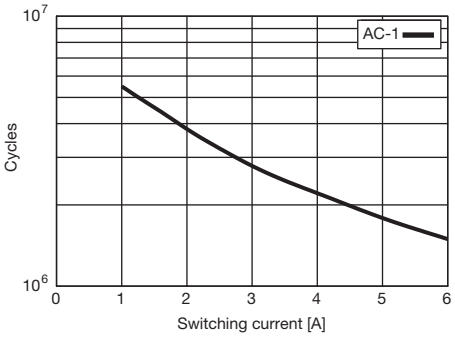
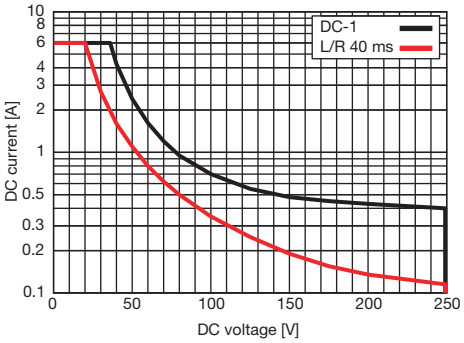
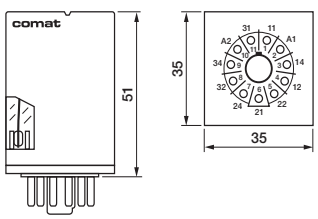


Fig. 2 DC load limit curve



Dimensions [mm]

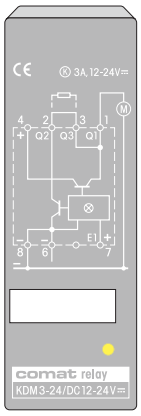


Technical approvals, conformities

Notes

1.1.6 Motor Control Relay

DC Motor Control Relay

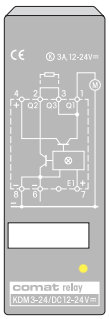


Application	Types	Output	DC ratings	Socket
KDM				
DC Motor control	KDM3-24	1xPNP & 1xNPN	3 A / 32 V	S7-C

Plug-in solid state relay

KDM 3-24

DC Motor control relay with brake function, DC 24 V
1 high side switch and 1 N-channel brake switch



Type: KDM 3-24/DC12-24V R

Solid state relay for DC-motor control
and similar applications
1 high side + 1 N channel transistor switch
All overload and short circuit protected
Adjustable or disabled brake function by
external resistor or jumper
LED status indicator
Pluggable module

Maximum load	**3 A / 32 V**	
Outputs	**Drive**	**Brake**
Type: Power MOS FET	High side	N-channel
Max. switching current	3 A	3 A, 10 sec
Max. continuous current	3 A (5 A) [1]	2 A
Max. inrush current, 1 sec [2]	20 A	7
Switching voltage range	10 … 32 V	10 … 32 V
Max. Load	100 W	65 W
Thermal overload protection [2]	self restoring	self restoring
Over current limiting [2]	typ. 35 A	7 … 14 A
Clamp voltage	typ. 58 V	60 … 70 V
Max. inductive switch-off energy [2]	1 Ws single pulse	0.4 Ws single pulse
ON resistance @ 25 °C	≤ 50 mΩ	≤ 100 mΩ
Leakage current	≤ 10 µA	

[1] Repetitive operation: When the ratio t_{pulse} / t_{cycle} is a low value then the current can be increased up to 5 A @ T_A ≤ 50 °C.
[2] Not for continous repetitive operation

Control input	**V_N = DC 12-24 V**
Operating voltage range	9 … 28 V
Release voltage	≤ 2 V
Typical input current @ 12 / 24 V	2 / 6.5 mA
Power consumption @ 12 / 24 V	25 / 160 mW
Polarity reversal	protected

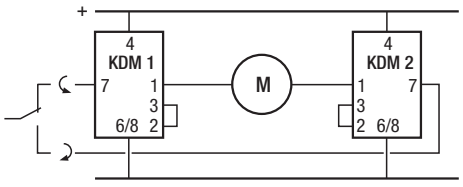
General Specifications	
Ambient temperature storage/operation	-40 … m +85°C / -25 … +60°C
ON delay	1 ms
Release time	1 ms
Ingress protection degree	IP 40 when the device is plugged in
Housing material	Lexan
Weight	27 g

Standard types	
DC 12-24	**KDM3-24/DC12-24V R**

Accessories	
Socket:	**S7-C**

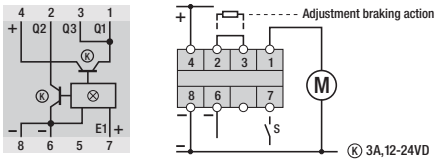
Application sample

Four quadrant (forward / reversed) motor control

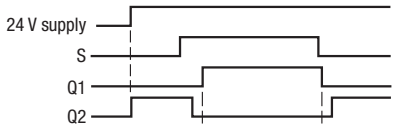


Operating with brake resistors (on 2–3) is not recommended in this application.

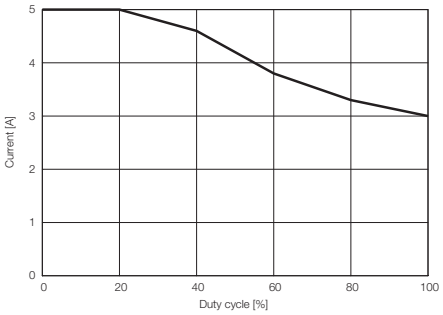
Connection diagram



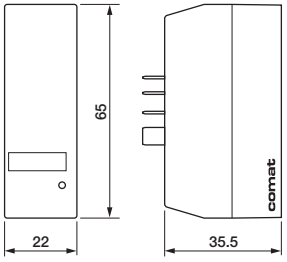
Function diagramm



Output current vs. duty cycle



Dimensions [mm]

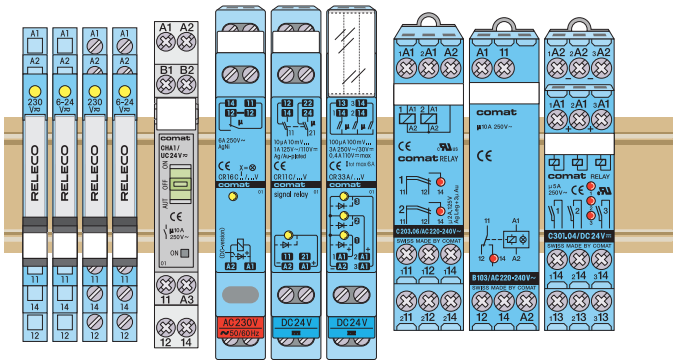


Technical approvals, conformities

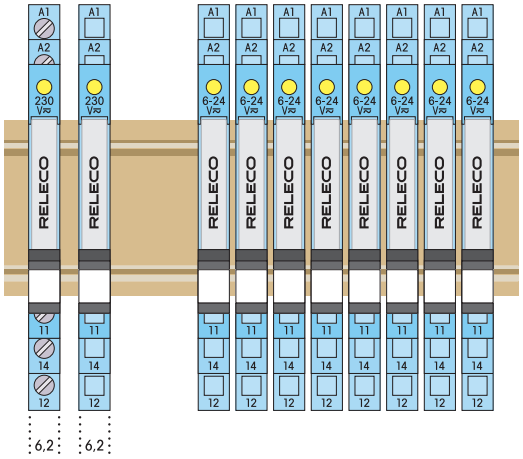
1.2 DIN Relays

1.2.1 Interface Relays

DIN Relays



Application	Types	Size	Outputs	AC ratings	DC ratings	Design
Interface relay for PLC, power contact	RINT-11	6.2 mm		6 A / 250 V	6 A / 25 V	Screw type
Interface relay for PLC, power contact	RINT-21	6.2 mm		6 A / 250 V	6 A / 25 V	Cage clamp type
Interface relay for PLC, signal contact	RINT-12	6.2 mm		6 A / 250 V	6 A / 25 V	Screw type
Interface relay for PLC, signal contact	RINT-22	6.2 mm		6 A / 250 V	6 A / 25 V	Cage clamp type
Interface relay for PLC, DC-solid state contact	RINT-15	6.2 mm			2 A / 33 V	Screw type
Interface relay for PLC, DC-solid state contact	RINT-25	6.2 mm			2 A / 33 V	Cage clamp type
Interface relay for PLC, AC-solid state contact	RINT-18	6.2 mm		0.75 A / 250 V		Screw type
Interface relay for PLC, AC-solid state contact	RINT-28	6.2 mm		0.75 A / 250 V		Cage clamp type
AUTO-ON-OFF realy High power & signal contact	CHA1	11.5 mm		10 A / 250 V 300 mA / 30 V		
Power relay	CR16CX	13 mm		6 A / 250 V	6 A / 30 V	
Signal realy	CR11C	13 mm		1 A / 125 V	1 A / 30 V	
Control relay	CR33A	13 mm	3x	3 A / 250 V	3 A / 30 V	
Steping relay	CRS1C	13 mm		6 A / 250 V	6 A / 30 V	
Power relay	B103	17.5 mm		10 A / 250 V	6 A / 25 V	
Power relay, 2 channels	C203.01	17.5 mm	2x	6 A / 250 V	6 A / 25 V	
Signal realy	C203.04	17.5 mm	2x	5 A / 250 V	5 A / 30 V	
Signal realy	C301.04	17.5 mm	3x	5 A / 250 V	5 A / 30 V	
Solid-state relay	KDW3-24	17.5 mm			3 A / 24 V	



- ✔ Relay module up to 6A 250V, different contact material
- ✔ Solid state modules DC, AC up to 2A
- ✔ Coil UC = AC/DC, not polarised, integrated freewheeling circuit
- ✔ LED status display
- ✔ Screw terminals or spring cage terminals
- ✔ Optional coloured plug-in bridges for different connections
- ✔ Narrow mounting 6,2 mm

RINT RELAY CODIFICATION AND ACCESSORIES

RINT INTERFACE RELAY CONSISTS OF TWO COMPONENTS.

- RELAY
- SOCKET

CODIFICATION FOR COMPLETE RELAY MODULE RELAY AND SOCKET 6,2 MM

RINT	Y	X	/UC...V

Nominal Voltage
24 V
230 V

Relay contact material
X = 1 $AgSnO_2$
X = 2 $AgSnO_2$ + min. 3µ Au
X = 5 Solid State N.O. 2 A DC 24 V
X = 8 Solid State N.O. 2 A AC 250 V

Socket terminal type
Y = 1 Screw terminal
Y = 2 Cage clamp terminal

RELAY CODIFICATION

RINT	RX	/DC...V

Nominal Voltage
24 V (for UC 24 V)
60 V (for UC 230 V)

Relay contact material
X = 1 $AgSnO_2$
X = 2 $AgSnO_2$ + min. 3µ Au
X = 5 Solid State N.O. 2 A DC 24 V
X = 8 Solid State N.O. 2 A AC 250 V

RINT 11 … 22 series 6.2 mm wide

Interface module with mechanical CO output contact

DIN Rail mounting according to DIN 43 880

Types: RINT-11, RINT-12, RINT-21, RINT-22, / …V
Standard interface module, 1 change over contact
Type 1x: Screw terminal, Type 2x: Spring cage terminal
Control voltage UC 24 V and UC 230 V, 50/60 Hz
User friendly jumper system for in- and outputs, Yellow LED for status indication

Max. contact load	**6 A, 250 V AC-1**	**6 A, 25 V DC-1**

Contact Data

Type		micro disconnection	
Material	Standard Code x1	$AgSnO_2$	
	Optional Code x2	$AgSnO_2$ + 5µ gold plated	
		$AgSnO_2$:	**+ 5 µAu:**
Max. operational current		6 A	50 mA
Max. inrush current AC 15 op.		30 A	50 mA
Max. switching voltage AC-1		250 V	30 V
Max. AC load		1500 VA	—
Max. DC load 24 V/220 V		140 W/40 W	24 V: 1.2 W
Recommended min. contact load		100 mA, 12 V	1 mA, 0.1 V

Control input V_n =	**UC 24 V**	**UC 230 V**
Operating voltage range @ 40 °C	20.5 … 33 V	184 … 257 V
Typical input current	11 / 8.5 mA	3 mA
Release voltage	< 4 V	< 60 V
Nominal power consumption	270 mW	700 mW

Insulation

Test voltage I / O	4 kVrms 1minute
Pollution degree	3
Over voltage category	III
Open contact	1000 Vrms dielectric strength 1 min
Max. working voltage	250 V
Standard	IEC 60 664

General Specifications

Ambient temperature: operation	-25 … +60 °C, 230 V: …+55 °C
storage	-40 … 85 °C
Typical response time @ V_n	7 ms
Typical release time @ V_n	15 ms
Service life mech./elec.	≥ 10^7/ ≥ 10^5 operations
Cond. cross section screw terminal	solid/stranded wire 0.14 … 2.5 / 1.5 mm^2
Cond. cross section spring cage	solid/stranded wire 0.2 … 2.5 / 1.5 mm^2
Ingress protection	IP 20, plug-in module: IP57
Mounting position	any
Housing material	Polyamide PA

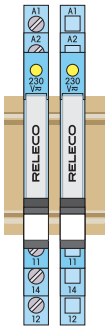
Standard types

UC 24, UC230, screw terminal:	**RINT-11/UC…V**
UC 24, UC230, screw terminal, gold plated:	**RINT-12/UC…V**
UC 24, UC230, spring cage terminal:	**RINT-21/UC…V**
UC 24, UC230, spring cage terminal, gold plated:	**RINT-22/UC…V**

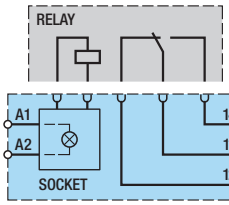
" …" enter the voltage for full type designation

Accessories

Plug-in bridges 500 mm:	blue:	**RINT-BR1-500B**	gray:	**RINT-BR1-500G**
Plug-in bridges 6 mm:	blue:	**RINT-BR2-6B/10**	gray:	**RINT-BR2-6G/10**
	red:	**RINT-BR2-6R/10**		
Label plate:		**RINT-MA6-0/100** (100 pieces)		
Replacement relay for RINT-11/21:		**RINT-R1/DC (for UC24V)**		
		RINT-R1/DC 60V (for UC230V)		
Replacement relay for RINT-12/22:		**RINT-R2/DC (for UC24V)**		
		RINT-R2/DC 60V (for UC230V)		



Connection diagram



Relay module
RINT-R1… / RINT-R2…

Fig.1 AC voltage endurance RINT 11, 21

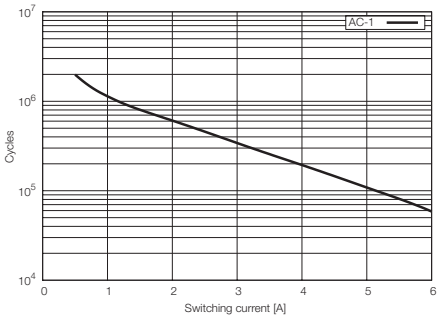
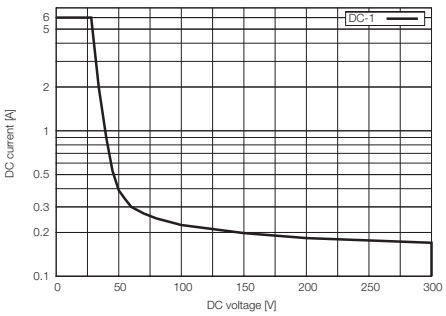
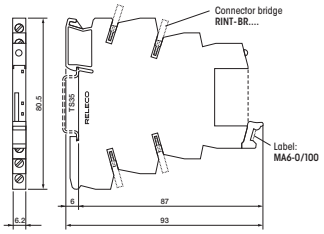


Fig. 2 DC load limit curve RINT 11, 21



Dimensions [mm]



Technical approvals, conformities

RINT 15 … 25 series 6.2 mm wide

Interface module with solid state DC relay

DIN Rail mounting according to DIN 43 880

Types: RINT-15, RINT-25, /DC24V
Standard interface module, Solid state DC
Type 1x: Screw terminal, Type 2x: Spring cage terminal
DC 24 V control voltage, User friendly jumper system for in- and outputs
Yellow LED for status indication

