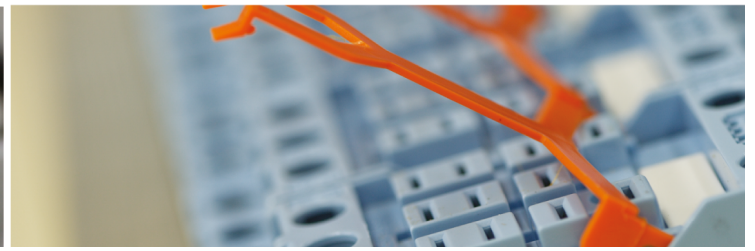
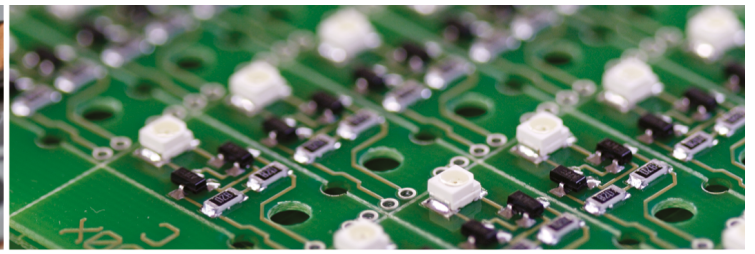
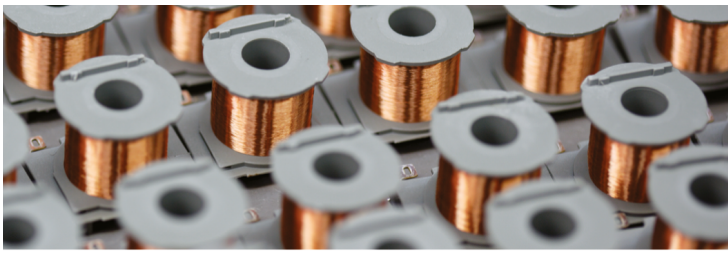




WORLD OF RELAYS

RAILWAY CATALOGUE

WoR 3.2 | English



ComatReleco at a glance

ComatReleco is one of the world's leading suppliers of high-quality relays and contactors of all kinds. With one of the broadest product portfolios, including customized solutions, ComatReleco serves customers in the industrial automation and building installation, rail and transportation segments. Our core competencies are industrial relays, timing relays, monitoring relays and contactors. These are installed with the latest semiconductor technologies or also with the traditional electromechanical design.

Designed in Switzerland, assembled in...

ComatReleco continuously invests in research and development, thus ensuring a consistently high rate of innovation. Several international patent applications support this fact. Our research and development team is headquartered in Switzerland and has access to additional qualified employees in our subsidiaries in Germany and China. With a share of more than 20% of total research and development costs, we outperform many global players in our segment.

Customer orientation and quality management

ComatReleco has a group-wide quality management system with real-time access to test and inspection protocols. Our relays and contactors are 100% tested at the end of the production line. On arrival of the goods at our central warehouse in Switzerland, another quality test is carried out.

Are you using a ComatReleco product or are you looking for a suitable solution? Our support centre in Switzerland will be happy to help you find the right relay or contactor for your application. ComatReleco is known for the world's largest number of customized solutions for industrial, time and monitoring relays and contactors.

Headquarters in Switzerland – international presence

The warehouse and logistics are managed centrally at the headquarters in Switzerland. Production is diversified and optimized in terms of quality, costs and logistics criteria. Our production sites are located in Europe and Asia. Through our network of distribution partners, the Group is present on all world markets. ComatReleco has been part of the management team since 2003.

WORLD OF RELAYS

Find your suitable documentation

ComatReleco offers a variety of customized solutions. We therefore have different documentation for different areas of application.



CATALOGUES: GENERAL, TRANSPORTATION & RAILWAY, MARINE & SHIPPING, SOLID STATE RELAY, PLC & HMI

Please visit comatreleco.com or contact our support at support@comatreleco.com for more information.

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Railway products

ComatRelco products are designed and tested to comply with relevant railway and rolling stock equipment standards such as:

EN 50155 Railway applications – Rolling stock – Electronic equipment

EN 45545-2 Railway applications – Fire protection on railway vehicles –

EN 61373 Railway applications – Rolling stock equipment - Shock and vibration tests

Part 2: Requirements for fire behaviour of materials and components

We also understand that at times we may have to also comply with local standards which can be required.

ComatRelco differences to most standard industrial products are:

- Supply voltages 24 V DC, 36 V DC, 72 V DC and 110 V DC are considered standard, with other coil voltages for relays and contactors available on demand.
- Tolerance according to EN 50155 of +25 % / -30 % from nominal power applied to the product, i.e. special coils for relays and contactors.
- Temperature range from -40 °C to +70 °C (OT4 according to EN 50155) whenever possible.
- Shock and vibration tested according to EN 61373 Category 1, Class B.
- The material used complies to EN 45545-2 for fire protection on railway vehicles. ComatRelco products belong mainly to component class EL10, and therefore, requirement R26 applies and is achieved by using V0 material in our construction.
- To prevent damages due to moisture or atmospheric pollutants, all PCB's have a transparent protective coat on both sides, according to EN 50155.

Although specially designed for railway applications, these products are often also used for other industrial applications where increased product safety is required.

Our products are suitable for applications in:

- Heating / Ventilation and Air Conditioning (HVAC) systems
- Door control systems
- Lights and lighting monitoring / control circuits
- Signalisation systems
- etc.

Please don't hesitate to ask ComatRelco for any special requirements, our team is ready for any special local requirements and provide a solution.

Availability, errors and specifications subjects to change without notice.

Relays

Our range includes 1 to 4 poles mechanical relays, 1 poles interface relays (mechanical or solid state). Additional monitoring or time modules are available to increase the functionality of the relay.

If there is a need for another coil voltage as the ones listed on the data sheets, please contact us.



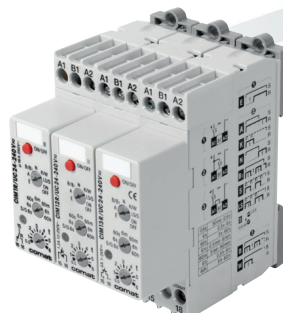
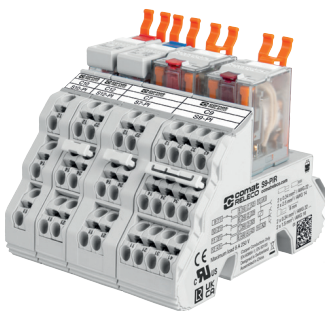
Contactors - High power switching at reduced space

Our standard contactors are capable of switching 4 A at 110 V DC (DC-5). This is achieved with a built-in blow magnet into a 2-poles contactor with a compact width of only 17.5 mm. ComatRelco also can build custom coil voltages away from those listed within in standard range.



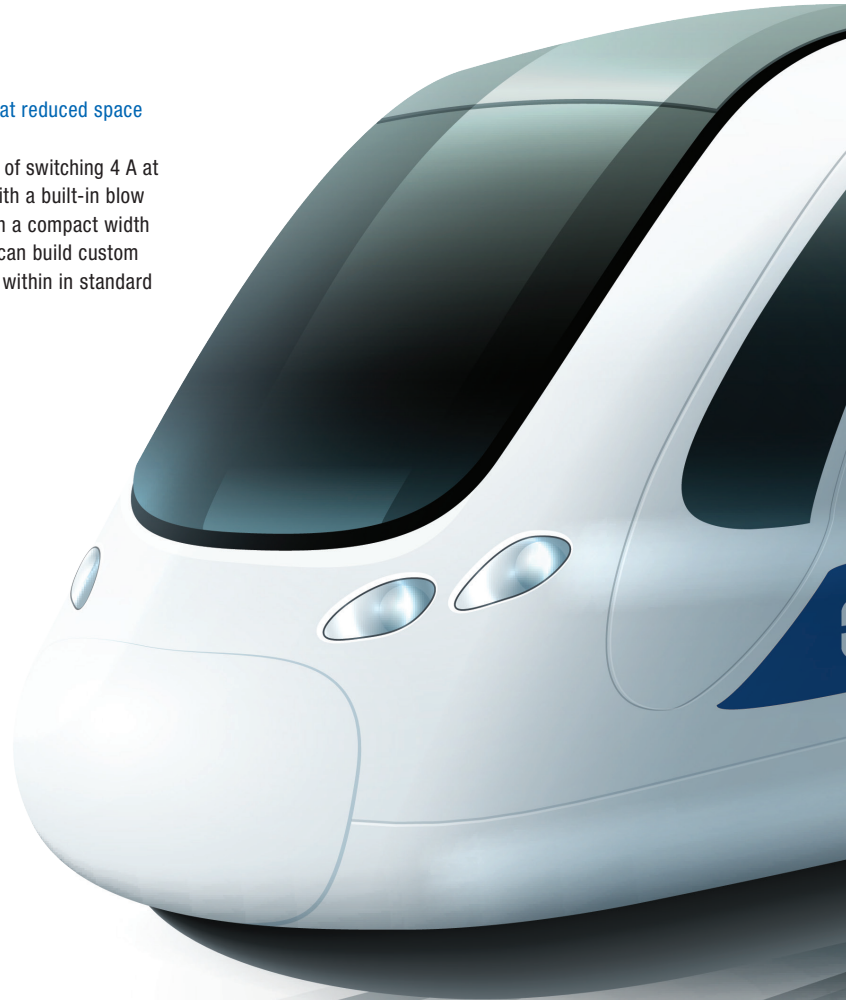
Sockets - Smallest Push-In socket family

The new Push-in relay sockets from ComatRelco form a family. All relay sockets can be combined. The ComatRelco Push-in connection technology makes it possible to connect solid conductors as well as stranded wire. Solid conductors in the form of wire or stranded wire with ferrule terminals are inserted without tools. The socket labelling is consistent, the uniform bridges connect potentials, and the functional modules bring intelligence into the relay application.



Timer series CIM

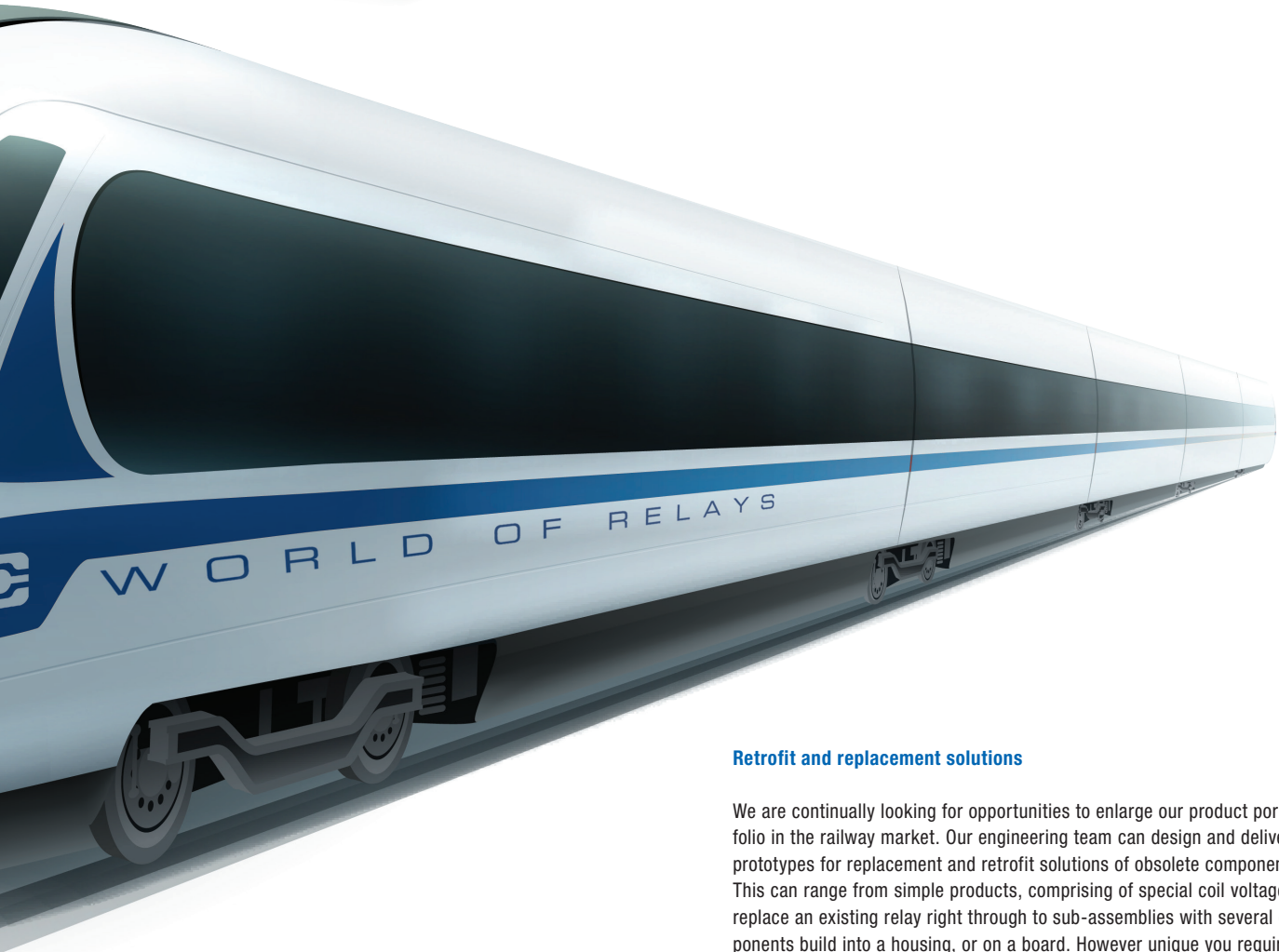
The timers of the new CIM series are compact, and multifunctional timer relays with totally 18-time functions and a wide power supply range from 24 to 240 V AC/DC. All the three basic types are available with relay change-over, TRIAC or MOSFET output contacts. The semiconductor solutions are especially useful for inductive load switching.





Monitoring device MRx

The MRx line includes monitoring devices for single and three-phase loads. MRx can supervise current, voltage, apparent power, active power, frequency and cosPhi as well as $\Delta\Phi$ (phase sequence) in the three-phase version. All units are designed for universal voltage. Thus, there is no need to differ between AC and DC power, neither in power supply nor in the measured values.



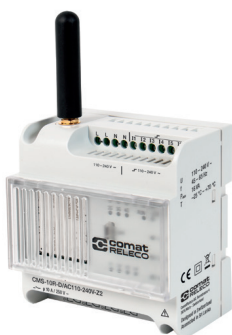
Retrofit and replacement solutions

We are continually looking for opportunities to enlarge our product portfolio in the railway market. Our engineering team can design and deliver prototypes for replacement and retrofit solutions of obsolete components. This can range from simple products, comprising of special coil voltages to replace an existing relay right through to sub-assemblies with several components build into a housing, or on a board. However unique your requirement may be, we have the in-house experience and expertise to deliver it.

Please contact our team for further information support@comatreleco.com

Other products

If there is a product in the General Catalogue (WoR) under the industrial section, that suits your requirements, please contact us. Our team can confirm the possibility of producing it to comply with the Railway standards. Please contact support@comatreleco.com for further information.



Example:

CMS-10R ComatReleco Messaging System

is a wireless remote monitoring and control system for use in 4G, 3G, 2G mobile networks. The built-in eSIM technology for worldwide use eliminates the need for a separate contract with a mobile operator. CMS-10R communicates via the ComatReleco IoT portal - iot.comatreleco.com and sends push notifications via Android or iOS applications, email and SMS (SMS also as fallback in rare cases when the IoT portal is not available.).