Max. output load	**2 A / 33 V**

Output data

Type	NO solid state DC, 2 wire floating
Polarity reversal & overvoltage	protected
Max. continuous current	2 A
Max. inrush current (10 ms)	15 A
Switching voltage	3 … 33 V
Max. DC load 24 V	48 W
Max. voltage drop @ 2 A	200 mV

Control input V_n =	**DC 24 V**
Operating voltage range	19 … 29 V
Release voltage	< 9 V
Typical input current @ 24 V	8.5 mA
Nominal power consumption	210 mW
Polarity reversal	protected

Insulation

Test voltage I / O	2.5 kVrms 1 minute
Pollution degree	2
Over voltage category	III
Standard	IEC 60 664

General Specifications

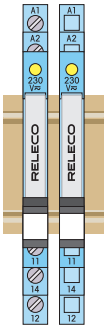
Ambient temperature: operation	-25 … +60 °C
storage	-25 … 70 °C
Typical response time @ V_n	20 µs
Typical release time @ V_n	500 µs
Wire size, screw terminal	solid/stranded wire 0.14 … 2.5 mm²
Wire size, spring cage	solid/stranded wire 0.14 … 2.5 mm²
Ingress protection	IP 20, plug-in module: IP57
Mounting position	any
Housing material	Polyamide PA

Standard types

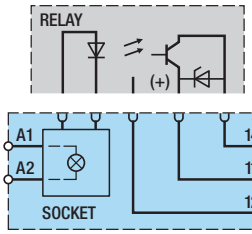
DC 24V, screw terminal:	**RINT-15/DC24V**
DC 24V, spring cage terminal:	**RINT-25/DC24V**

Accessories

Plug-in bridges: 500 mm:	blue:	**RINT-BR1-500B**
	gray:	**RINT-BR1-500G**
Plug-in bridges: 6 mm:	blue:	**RINT-BR2-6B/10**
	gray:	**RINT-BR2-6G/10**
	red:	**RINT-BR2-6R/10**
Label:		**RINT-MA6-0/100** (100 pieces)
Replacement relay:		**RINT-R5/DC24V**

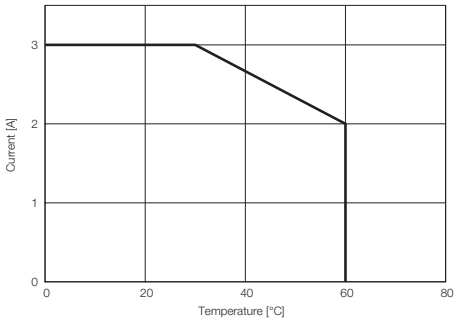


Connection diagram

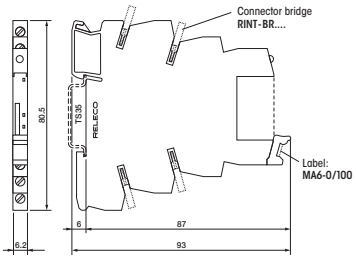


Solid-State module
RINT-R5/DC24V

Output derating curve



Dimensions [mm]



Technical approvals, conformities

RINT 18 … 28 series 6.2 mm wide

Interface module with solid state AC triac

DIN Rail mounting according to DIN 43 880

Types: RINT-18, RINT-28, / DC24V
Standard interface module, Solid state AC (triac)
Type 1x: Screw terminal, Type 2x: Spring cage terminal
DC 24 V control voltage, User friendly jumper system for in- and outputs
Yellow LED for status indication

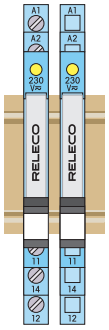
Max. output load	**0.75 A / 250 V**
Output data	
Type	NO solid state AC, 2 wire floating
Switching AC voltage range	24 … 253 V
Max. voltage drop	< 1 V
Max. continuous current	0.75 A
Max. inrush current (10 ms)	30 A
Min. load current	10 mA
I^2t value	4.5 A^2s
Leakage current	< 1 mA
Protection	RCV circuit
Control input V_n =	**DC 24 V**
Operating voltage range	19 … 29 V
Release voltage	< 6 V
Typical input current @ 24 V	8 mA
Nominal power consumption	200 mW
Polarity reversal	protected
Insulation	
Test voltage I / O	2.5 kVrms 1minute
Pollution degree	2
Over voltage category	III
Standard	IEC 60 664
General Specifications	
Ambient temperature: operation	-25 … +60 °C
storage	-25 … 70 °C
Typical response time @ V_n	10 ms
Typical release time @ V_n	10 ms
Wire size, screw terminal	solid/stranded wire 0.14 … 2.5 mm^2
Wire size, spring cage	solid/stranded wire 0.14 … 2.5 mm^2
Ingress protection	IP 20
Mounting position	any
Housing material	Polyamide PA

Standard types

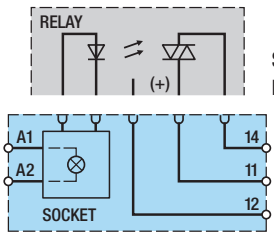
DC24V, screw terminal:	**RINT-18/DC24V**
DC24V, spring cage terminal:	**RINT-28/DC24V**

Accessories

Plug-in bridges: 500 mm:	blue:	**RINT-BR1-500B**
	gray:	**RINT-BR1-500G**
Plug-in bridges: 6 mm	blue:	**RINT-BR2-6B/10**
	gray:	**RINT-BR2-6G/10**
	red:	**RINT-BR2-6R/10**
Label:		**RINT-MA6-0/100** (100 pieces)
Replacement relay:		**RINT-R8/DC24V**

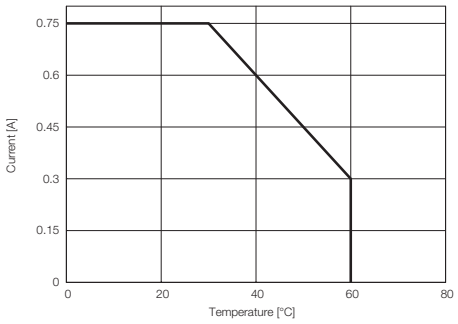


Connection diagram

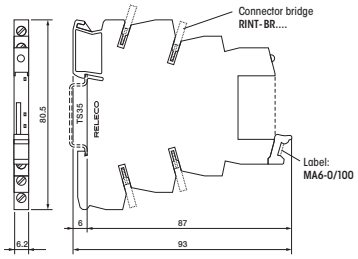


Solid-State module
RINT-R8/DC24V

Output derating curve



Dimensions [mm]



Technical approvals, conformities

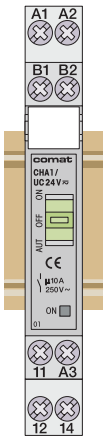
CHA1

Auto-ON-OFF Interface Relay

DIN Rail mounting according to DIN 43 880

Type: CHA1/UC24V

Auto ON-OFF relay with override switch and check back signal contact, e.g. for PLC. It is suitable for either automatic control or function override for maintenance, emergency, installations etc.
1 change over power contact with 2500 VA switching capacity
1 normally closed signal contact 0.3 A, 30 V
UC 24 V control voltage, DC, AC 50 / 60 Hz
LED for status indication



Maximum contact load	**2500 VA AC1, 250 W DC1**
Recommended minimum contact load	**10 mA / 12 V**

Contact data	**Power cont.**	**Signal cont.**
Contact type	1CO, micro disconnection	1NC
Material	$AgSnO_2$	Ag
Rated operational current	10 A	0.3 A
Max. inrush current (20 ms)	15 A	0.5 A
Max. switching voltage AC-1	250 V	30 V
Max. AC load	2500 VA AC-1, 500 VA AC-15	
Max. Motor load AC-3	0.44 kW	
Max. DC load DC-1	10 A 24 V, 0.12 A 220 V	10 W
Min. switching load	300 mW	

Control input V_n =	**UC 24 V (AC or DC)**
Operating voltage range	19 … 26.5 V
Release voltage	< 3 V, typically 5 V
input current @ V_n	≤ 17 mA
Nominal power consumption	400 mW

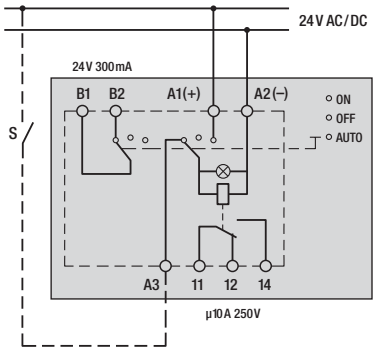
Insulation	
Withstand voltage I / O	Pulse 4 kV (1.2/50µs)
Open contact	1000 Vrms dielectric strength

General Specifications	
Ambient temperature: operation	-10 … +50 °C
Typical response time @ Vnom	5 … 10 ms
Typical release time @ Vnom	7 … 12 ms
Mechanical life	≥ 10^7 operations
Electrical life AC-1	≥ 10^5 operations
Ingress protection degree	IP 20
Conductor cross section, solid wire size	1 x 6 mm^2/ AWG10, 2 x 2.5 mm^2/AWG 12
Conductor cross section, stranded wire size	1 x 4 mm^2/ AWG12, 2 x 1.5 mm^2/AWG 16
Max. Screw torque	0.5 Nm

Standard types

CHA1/UC24V	

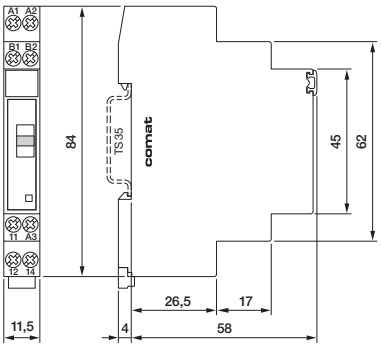
Connection diagram



Function table

Green ON-OFF-switch	Control input A3	Relay / LED	Check back contact
AUTO	1	1	1
	0	0	1
ON	-	1	0
OFF	-	0	0

Dimensions [mm]



Technical approvals, conformities

DIN Relay 13 mm interface series

CR16CX

Power relay with 1-pole change over contact
DIN Rail mounting according to DIN 43 880

Type: CR16CX/...V R
Power relay
1 change over contact
control voltage DC 24 V and AC 230 V / 50 Hz
LED status indicator
Wash tight relay built in

Maximum contact load	**6 A 250 V AC-1, 6 A 30 V DC-1**
Recommended minimum contact load	**10 mA / 12 V**

Contacts

Type	Single contact micro disconnection
Material	AgNi
Rated operational current	6 A
Max. inrush current (20ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1	1500 VA
Max. DC load 24V/220V (Fig. 2)	180 W

Control input V_n =	**DC 24 V**	**AC 230**
Operating voltage range	18 … 27 V	190 … 255 V
Input current @ V_n	12 … 15 mA	12 … 16 mA
Starting current	—	≤ 0.65 A / 0.1 ms
Release voltage	2.4 V	33 V
Nominal power consumption	330 mW	330 mW
Inductive turn-off voltage	damped, 57 Vp	suppressed

Insulation

Test voltage open contact	1 kVrms
Test voltage between contacts and coil	2.5 kVrms 1 minute

General Specifications

Ambient temperature storage / operation		-40 … +85 °C / -25 … +60 °C
Response time AC / DC		10 ms / 6 ms
Release time AC / DC		8 … 20 ms / 10 … 15 ms
Bounce time NO contact		2.5 ms
Operating frequency at nominal load		≤ 400 operations / h
Service live, mech./elec.		≥ 30 x 10^6 / ≥ 1.5 x 10^5 operations (Fig. 1)
Ingress protection degree	Housing:	IP 40, terminals: IP 20
	contact:	IP67
Max. Screw torque		0.4 Nm
Housing material		Lexan
Weight		50 g

Standard types

AC 230 V 50 Hz:	**CR16CX/AC230V R**
DC 24 V:	**CR16CX/DC24V R**

Accessories

Marking Strip:	
Large:	**BS-13G**
Small:	**BS-13K**

Connection diagram

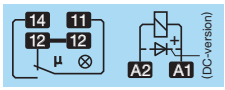


Fig.1 AC voltage endurance 250 V

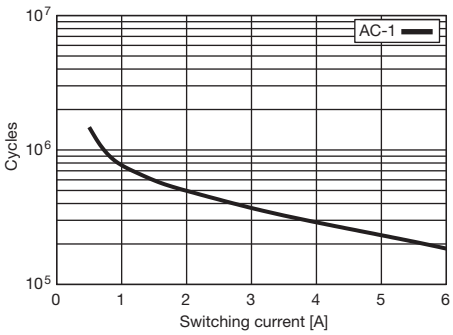
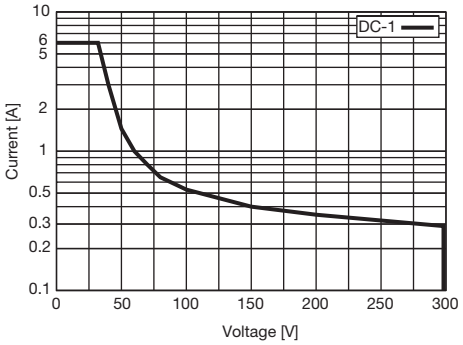
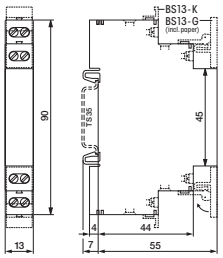


Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

DIN Relay 13 mm interface series

CR11C

Signal relay with 2-pole change over double contacts
DIN Rail mounting TS 35, according to DIN 43 880

Type: CR11C/DC24V R
Signal relay
2 change over double contacts
LED status indicator
Sealed relay built in

Maximum contact load	**1 A, 125 V AC-1, 1 A 30 V DC-1**
Minimum contact load	**10 µA / 10 mV**

Contacts

Type	double contact micro disconnection
Material	Ag gold plated
Max. operational current	1 A
Max. switching voltage AC-1	125 V
Max. AC load AC-1	0.5 A, 125 V, 62.5 VA
Max. DC load (Fig. 2)	30 W

Remark: For preserving the gold plating do not exceed 30 V / 0.1 A resistive load.

Control input V_n =	**DC 24 V**
Operating voltage range	18 … 30 V
Input current @ V_n	10.5 … 12 mA
Release voltage	2.4 V
Nominal power consumption	280 mW
Inductive turn-off voltage	damped, 45 Vp

Insulation

Test voltage open contact	0.75 kVrms 1 minute
Test voltage between adjacent poles	0.5 kVrms, 1minute
Test voltage between contacts and coil	1 kVrms 1 minute

General Specifications

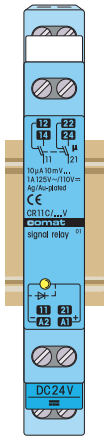
Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
Response time	≤ 3 ms
Release time	≤ 4 ms
Operating frequency at nominal load	≤ 400 operations / h
Bounce time NO contact	≤ 1 ms
Service live, mech./elec.	≥ 10^8 / ≥ 10^5 operations (Fig. 1)
Ingress protection degree	Housing: IP 40, terminals: IP 20 contacts: IP67
Housing material	Lexan
Max. Screw torque	0.4 Nm
Weight	40 g

Standard types

DC 24 V	**CR11C/DC24V R**

Accessories

Marking Strip:	
Large	**BS-13G**
Small	**BS-13K**



Connection diagram

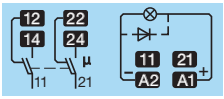


Fig.1 Contact endurance

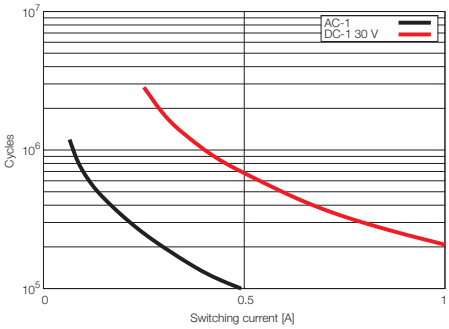
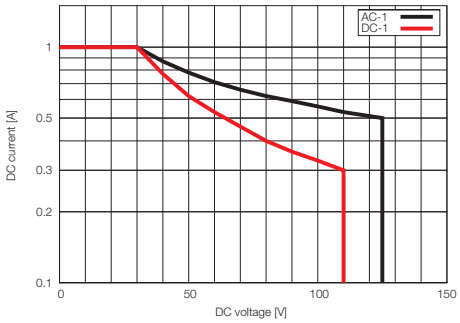
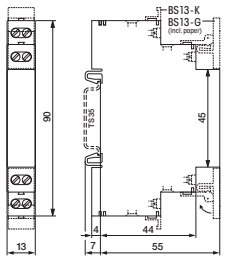


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947-4-1, EN 60947-5-1

DIN Relay 13 mm interface series

CR33A

3 channels control relay with normally open double contacts
DIN Rail mounting according to DIN 43 880

Type: CR33A/DC24V R
3 channels control relay
3 NO double contacts on common line
LED status indicator for each channel
Sealed relays built in

Maximum contact load	**3 A, 250 V AC-1, 3 A 30 V DC-1**
Recommended minimum contact load	**100 µA / 100 mV**

Contacts

Type	double contact micro disconnection
Material	Silver alloy gold plated
Max. operational current	3 A
Max. switching voltage AC-1	250 V
Max. AC load AC-1	750 VA
Max. DC load (Fig. 2) DC-1	150 V 0.24 A, 90 W

Remark: For preserving the gold plating do not exceed 30 V / 0.1 A resistive load.

Control input V_N	**DC 24 V**
Operating voltage range	18 … 29 V
Input current per channel @ V_N	8 … 10 mA
Release voltage	2.4 V
Nominal power consumption per channel	250 mW
Inductive turn-off voltage	damped, 30 Vp

Insulation

Test voltage open contact	0.75 kVrms 1 minute
Test voltage between contacts and coil	2 kVrms 1 minute

General Specifications

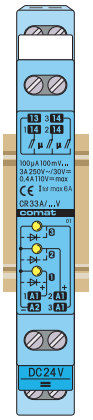
Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
Response time	≤ 6 ms
Release time	≤ 4 ms
Service life, mech./elec.	≥ 2 x 107 / ≥ 10^5 operations (Fig. 1)
Ingress protection degree	Housing: IP 40, terminals: IP 20 contacts: IP 67
Max. Screw torque	0.4 Nm
Housing material	Lexan
Weight	52 g

Standard types

DC 24 V:	**CR33A/DC24V R**

Accessories

Marking Strip:	
Large	**BS-13G**
Small	**BS-13K**



Connection diagram

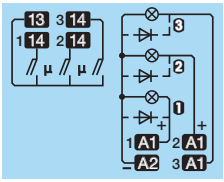


Fig.1 Contact endurance

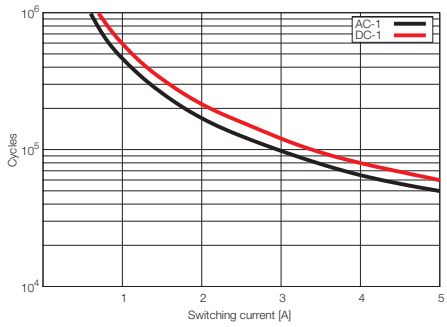
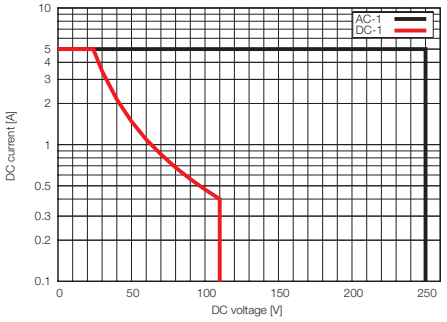
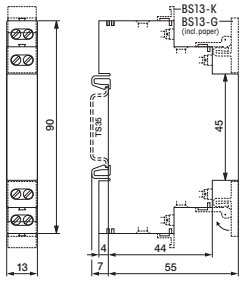


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947-4-1
EN 60947-5-1

DIN Relay 13 mm interface series

CRS1C

Stepping relay with 1-pole change over power contact
DIN Rail mounting according to DIN 43 880

Type: CRS1C/...V R
Stepping relay (bistable, mech. latching)
1 change over contact with 0.5 mm gap

Maximum contact load	**6 A / 250 V, 180 W DC-1**
Recommended minimum contact load	**0.1 A / 10 V**

Contacts

Type	Single contact micro disconnection
Material	AgNi 10 + 0.2 µm Au
Rated operational current	
AC-1, AC-5a, AC-5b, AC-7a, AC-7b	6 A
Max. inrush current (20ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load (Fig. 1) AC-1	1500 VA
Max. DC load (Fig. 2) DC-1	180 W

Coils V_N =	**AC 230 V 50 Hz**	**DC 24 V**
Operating voltage range	185 … 255 V	19 … 27 V
Max. pulse voltage	253 V *$(t_{on}/t_p)^{0.5}$	26.4 V *$(t_{on}/t_p)^{0.5}$
Op. voltage @100% duty cycle, 60 °C, ambient temp., 6 A contact load	≤ 245 V	≤ 25.5 V
Nominal power consumption	1.4 VA	1 W With free wheeling diode

Coil Table

VAC	Ω ± 10%	mA	VDC	Ω ± 10%	mA
230	25 000	60 mA	24	575	42

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and coil	4 kVrms 1 minute

General Specifications

Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
Min. drive pulse width	50 ms
Mechanical life, DC drive / AC drive	≥ 107 / ≥ 10^5 operations
Electrical life 250 V, AC-1	≥ 10^5 operations
Ingress Protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material	Lexan
Weight	47 g

Standard types

AC 230 V, 50Hz/60Hz:	**CRS1C/AC230V R**
DC 24 V:	**CRS1C/DC24V R**

Accessories

Marking Strip:	
Large	**BS-13G**
Small	**BS-13K**

Connection diagram

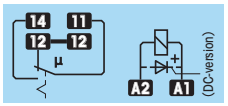


Fig.1 AC voltage endurance

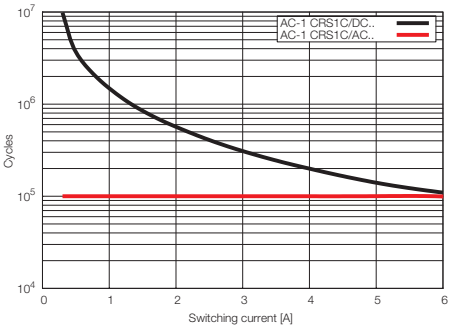
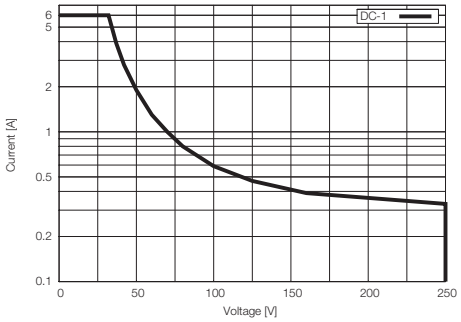
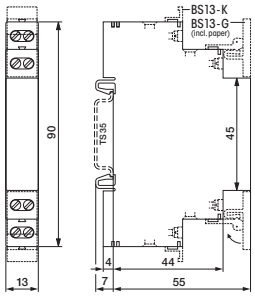


Fig. 2 DC load limit curve



Dimensions [mm]



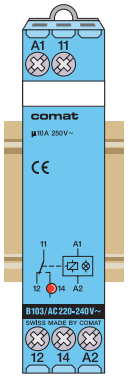
Technical approvals, conformities

IEC 61810; EN 60947

B103

Power relay with 1-pole change over contact
DIN Rail mounting according to DIN 43 880

Type: B103/...V R
Power relay
1 change over contact
8 … 240 V, UC / AC control voltage
LED status indicator
Wash tight relay built in
Also suitable for panel mounting 2 x M4



Maximum contact load	**10 A 250 V AC-1, 6 A 25 V DC-1**
Recommended minimum contact load	**10 mA / 12 V**

Contacts

Type	Single contact micro disconnection
Material	AgSnO2
Rated operational current	10 A
Max. inrush current (10ms)	16 A
Max. switching voltage AC-1	250 V
Max. AC load	2500 VA AC-1
Max. DC load 24V/220V (Fig. 2)	150 W / 50 W

Control input V_n =

	DC 12 V	UC 24 V	UC 48 V	AC 110 - 127 V 50Hz/60Hz	AC 220 - 240 V 50Hz/60Hz
Operating voltage range [V]	7.5 … 15	19 … 29	38 … 57	90 … 150	190 … 265
Input current @ Vnom [mA]	≤ 100	≤ 25	≤ 15	≤ 25 / 30	≤ 25 / 30
Release voltage [V]	≥ 2	≥ 3.5	≥ 6	≥ 12 / 10	≥ 20 / 18
Nom. power consumption [W]	≤ 0.9/1.2	≤ 0.5/0.6	≤ 0.7/0.8	≤ 0.8/1.2	≤ 0. 8/1.2
Inductive turn-off voltage	None	None	None	None	None

Insulation

Test voltage open contact	1 kVrms
Test voltage between contacts and coil	2 kVrms 1 minute

General Specifications

Ambient temperature storage/operation	-40 … +85 °C /-25 … +60 °C
Response time AC/DC	20 ms / 7 ms
Release time	5 … 12 ms
Bounce time NO/NC contact	typ. 0.5 ms / 3 ms
Mechanical life	≥ 20 x 10^6
Conductor cross section	Stranded wire 2.5 mm^2, 2 x 1.5 mm^2
Ingress protection degree	Housing: IP 40, terminals: IP 20
Max. Screw torque	0.4 Nm
Housing material	Lexan
Weight	50 g

Standard types

UC (AC / DC) 50/60Hz: 8-12, 24, 48	**B103/UC ...V R**
AC 50 / 60 Hz: 110-127, 220-240	**B103/AC ...V R**

"…" enter the voltage for full type designation

Accessories

Label plate:	**BZS-DIN17.5**

Connection diagram

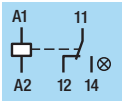


Fig.1 AC voltage endurance 250 V AC-1

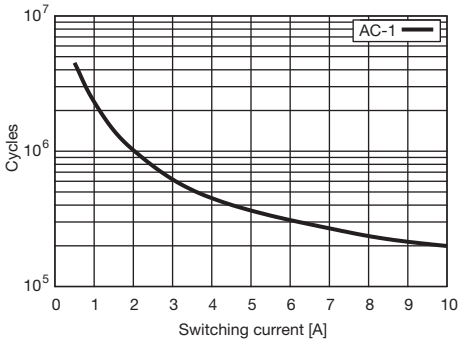
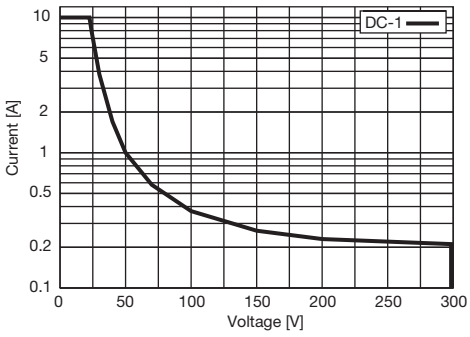
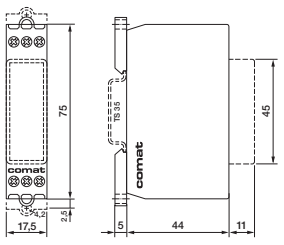


Fig. 2 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

DIN Relay 17.5 mm interface series

C203.01

2 channels power relay with change over single contacts
DIN Rail mounting according to DIN 43 880

Type: C203.01/...V R
2 channels power relay
2 separate change over contacts
12 … 230 V control inputs
LED status indicator for each channel
Wash tight relays built in
Also suitable for panel mounting 2 x M4

Maximum contact load	**6 A 250 V AC-1, 6 A 25 V DC-1**
Recommended minimum contact load	**100 mA / 12 V**

Contacts

Type	Single contact micro disconnection
Material	AgNi
Rated operational current	6 A
Max. inrush current (20ms)	15 A
Max. switching voltage AC-1	250 V
Max. AC load (Fig.1)	1500 VA AC-1
Max. DC load 24 V/220 V (Fig.2)	150 W / 50 W

Control input V_n = per channel gew	**DC 12 V**	**UC 24 V**	**UC 48 V**	**AC 110 - 127 V** 50Hz/60Hz	**AC 220 - 240 V** 50Hz/60Hz
Operating voltage range [V]	10 … 15	20 … 29	38 … 57	90 … 150	190 … 265
Input current @ Vnom [mA]	≤ 40	≤ 25	≤ 11	≤ 12/15	≤ 12/15
Release voltage [V]	≥ 1.2	≥ 2.4	≥ 4.8	≥ 20	≥ 40
Nom. power consumption [W]	≤ 0.4	≤ 0.6	≤ 0.55	≤ 0.8 / 1	≤ 0. 9 / 1.2
Inductive turn-off voltage	None	None	None	None	None

Insulation

Open contact	1 kVrms 1 minute
Between adjacent poles	2 kVrms 1 minute
Between contacts and coil	2 kVrms 1 minute

General Specifications

Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
Response time	2 – 15 ms
Release time	10 – 35 ms
Bounce time	≤ 3 ms
Mechanical life	20 x 10^6 operations
Conductor cross section	Stranded wire 2.5 mm^2, 2 x 1.5 mm^2
Max. screw torque	0.4 Nm
Ingress protection degree	Housing: IP 40, terminals: IP 20
Housing material	Lexan
Weight	80 g

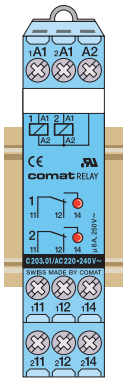
Standard types

AC 50 Hz / 60 Hz: 110 – 127, 220 – 240	**C203.01/AC...V R**
UC (AC / DC): 24, 48	**C203.01/UC ...V R**
DC 12 V:	**C203.01/DC12V R**

"..." enter the voltage for full type designation

Accessories

Label plate:	**BZS-DIN17.5**



Connection diagram

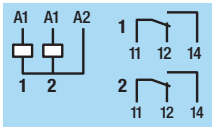


Fig. 1 AC voltage endurance 250 V

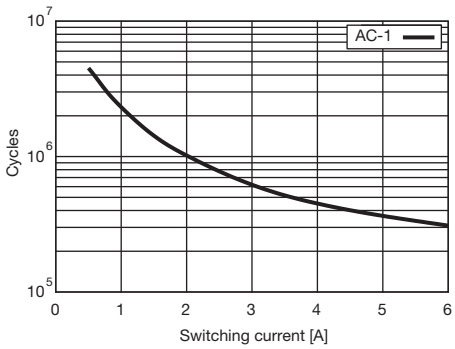
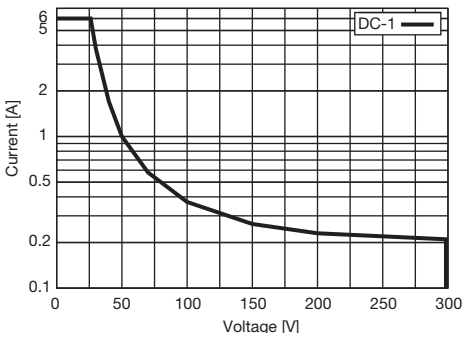
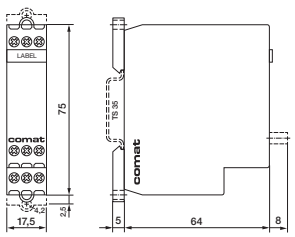


Fig. 2 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

EN 60947-4-1, EN 60947-5-1

C203.04

2 channels control relay for medium and very low contact load with change over single contacts, DIN Rail mounting according to DIN 43 880

Type: C203.04/...V R
2 channels power relay
2 separate change over contacts
12 … 48 V control inputs
LED status indicator for each channel
Sealed relays built in
Also suitable for panel mounting 2 x M4

Maximum contact load	**5 A 250 V AC-1, 5 A 30 V DC-1**
Recommended minimum contact load	**1 mA / 0.1 V**

Contacts

Type	Single contact micro disconnection
Material	Gold flash over silver alloy
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. switching voltage DC-1	125 V
Max. AC load (Fig.1) AC-1	1250 VA
Max. DC load 30 V / 125 V (Fig.2)	150 W / 25 W

Control input V_n =, per channel	**DC 12–15 V**	**UC 24 V**	**UC 48 V**
Operating voltage range [V]	11 … 18	20 … 29	38 … 53
Input current @ Vnom [mA]	≤ 25	≤ 16	≤ 25
Release voltage [V]	≥ 2	≥ 3.5	≥ 6
Nom. power consumption [W]	≤ 0.35	≤ 0.4	≤ 1
Inductive turn-off voltage	None	None	None
Polarity reversal	protected	protected	protected