1 Relays & Contactors

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Relays

General Information

Product range

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

Relays C2, C3, C4, C5, R4

35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connectors 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 4 contacts.

Relays C7, C9, R7, R9

22.5 mm series with up to 4 contacts and up to 10 A with 1 or 2 contacts.

Interface Relays, C10, C12, C16, C18, R10, R12

Overall width 13 mm with up to 2 electromechanical or fully electronic contacts.

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.

Solid State Relay SSR

Solid State Relays are suitable to either switch AC or DC loads. For AC relays a distinction is made between synchronously (zero crossing) and asynchronously switching versions. For switching transformer loads we recommend 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.

Basic identification principle (type designation code electromechanical relays)

1	2		3	4	5	6	7	8	9	10
C	n(n)	-	T	1	0	z	(*)	X	/...V	RF-nnnn

1. Relay application

C = Industrial relays
R = Railway relays

2. Product family

n(n) = Basic type refers to the product line

3. Relay type

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

4. Number of contacts

1-4 = Number of contacts

5. Definition of contact material / SSR type

This code may differ depending on type.

Examples:

0 = In the standard range stands for AgNi
1-9 = See contact material for each type
N = NPN negative common (DC)
P = PNP positive common (DC)
I = Instantaneous, random-on (AC)
Z = Zero-crossing synchronised (AC)

6. Describes the options

D = Integrated free-wheeling diode
F = Integrated free-wheeling diode and series diode e.g. for common alarm circuits
R = RC connection for the coil
B = Bridge rectifier

7. (*) Special requirements

H = Orange button. No lockable function
N = Black button. No function
U = DIN rail mounting

PT = PCB pins, 3.5 mm grid, transparent cover

PTL = PCB pins, 5 mm grid, transparent cover

8. Relay with LED

X = relays with LED

9. 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

10. 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.

Coil accessories
General Information

Relays C2-C9, R3-R9

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 relay 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.

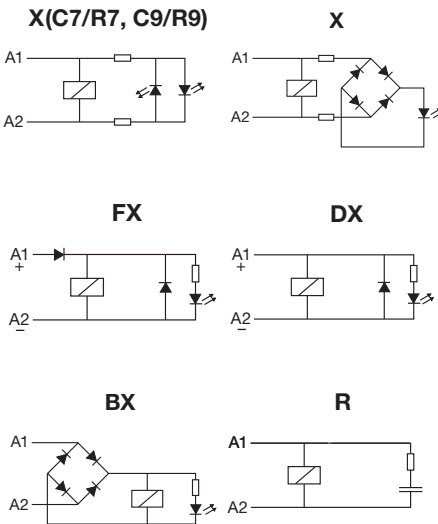
Normally a relay is unaffected by these pulses, but if a diode is connected in association with the coil, it must be capable of withstanding an inverse voltage higher than those of the incoming peaks.

Protection circuits

A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1,2/50\mu s}$)

ComatReleco Relays are available with integrated protection circuits.

- X** LED indication with rectifier.
For DC and AC relays up to 250 V
- DX** Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.
- FX** Polarity + free wheeling diode + LED
A diode in series with the coil protects the relay from reverse connection.
- BX** Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvenience.
Available only in voltages up to 60 V.
- R** Resistor and capacitor.



Relays C10-C12, R10-R12

LED and protection circuit connected to coil.

- X** LED with no polarity, (standard)
Coils ≤ 12 V A DC coils
LED rectifier bridge in parallel
- X** LED with no polarity, (standard)
Coils ≥ 24 V A DC coils
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 A DC coils
Rectifier bridge for AC/DC relays
- R** LED not available (option)
RC protection against pulses on AC

Protection against pulses

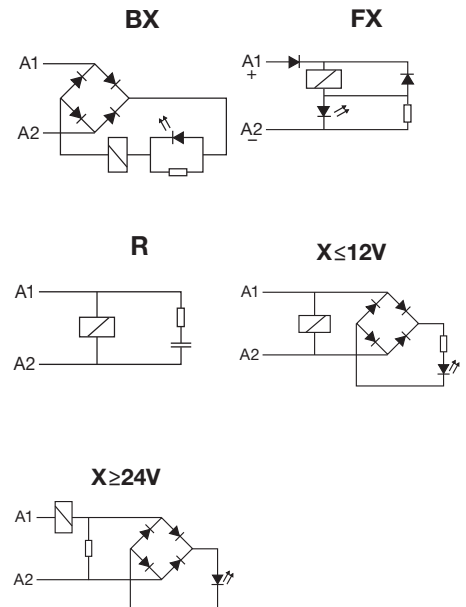
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

If Triac, transistor, etc. controls a relay, appropriate 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.



Relays

General Information

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. <math> < 24 \text{ V}</math>, <math> < 100 \text{ mA}</math>.

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 $5 \mu\text{m}$) 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 ($0.2 \mu\text{m}$) are available. The purpose is corrosion protection during storage. Tin oxide is specially appropriated 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 $50 \text{ m}\Omega$.

Contact spacing

Normally all contacts have an air gap between $0.5 \dots 1.5 \text{ mm}$ 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 relays with "Cx-Gyz" naming. "G" stands for extended contact 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 AC-1 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 $130 \text{ }^\circ\text{C}$) 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 $20 \text{ }^\circ\text{C}$. The tolerance is $\pm 10 \%$.

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 90H. 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

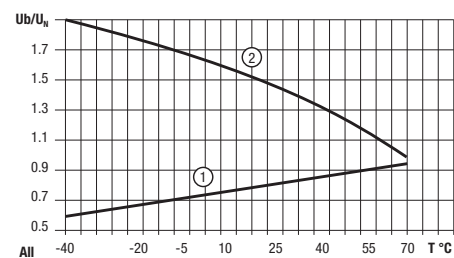
The pick-up voltage is the voltage at which the relay engages safely. For DC the typical trip voltage is approx. 65 % of U_{nom} , for AC approx. 75 %. The release voltage, on the other hand, is approx. 25 % or 60 % respectively.

For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu (See curve 1). 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 (See curve 2). 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 over-voltages temporary may occur for short periods. If in doubt please consult our specialists.



General design

ComatReleco 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, free-wheeling 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, in general, ComatReleco 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 free-wheeling 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 free-wheeling diode (D) will lead to an increase in release time by a factor 2 to 5, or 10 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 less than 5 ms.

Relays

General Information

Standards, conformities

The relays feature various technical approvals depending on the respective relay code, and they can comply with further standards and guidelines. The main technical approvals include CE, UKCA, 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.

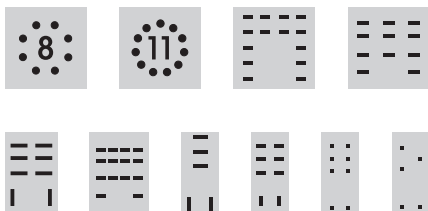
Example:

- AC-1 = Ohmic AC load
- AC-3 = Motor loads
- AC-15 = Power contactors, solenoid valves, solenoids
- DC-1 = Ohmic DC load
- DC-13 = DC contactors, solenoids

UL 60947 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.

Choosing the right Socket

For plug-in industry, interface, time, and monitoring relays, we offer sockets with the corresponding pin configuration and various layouts for the terminal connectors. For easy identification, you'll find those symbol referring to the matching socket.



Protection class IP according to EN 60529 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.

Main technical approvals and standards

Country	Technical approval
China	 Authority: CQC
Europe	 Authority: GEN-CENELEC
Canada	 Authority: CSA Group
Armenia / Belarus / Kazakhstan / Kyrgyzstan / Russia	 Authority: KORPORATSIA STANDART
USA	 Authority: Federal Communication Commission USA
USA / Canada	 Authority: UL
Australia / New Zealand	 Authority: Australia/New Zealand
England / Scotland / Wales	 Authority: GB
Worldwide	 Authority: Lloyd's Register
Europe / Worldwide	 Railway EN 50155

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

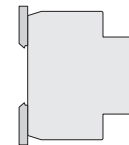
Dry, non-conductive and conductive contamination with moisture condensation

Cat. 4

Contamination with persistent conductivity through conductive dust, rain

DIN standard cutout 45 mm

All devices with a housing fitting in an electrical distributor with a front of 45mm (DIN 43880) are marked with the following symbol.



DIN rail 35 mm (TH 35)

All units with a housing that can be mounted on a 35 mm DIN rail (DIN EN 60715) are marked with the following symbol.



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 a problem and can result in constant humming of the relay or even inadvertent triggering due to interference.

Different 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 inductive loads.

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

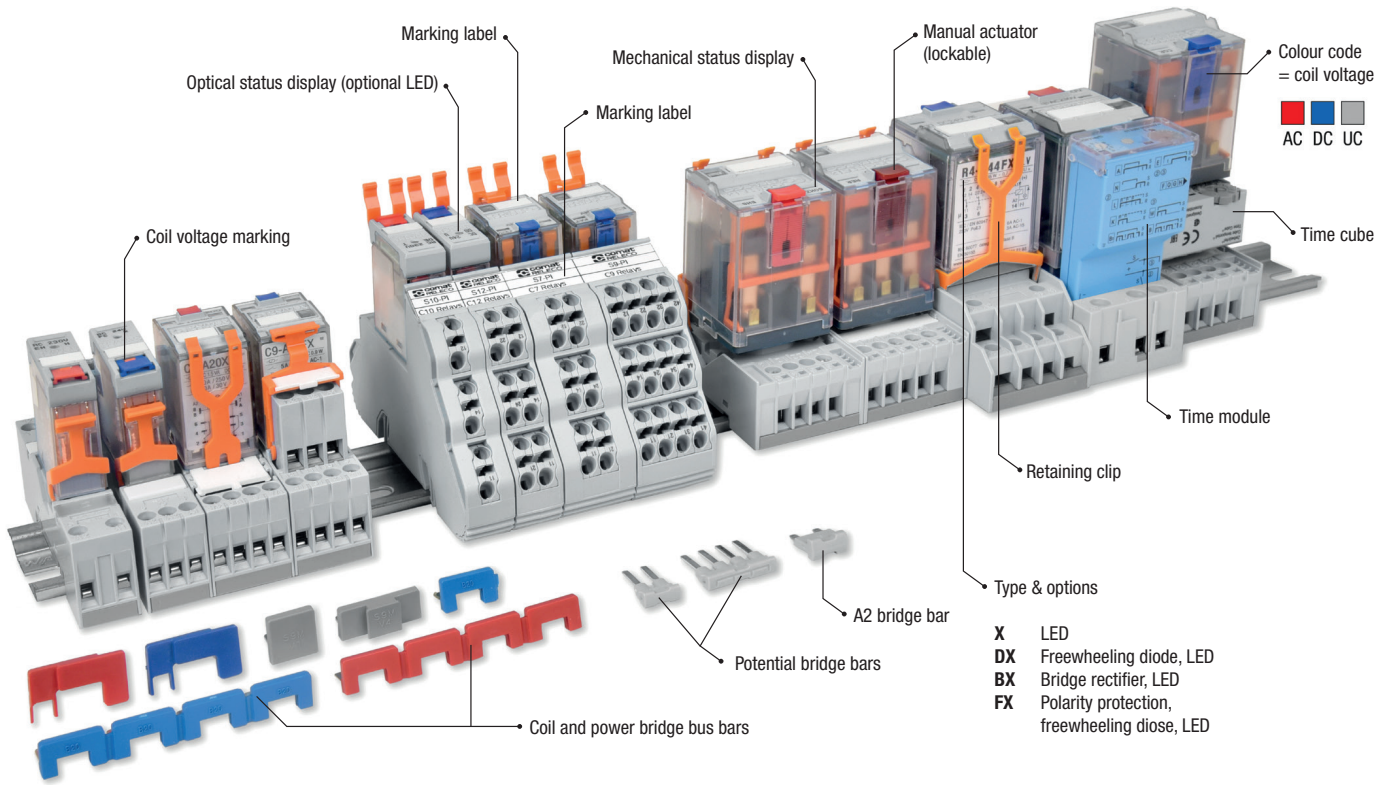
Very high, but very short switch-on currents due to built-in decoupling capacitors. Contacts have a tendency to fuse.

Transformers, AC contactors








Switching on during zero-transition may lead to switch-on currents of 8 ... 15 x rated values. High inductive switch-off energy is possible. The load must be connected.

Relays

Full Features System



Five colours for an easier identification of coil voltage

	AC	red: 230 V AC (North America 120 V AC)	If you don't want to have the lockable function, you can use the orange button.
	AC	dark red: others V AC	 Orange button, no lockable function, push only
	UC	grey: V AC/DC	 Black button, no function
	DC	blue: 24 V DC	
	DC	dark blue: others V DC	

Comprehensive technical label

R7-A20X — Part number

— 10 A / 250 V AC-1
μ 10A / 30 V DC-1 — Maximum switching capacity

Coil wiring diagram

Socket contact number: 8, 7, 6, 5, 4, 3, 2, 1

Relay contact number: 21, 11, 14, 12





1 Relays & Contactors

Relays



How to select the correct relay?

Use the table below to quickly find the right relay for your application. All relays in this catalogue are marked with a symbol corresponding to the respective field of application. Please also note the following parameters for correct dimensioning:

	Type of signal	Switching frequency and service life
①	What is the switching current and voltage of the application?	-
②	Is DC or AC voltage switched? Is the load inductive or capacitive?	How many switching cycles per time unit are to be expected?

Symbol	Typical field of application			Contact	
	① Voltage	① Current	② Application	Type	Material
 Signal relays	100 mV...5V	10 µA...1 mA	Low-level signals, Standard signals (0...10 V / 4...20 mA)	Gold-plated double contact	AgNi + Au
				Gold-plated Single Contact	AgNi + Au
 Control relays	5V...30V	1 mA...100 mA	PLC inputs, Control circuits	double contact	AgNi
				Gold-plated Single Contact	AgNi + Au
			Frequent, rapid switching procedures	Semiconductor	MOSFET (DC) Triac (AC)
 Power relays	30V...400V	100 mA...16A	Increased AC or DC loads	Single Contact	AgNi
			Electromagnets (utilisation cat. AC-15 / DC-13)	Single Contact	AgSnO ₂
			Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	MOSFET (DC) Triac (AC)
 High-power relays	12V...400V	100 mA...16A	Capacitive loads	Early make contact	AgNi + W AgSnO ₂ + W
			High DC loads, inductive loads	Series contacts	AgNi AgSnO ₂
			Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	MOSFET (DC) Triac (AC)

1.1 Interface Relays - pluggable

	Type	Pin	Page
C10 / R10 Series			
1 pole changeover contact Faston	R10-A10		18
C12 / R12 Series			
2 pole changeover contact Faston	R12-A21		19

1.1 Interface Relays - pluggable

R10-A10

1 pole | changeover contact | Faston



Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	30 A, 20 ms
Rated load AC	2 500 VA
Rated load DC	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 200 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	$0.7 U_N \dots 1.25 U_N$
Pick-up voltage	$\leq 0.7 U_N$
Release voltage	$\geq 0.1 U_N$
Power consumption DC	0.7 W

Coil table

V DC	Ohm	mA
12	224	54
24	742	32
36	1 815	20
48	3 400	14
60	5 400	11
72	8 467	9
110	19 923	6

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	10 ms / ≤ 1 ms
Release time / bounce time	5 ms / ≤ 3 ms
Maximum switching frequency at rated load	1 200 / h
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110
LED & Pol. & Free wheeling diode	R10-A10FX/DC...V	✓	✓	✓	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR
--------	-----------------



fig. 1. Wiring diagram

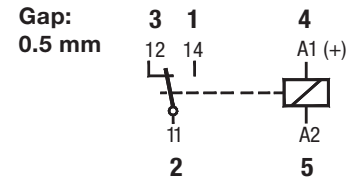


fig. 2. AC voltage endurance

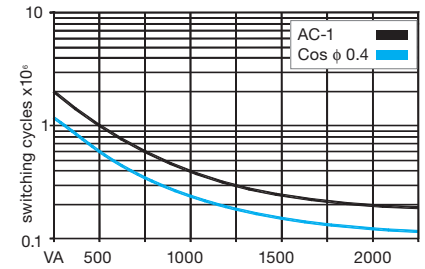


fig. 3. DC load limit curve

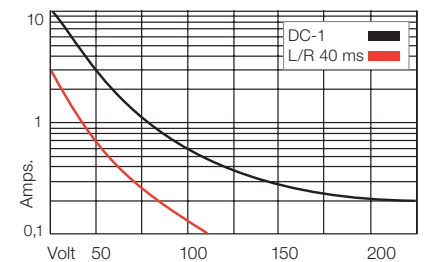
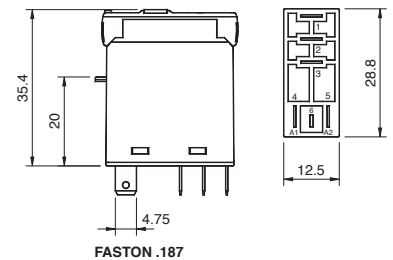


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155



R12-A21

2 pole | changeover contact | Faston

Main circuit

Available contact materials	AgNi + 0.2 μ Au
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	5 A / 250 V AC-1
Maximum contact load DC	5 A / 30 V DC-1
Inrush current	15 A, 20 ms
Rated load AC	1 200 VA
Rated load DC	fig. 3.
Rated current	5 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 100 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption DC	0.7 W

Coil table

V DC	Ohm	mA
12	224	54
24	742	32
36	1 815	20
48	3 400	14
60	5 400	11
72	8 467	9
110	19 923	6

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	3 kV / 1 min
Test voltage contact / coil	5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	10 ms / ≤ 1 ms
Release time / bounce time	5 ms / ≤ 3 ms
Maximum switching frequency at rated load	1 200 / h
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110
LED & Pol. & Free wheeling diode	R12-A21FX/DC...V	✓	✓	✓	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S12-GR, S12-PIR
--------	-----------------



fig. 1. Wiring diagram

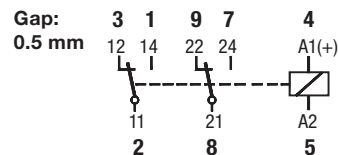


fig. 2. AC voltage endurance

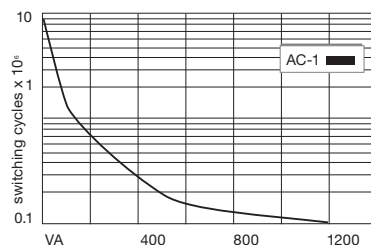


fig. 3. DC load limit curve

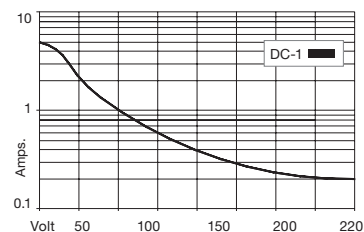
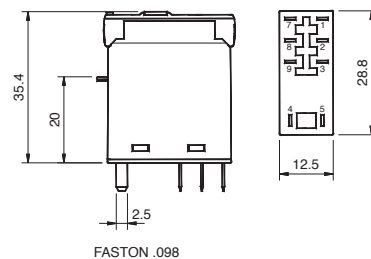


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.2 Interface Relays

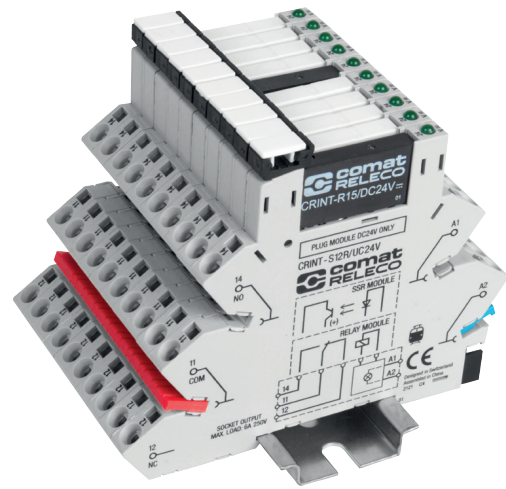
	Type	Pin	Page
CRINT Series			
1 pole changeover contact	CRINT-C1x1R		23
1 pole changeover contact	CRINT-C1x2R		24

CRINT-C1xx

Product Key and dimensions

Interface Module CRINT

- Relay module up to 6 A 250 V, different contact materials
- Solid state modules for most loads DC and AC up to 2 A / 4 A
- Coil UC = AC/DC, no protection circuit required
- LED status display
- Push-in terminals
- Jumper link
- Super small mounting: 6.2 mm width



CRINT Product Key

1		2	3	4	5	6		7	8
CRINT	-	C	1	3	1	R	/	UC	24V

1. Product family

CRINT

2. Type

C = Combined version (Socket and Relay)

3. Contact

1 = One change-over contact

4. Connection type

2 = Cage clamp
3 = Push-in

5. Output

1 = AgSnO₂
2 = AgSnO₂ + 3μ Au
5 = NO / Solid-state DC
8 = NO / Solid-state AC

6. Options

- = Standard version
R = Railway version

7. Supply voltage

UC = AC/DC
DC = Only for C1x5 and C1x8

8. Nominal voltage

12V, 24V, 48V, 60V, 110-125V, 220-240V

RELAY Only

1		2	3	4	5
CRINT	-	R	11	DC	12V

1. Product family

CRINT

2. Type

R = Relay

3. Contact

11 = AgSnO₂
12 = AgSnO₂ + 3μ Au
15 = NO / Solid-state DC
18 = NO / Solid-state AC

4. Supply voltage

DC

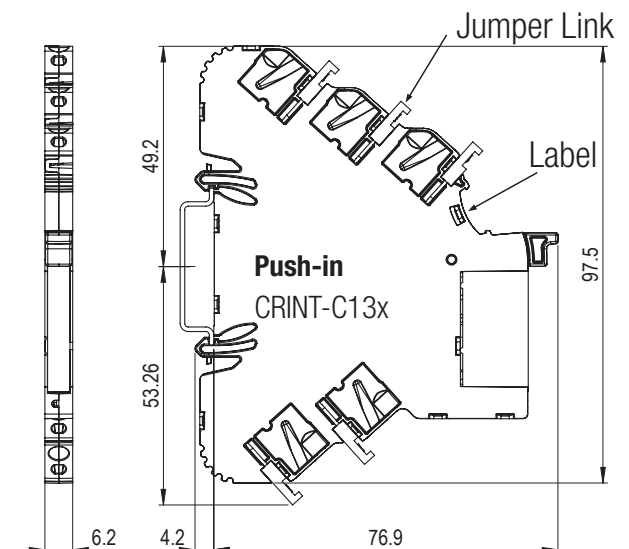
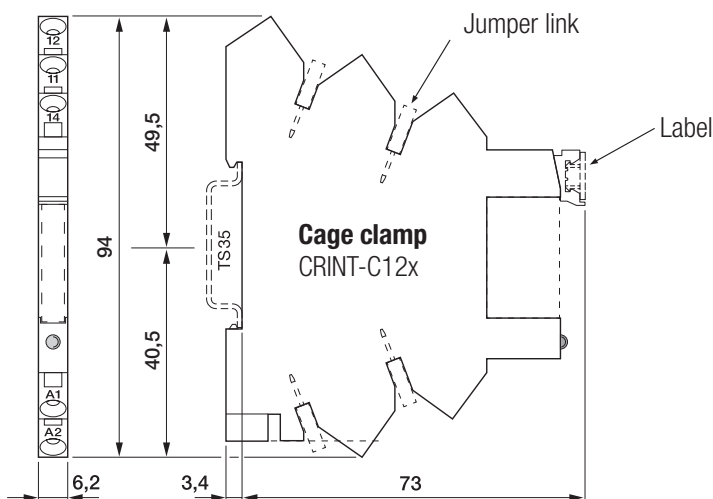
5. Nominal voltage

12 V, 24 V, 48 V, 60 V*

*60 V Relay used for all sockets with a nominal voltage higher or equal 60V

CRINT-C1xx

Dimensions (mm)



CRINT-C1x1R

1 pole | changeover contact

Main circuit

Available contact materials	⚡ AgSnO ₂
Recommended minimum contact load	100 mA / 12 V
Maximum contact load AC	6 A / 250 V AC-1
Maximum contact load DC	6 A / 30 V DC-1
Inrush current	15 A, 2.5 ms
Rated load AC	1 500 VA
Rated load DC	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 1 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 10 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.8 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.8 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	0.9 VA / 0.4 W

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	6 kV / 1 min
Overtoltage category	III
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C (-40 ... 55 °C for control voltage > 60 V)
Pick-up time / bounce time	7 ms / ≤ 8 ms
Release time / bounce time	15 ms / ≤ 4 ms
Conductor cross section cage clamp	0.75 ... 2.5 mm ²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (crimped)	0.34 mm ² / AWG 22 ... 1.5 mm ² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Weight	30 g
Housing material	PA

Product references

Description	Type	24	110-125	220-240
Cage clamp terminal	CRINT-C121R/UC...V	✓	✓	
Push-in terminal	CRINT-C131R/UC...V	✓	✓	✓

«...» List control voltage to complete product references

Accessories

Jumper link	CRINT-BR20-BU (BAG 5 PCS), CRINT-BR20-RD (BAG 5 PCS), CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Marking strip for Push-in	BS11-PI (50m tape)

Replacement relays

Description	Type	24	60
DC	CRINT-R11/DC...V	✓	✓

«...» List control voltage to complete product references
60 V relay used for all sockets with a minimum nominal voltage higher or equal 60 V

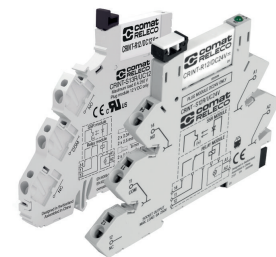


fig. 1. Wiring diagram

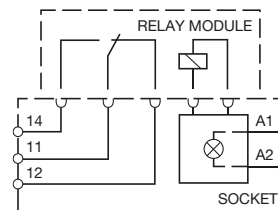


fig. 2. AC voltage endurance

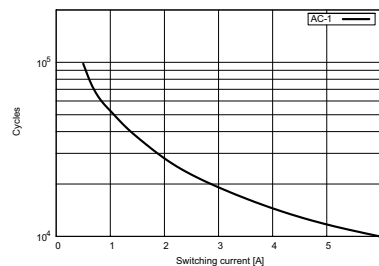


fig. 3. DC load limit curve

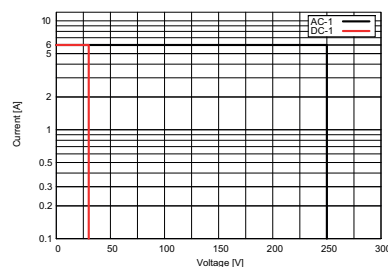
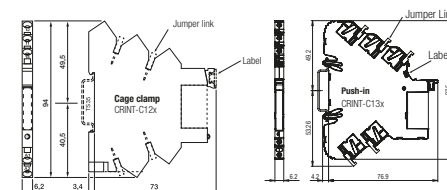


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1; IEC/EN 61810-1

Railway EN 45545-2; EN 50155



Approvals

1.2 Interface Relays

CRINT-C1x2R

1 pole | changeover contact

Main circuit

Available contact materials	AgSnO ₂ + Au
Recommended minimum contact load	10 mA / 5 V
Maximum contact load AC	6A / 250 V AC-1
Maximum contact load DC	6A / 30 V DC-1
Inrush current	15 A, 2.5 ms
Rated load AC	1 500 VA
Rated load DC	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 1 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 10 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.8 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.8 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	0.9 VA / 0.4 W

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	6 kV / 1 min
Overvoltage category	III
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C (-40 ... 55 °C for control voltage > 60 V)
Pick-up time / bounce time	7 ms / ≤ 8 ms
Release time / bounce time	15 ms / ≤ 4 ms
Conductor cross section cage clamp	0.75 ... 2.5 mm ²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (crimped)	0.34 mm ² / AWG 22 ... 1.5 mm ² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Weight	30 g
Housing material	PA

Product references

Description	Type	24	110-125	220-240
Cage clamp terminal	CRINT-C122R/UC...V	✓	✓	✓
Push-in terminal	CRINT-C132R/UC...V	✓	✓	✓

«...» List control voltage to complete product references

Accessories

Jumper link	CRINT-BR20-BU (BAG 5 PCS), CRINT-BR20-RD (BAG 5 PCS), CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Marking strip for Push-in	BS11-PI (50m tape)

Replacement relays

Description	Type	24	60
DC	CRINT-R12/DC...V	✓	✓

«...» List control voltage to complete product references

60 V relay used for all sockets with a minimum nominal voltage higher or equal 60 V

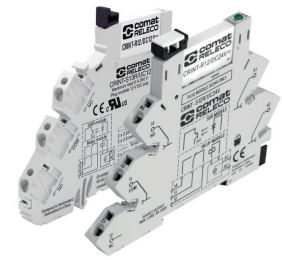


fig. 1. Wiring diagram

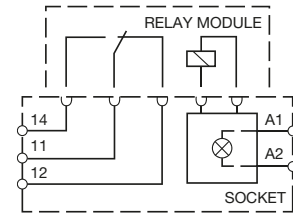


fig. 2. AC voltage endurance

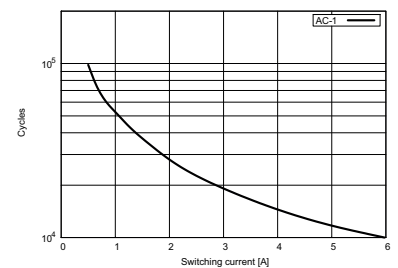


fig. 3. DC load limit curve

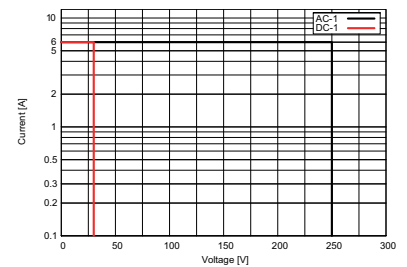
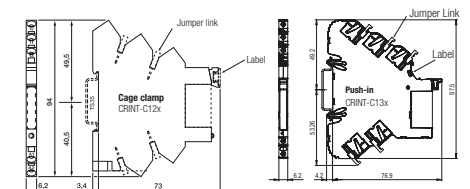


fig. 4. Dimensions (mm)



Technical approvals, conformities









Standards EN 60664-1; IEC/EN 61810-1

Railway EN 45545-2; EN 50155



Approvals

1.3 Industrial Relays - pluggable

	Type	Pin	Page
C3 Series / R3 Series			
3 pole changeover contact sensitive coil	R3-N34		26
2 pole changeover contact remanence	R3-R20N		27
C4 Series / R4 Series			
4 pole changeover contact Faston	R4-A40		28
C5 Series			
3 pole changeover contact Faston	R5-A30U		29
1 pole normally open serial contact with blow magnet Faston	R5-M10		30
C7 Series / R7 Series			
2 pole changeover contact Faston	R7-A20		31
2 pole changeover twin contact Faston	R7-T2x		32
C9 Series / R9 Series			
4 pole changeover contact Faston	R9-A41		33

1.3 Industrial Relays - pluggable

R3-N34

3 pole | changeover contact | sensitive coil



Main circuit

Available contact materials	AgNi + 0.2 μ Au
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	6 A / 250 V AC-1
Maximum contact load DC	6 A / 30 V DC-1
Inrush current	30 A, 20 ms
Rated load AC	1 500 VA
Rated load DC	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 20 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 500 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	800 mW

Coil table

V DC	Ohm	mA
72	4 844	15
110	12 900	9

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	18 ms / ≤ 3 ms
Release time / bounce time	10 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	72	110
Freewheeling diode module	R3-N34D/DC...V	✓	✓

AC relays also available as 60 Hz. Other voltages on request. Please contact support@comatreleco.com.