Insulation

Open contact	1 kVrms
Between adjacent poles	2 kVrms
Between contacts and coil	2 kVrms

General Specifications

Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
ON delay	≤ 6 ms
Release time	≤ 30 ms
Bounce time NO contact	≤ 3 ms
Mechanical life	≥ 50 x 10^6 operations
Conductor cross section	Stranded wire 2.5 mm^2, 2 x 1.5 mm^2
Max. Screw torque	0.4 Nm
Ingress protection degree	Housing: IP 40, terminals: IP 20
Housing material	Lexan
Weight	80 g

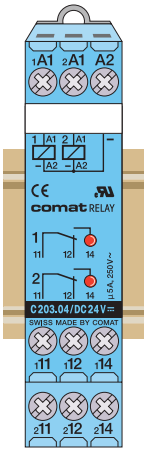
Standard types

DC: 12-15, 24, 48	**C203.04/DC ...V R**

"…" enter the voltage for full type designation

Accessories

Label plate:	**BZS-DIN17.5**



Connection diagram

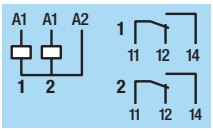


Fig.1 Contact endurance

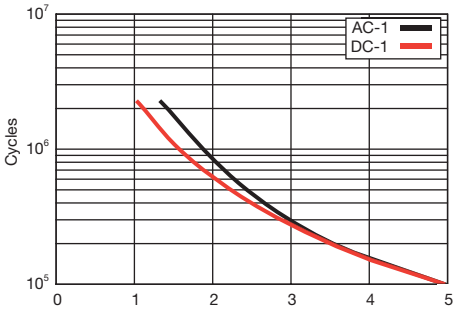
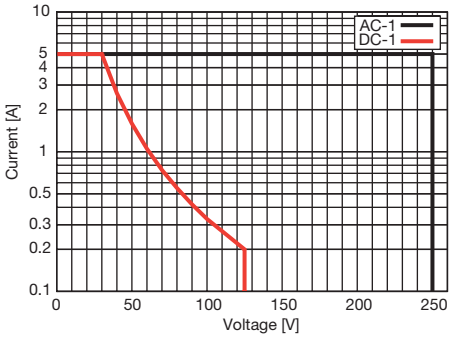
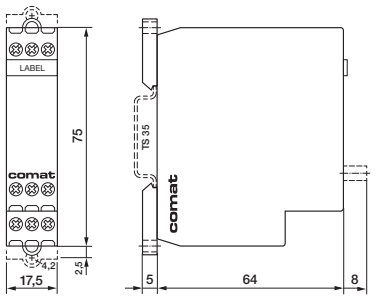


Fig. 2 Load limit curve



Dimensions [mm]



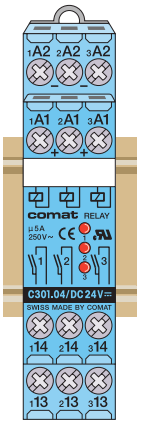
Technical approvals, conformities

EN 60947-4-1, EN 60947-5-1

DIN Relay 17.5 mm interface series

C301.04

3 channels control relay for medium and very low contact load with normally open double contacts, DIN Rail mounting according to DIN 43 880



Type: C301.04/…V R
3 channels control relay
3 separate normally open double contacts of high reliability
12 … 48 V control inputs
LED status indicator for each channel
Sealed relays built in
Also suitable for panel mounting 2 x M4

Maximum contact load	**5 A 250 V AC-1, 5 A 30 V DC-1**
Recommended minimum contact load	**1 mA / 0.1 V**

Contacts

Type	Double contact micro disconnection
Material	Gold flash over silver alloy
Rated operational current	5 A
Max. switching voltage AC-1	250 V
Max. switching voltage DC-1	125 V
Max. AC load (Fig.1) AC-1	1250 VA
Max. DC load 30 V / 125 V (Fig.2)	150 W / 25 W

Control input = per channel V_n	**DC 12 -15 V**	**DC 24 V**	**DC 48 V**
Operating voltage range [V]	11 … 18	20 … 29	38 … 53
Input current @ Vnom [mA]	≤ 25	≤ 16	≤ 25
Release voltage [V]	≥ 2	≥ 3.5	≥ 6
Nom. power consumption [W]	≤ 0.35	≤ 0.4	≤ 1
Inductive turn-off voltage	None	None	None
Polarity reversal	protected	protected	protected

Insulation

Open contact	1 kVrms
Between adjacent poles	2 kVrms
Between contacts and coil	2 kVrms

General Specifications

Ambient temperature storage/operation	-40 … +85 °C / -25 … +60 °C
ON delay	≤ 6 ms
Release time	≤ 30 ms
Bounce time NO contact	≤ 3 ms
Mechanical life	≥ 50 x 10^6 operations
Conductor cross section	Stranded wire 2.5 mm^2, 2 x 1.5 mm^2
Max. Screw torque	0.4 Nm
Ingress protection degree	Housing: IP 40, terminals: IP 20
Housing material	Lexan
Weight	80 g

Standard types

DC, 12-15, 24, 48:	**C301.04/DC ...V R**

"…" enter the voltage for full type designation

Accessories

Label plate:	**BZS-DIN17.5**

Connection diagram

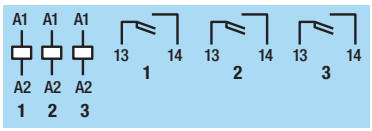


Fig.1 Contact endurance

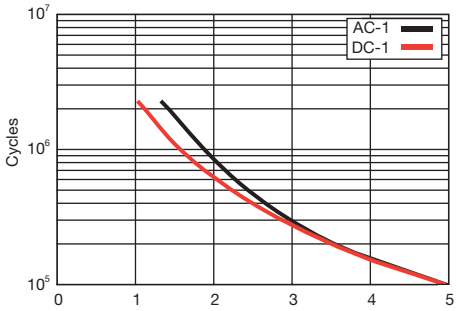
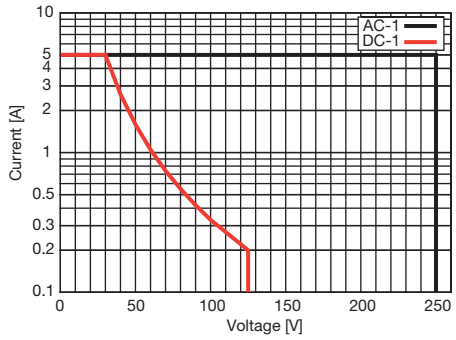
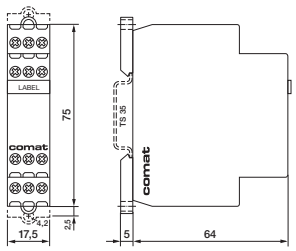


Fig. 2 Load limit curve



Dimensions [mm]



Technical approvals, conformities

DIN Relay 17.5 mm

KDW 3-24

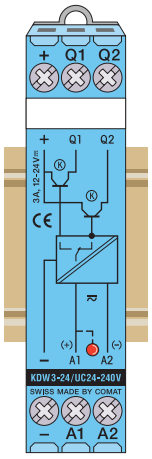
Solid state switching over interface module with two output channels and galvanically separated control input with wide voltage range DIN Rail mounting according to DIN 43 880

Type: KDW 3-24/UC24-240V R
24 V solid state switching over relay
Two high side switches for 24 V/3 A
all overload and short circuit protected
suitable for all kind of loads, such as lamps, DC-motors, valves, etc.
Control input for UC 24 … 240 V (AC/DC)
LED status indicator

Maximum load	**3 A / 32 V**
Output data for each channel	
Type: Power MOS FET	High side switch
Max. switching current	3 A
Max. continuous current	3 A (5 A) [1]
Max. inrush current, 1 sec [2]	20 A
Switching voltage range	9 … 32 V
Max. Load	100 W
Thermal overload protection [2]	self restoring
Over current limiting [2]	20 … 30 A
Clamp voltage	41 … 52 V
Max. inductive switch-off energy[2]	0.27 … 340 Ws (see fig. 1)
ON resistance @ 25 °C	≤ 30 mΩ
Leakage current	≤ 50 µA

[1] Repetitive operation: When the ratio t_{pulse} / t_{cycle} is a low value then the current can be increased up to 5 A @ T_A ≤ 50 °C. See fig. 2.
[2] Not for continuous repetitive operation

Control input V_N =	**UC 24-240 V (AC / DC)**
Operating voltage range	18 … 255 V
Release voltage / current	≤ 8 V / ≤ 1 mA
Input current	2 mA – 8 mA
Max. power consumption	800 mW
Surge immunity EN 61000-4-5	2 kV
Insulation	
Between input and outputs	2 kVrms 1 minute
General Specifications	
Ambient temperature storage/operation	-40 … +85 °C/-25 … +60 °C
ON delay	≤ 3 ms
Release time	≤ 4 ms
Max. Switching frequency	3600 ops/minute
Conductor cross section	Stranded wire 2.5 mm², 2 x 1.5 mm²
Max. Screw torque	0.4 Nm
Ingress protection degree	Housing: IP 40, terminals: IP 20
Housing material	Lexan
Weight	30 g
Standard types	
UC 50/60Hz (AC/DC)	**KDW3-24 / UC24-240V R**
Accessories	
Label plate:	**BZS-DIN17.5**



Connection diagram

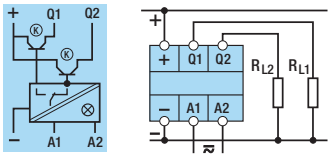


Fig.1 Load inductance vs. Loadcurrent

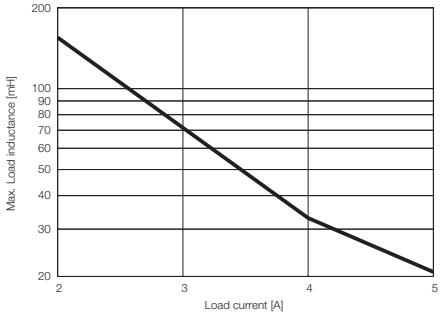
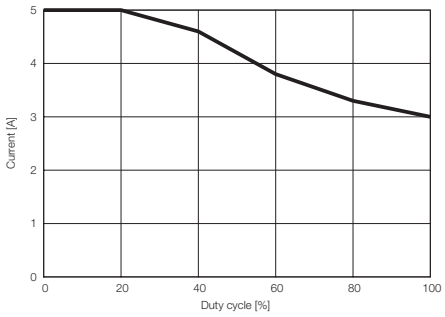
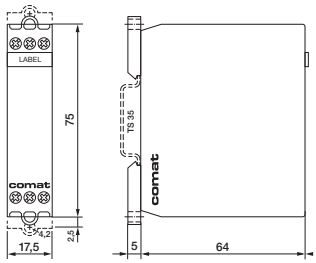


Fig. 2 Output current vs. duty cycle



Dimensions [mm]

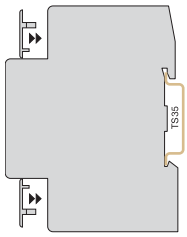


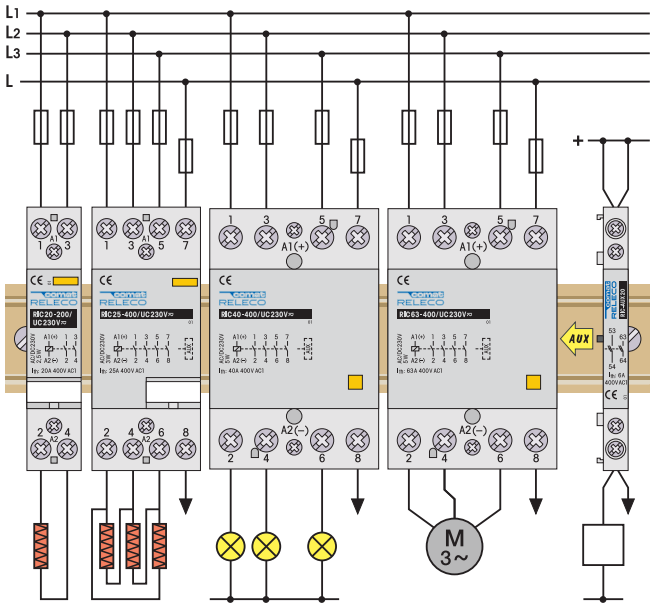
Technical approvals, conformities

Notes

1.2.2 Power Relays

Installation Contactor





- Different versions NO; NC; NC + NO
- AC/DC Coil Hum free
- No EMC (free wheeling circuit included)
- Robust and compact
- Wide Range of application
- Mouting according DIN/EN 43880 on DIN Rail TS 35
- Sealing cover optional

Installation Contactor

RIC20

20 A, AC/DC control voltage, silent operation
DIN rail mounting according to DIN 43 880

Type: RIC20-xxx/ ...V

Hum-free installation contactor, 2 contacts, 2 NO, 1 NO-1 NC, 2 NC types available

Rated operational power	**4 kW / 230 V AC-1, 0.5 A / 220 V DC-1**
Recommended minimum contact load	**10 mA / 24 V**

Contacts

Material		AgNi
Rated operational current		20 A
Max. inrush current (100ms)		50 A
Max. switching voltage		400 V
Max. AC load	AC-1, AC-7a	4 kW / 230 V
	AC-3	1.3 kW /230 V (NO contact only)
Max. DC load 24 V / 220 V DC-1 (Fig. 1)		480 W / 130 W

Control input V_n =	**UC 24 V**	**UC 230 V**
Operating voltage range [V]	20.4 ... 26.4	195 ... 253
Typ. pic up voltage [V]	17	160
Typ. release voltage [V]	7	70
Power consumption [W]	≤ 2.5	≤ 2.5
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV

Insulation

Rated insulation voltage	230 V
Rated impulse withstand voltage	4 kV
Min. clearance of open contact	3.6 mm

General Specifications

Ambient temperature	
storage	-30 ... 80 °C
operation, Spacer after 2 contactors side by side	-5 ... 55 °C
operation, Spacer after 3 contactors side by side	-5 ... 40 °C
Pick-up time	15 ... 45 ms
Release time	20 ... 50 ms
Mechanical life	≥ 3 x 10^6 operations
AC voltage endurance at rated load AC-3, AC-7b	≥ 3 x 10^5 operations
DC voltage endurance at rated load DC-1	10^5 operations
Operating frequency at rated load DC-1	≤ 300 operations / h
Operating frequency at rated load AC-1	≤ 600 operations / h
Conductor cross section coil /contacts	Stranded wire 2.5 mm^2 / 6 mm^2
Max. Screw torque coil /contacts	0.6 Nm / 1.2 Nm
Ingress protection degree	IP 20
Weight	140 g

Standard types

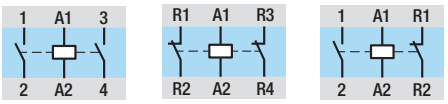
UC (AC / DC) 50 / 60 Hz, 24, 230		
	2NO	**RIC20-200/UC ...V**
	1NO + 1NC	**RIC20-110/UC ...V**
"..." enter the voltage for full type designation	**2NC**	**RIC20-020/UC ...V**

Accessories

Auxiliary contact bloc:	**RIC-AUX**
Sealing cover:	**RIC-SEAL 20**
Spacer:	**RIC-DIST**

Samples of lamp loads	**Number of lamps**
Incandescent lamps 230 V / 100 W	20
Fluorescent lamps not corrected 230 V / 36 W	17
Fluorescent lamps electronic ballast units 36 W	15

Connection diagram



2xNO RIC20-200 | 2xNC RIC20-020 | 1xNO + 1xNC RIC20-110

Coil circuit

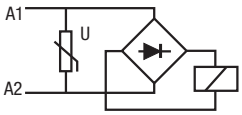
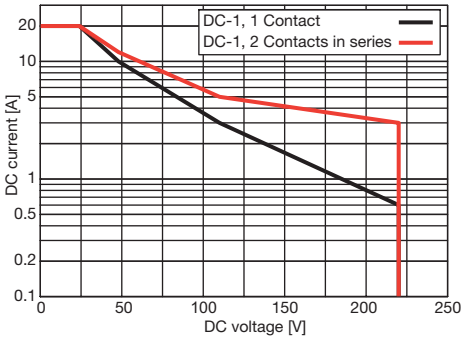
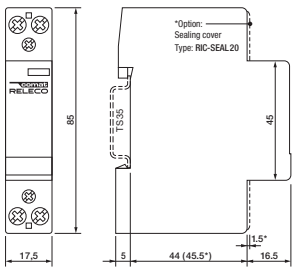