«...» List coil voltage to complete product references.

Accessories

Socket	S3-MR, S3-M0R, S3-M1R
Blanking plug	SO-NP (BAG 10 PCS)

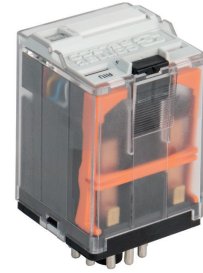


fig. 1. Wiring diagram

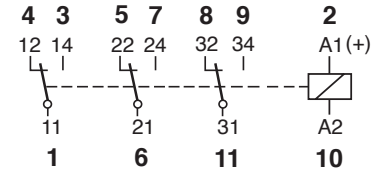


fig. 2. AC voltage endurance

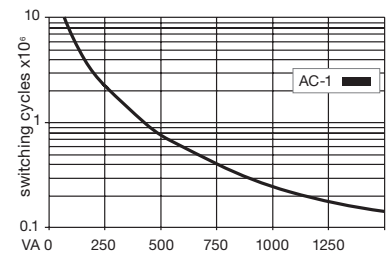


fig. 3. DC load limit curve

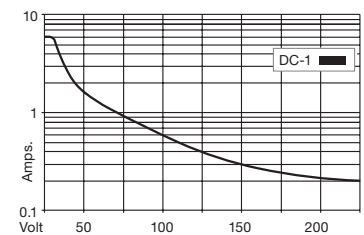
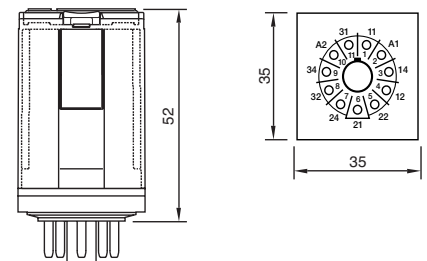


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

R3-R20N

2 pole | changeover contact | remanence

Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	30 A, 20 ms
Rated load AC	2 500 VA
Rated load DC	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 5 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 500 000

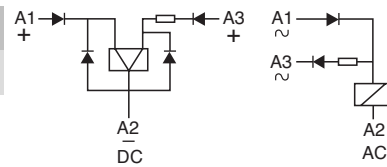
Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≤ 0.7 U _N
ON pulse power	DC 1.5 W
OFF pulse power	DC 0.5 W

Coil table

V DC	mA ON	mA OFF
24	60	18
36	45	15

Internal diagram



Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Minimum pulse length ON / OFF	50 ms
Maximum switching frequency at rated load	1 200 / h
Weight	81 g
Housing material	PA / PC

Product references

Description	Type	24	36
DC	R3-R20N/DC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S3-MR, S3-M0R, S3-M1R
Blanking plug	S0-NP (BAG 10 PCS)



fig. 1. Wiring diagram

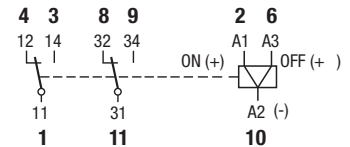


fig. 2. AC voltage endurance

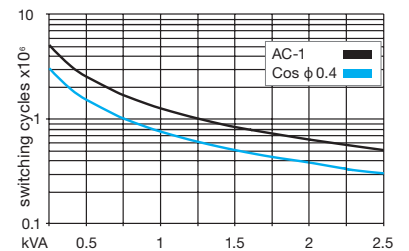


fig. 3. DC load limit curve

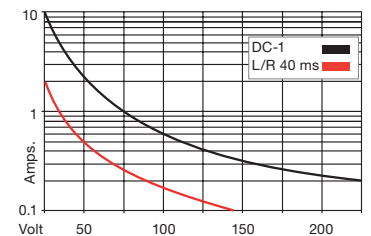
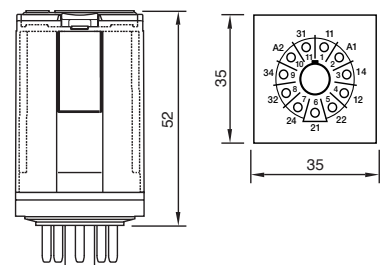


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.3 Industrial Relays - pluggable

R4-A40

4 pole | changeover contact | Faston



Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 5 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	30 A, 20 ms
Rated load AC	2 500 VA
Rated load DC	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 20 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 500 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	2.4 VA / 1.4 W

Coil table

V DC	Ohm	mA
12	105	114
24	414	58
36	916	39
48	1 664	29
60	2 581	23
72	3 775	20
110	8 117	14
220	35 696	6.2

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	20 ms / ≤ 3 ms
Release time / bounce time	8 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
LED & Pol. & Free wheeling diode	R4-A40FX/DC...V	✓	✓	✓	✓	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S4-GR
Blanking plug	S0-NP (BAG 10 PCS)
Wall mounting adapter for C4, C5	S5-R (BAG 5 PCS)
Test button without locking	S5-HP (BAG 10 PCS)

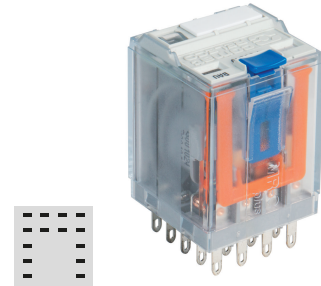


fig. 1. Wiring diagram

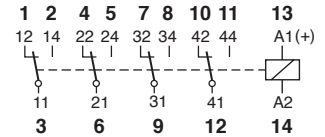


fig. 2. AC voltage endurance

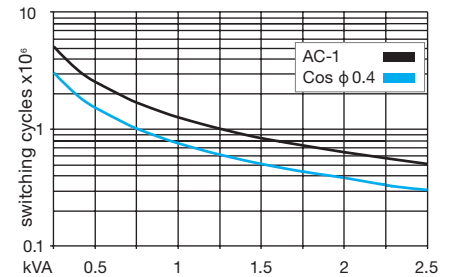


fig. 3. DC load limit curve

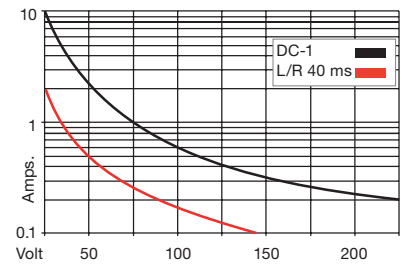
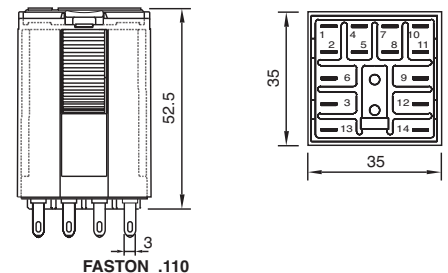


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155



R5-A30U

3 pole | changeover contact | Faston

Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	16 A / 400 V AC-1
Maximum contact load DC	16 A / 30 V DC-1
Inrush current	40 A, 20 ms
Rated load AC	4 000 VA
Rated load DC	fig. 3.
Rated current	16 A
Mechanical endurance (cycles)	≥ 20 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 300 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	2.4 VA / 1.4 W

Coil table

V DC	Ohm	mA
24	414	58

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	4 kV / 1 min
Test voltage contact / coil	4 kV / 1 min
Overtoltage category	III
Insulation resistance at 500 V	≥ 3 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	20 ms / ≤ 3 ms
Release time / bounce time	10 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	95 g
Housing material	PA / PC

Product references

Description	Type	24
DC	R5-A30U/DC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

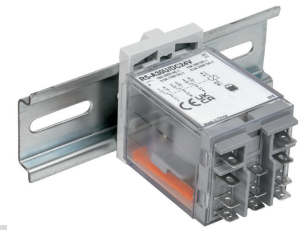


fig. 1. Wiring diagram

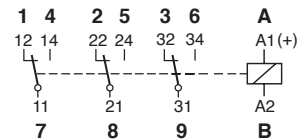


fig. 2. AC voltage endurance

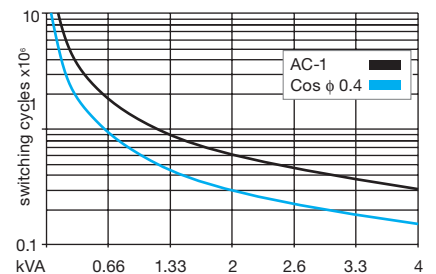


fig. 3. DC load limit curve

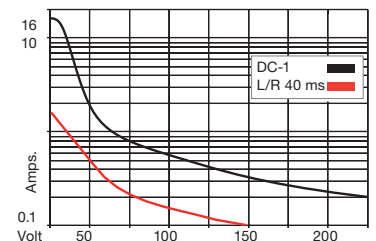
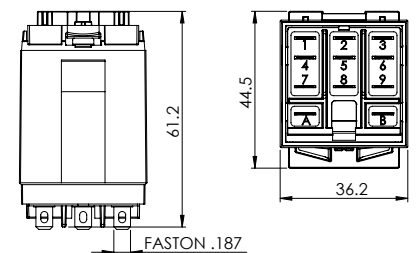


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155



1.3 Industrial Relays - pluggable

R5-M10

1 pole | normally open serial contact with blow magnet | Faston



Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	16 A / 400 V AC-1
Maximum contact load DC	10 A / 220 V DC-1
Inrush current	40 A, 20 ms
Rated load AC	4 000 VA
Rated load DC	2 200 W
Rated current	16 A
Mechanical endurance (cycles)	≥ 20 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 300 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	$0.7 U_N \dots 1.25 U_N$
Pick-up voltage	$\leq 0.7 U_N$
Release voltage	$\geq 0.1 U_N$
Power consumption AC / DC	2.4 VA / 1.3 W

Coil table

V DC	Ohm	mA
24	443	54

Insulation

Test voltage open contact	4 kV / 1 min
Test voltage contact / coil	4 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 3 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	20 ms / ≤ 3 ms
Release time / bounce time	10 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	24
LED & Pol. & Free wheeling diode	R5-M10FX/DC...V	✓
Other voltages on request. Please contact support@comatreleco.com.		
«...» List coil voltage to complete product references		

Accessories

S5-MR	S5-MR
Blanking plug	S0-NP (BAG 10 PCS)
Wall mounting adapter for C4, C5	S5-R (BAG 5 PCS)

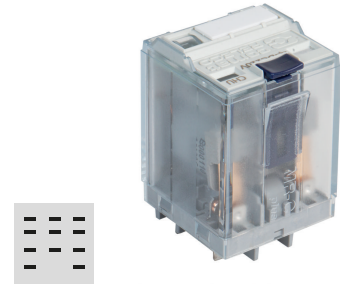


fig. 1. Wiring diagram

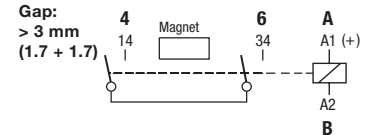


fig. 2. AC voltage endurance

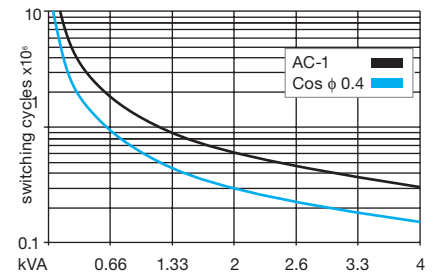


fig. 3. DC load limit curve

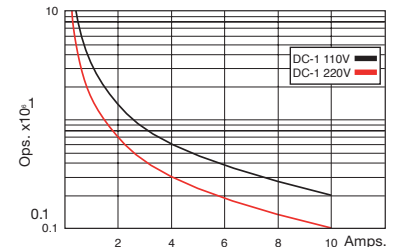
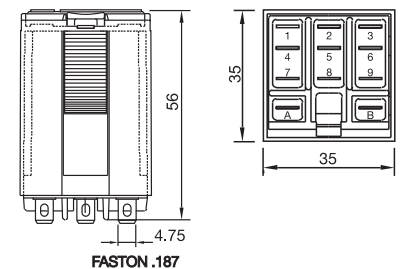


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

R7-A20

2 pole | changeover contact | Faston

Main circuit

Available contact materials	⚡ AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 24 V DC-1
Inrush current	30 A, 20 ms
Rated load AC	2 500 VA
Rated load DC	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 300 000 / ≥ 100 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	1.2 VA / 1 W

Coil table

V DC	Ohm	mA
12	158	76
24	632	38
24	5 692	13
36	1 423	25
60	3 953	15
72	5 692	13
110	13 286	8
220	53 146	4

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	16 ms / ≤ 3 ms
Release time / bounce time	8 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	35 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	60	72	110	220
LED & Free wheeling diode	R7-A20DX/DC...V	✓	✓	✓	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S7-GR, S7-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Test Button w/o locking	S9-OP (BAG 10 PCS)

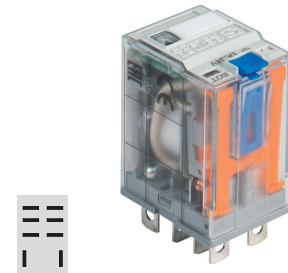


fig. 1. Wiring diagram

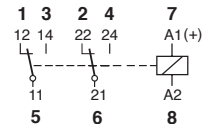


fig. 2. AC voltage endurance

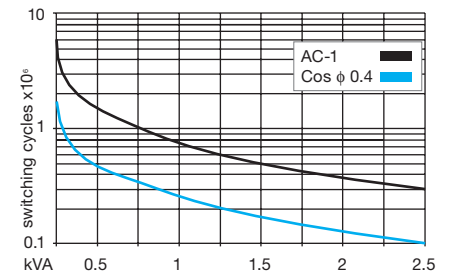


fig. 3. DC load limit curve

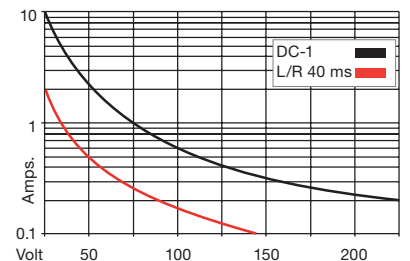
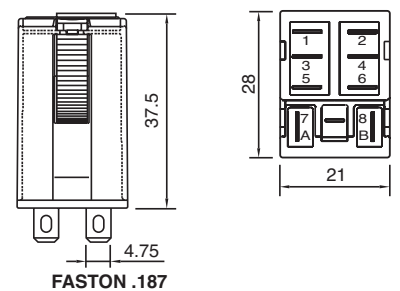


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.3 Industrial Relays - pluggable

R7-T2x

2 pole | changeover twin contact | Faston



Main circuit

Available contact materials

AgNi + 0.2 μ Au for R7-T21

AgNi + 5 μ Au for R7-T22

Recommended minimum contact load

5 mA / 5 V for R7-T21

1 mA / 1 V for R7-T22

Maximum contact load AC

6 A / 250 V AC-1

Maximum contact load DC

6 A / 30 V DC-1

Inrush current

15 A, 20 ms

Rated load AC

1 200 VA

Rated load DC

fig. 3.

Rated current

6 A

Mechanical endurance (cycles)

≥ 10 000 000

Electrical endurance at rated load AC-1 (cycles)

≥ 150 000 / ≥ 100 000



fig. 1. Wiring diagram

Control circuit

Nominal voltage

see table product references

Operating voltage range

0.7 U_N ... 1.25 U_N

Pick-up voltage

≤ 0.7 U_N

Release voltage

≥ 0.1 U_N

Power consumption AC / DC

1.2 VA / 1 W

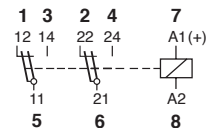
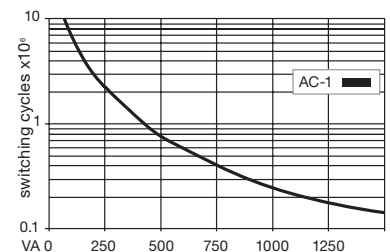


fig. 2. AC voltage endurance

Coil table

V DC	Ohm	mA
12	158	76
24	632	38
36	1 423	25
48	2 530	19
60	3 953	15
72	5 692	13
110	13 286	8
220	53 146	4



Insulation

Test voltage open contact

1 kV / 1 min

Test voltage contact / contact

2.5 kV / 1 min

Test voltage contact / coil

2.5 kV / 1 min

Overvoltage category

III

Insulation resistance at 500 V

≥ 1 GΩ

Pollution degree

3

fig. 3. DC load limit curve

General data

Storage temperature (no ice)

-40 ... 80 °C

Operation temperature

-40 ... 70 °C

Pick-up time / bounce time

16 ms / ≤ 3 ms

Release time / bounce time

8 ms / ≤ 1 ms

Maximum switching frequency at rated load

1 200 / h

Weight

35 g

Housing material

PA / PC

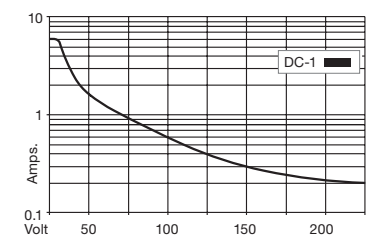
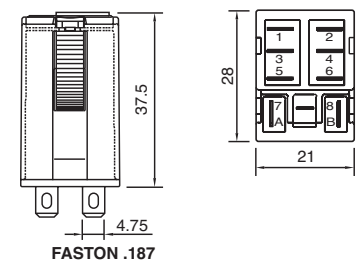


fig. 4. Dimensions (mm)



Product references

Description	Type	12	24	36	48	60	220	230
LED & Pol. & Free wheeling diode	R7-T2x/AC...V							✓

LED & Pol. & Free wheeling diode	R7-T2xFX/DC...V	✓	✓	✓	✓	✓	✓	
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Other voltages on request. Please contact support@comatreleco.com.

«...» List coil voltage to complete product references

Accessories

Socket

S7-GR, S7-PIR

Blanking plug

S9-NP (BAG 10 PCS)

Test Button w/o locking

S9-OP (BAG 10 PCS)

Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

R9-A41

4 pole | changeover contact | Faston

Main circuit

Available contact materials	AgNi + 0.2 μ Au
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	5 A / 250 V AC-1
Maximum contact load DC	5 A / 30 V DC-1
Inrush current	15 A, 20 ms
Rated load AC	1 250 VA
Rated load DC	fig. 3.
Rated current	5 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 100 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	≤ 0.7 U _N
Release voltage	≥ 0.1 U _N
Power consumption AC / DC	1.2 VA / 1 W

Coil table

V DC	Ohm	mA
12	158	76
24	632	38
36	1 423	25
48	2 530	19
60	3 953	15
72	5 692	13
110	13 286	8
220	53 146	4

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up time / bounce time	10 ms / ≤ 3 ms
Release time / bounce time	6 ms / ≤ 1 ms
Maximum switching frequency at rated load	1 200 / h
Weight	43 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
LED & Pol. & Free wheeling diode	R9-A41FX/DC...V	✓	✓	✓	✓	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S9-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Test Button w/o locking	S9-OP (BAG 10 PCS)

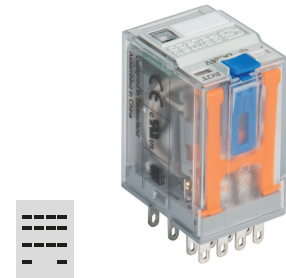


fig. 1. Wiring diagram

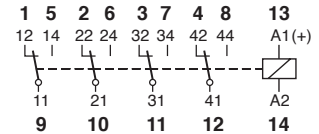


fig. 2. AC voltage endurance

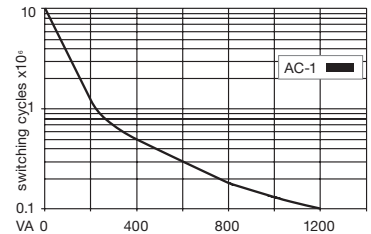


fig. 3. DC load limit curve

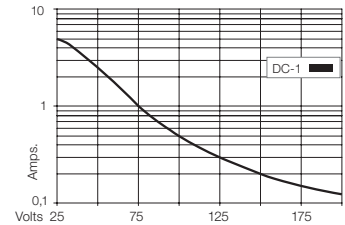
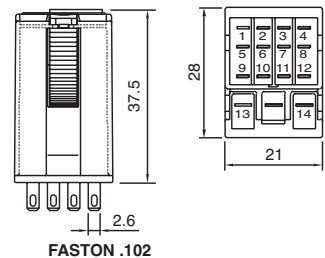


fig. 4. Dimensions (mm)





Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.4 Long Life Relays

	Type	Pin	Page
C3 Series			
3 pole changeover contact Power relay Railway	C31x/R		36
3 pole changeover twin contact Control relay Railway	C32x/R		37

1.4 Long Life Relays

C31x/R

3 pole | changeover contact | Power relay | Railway



Main circuit

Available contact materials	⚡ AgCuNi
Recommended minimum contact load	50 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	40 A, 20 ms
Rated load AC	2 500 VA
Rated load DC	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 100 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 700 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	$0.7 U_N \dots 1.25 U_N$
Pick-up voltage	$0.7 U_N$
Release voltage	$> 0.15 \times U_N / > 0.05 \times U_N$
Power consumption AC / DC	2.5 VA / 1.2 W

Coil table

V AC	Ohm	mA	V DC	Ohm	mA
115	1 350	23	12	115	104
230	5 600	11.5	24	340	70
			36	780	46
			48	1 850	26
			72	3 200	23
			110	9 700	11
			220	29 000	7.6

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

Insulation

Test voltage open contact	1.5 kV / 1 min
Test voltage contact / contact	1.5 kV / 1 min
Test voltage contact / coil	2 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up 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
Maximum switching frequency at rated load	360 / h
Weight	80 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	72	110	115	220	230
Railway & LED	C31L/R AC...V							✓		✓
Railway & Free wheeling diode	C31D/R DC...V	✓	✓	✓	✓	✓	✓			✓
Railway & Free wheeling diode	C31L/R DC...V			✓						

Other voltages on request. Please contact support@comatreleco.com.
«...» List coil voltage to complete product references

Accessories

Socket	S3-MR, S3-M0R, S3-M1R
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fig. 1. Wiring diagram

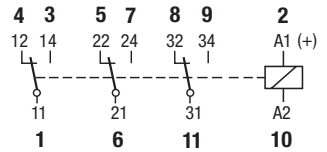


fig. 2. AC voltage endurance

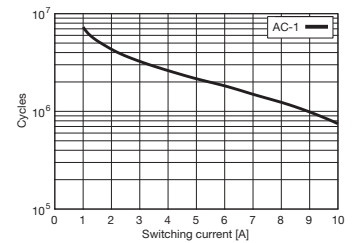


fig. 3. DC load limit curve

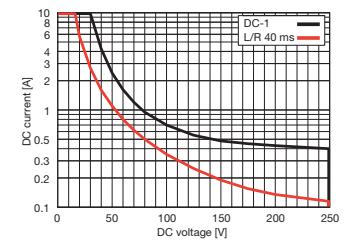
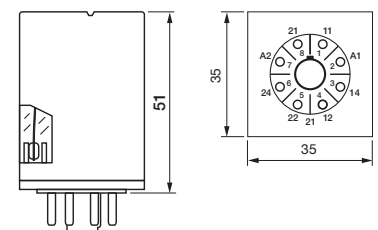


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155



C32x/R

3 pole | changeover twin contact | Control relay | Railway

Main circuit

Available contact materials	AgCuNi
Recommended minimum contact load	1 mA / 5 V
Maximum contact load AC	6 A / 250 V AC-1
Maximum contact load DC	6 A / 30 V DC-1
Inrush current	15 A, 20 ms
Rated load AC	1 500 VA
Rated load DC	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 100 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 1 500 000

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U _N ... 1.25 U _N
Pick-up voltage	0.7 U _N
Release voltage	>0.15 x U _N / > 0.05 x U _N
Power consumption AC / DC	2.5 VA / 1.2 W

Coil table

V AC	Ohm	mA	V DC	Ohm	mA
230	5 600	11.5	12	115	104
			24	340	70
			36	780	46
			48	1 850	26
			72	3 200	23
			110	9 700	11
			220	29 000	7.6

Insulation

Test voltage open contact	1.5 kV / 1 min
Test voltage contact / contact	1.5 kV / 1 min
Test voltage contact / coil	2 kV / 1 min
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Pick-up 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
Maximum switching frequency at rated load	360 / h
Weight	80 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	72	110	220	230
Railway & LED	C32L/R AC...V								✓

Railway & Free wheeling diode	C32D/R DC...V	✓	✓	✓	✓	✓	✓	✓	✓
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AC relays also available as 60 Hz. Other voltages on request. Please contact support@comatreleco.com.

«...» List coil voltage to complete product references.

Accessories

Socket	S3-MR, S3-M0R, S3-M1R
--------	-----------------------



fig. 1. Wiring diagram

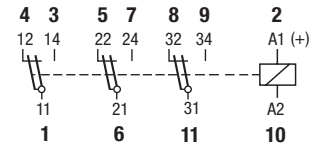


fig. 2. AC voltage endurance

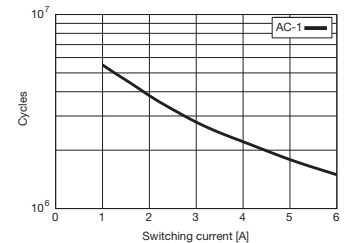


fig. 3. DC load limit curve

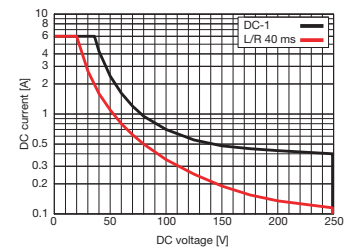
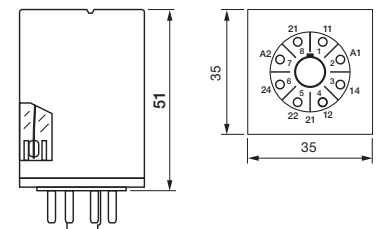


fig. 4. Dimensions (mm)



Technical approvals, conformities





Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155



Approvals

1.5 Solid State Relays

	Type	Pin	Page
CSS Series / R10 Series			
1 pole normally open solid state AC Faston	R10-Z1I		40
1 pole normally open solid state AC Faston	R10-Z1Z		41
1 pole normally open solid state DC Faston	R10-Z1N		42
1 pole normally open solid state DC Faston	R10-Z1P		43
CRINT Series			
1 pole normally open solid state DC	CRINT-C1x5R		45
1 pole normally open solid state AC	CRINT-C1x8R		46

1.5 Solid State Relays

R10-Z1I

1 pole | normally open solid state AC | Faston



Main circuit

Output type	TRIAC
Type	Instantaneous
Output voltage range	24 ... 250 V AC
Recommended minimum contact load	35 mA
Residual current	1 mA
Maximum voltage drop	≤ 1.1 V AC
Rated current	3 A
Inrush current	150 A, 10 ms
Rated limit load I ² t	210 A ² s
Rated load AC	750 VA

Control circuit

Nominal voltage	see table product references
Operating voltage range	5 ... 48 V DC
Input voltage range	4.75 ... 60 V DC
Input current	10 mA
Pick-up voltage	5 V DC
Release voltage	< 4.75 V
Power consumption DC	300 mW

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Ingress Protection	IP 40
Weight	28 g
Housing material	PA

Product references

Description	Type	5-48
DC	R10-Z1IX/DC...V	✓

«...» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR
--------	-----------------

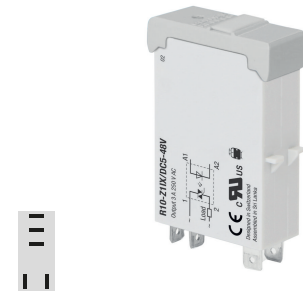


fig. 1. Wiring diagram

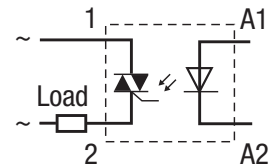


fig. 2. AC derating curve

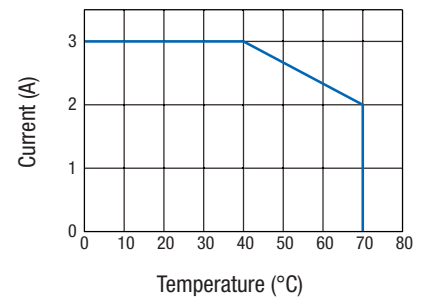
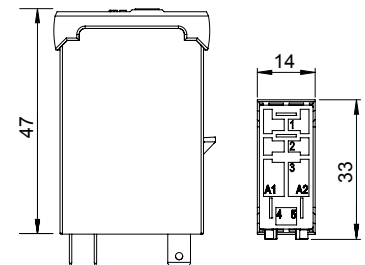


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947



Railway EN 45545-2; EN 50155

Approvals

R10-Z1Z

1 pole | normally open solid state AC | Faston

Main circuit

Output type	  TRIAC
Type	Synchronized zero
Output voltage range	24 ... 250 V AC
Recommended minimum contact load	35 mA
Residual current	1 mA
Maximum voltage drop	≤ 1.1 V AC
Rated current	3 A
Inrush current	150 A, 10 ms
Rated limit load I ² t	210 A ² s
Rated load AC	750 VA

Control circuit

Nominal voltage	see table product references
Operating voltage range	5 ... 48 V DC
Input voltage range	4.75 ... 60 V DC
Input current	10 mA
Pick-up voltage	5 V DC
Release voltage	< 4.75 V
Power consumption DC	300 mW

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Pick-up time	10 ms
Release time	10 ms
Ingress Protection	IP 40
Weight	28 g
Housing material	PA

Product references

Description	Type	5-48
DC	R10-Z1ZX/DC...V	✓

«...» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR
--------	-----------------