Fig. 1 DC load limit curve DC1



Dimensions [mm]



Technical approvals, conformities

IEC/EN 60947-4-1, VDE 0660
IEC/EN 60947-5-1
IEC/EN 61095, VDE 0637

Installation Contactor

RIC25 (Railway)

25 A, AC/DC control voltage, silent operation
DIN Rail mounting according to DIN 43 880

Type: RIC25-xxx/ ...V

Hum-free installation contactor, 4 contacts, 4 NO, 4 NC, 2 NO-2 NC types available

Rated operational power AC-1	**Single phase: 5.4 kW/230 V, 0.5 A/220 V DC-1** **3 phase 230 V: 9 kW** **3 phase 400 V: 16 kW**
Recommended minimum contact load	**10 mA / 24 V**

Contacts

Material		AgNi
Rated operational current		25 A
Max. inrush current (100ms)		50 A
Max. switching voltage		400 V
Max. AC load 3 phase	AC-1, AC-7a	9 kW / 230 V, 16 kW / 400 V
	AC-3	2.2 kW /230 V, 4 kW / 400 V
Max. DC load 24V/220V DC-1 (Fig. 1)		600 W / 130 W

Control input V_n =	**UC 24 V**	**UC 230 V**
Operating voltage range [V]	20.4 … 26.4	195 … 253
Typ. pic up voltage [V]	17	160
Typ. release voltage [V]	7	70
Power consumption [W]	≤ 3	≤ 3
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage	4 KV
Min. clearance of open contact	3.6 mm

General Specifications

Ambient temperature		
storage		-30 … 80 °C
operation, Spacer after 2 contactors side by side		-5 … 55 °C
operation, Spacer after 3 contactors side by side		-5 … 40 °C
Pick-up time		15 … 45 ms
Release time		20 … 70 ms
Mechanical life		≥ 3 x 10^6 operations
AC voltage endurance at rated load	AC-3, AC-7b	≥ 5 x 10^5 operations
DC voltage endurance at rated load	DC-1	10^5 operations
Operating frequency at rated load	DC-1	≤ 300 operations / h
Operating frequency at rated load	AC-1, AC-3	≤ 600 operations / h
Conductor cross section coil / contacts terminals		Stranded wire 2.5 mm² / 6 mm²
Max. Screw torque coil / contacts		0.6 Nm / 1.2 Nm
Ingress protection degree		IP 20
Weight		270 g

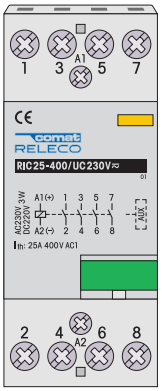
Standard types

UC (AC / DC) 50 / 60 Hz, 24, 230	**4NO**	**RIC25-400/UC ...V**
	2NO + 2NC	**RIC25-220/UC ...V**
"..." enter the voltage for full type designation	**4NC**	**RIC25-040/UC ...V**

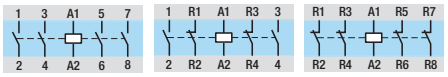
Accessories

Auxillary contact bloc:	**RIC-AUX..**
Sealing cover:	**RIC-SEAL 25**
Spacer:	**RIC-DIST**

Samples of lamp loads	**Number of lamps**
Incandescent lamps 230 V/ 100 W	20
Fluorescent lamps not corrected 230 V/ 36 W	20
Fluorescent lamps electronic ballast units 36 W	20



Connection diagram



Coil circuit

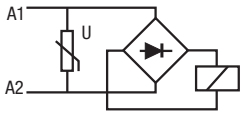
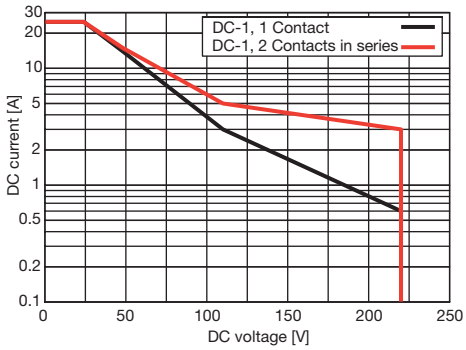
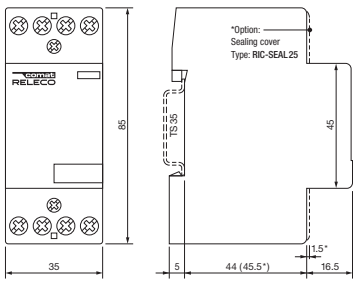


Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

IEC/EN 60947-4-1
IEC/EN 60947-5-1
IEC/EN 61095

Installation Contactor

RIC40

40 A, AC/DC control voltage, silent operation
DIN rail mounting according to DIN 43 880

Type: RIC 40-xxx/...V

Hum-free installation contactor, 4 contacts, 4 NO, 2 NO-2 NC, 4 NC types available

Rated operational power AC-1	**Single phase: 8.7 kW/230 V, 0.5 A / 220 V DC-1**
	3 phase 230 V: 16 kW
	3 phase 400 V: 26 kW
Recommended minimum contact load	**10 mA / 24 V**

Contacts

Material		$AgSnO_2$
Rated operational current		40 A
Max. inrush current (100ms)		150 A
Max. switching voltage		400 V
Max. AC load 3 phase	AC-1, AC-7a	16 kW / 230 V, 26 kW / 400 V
	AC-3	3.7 kW / 230 V, 11 kW / 400 V
Max. DC load 24V/220V DC-1(Fig. 1)		960 W / 260 W

Control input V_N = AC 50 / 60 Hz / DC	**UC 24 V**	**UC 230 V**
Operating voltage range [V]	20.4 ... 26.4	195 ... 253
Typ. pic up voltage [V]	17	160
Typ. release voltage [V]	7	70
Power consumption [W]	≤ 5	≤ 5
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage	4 kV
Min. clearance of open contact	3.6 mm

General Specifications

Ambient temperature		
storage		-30 ... 80 °C
operation, Spacer after 2 contactors side by side		-5 ... 55 °C
operation, Spacer after 3 contactors side by side		-5 ... 40 °C
Pick-up time		15 ... 45 ms
Release time		20 ... 70 ms
Mechanical life		≥ 3 x 10^6 operations
AC voltage endurance at rated load	AC-3, AC-7b	≥ 1.5 x 10^5 operations
DC voltage endurance at rated load	DC-1	10^5 operations
Operating frequency at rated load	DC-1	≤ 300 operations / h
Operating frequency at rated load	AC-1, AC-3	≤ 600 operations / h
Conductor cross section coil /contacts terminals		Stranded wire 2.5 mm^2 / 16 mm^2
Max. Screw torque coil /contacts		0.6 Nm / 2 Nm
Ingress protection degree		IP 20
Weight		420 g

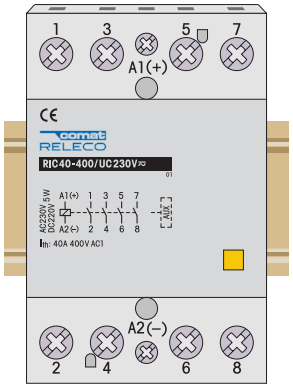
Standard types

UC (AC / DC) 50 / 60 Hz, 24, 230	**4NO**	**RIC40-400/UC ...V**
	2NO + 2NC	**RIC40-220/UC ...V**
"..." enter the voltage for full type designation	**4NC**	**RIC40-040/UC ...V**

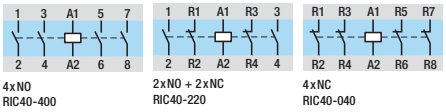
Accessories

Auxiliary contact bloc:	**RIC-AUX..**
Sealing cover:	**RIC-SEAL 40-63**
Spacer:	**RIC-DIST**

Samples of lamp loads	**Number of lamps**
Incandescent lamps 230 V / 100 W	40
Fluorescent lamps not corrected 230 V / 36 W	65
Fluorescent lamps electronic ballast units 36 W	52



Connection diagram



Coil circuit

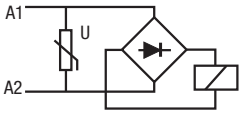
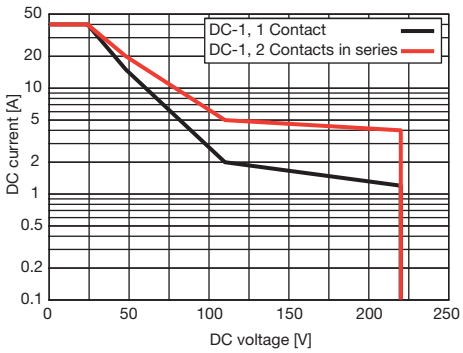
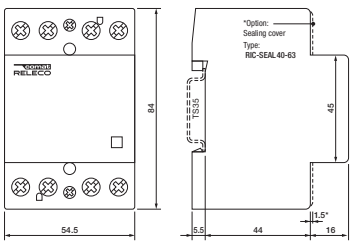


Fig. 1 DC load limit curve DC1



Dimensions [mm]



Technical approvals, conformities

IEC/EN 60947-4-1
IEC/EN 60947-5-1
IEC/EN 61095

Installation Contactor

RIC63

63 A, AC/DC control voltage, silent operation
DIN Rail mounting according to DIN 43 880

Type: RIC 63-xxx/...V

Hum-free installation contactor, 4 contacts, 4 NO, 2 NO-2 NC types available

Rated operational power AC-1	**Single phase: 13.3 kW/230 V, 1.2 A/220VDC-1** **3 phase 230 V: 24 kW** **3 phase 400 V: 40 kW**
Recommended minimum contact load	**10 mA / 24 V**

Contacts

Material		$AgSnO_2$
Rated operational current		63 A
Max. inrush current (100ms)		150 A
Max. switching voltage		400 V
Max. AC load 3 phase	AC-1, AC-7a	24 kW / 230 V, 40 kW / 400 V
	AC-3	5 kW / 230 V, 15 kW / 400 V
Max. DC load 24 V / 220 V DC-1(Fig. 1)		1500 W / 260 W

Control input V_N = AC 50 / 60 Hz / DC	**UC 24 V**	**UC 230 V**
Operating voltage range [V]	20.4 ... 26.4	195 ... 253
Typ. pic up voltage [V]	17	160
Typ. release voltage [V]	7	70
Power consumption [W]	≤ 5	≤ 5
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage	4 kV
Min. clearance of open contact	3.6 mm

General Specifications

Ambient temperature		
storage		-30 ... 80 °C
operation, Spacer after 2 contactors side by side		-5 ... 55 °C
operation, Spacer after 3 contactors side by side		-5 ... 40 °C
Pick-up time		15 ... 45 ms
Release time		20 ... 70 ms
Mechanical life		≥ 3 x 10^6 operations
AC voltage endurance at rated load	AC-3, AC-7b	≥ 1.5 x 10^5 operations
DC voltage endurance at rated load	DC-1	10^5 operations
Operating frequency at rated load	DC-1	≤ 300 operations / h
Operating frequency at rated load	AC-1, AC-3	≤ 600 operations / h
Conductor cross section coil /contacts terminals		Stranded wire 2.5 mm^2 / 16 mm^2
Max. Screw torque coil /contacts		0.6 Nm / 2 Nm
Ingress protection degree		IP 20
Weight		420 g

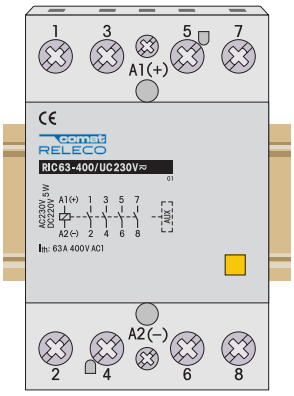
Standard types

UC (AC / DC) 50 / 60 Hz, 24, 230	**4NO**	**RIC63-400/UC ...V**
"..." enter the voltage for full type designation	**2NO + 2NC**	**RIC63-220/UC ...V**

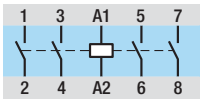
Accessories

Auxiliary contact bloc:	**RIC-AUX..**
Sealing cover:	**RIC-SEAL 40-63**
Spacer:	**RIC-DIST**

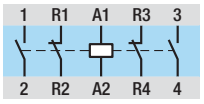
Samples of lamp loads	**Number of lamps**
Incandescent lamps 230 V / 100 W	50
Fluorescent lamps not corrected 230 V / 36 W	95
Fluorescent lamps electronic ballast units 36 W	75



Connection diagram



4xNO
RIC63-400



2xNO + 2xNC
RIC63-220

Coil circuit

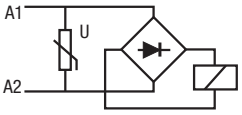
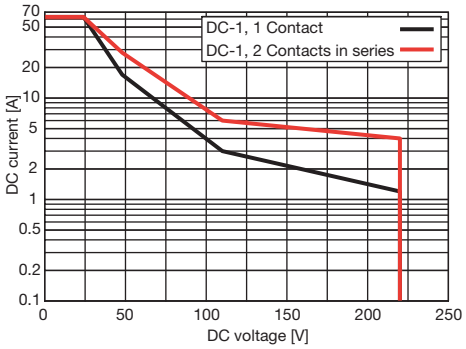
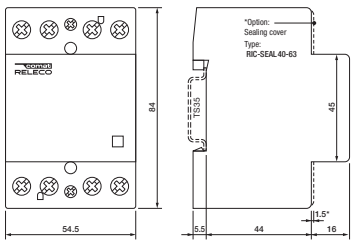


Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

IEC/EN 60947-4-1
IEC/EN 60947-5-1
IEC/EN 61095

Installation Contactor

RIC-AUX

6 A auxiliary contact bloc with 2 double contacts, 3 different combinations of NO / NC contacts

Type: RIC AUXxx
2 double contacts, 2 NO, 1 NC-1 NO, 2 NC types available

Maximum contact load AC-15	**6 A / 230 V, 4 A / 400 V**
Recommended minimum contact load	**10 mA / 24 V**

Contacts

Material	AgNi
Rated operational current AC-15	6 A / 230 V, 4 A / 400 V
Max. switching voltage with RIC 20	400 V

Insulation

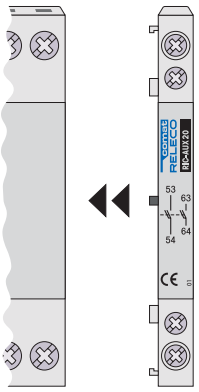
Rated insulation voltage	on RIC 20 / 25	440 V
	on RIC 40 / 63	500 V
Rated impulse withstand voltage		4 kV

Specifications

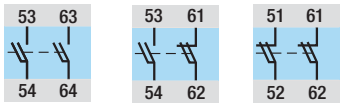
Ambient temperature storage / operation	-30 … 80 °C / -5 … 55 °C
Operating frequency at rated load	≤ 600 operations / h
Conductor cross section	Stranded wire 2.5 mm²
Max. Screw torque	0.8 Nm
Ingress protection degree	IP 20
Weight	50 g

Standard types

2NO	**RIC-AUX20**
1NO + 1NC	**RIC-AUX11**
2NC	**RIC-AUX02**

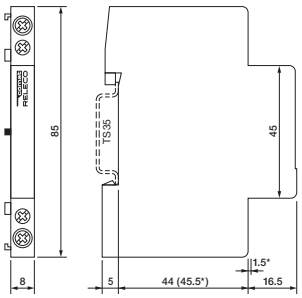


Connection diagram



2xNO RIC-AUX20 | 1xNO + 1xNC RIC-AUX11 | 2xNC RIC-AUX02

Dimensions [mm]



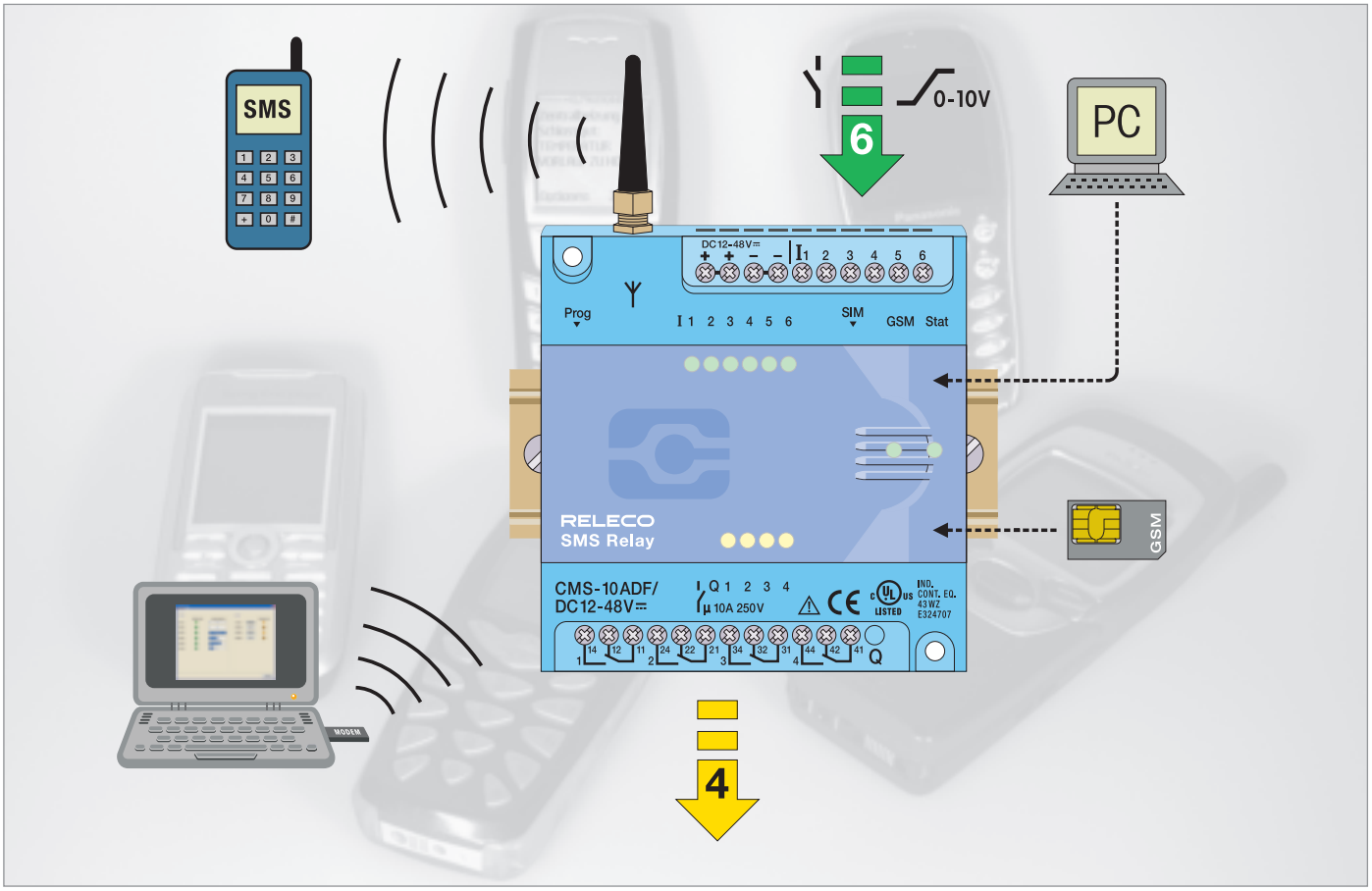
Technical approvals, conformities

IEC/EN 60947-4-1
IEC/EN 60947-5-1
IEC/EN 61095

NEW
With Remote Access

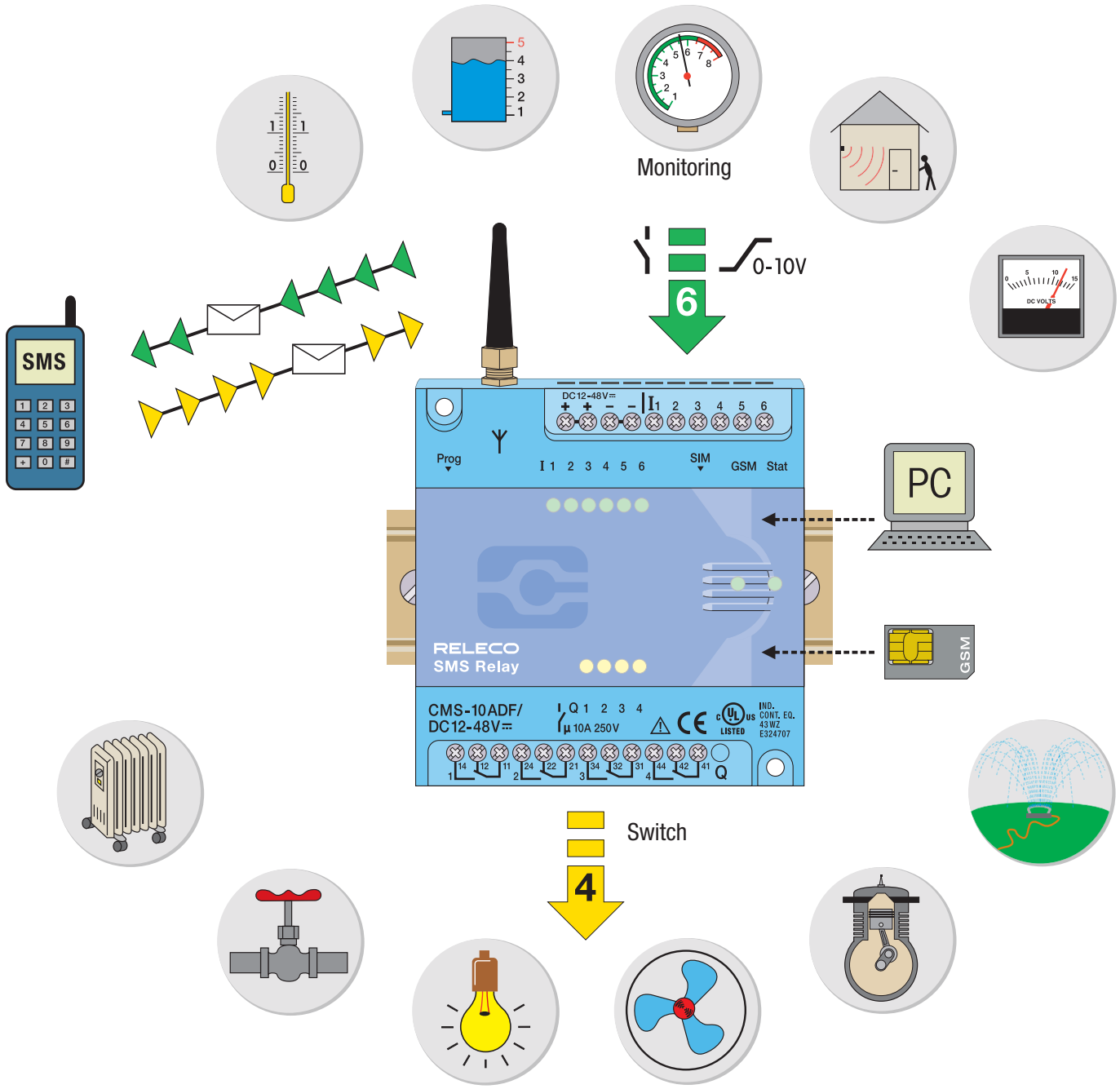
1.3 Automation Relays
1.3.1 Remote Control Relay

SMS Relay



- Easy configuration with PC and «Fast SMS Set™»-up configuration software
- Sequential alert messaging to 5 different subscribers
- Analog and/or digital inputs
- Monitoring of all inputs and outputs with SMS messaging
- Request of analogue values by SMS
- Remote control of outputs by SMS
- Power failure notification by SMS messaging
- Status change messages by SMS
- User defined message text
- Remote access and status display by PC/Notebook

Applications



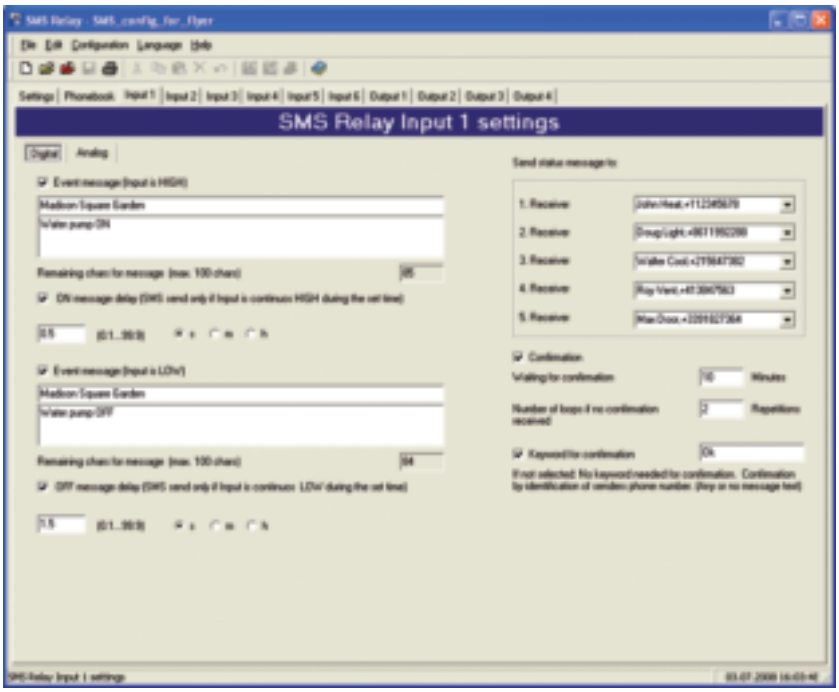
Monitoring Alerting, Controlling
Alerting **Controlling** Monitoring
Controlling Monitoring **Alerting**

FACT SMS comat SET

Language

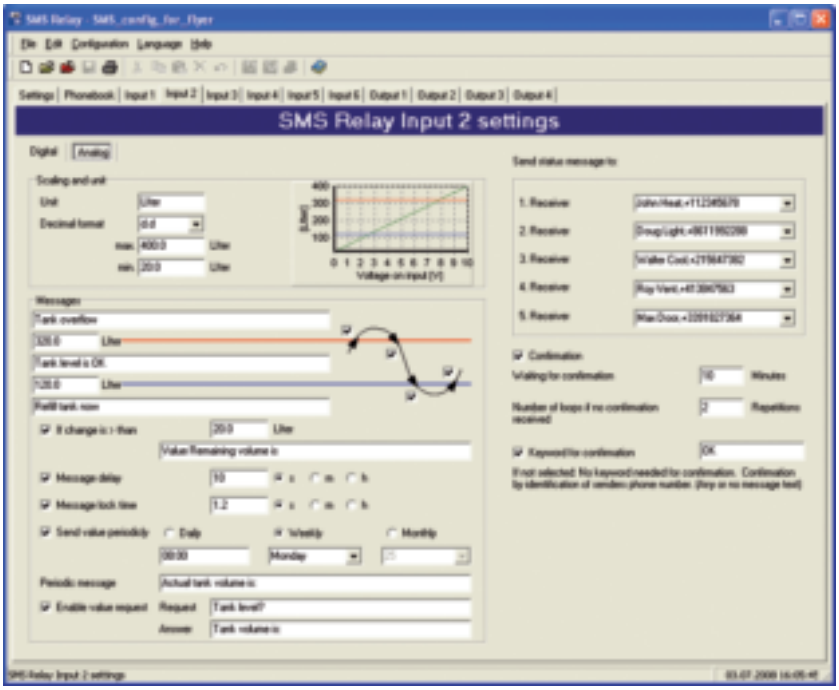
- Chinesisch vereinfacht
- Chinesisch traditionell
- Tschechisch
- Dänisch
- Deutsch
- Holländisch
- Englisch
- Spanisch
- Flämisch
- Französisch
- Italienisch
- Polnisch
- Russisch
- Schwedisch

Digital Inputs

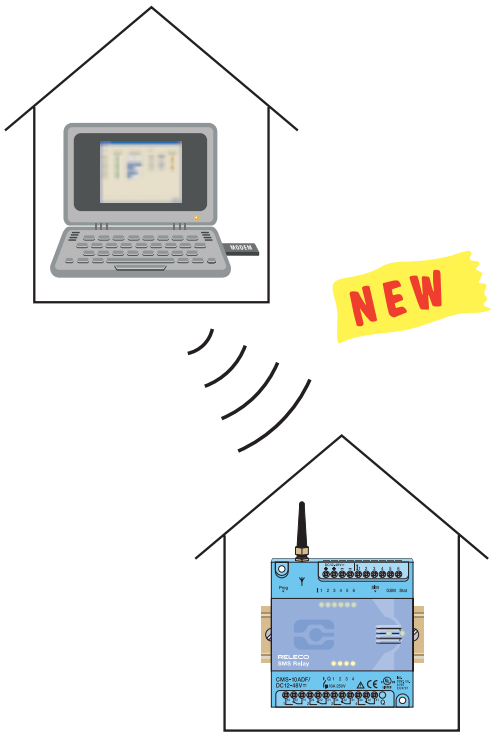


Analog Inputs

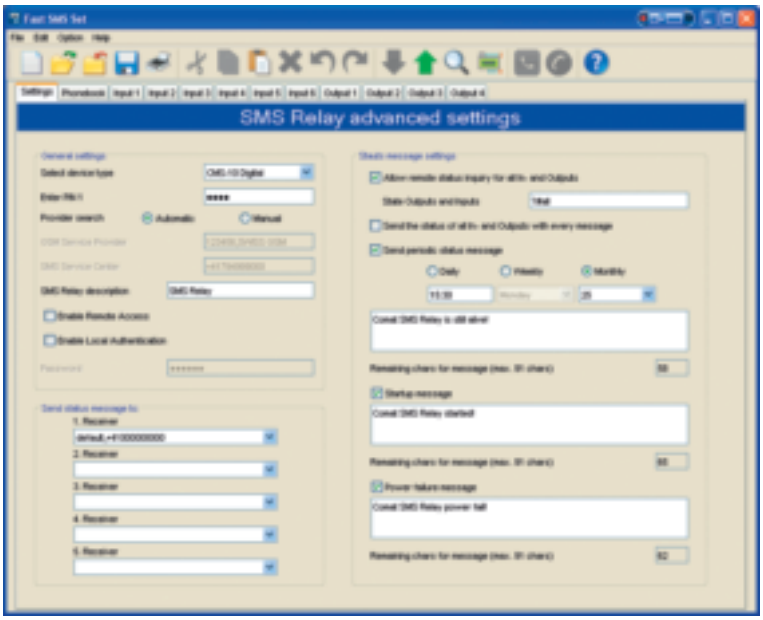
- Free selectable units e.g.: l, kg, m^3, psi, F, sqm, lbs
- Any min/max value can be defined. Scale adjustment automatic
- Value inquire by SMS
- Automatic alerting if min/max values are exceeded
- Status display on PC/Notebook via GSM network



Remote maintenance



Basic settings



Status display on the PC screen

Remote maintenance

The option “remote access” allows users to change the device configuration without presence on site.

The connection with a serial cable is replaced with the communication over the GSM network.

For that purpose, the user has to establish communication with the SMS Relay via a GSM modem. (for example with CMS-GMS-MOD) connected to the PC.

As soon as the connection between the PC and the device is established, a new configuration can be downloaded or the existing configuration may be read out. This allows to simply safe or change a phone number of a message receiver or to modify an analogue value or a time setting.

With the new configuration software it is also possible to display all Input and Output status as well as to switch Outputs without sending an SMS message to the device.

It has to be noted that establishing of communication and data transfers in the GSM network are subject of charges. These costs are variable depending on the provider and subscription. We recommend to keep the connection as short as possible.

The easy and comfortable handling of the SMS Relay is not affected with the new functions. The configuration software “FAS SMS SET” has not changed significantly and remains easy to use.