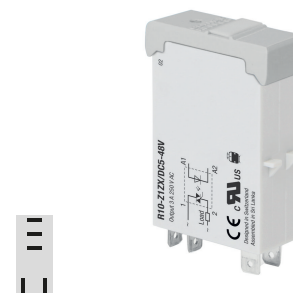


fig. 1. Wiring diagram

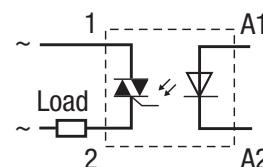


fig. 2. AC derating curve

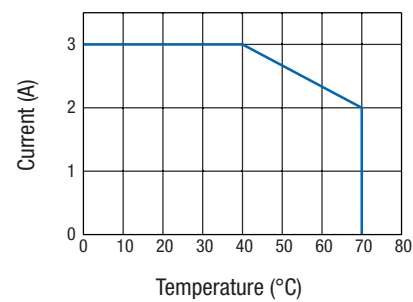
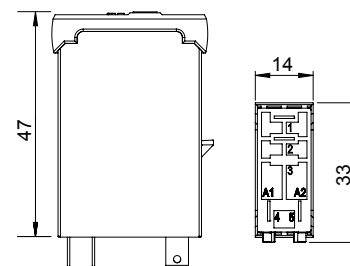


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals  

1.5 Solid State Relays

R10-Z1N

1 pole | normally open solid state DC | Faston



Main circuit

Output type	MOSFET
Type	Instantaneous
Logic	NPN
Output voltage range	5 ... 48 V DC
Recommended minimum contact load	1 mA
Residual current	0.1 mA
Maximum voltage drop	≤ 0.14 V DC
Rated current	6 A
Inrush current	40 A, 10 ms
Rated load DC	360 W

Control circuit

Nominal voltage	see table product references
Operating voltage range	5 ... 48 V DC
Input voltage range	4.75 ... 60 V DC
Input current	4 mA
Pick-up voltage	5 V DC
Release voltage	< 4.75 V
Power consumption DC	300 mW

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Ingress Protection	IP 40
Weight	28 g
Housing material	PA

Product references

Description	Type	5-48
DC	R10-Z1NX/DC...V	✓

«...» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR
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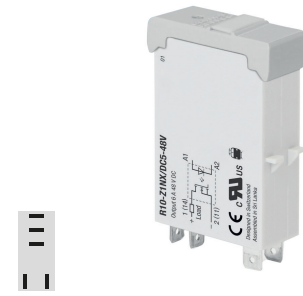


fig. 1. Wiring diagram

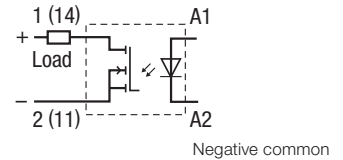


fig. 2. DC derating curve

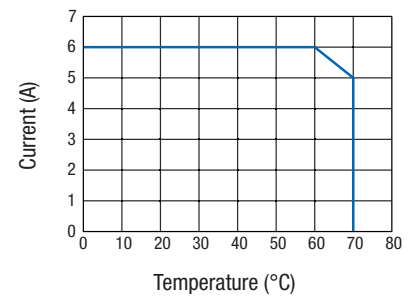
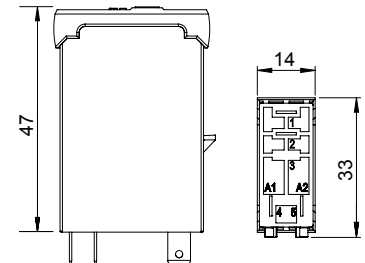


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947


Railway EN 45545-2; EN 50155

Approvals

R10-Z1P

1 pole | normally open solid state DC | Faston

Main circuit

Output type	 MOSFET
Type	Instantaneous
Logic	PNP
Output voltage range	5 ... 48 V DC
Recommended minimum contact load	1 mA
Residual current	0.1 mA
Maximum voltage drop	≤ 0.14 V DC
Rated current	6 A
Inrush current	40 A, 10 ms
Rated load DC	360 W

Control circuit

Nominal voltage	see table product references
Operating voltage range	5 ... 48 V DC
Input voltage range	4.75 ... 60 V DC
Input current	4 mA
Pick-up voltage	5 V DC
Release voltage	< 4.75 V
Power consumption DC	300 mW

Output current

Type	Instantaneous
Logic	PNP
Maximum output current	6 A
Minimum output current	1 mA
Output voltage range	5 ... 48 V DC
Residual current	0.1 mA
Maximum voltage drop	≤ 0.14 V DC

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Ingress Protection	IP 40
Weight	28 g
Housing material	PA

Product references

Description	Type	5-48
DC	R10-Z1PX/DC...V	✓

«...» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR
--------	-----------------

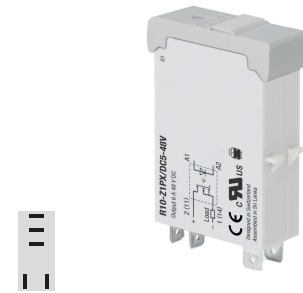


fig. 1. Wiring diagram

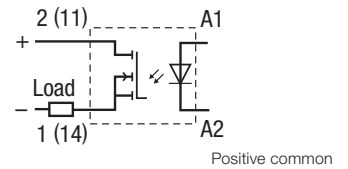


fig. 2. DC derating curve

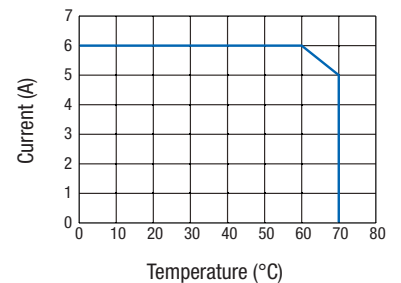
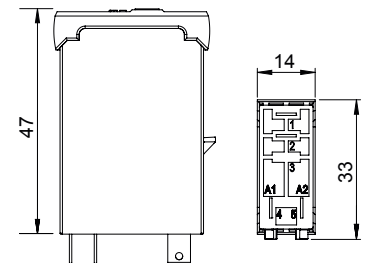


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

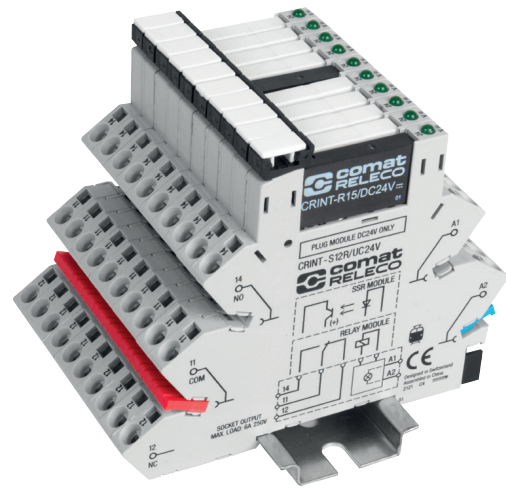
Approvals  

CRINT-C1xx

Product Key and dimensions

Interface Module CRINT

- Relay module up to 6 A 250 V, different contact materials
- Solid state modules for most loads DC and AC up to 2 A / 4 A
- Coil UC = AC/DC, no protection circuit required
- LED status display
- Push-in terminals
- Jumper link
- Super small mounting: 6.2 mm width



CRINT Product Key

1	2	3	4	5	6	7	8
CRINT	-	C	1	3	1	R	/ UC 24V

1. Product family

CRINT

2. Type

C = Combined version (Socket and Relay)

3. Contact

1 = One change-over contact

4. Connection type

2 = Cage clamp
3 = Push-in

5. Output

1 = AgSnO₂
2 = AgSnO₂ + 3μ Au
5 = NO / Solid-state DC
8 = NO / Solid-state AC

6. Options

- = Standard version
R = Railway version

7. Supply voltage

UC = AC/DC
DC = Only for C1x5 and C1x8

8. Nominal voltage

12V, 24V, 48V, 60V, 110-125V, 220-240V

RELAY Only

1	2	3	4	5
CRINT	-	R	11	DC 12V

1. Product family

CRINT

2. Type

R = Relay

3. Contact

11 = AgSnO₂
12 = AgSnO₂ + 3μ Au
15 = NO / Solid-state DC
18 = NO / Solid-state AC

4. Supply voltage

DC

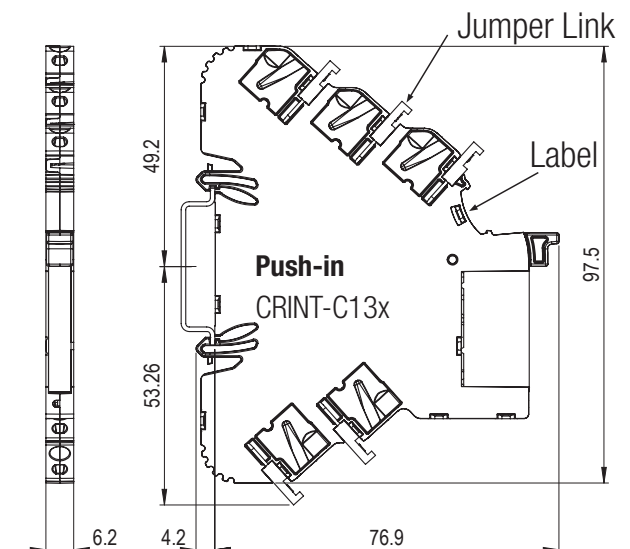
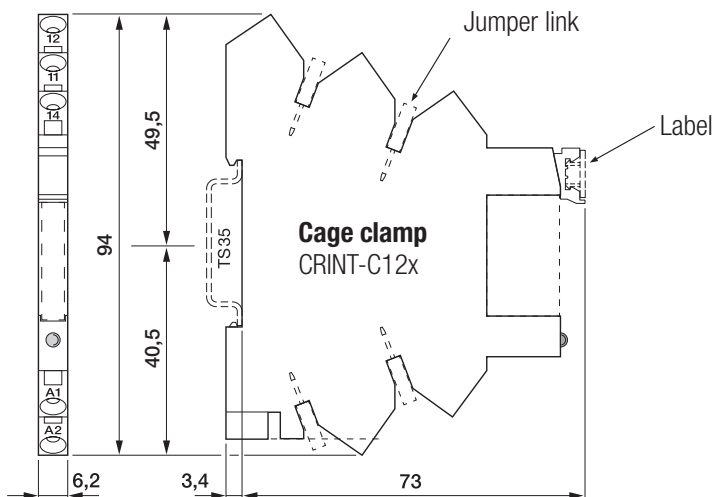
5. Nominal voltage

12 V, 24 V, 48 V, 60 V*

*60 V Relay used for all sockets with a nominal voltage higher or equal 60V

CRINT-C1xx

Dimensions (mm)



CRINT-C1x5R

1 pole | normally open solid state DC

Main circuit

Output type	MOSFET
Type	Instantaneous
Output voltage range	3 ... 28.8 V DC
Recommended minimum contact load	20 mA
Residual current	0.1 mA
Maximum voltage drop	0.35 V DC
Rated current	4 A
Inrush current	48 A, 10 ms
Rated load DC	115 W

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.8 ... 1.2 U _N
Pick-up voltage	≤ 0.8 U _N
Release voltage	≤ 0.25 U _N
Power consumption AC / DC	160 mW
Power consumption DC	160 mW

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Pollution degree	3

General data

Storage temperature (no ice)	-30 ... 85 °C
Operation temperature	-30 ... 70 °C
Pick-up time	≤ 50 μs
Release time	≤ 300 μs
Conductor cross section cage clamp	0.75 ... 2.5 mm ²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (crimped)	0.34 mm ² / AWG 22 ... 1.5 mm ² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Weight	30 g
Housing material	PA

Product references

Description	Type	24	110-125
Cage clamp terminal	CRINT-C125R/DC...V	✓	✓
Push-in terminal	CRINT-C135R/DC...V	✓	✓

«...» List control voltage to complete product references

Accessories

Jumper link	CRINT-BR20-BU (BAG 5 PCS), CRINT-BR20-RD (BAG 5 PCS), CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Marking strip for Push-in	BS11-PI (50m tape)

Replacement relays

Description	Type	24	60
DC	CRINT-R15/DC...V	✓	✓

«...» List control voltage to complete product references

60 V relay used for all sockets with a minimum nominal voltage higher or equal 60 V

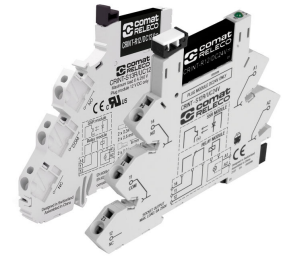


fig. 1. Wiring diagram

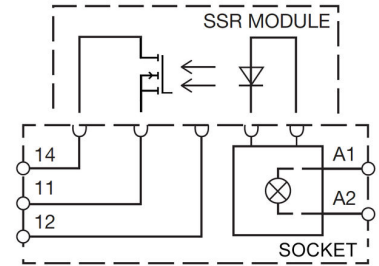


fig. 2. DC load limit curve

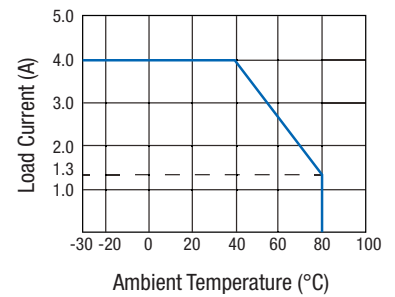
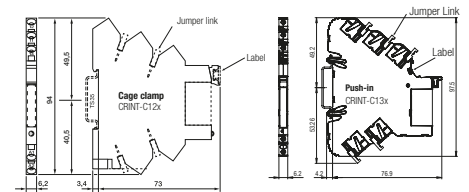


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1; EN 62314
 Railway EN 45545-2; EN 50155



1.5 Solid State Relays

CRINT-C1x8R

1 pole | normally open solid state AC



Main circuit

Output type	TRIAC
Type	Synchronized zero
Output voltage range	48 ... 280 V AC
Recommended minimum contact load	100 mA
Residual current	1.5 mA
Maximum voltage drop	1.2 V AC
Rated current	2 A
Inrush current	80 A, 10 ms
Rated load AC	fig. 2.