Technical Data's

Typ	CMS-10F/AC 110-240 V	CMS-10F/DC 12-48 V	CMS-10ADF/DC C12-48 V
Operating voltage	AC 110-240 V~ 50/60 Hz	DC 12-48 V⎓ ∇∇ max. 10 %	DC 12-48 V⎓ ∇∇ max. 10 %
Power consumption	8 VA / 6 W	4,2 W	4,2 W
Switching capacity	4 x 10 A 250 V; Sum of current max. 20 A		
Temperature range	Tu: -25…+55° C Rel. humidity: 10…95 % (non condensing) Protection IP 20		
Inputs	6 x digital trigger level 85 V~	6 x digital trigger level 9,5 V⎓	6 x digital trigger level 9,5 V⎓ or analog 0-10 V⎓
Outputs	4 x CO contacts µ 10 A / 250 V AC-1		
Provider (Phone / Network)	User selectable (dependent on SIM card)		
Frequency	GSM QuadBand (850; 900; 1800; 1900 MHz)		

Installation note

The base unit device is delivered fully operational and includes the small aerial CMS-ANT.

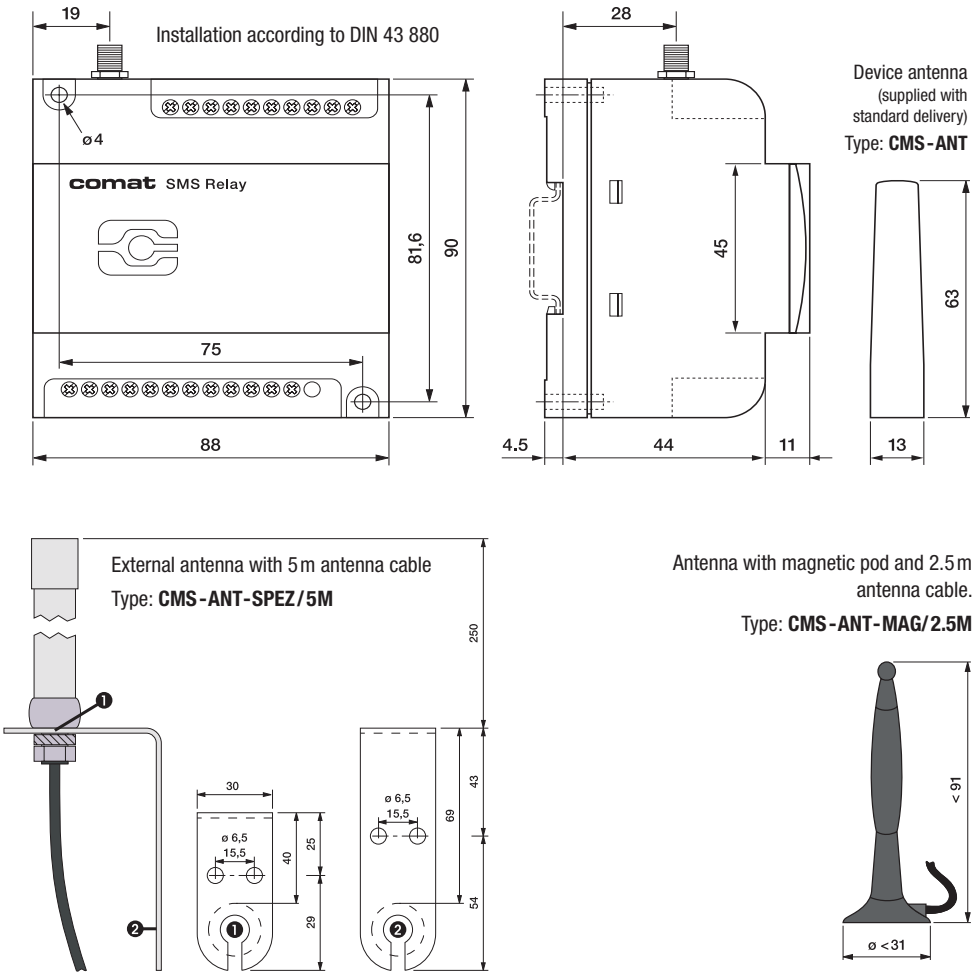
Before installation, the final location of installation must be taken into consideration.

For installation inside a control panel, the small device aerial may not be suitable and needs to be replaced by the antenna with magnetic pod (CMS-ANT-MAG/2.5M) or by the external antenna (CMS-ANT-SPEZ/5M).

These two antennas provide considerably better results and improve communication with the mobile network.

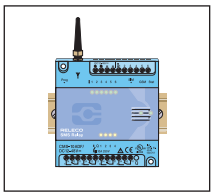
Please ask our product specialists if you require any support.

Dimensions



Order-Nr.

Typ	Description
CMS-10F/AC110-240V	SMS Relay AC 110-240V with digital inputs incl. small antenna (CMS-ANT)
CMS-10F/DC12-48V	SMS Relay DC 12-48V with digital inputs incl. small antenna (CMS-ANT)
CMS-10ADF/DC12-48V	SMS Relay DC 12-48V with digital and analog inputs incl. small antenna (CMS-ANT)
KIT consisting of:	A base unit with small antenna, antenna with magnetic pod and 2.5m cable, programming cable, USB-RS232 Interface connector, CD with «FAST SMS SET™»-up programming software and operation manual
CMS-10FKIT/AC110-240V	Installation kit complete with digital inputs (SMS Relay AC110-240V)
CMS-10FKIT/DC12-48V	Installation kit complete with digital inputs (SMS Relay DC12-48V)
CMS-10ADFKIT/DC12-48V	Installation kit complete with digital and/or analog inputs (SMS Relay DC12-48V)
Zubehör	
CMS-RS232	SMS Relay programming cable RS232
CMS-USB	USB-RS232 interface connector (including driver CD)
CMS-ANT	Small spare antenna for base unit, 63mm long
CMS-ANT-MAG/2.5M	Antenna with magnetic pod and 2.5m antenna cable
CMS-ANT-SPEZ/5M	External antenna with 5m antenna cable
CMS-ANT-KAB/5M	Antenna cable 5m (extension)
CMS-ANT-KAB/10M	Antenna cable 10m (extension)
CMS-ANT-ADAPT	Adaptor FME to SMA plug
CMS-CAP	Device cover (spare)
CMS-CD	CD with FAST SMS SET -up programming software and manual
DR-15-24	Power supply 15W, 24V. DIN-rail mounting
DR-30-24	Power supply 36W, 24V. DIN-rail mounting
MK31-112-LU/24V DC	1-channel voltage repeater
4114 PReasy	Universal transmitter PReasy 4114
4501	Display front (to PReasy 4114)
ZPT-10-H	PT100/PT1000 Amplifier
RF01-U	Room temperature sensor 0…50°C without display
RF01-U-D	Room temperature sensor 0…50°C with display
RTBSB-001-010	Room thermostat 5…30°C with operating controls
WF50 ext-U	Outdoor temperature sensor -50…+50°C
KS-110	AC sensor for monitoring of humidity and temperature in control panels, archives and cabinets
PS1	Water gauge suitable for application of level measurements in water installations
CMS-GSM-MOD	GSM Module (Connected to USB port of the PC) for remote access to the SMS Relay



Type

CMS-10F/…
CMS-10ADF/…

SMS Relay
- SMS Relay incl. small antenna 63mm
- WITHOUT programming cable, magnetic pod antenna, USB converter and programming software
- Suitable for user which already possess the accessories

CMS-10FKIT/…
CMS-10ADFKIT/…

SMS Relay KIT
- SMS Relay incl. small antenna 63mm
- Including programming cable, magnetic pod antenna with 2.5m cable, USB converter USB-RS232, and programming software “FASTR SMS SET™” with manual
- Suitable for user first user

Accessories

Type

DR-15-24 — **Power supply**

- Input
  - Voltage range: 85-264 V AC, 120-370 V DC
  - Frequency range: 47-63 Hz
  - Max. current: 0,88 A
- Output
  - DC Nominal voltage: 24 V
  - Setting range: 21,6-26,4 V
  - Power range: 0-0,63 A
  - Nominal load: 15,2 W

DR-30-24 — **Power supply**

- Input
  - Voltage range: 85-264 V AC, 120-370 V DC
  - Frequency range: 47-63 Hz
  - Max. current: 0,88 A
- Output
  - DC Nominal voltage: 24 V
  - Setting range: 21,6-26,4 V
  - Power range: 0-1,5 A
  - Nominal load: 36 W

MK31-112-LU/24V DC — **1-chanel voltage repeater**

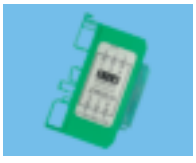
- Input
  - Current: 4…20 mA
  - Voltage: 0…10 V DC
- Output
  - Voltage: 0…10 V DC
  - Linearity: ≤ 0,1%
- Low temperature drift of less than 0.2%/K
- Galvanic separation of Input and Output circuit and supply voltage

4114 PReasy — **Universal transmitter**

- Input
  - Current: 0/4…20 mA
  - Voltage: 0/0,2…1; 0/1…5; 0/2…10 V DC
  - PT100: 2-, 3- and 4 wire
  - TE types: B…W5
  - Potentiometer: 10 Ω…100 kΩ
  - Lin. Resistance: 0 Ω…10 kΩ
- Output
  - Current: 0/4…20 mA / 800 Ω
  - Voltage: 0/0,2…1; 0/1…5; 0/2…10 V DC

4501 — **Display/Programming panel for PReasy**

- Communication interface for setting of operative parameters
- Can be plugged from one device to the other for data transmission
- Stationary display to visualize status of process data's
- Password protected
- LCD display with 4 lines



ZPT-10-H — **PT100/PT1000 Amplifier**

- Input: PT100; PT1000: 2-, 3-line switching
- Output: 0…10 V DC
- Supply voltage: 15…35 V DC
- DIN rail mounting

Accessories

Type

RF01-U — **Room temperature sensor without display**

- Integrated transducer
- Output: 0…10 V DC
- Measuring range: 0 °C…50 °C
- Supply voltage: 24 V AC/DC

RF01-U-D — **Room temperature sensor with integrated display**

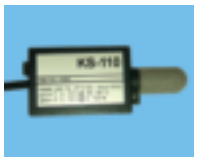
- Integrated transducer
- Output: 0…10 V DC
- Measuring range: 0 °C…50 °C
- Supply voltage: 24 V AC/DC

RTBSB-001-010 — **Room thermostat with operating controls**

- Suitable for temperature monitoring in closed rooms
- Output: 1 CO
- Setting range: 5 °C…30 °C
- Supply voltage: 230 V AC (24 V DC)

WF50 ext-U — **Outdoor temperature sensor**

- Sensor for temperature measuring outdoors or in industrial storage- or cold chambers
- Output: 0…10 V DC
- Measuring range: -50 °C…+50 °C
- Supply voltage: 15…24 V DC
- Protection class: IP65



KS-110 — **AC sensor for indoors and outdoors**

- Measuring of humidity and temperature in control panels, archives and cabinets
- **Temperature**
  - Measuring range: -40 °C…+80 °C
  - Measuring element: Solid state
  - Output: 0-10 V
- **Humidity**
  - Measuring range: 0 %…100 % relative humidity
  - Measuring element: Capacitive
  - Output: 0-10 V

PS1 — **Level and water gauge**

- Suitable for applications in fountains or in water installations up to a depth of 5m (0-0.5 bar) Additional measuring ranges on request.
- Cable in special design with pressure compensation line
- Output signal: 0-10V, 3-wire
- Application temperature: +5 °C bis +70 °C

CMS-GSM-MOD — **Recommended modem for remote communication with the SMS Relay**

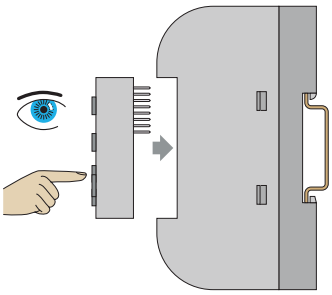
QuadBand (850/900/1800/1900 MHz)
Supports GPRS, CSD, CSF and SMS
USB 2.0 Full speed (12 Mbits/s) interface
With driver for Windows 2000/XP/XPPro/Tablet and Linux

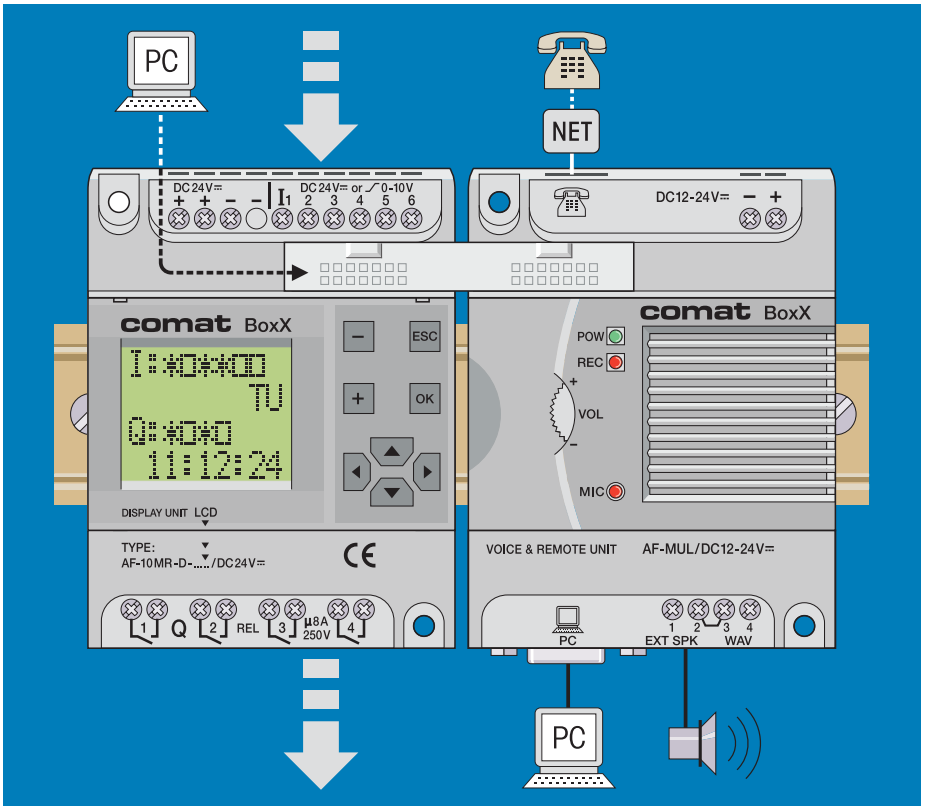
All above products are available from Releco. Don't hesitate to contact us.

Our SMS Relay is very suitable also for applications with products of EnOcean technology.
With accessories of this innovative solar powered wireless technology, these sensors can be used anywhere without expensive wiring.

1.3.2 Smart Relay

Smart Relay "BoxX" Miniature Controller (with Voice Module)



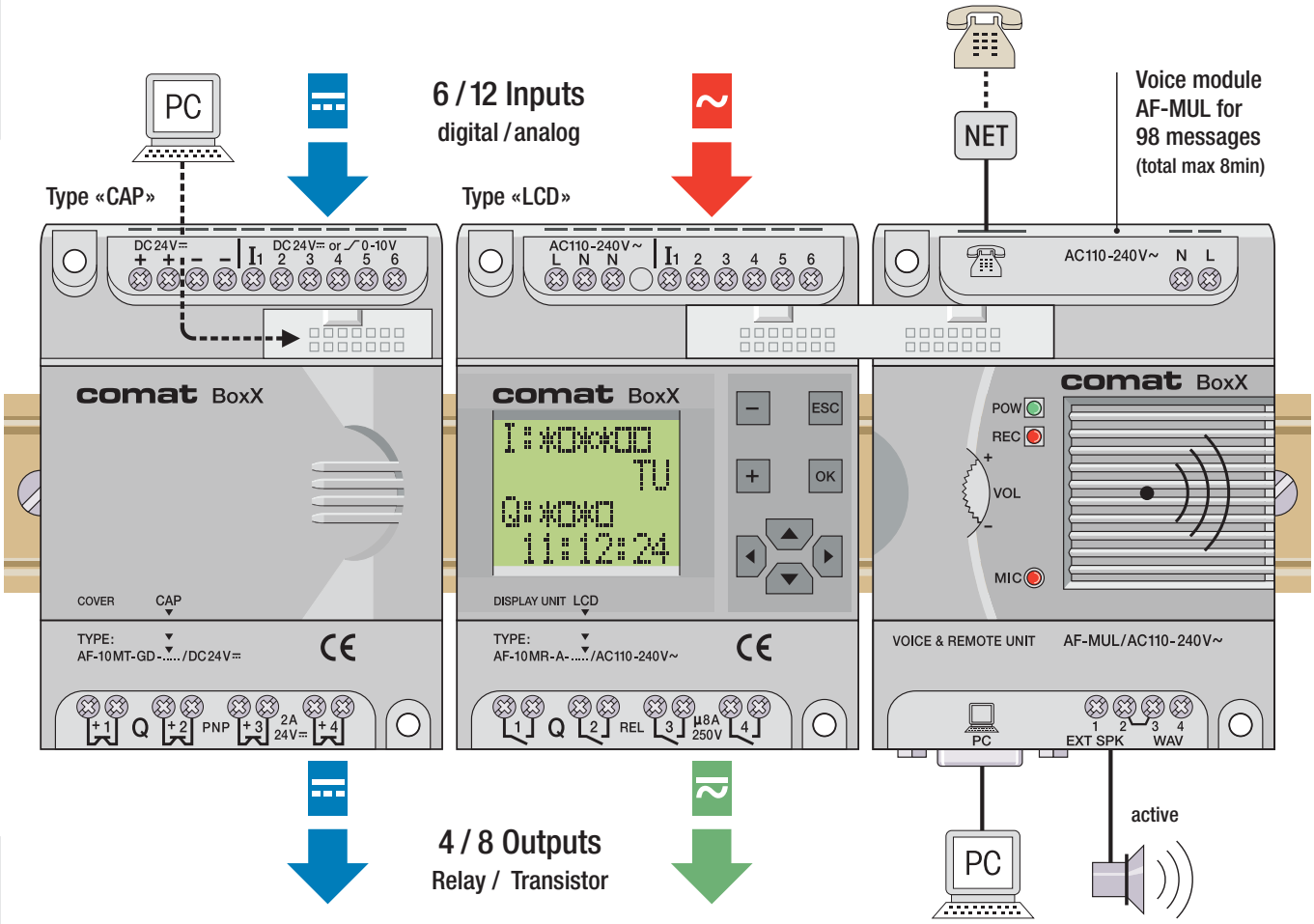


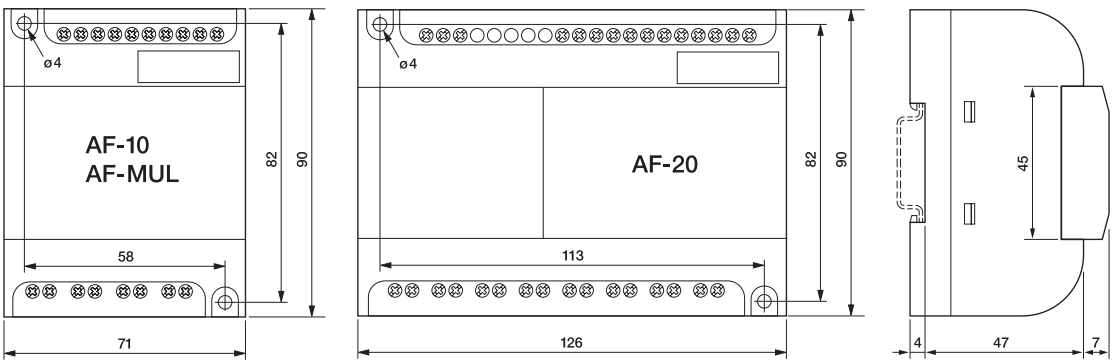
- Programming via PC
- Remote controlling and voice message over telephone network
- Comprehensive function block library
- Password protected

The Controller

127 Function blocks
Intermediate relays
Timer instructions
(up to the year 2099)

- Program storage 64 kByte
- Time range 0,01s-99,99h
- Counting values 1-999'999
- System timer back up 100h

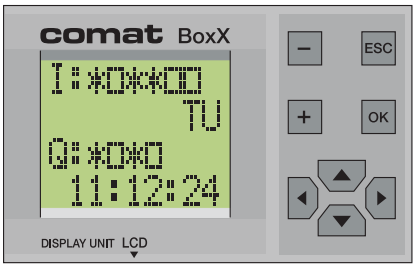




The Application

The Comat BoxX can be programmed by PC or with the snap-on LCD display with integrated function keys.
It is possible to modify time intervals of the function blocks in the existing control program on site directly on installation.
The LCD display can be connected to the Comat BoxX to visualize conditions or may be removed (without voltage) and used on another Comat BoxX.

The 24V versions of the Comat BoxX can also process analogue input signals 0…10V with increments of 0.1V.
All inputs can be used or configured at random as analogue or digital inputs.
Function blocks for the comparison of analogue values are available,
i.e. to monitor temperature in a heating system.



Setting the display

Analogue inputs

Programming software

The programming software QUICK II allows easy and transparent programming of the Comat BoxX with a PC.
QUICK II is based on Windows®.
127 function blocks can be stored inside the program memory of the Comat BoxX.
Stored programs cannot be lost even during a power loss.
Therefore back up batteries are not needed.
With the simulation tool, the set up can be tested on the PC before commissioning.
Example: next page

Programming the function blocks

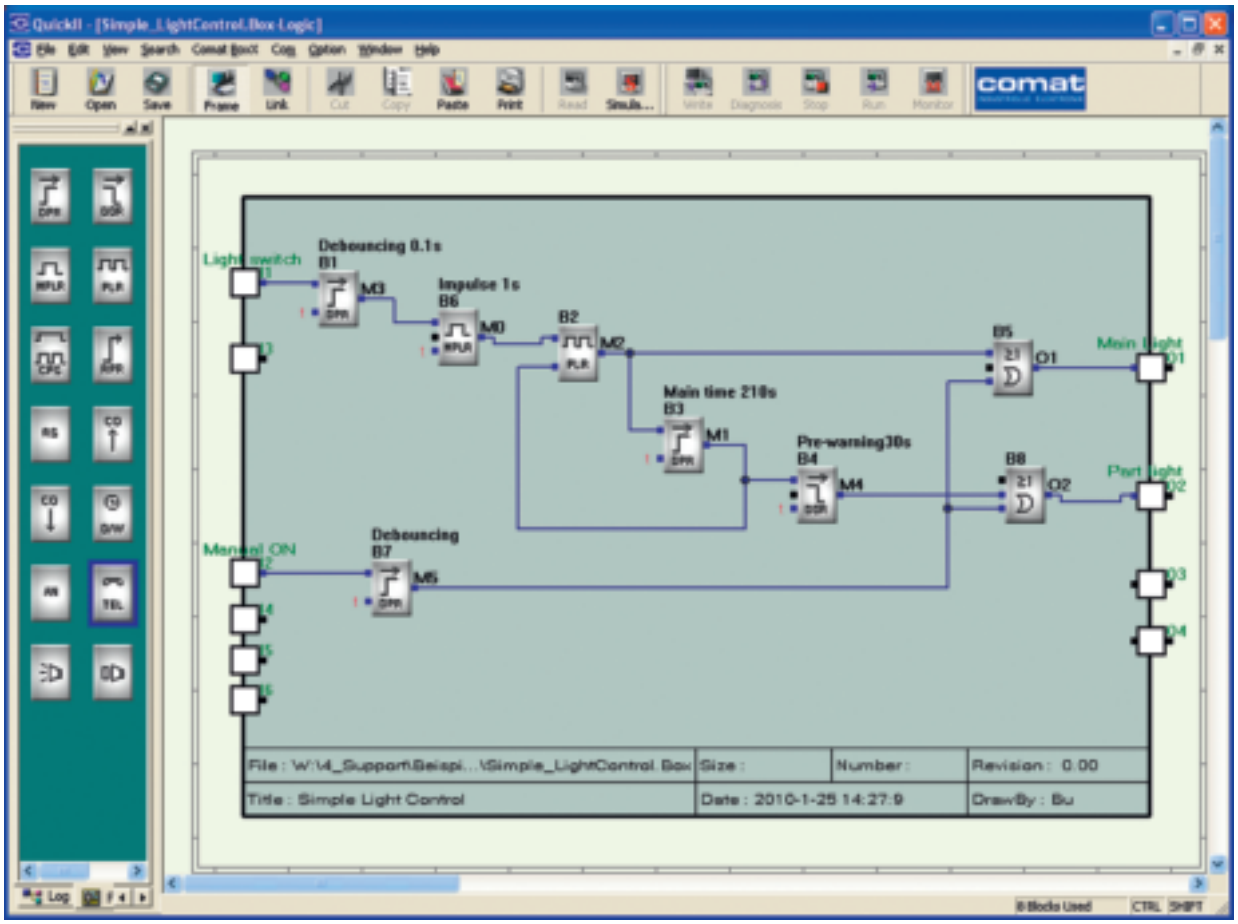
Control tasks can be solved easily with the function blocks available in the library.
Programming codes in a highlevel program language are not required.
Simply place the corresponding function blocks and link them with other function blocks according to the required control function.

The voice and remote module

The voice module allows the playing of messages through either the built-in or external loud speakers. The voice module also replays phone calls or dials phone numbers to send emergency or status messages.
Messages are recorded directly over the built-in microphone or are transferred as*.wav files directly from the PC.

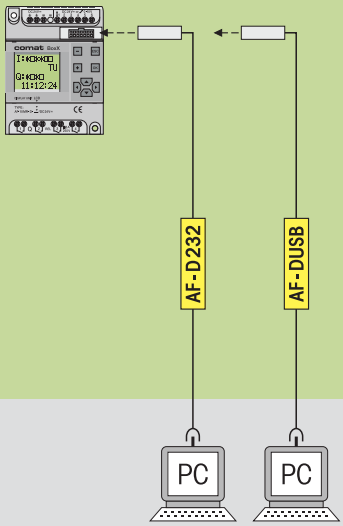
Programming software Quick II

Example: Programming environment

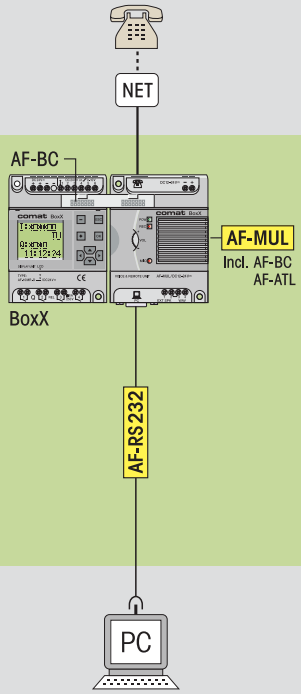


The Extension module

Programming simulation and monitoring with the PC.

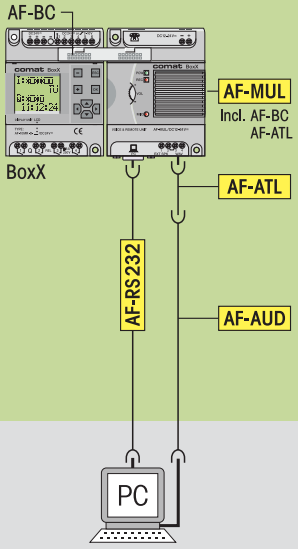


Programming via the MUL voice and remote unit



Each Comat BoxX can be controlled via a telephone line if connected to the extension module AF-MUL (voice & remote unit).
The AF-MUL will answer calls and allows access after the password is accepted.
The Comat BoxX with the AF-MUL is able to record up to 98 predefined conditions, for example alarm messages over the phone network. The designated phone number is dialled and the recorded message is played over the telephone.
The message can also be broadcasted over auxiliary loudspeakers.
At the same time, the controller can be remotley accessed by phone, and phone Keys are used to send remote signals to control the installation or to activate controlling steps.

Recording of messages with the PC



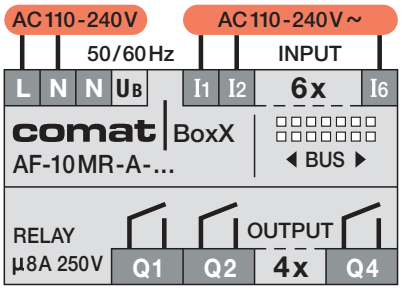
Messages are transferred to the voice module as *.wav files directly from the PC over the AF-AUD cable.

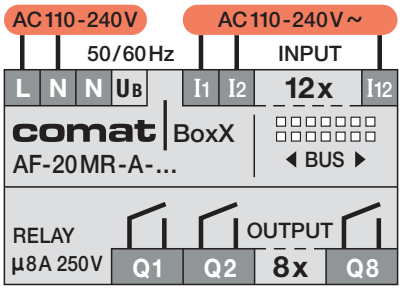
The Types

	UB	6 Inputs / 4 Outputs	UB	12 Inputs / 8 Outputs

6/12 Inputs digital AC110-240V

4/8 Ouputs relays 8A 250V ~

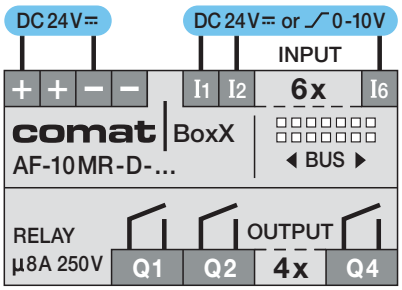


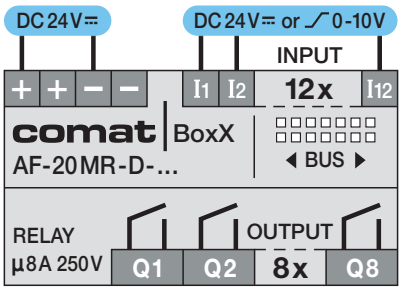


Order no.				
	without display	AF-10MR-A-CAP/AC110-240V	without display	AF-20MR-A-CAP/AC110-240V
	with display	AF-10MR-A-LCD/AC110-240V	with display	AF-20MR-A-LCD/AC110-240V

6/12 Inputs configurable: digital / analog 0-10V (0,1V)

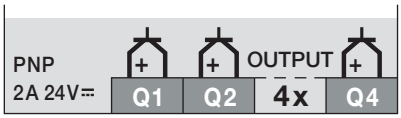
4/8 Outputs relays 8A 250V ~

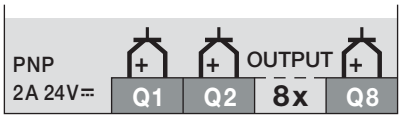




Order no.				
	without display	AF-10MR-D-CAP/DC24V	without display	AF-20MR-D-CAP/DC24V
	with display	AF-10MR-D-LCD/DC24V	with display	AF-20MR-D-LCD/DC24V

4/8 Transistor outputs PNP 2A 24V ⎓





Order no.				
	without display	AF-10MT-GD-CAP/DC24V	without display	AF-20MT-GD-CAP/DC24V
	with display	AF-10MT-GD-LCD/DC24V	with display	AF-20MT-GD-LCD/DC24V

Accessories

Order no.		Order no.	
AF-MUL/AC110-240V	Voice and remote unit [1]	AF-D232	Programming cable (RS 232)
AF-MUL/DC12-24V	Voice and remote unit [1]	AF-DUSB	Programming cable (BoxX/USB)
AF-RS232	AF-MUL Programming cable	CMS-USB	Converter USB-RS 232
AF-BC	AF-MUL Bridge connector [2]	AF-LCD	Display with function keys
AF-ATL	AF-5MUL Audio Cable [2]	AF-CAP	Cover (instead of AF-LCD)
AF-AUD	Audio Cable	AF-CDR	CD-ROM
DR-15-24	Power supply 15W, 24V		

1) Inclusive AF-BC and AF-ATL
2) Included with AF-MUL

The Data

	AF-10	AF-20	AF-MUL
Operating voltage UB	AC110-240V~ 50/60Hz		AC110-240V~
	DC24V⎓ ⎓ max.10%		DC12-24V⎓
Power consumption	Transistor: 2W	Transistor: 2W	0,7W
	Relay: 4W	Relay: 5W	
Switching power	⎍ 8A 250V~ ⎍ 2A 24V⎓		
Ambience conditions	Tu without display -25...+55°C	Tu with display 0...+55°C	Rel. humidity: 5...95% (non condensing) / Protection IP20