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.8 ... 1.2 U _N
Pick-up voltage	≤ 0.8 U _N
Release voltage	≤ 0.25 U _N
Power consumption DC	150 mW

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
Overvoltage category	III
Pollution degree	3

General data

Storage temperature (no ice)	-30 ... 85 °C
Operation temperature	-30 ... 70 °C
Pick-up time	1/2 Cycle +1 ms
Release time	1/2 Cycle +1 ms
Conductor cross section cage clamp	0.75 ... 2.5 mm ²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
- Multi wire (crimped)	0.34 mm ² / AWG 22 ... 1.5 mm ² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Weight	30 g
Housing material	PA

Product references

Description	Type	24	110-125
Cage clamp terminal	CRINT-C128R/DC...V	✓	✓
Push-in terminal	CRINT-C138R/DC...V	✓	✓
«...» List control voltage to complete product references			

Accessories

Jumper link	CRINT-BR20-BU (BAG 5 PCS), CRINT-BR20-RD (BAG 5 PCS), CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Marking strip for Push-in	BS11-PI (50m tape)

Replacement relays

Description	Type	24	60
DC	CRINT-R18/DC...V	✓	✓

«...» List control voltage to complete product references
60 V relay used for all sockets with a minimum nominal voltage higher or equal 60 V

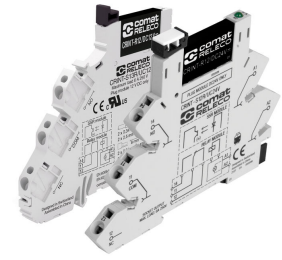


fig. 1. Wiring diagram

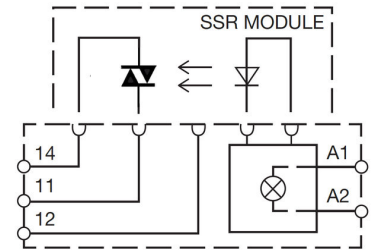


fig. 2. DC load limit curve

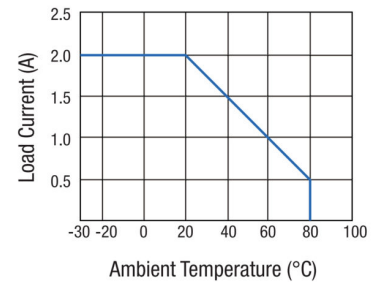
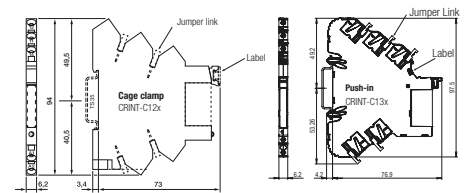


fig. 3. Dimensions (mm)




Technical approvals, conformities

Standards EN 60664-1; EN 62314

Railway EN 45545-2; EN 50155



1.6 Installation Relays

	Type	Pin	Page
C100/200/300 Series			
2 pole 2 coil Signal Relay	C203.06R		48

1.6 Installation Relays

C203.06R

2 pole | 2 coil | Signal Relay

Main circuit

Available contact materials	AgAu
Recommended minimum contact load	10 μ A / 10 mV
Maximum contact load AC	0.5 A / 125 V
Maximum contact load DC	2 A / 30 V
Operating voltage AC / DC	See table product references
Rated load AC	100 VA
Rated load DC	60 W, fig. 2.
Rated current	0.5 A
Mechanical endurance (cycles)	$\geq 100\,000\,000$
Electrical endurance at rated load AC-1 (cycles)	$\geq 100\,000$
Number of contacts	2 CO

Control circuit

Nominal voltage	see table product references
Operating voltage range	$0.7 U_N \dots 1.25 U_N$
Pick-up voltage	$0.7 U_N$
Release voltage	$\geq 0.1 U_N$
Pick-up time	10 ms
Release time	20 ms
Power consumption AC	2×0.25 VA
Power consumption DC	2×0.25 W

Insulation

Contact/contact	4 kV / 1 min
Contact/coil	2 kV / 1 min
Overvoltage category	III
Rated impulse withstand voltage open contact	1 kV / 1 min
Pollution degree	3

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-25 ... 60 °C
Conductor cross section	solid wire 1 x 4 mm ² , 2 x 1.5 mm ² , stranded & crimped wire 1 x 2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.5 Nm
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Weight	65 g
Housing material	PA / PC

Product references

Description	Type	24	36
2 CO	C203.06R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.



fig. 1. Wiring diagram

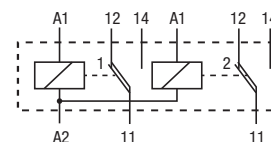


fig. 2. DC voltage endurance

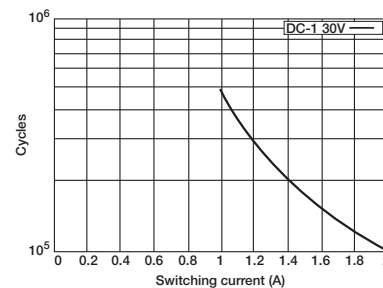


fig. 3. DC load limit curve

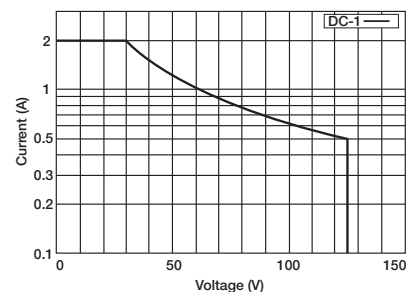
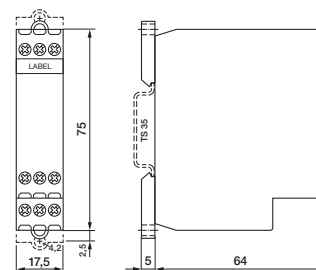


fig. 4. Dimensions (mm)






Technical approvals, conformities

Standards EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.7 Installation Contactors

	Type	Pin	Page
RIC Series			
2 pole 20 A 7 kW DC-5 4 A 110 V DC	RIC20-xxx-R4A110V		51
2 pole 20 A 7 kW DC-5 4 A 110 V DC TVS Suppressor	RIC20-xxx-SR		52
4 pole 25 A 5.4 kW	RIC25-xxx-R		53

Installation Contactors

Product Key Installation Contactors

1	2		3	4	5		6	7	8		9	10
RIC	20	-	2	0	0	-			R	/	DC	24V

1. Product Name

- RIC Installation Contactor
- RAC Installation Contactor with manual control (Actuator)
- RBC Installation Bi-stable Contactor

2. Rated current AC-1 [A]

16, 20, 25, 32, 40 or 63 A

3. Number of main contacts NO (normally open)

4. Number of main contacts NC (normally closed)

5. Number of main contacts CO (change over)

6. Terminal

- Screw
- 1 Cage Clamp
- 2 Push-in

7. Surge protection

- none
- S Transient voltage suppressor

8. Options

- Standard version
- R Railway version

9. Supply voltage

- DC Direct current
- AC Alternate current
- UC AC/DC with built-in bridge rectifier and varistor

10. Coil nominal voltage

12, 24, 36, 48, 72, 110, 230 or 400 V

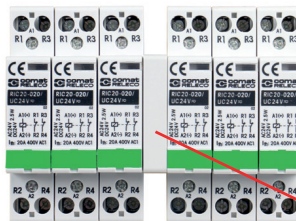
Assembly information

If several contactors are installed next to each other, spacers (RIC DIST) must be installed for heat dissipation.

Example:

Ambient temperature up to 40 °C:

1 spacer (9 mm) after every third RIC, RAC, RBC



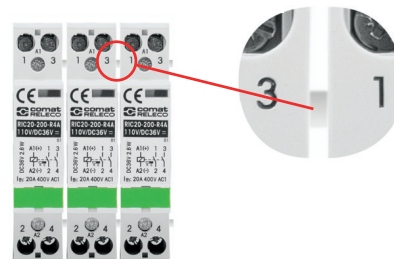
spacers (RIC DIST)

Ambient temperature 40 ... 50 °C:

1 spacer (9 mm) after every second RIC, RAC, RBC



The RIC20 rail contactors have an integrated spacer (3 mm).



1.7 Installation Contactors

RIC20-xxx-R4A110V

2 pole | 20 A | 7 kW | DC-5 | 4 A 110 V DC

Main circuit

Available contact materials	AgNi
Rated voltage	400 V AC
Rated current AC-1	20 A
Recommended minimum contact load	50 mA, 17 V
Inrush current	50 A, 100 ms / 180 A, 300 μs
Rated load AC-1	7 kW
Rated load AC-3	1.3 kW (NO) / 0.75 kW (NC)
Rated load DC-1	see fig. 2
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 150 000
Electrical endurance at rated load AC-3 (cycles)	≥ 200 000
Electrical endurance at rated load DC-1 (cycles)	≥ 200 000
Electrical endurance at rated load DC-5 (cycles)	≥ 300 000
Switching frequency at rated load AC-1 (cycles / h)	≤ 600
Switching frequency at rated load AC-3 (cycles / h)	≤ 600
Switching frequency at rated load DC-1 (cycles / h)	≤ 300
Switching frequency at rated load DC-5 (cycles / h)	≤ 300

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.70 ... 1.25 U _N
Pick-up voltage	≤ 0.70 U _N
Release voltage	≥ 0.1 U _N
Pick-up time	15 ... 45 ms
Release time	20 ... 50 ms
Power consumption DC	2.6 W

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage open contact	4 kV / 1 min
Pollution degree	3
Overvoltage category	III
Clearance of open contact	3.6 mm

Wiring

Conductor cross section control / main circuit	2.5 mm ² / 6 mm ²
Stripping Length control / main circuit	7 mm / 9 mm
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Screwdrive control / main circuit	PZ1 / PZ1

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Spacer	Integrated
Operation temperature	-40 ... 70 °C
Relative humidity, no condensation	95 %
Ingress Protection	IP 20
Weight	133 g
Operation Altitude	Max. 2 000 m
Mounting	35 mm rail
Housing material	PA 6
Dimensions	see fig. 3

Product references

Description	Type	24	36	72	110
2 NC	RIC20-020-R4A110V/DC...V	✓	✓	✓	✓
1 NO + 1 NC	RIC20-110-R4A110V/DC...V	✓	✓	✓	✓
2 NO	RIC20-200-R4A110V/DC...V	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

Accessories

Sealing cover	RIC-SEAL20
End covers	RIC-EK-11 (BAG 25 PCS), RIC-EK-23 (BAG 10 PCS)
Busbar	RIC-NS-1-1-R, RIC-PS-1-2-R



fig. 1. Wiring diagram

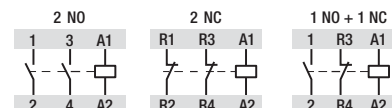


fig. 2. DC load limit curve

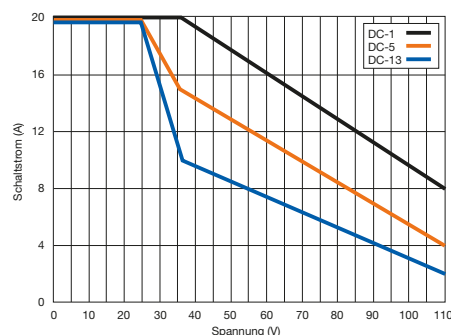
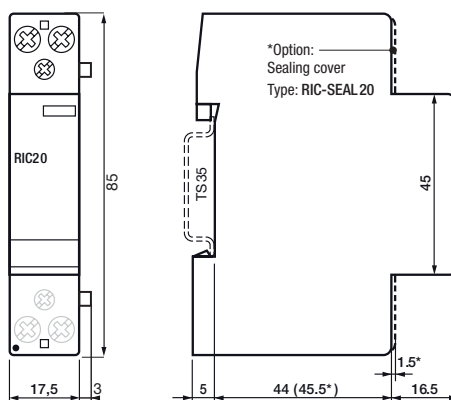


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

1.7 Installation Contactors

RIC20-xxx-SR

2 pole | 20 A | 7 kW | DC-5 | 4 A 110 V DC | TVS Suppressor



Main circuit

Available contact materials	⚡ AgNi
Rated voltage	400 V AC
Rated current AC-1	20 A
Recommended minimum contact load	50 mA, 17 V
Inrush current	50 A, 100 ms / 180 A, 300 μs
Rated load AC-1	7 kW
Rated load AC-3	1.3 kW (NO) / 0.75 kW (NC)
Rated load DC-1	see fig. 2
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 150 000
Electrical endurance at rated load AC-3 (cycles)	≥ 200 000
Electrical endurance at rated load DC-1 (cycles)	≥ 200 000
Electrical endurance at rated load DC-5 (cycles)	≥ 300 000
Switching frequency at rated load AC-1 (cycles / h)	≤ 600
Switching frequency at rated load AC-3 (cycles / h)	≤ 600
Switching frequency at rated load DC-1 (cycles / h)	≤ 300
Switching frequency at rated load DC-5 (cycles / h)	≤ 300

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.70 ... 1.25 U _N
Pick-up voltage	≤ 0.70 U _N
Release voltage	≥ 0.1 U _N
Pick-up time	15 ... 45 ms
Release time	20 ... 50 ms
Power consumption DC	2.6 W
TVS Diode type	Bidirectional surge TVS
TVS Diode failure mode	defined short cut

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage open contact	4 kV / 1 min
Pollution degree	3
Overvoltage category	III
Clearance of open contact	3.6 mm

Wiring

Conductor cross section control / main circuit	2.5 mm ² / 6 mm ² , use copper conductors only
Stripping Length control / main circuit	7 mm / 9 mm
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Screwdrive control / main circuit	PZ1 / PZ1

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Spacer	Integrated
Operation temperature	-40 ... 70 °C
Relative humidity, no condensation	95 %
Ingress Protection	IP 20
Weight	135 g
Operation Altitude	Max. 2 000 m
Mounting	DIN rail
Housing material	PA 66
Dimensions	see fig. 3

Product references

Description	Type	24	36	72	110
2 NC	RIC20-020-SR/DC...V	✓	✓	✓	✓
1 NO + 1 NC	RIC20-110-SR/DC...V	✓	✓	✓	✓
2 NO	RIC20-200-SR/DC...V	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

Accessories

Sealing cover	RIC-SEAL20
End covers	RIC-EK-11 (BAG 25 PCS), RIC-EK-23 (BAG 10 PCS)
Busbar	RIC-NS-1-1-R, RIC-PS-1-2-R



fig. 1. Wiring diagram

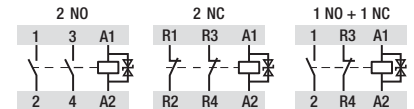


fig. 2. DC load limit curve

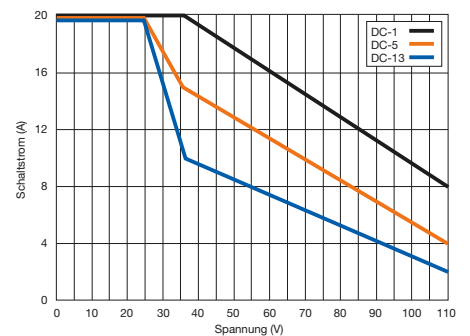
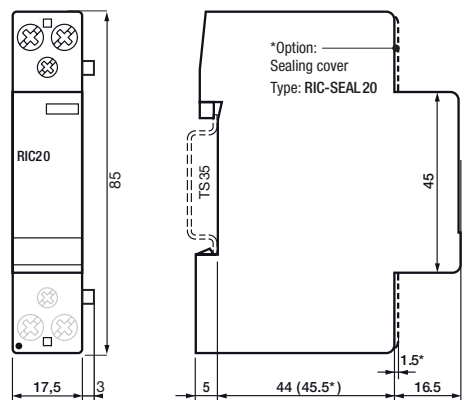


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

RIC25-xxx-R

4 pole | 25 A | 5.4 kW

Main circuit

Available contact materials	AgNi
Rated voltage	400 V AC
Rated current AC-1	25 A
Recommended minimum contact load	50 mA, 17 V
Inrush current	60 A, 100 ms / 280 A, 300 μs
Rated load AC-1	5.4 kW
Rated load AC-3	1.3 kW
Rated load DC-1	see fig. 2
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 200 000
Electrical endurance at rated load AC-3 (cycles)	≥ 500 000
Electrical endurance at rated load DC-1 (cycles)	≥ 100 000
Electrical endurance at rated load DC-5 (cycles)	≥ 100 000
Switching frequency at rated load AC-1 (cycles / h)	≤ 600
Switching frequency at rated load AC-3 (cycles / h)	≤ 600
Switching frequency at rated load DC-1 (cycles / h)	≤ 300
Switching frequency at rated load DC-3 (cycles / h)	≤ 300
Switching frequency at rated load DC-5 (cycles / h)	≤ 300

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.70 ... 1.25 U _N
Pick-up voltage	≤ 0.70 U _N
Release voltage	≥ 0.1 U _N
Pick-up time	15 ... 45 ms
Release time	20 ... 70 ms
Power consumption DC	4.6 W

Insulation

Rated insulation voltage	440 V
Rated impulse withstand voltage open contact	4 kV / 1 min
Pollution degree	3
Overvoltage category	III
Clearance of open contact	3.6 mm

Wiring

Conductor cross section control / main circuit	2.5 mm ² / 6 mm ²
Stripping Length control / main circuit	7 mm / 9 mm
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Screwdrive control / main circuit	PZ1 / PZ1

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Relative humidity, no condensation	95 %
Ingress Protection	IP 20
Weight	250 g
Operation Altitude	Max. 2 000 m
Mounting	DIN rail
Housing material	PA 6
Dimensions	see fig. 3

Product references

Description	Type	24	36	72	110
2 CO	RIC25-002-R/DC...V	✓	✓	✓	✓
4 NC	RIC25-040-R/DC...V	✓	✓	✓	✓
2 NO + 2 NC	RIC25-220-R/DC...V	✓	✓	✓	✓
4 NO	RIC25-400-R/DC...V	✓	✓	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

Accessories

Sealing cover	RIC-SEAL25
Spacer	RIC-DIST
Busbar	RIC-NS-2-1, RIC-PS-2-3, RIC-PS-2-4
End covers	RIC-EK-11 (BAG 25 PCS), RIC-EK-23 (BAG 10 PCS), RIC-EK-40 (BAG 10 PCS)
Auxiliary contact	RIC-AUX02, RIC-AUX11, RIC-AUX20

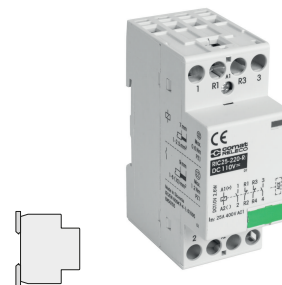


fig. 1. Wiring diagram

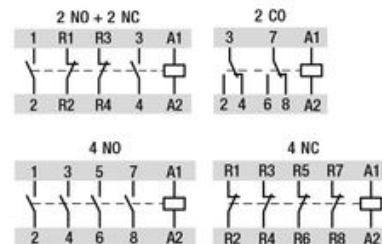


fig. 2. DC load limit curve

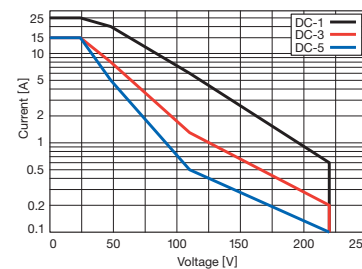
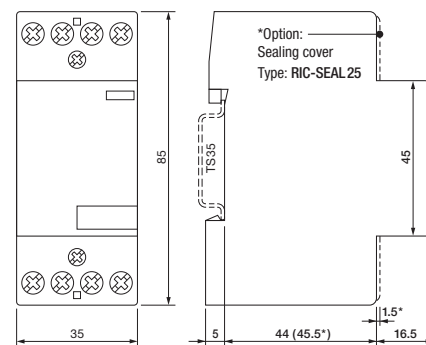


fig. 3. Dimensions (mm)





Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

1.8 Contactors Accessories

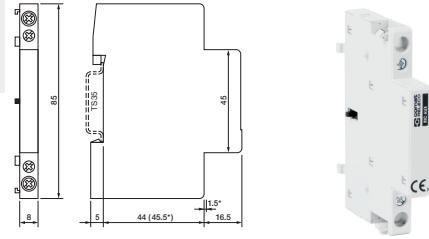
	Type	Pin	Page
Contactors Accessories			
Auxiliary module for RIC / RAC installation contactors 2 pole 6 A	RIC-AUX		56
Auxiliary spacer module for RIC / RAC / RBC installation contactors	RIC-DIST		56
End covers for RIC-NS / RIC-PS Busbar set with left and right	RIC-EK		56
Neutral busbar for RIC / RAC 10 mm ² 690V 63A 1m	RIC-NS		56
Phase busbar for RIC / RAC 10 mm ² 690V 63A 1m	RIC-PS		57
Auxiliary sealing cover for RIC20 / RAC20	RIC-SEAL		57

RIC-AUX

Auxiliary module for RIC / RAC installation contactors | 2 pole | 6 A

Housing and environmental conditions

Storage temperature (no ice)	-30 ... 80 °C
Operation temperature	-25 ... 55 °C
Relative humidity, no condensation	95 %
Ingress Protection	IP 20
Weight	30 g
Operation Altitude	Max. 2 000 m
Housing material	PA 6
Dimensions	see fig. 2
Suitable for installation contactor type	RIC25, RIC32 (4 pole), RIC40, RIC63, RAC25, RAC40, RAC63



Product references

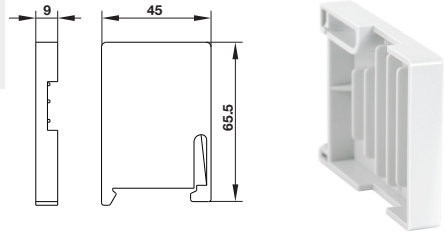
Description	Type
2 NC	RIC-AUX02
1 NO + 1 NC	RIC-AUX11
2 NO	RIC-AUX20

RIC-DIST

Auxiliary spacer module for RIC / RAC / RBC installation contactors

General data

Storage temperature (no ice)	-30 ... 80 °C
Dimensions	see fig. 1
Weight	13 g
Housing material	PA 6



Product references

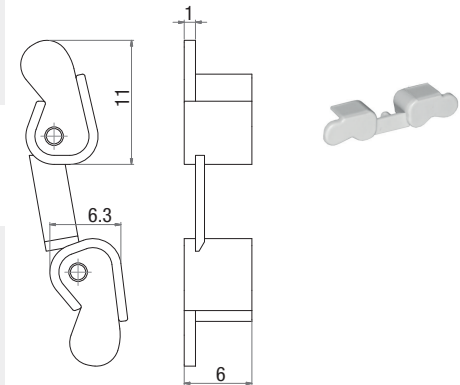
Description	Type
Auxiliary spacer module (9 mm)	RIC-DIST

RIC-EK

End covers for RIC-NS / RIC-PS Busbar | set with left and right

General data

Dimensions	12 x 6 x 6 mm
Weight	0.17 g
Housing material	PC/ABS



Product references

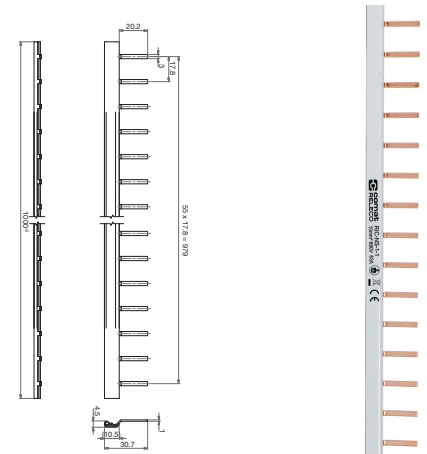
Description	Type
End cover for 1 pole busbar	RIC-EK-11
End cover for 2/3 pole busbar	RIC-EK-23
End cover for 4 pole busbar	RIC-EK-40

RIC-NS

Neutral busbar for RIC / RAC | 10 mm² | 690V | 63A | 1m

General data

Conductor cross section control / main circuit	10 mm ²
Dimensions	see fig. 1
Weight	159 g
Ingress Protection	IP 20
Housing material	PC/ABS



Product references

Description	Type
Neutral busbar for RIC / RAC	RIC-NS-1-1
Neutral busbar for RIC / RAC	RIC-NS-1-1-R
Neutral busbar for RIC / RAC	RIC-NS-2-1

RIC-PS

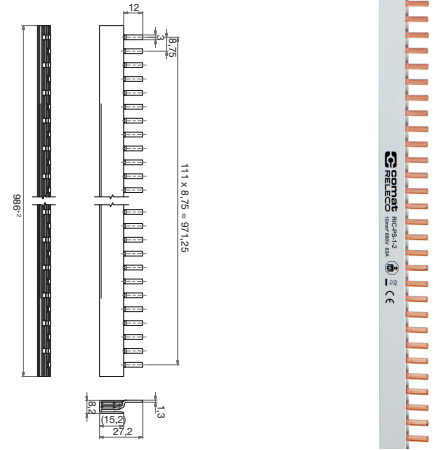
Phase busbar for RIC / RAC | 10 mm² | 690V | 63A | 1m

General data

Conductor cross section control / main circuit 10 mm²
 Dimensions see fig. 1
 Weight 480 g
 Ingress Protection IP 20
 Housing material PC/ABS

Product references

Description	Type
Phase busbar for RIC / RAC	RIC-PS-1-2
Phase busbar for RIC / RAC	RIC-PS-1-2-R
Phase busbar for RIC / RAC	RIC-PS-2-3
Phase busbar for RIC / RAC	RIC-PS-2-4



RIC-SEAL

Auxiliary sealing cover for RIC20 / RAC20

General data

Storage temperature (no ice) -30 ... 80 °C
 Dimensions 21 x 16 x 1 mm (20), 21 x 35 x 1 mm (25), 18 x 53 x 16 mm (40/63)
 Weight 1 g (20), 2 g (25), 3 g (40/63)
 Housing material PA



Product references

Description	Type
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL20
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL25
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL40/63

2 Time Relays

Chapter	Page
2.1 Multifunction Time Relays	61
2.2 Time Modules	71

Delay functions

E On delay

 $S \Rightarrow R$ on with delay
 $S_{OFF} \Rightarrow R$ off

A Off delay

 $S \Rightarrow R$ on
 $S_{OFF} \Rightarrow R$ off with delay

F On and off delay

 $S \Rightarrow R$ on with delay (t_1)
 $S_{OFF} \Rightarrow R$ off with delay (t_2)

Shot timing modes

W One shot leading edge

 $S \Rightarrow R$ on for t
 $S_{OFF} \Rightarrow R$ off (pulse clipping)

N One shot trailing edge

 $S_{OFF} \Rightarrow R$ on for t
 S on for t $\Rightarrow R$ off

Q One shot leading and trailing edge

 $S \Rightarrow R$ on for t_1
 $S_{OFF} \Rightarrow R$ on for t_2
 S_{OFF} off for $t_1 \Rightarrow R$ off

Puls shaping

K Puls shaping

 S (pulse or continuous contact) $\Rightarrow R$ on for t
 S_{--} no influence on R and t

L Pulse shaping, retrigger (subsequ.time operation from 0)

 S (pulse or continuous contact) $\Rightarrow R$ on for t
 S on for t = tRESET

M Puls shaping

 $S_{OFF} \Rightarrow R$ on for t
 S_{--} no influence on R and t

Blinker functions

B Blinker, pulse start

 $S \Rightarrow R$ on/off periodically according to t
 $S_{OFF} \Rightarrow R$ off

B1 Blinker, pulse start, trailing pulse

 $S \Rightarrow R$ on/off periodically according to t
 S_{OFF} : last pulse = t

B2 Blinker, interval start

 $S \Rightarrow R$ after t on/off periodically according to t
 $S_{OFF} \Rightarrow R$ off

Delayed pulse

G On delay single shot

 S (pulse or continuous contact) $\Rightarrow R$ after t_1 on for t_2
 S_{--} no influence on R and t

H On delay single shot

 $S \Rightarrow R$ after t_1 on for t_2
 $S_{OFF} \Rightarrow R$ off

Repeat cycle timer

I Repeat cycle timer, pulse start

 $S \Rightarrow R$ on/off periodically according to t_1 and t_2
 $S_{OFF} \Rightarrow R$ off

P Repeat cycle timer, interval start **C55, CT1: $t_2 t_1$**

 $S \Rightarrow R$ after t_1 (t_2) on/off periodically according to t_2 and t_1
 $S_{OFF} \Rightarrow R$ off

Special functions

Y Star-delta timer

 $S \Rightarrow \Delta$ on for t
 $\Delta_{OFF} \Rightarrow \Delta$ on with delay for t- Δ
 $S_{OFF} \Rightarrow \Delta$ off

X1 Restart delay

 $S \Rightarrow R$ on
 $S_{OFF} \Rightarrow R$ off and starts t
 $S \Rightarrow R$ restart only after t

Special functions

S Step-on / Step-off switch

 $S \Rightarrow R$ on/off

LS Step-switching (staircase lighting timer), with time lapse

 $S \Rightarrow R$ on and starts t
 S on for t $\Rightarrow R$ off

Stop/Reset

tSTOP SSTOP interrupts t (t-addition) **T** t is stopped $\Rightarrow R$ on/off

tRESET SRESET reset t t restarts immediately **T** Test

S = Triggering
R = Output circuit
 \Rightarrow = switches...

Pulse sequence monitoring

U
 S_1/S_2
P (tp)
 t_A t_V R

V
 S_1/S_2
P (tp)
 t_A t_V R




S_1/S_2 = Monitoring start
P = Pulse sequence
tp = Pulse separation

\leq : Pulse separation is smaller than the time tp
 $>$: Pulse separation is larger than the time tp

Start with S1 = without start-up short-out tA
Start with S2 = start-up short-out tA

tV = settable alarm delay
delay (tA = tV)

2.1 Multifunction Time Relays

	Type	Pin	Page
CIM Series			
Multifunction 24 ... 240 V AC / DC 1 CO	CIM1R		62
Multifunction 24 ... 240 V AC / DC 1 TRIAC	CIM12R		63
Multifunction 24 ... 240 V AC / DC 1 MOSFET	CIM13R		64
Multifunction 24 ... 240 V AC / DC 1 CO	CIM2R		65
Multifunction 24 ... 240 V AC / DC 1 TRIAC	CIM22R		66
Multifunction 24 ... 240 V AC / DC 1 MOSFET	CIM23R		67
Multifunction 24 ... 240 V AC / DC 1 CO	CIM3R		68
Multifunction 24 ... 240 V AC / DC 1 TRIAC	CIM32R		69
Multifunction 24 ... 240 V AC / DC 1 MOSFET	CIM33R		70

2.1 Multifunction Time Relays

CIM1R

Multifunction | 24 ... 240 V AC / DC | 1 CO



Time data

Timing functions	fig. 1 1: E 2: A, K, N, B1, S, LS 3: B, W
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	16 A
Minimum load	10 mA, 10 V
Inrush current	30 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	$\geq 30\,000\,000$
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Rated test voltage open contact	1 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 4
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM1R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

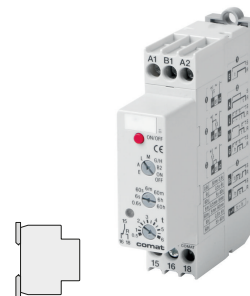


fig. 1. Wiring diagram

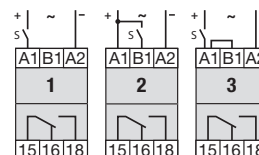


fig. 2. AC voltage endurance

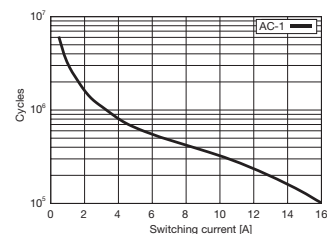


fig. 3. DC load limit curve

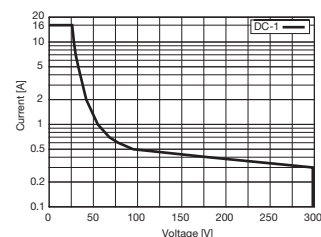
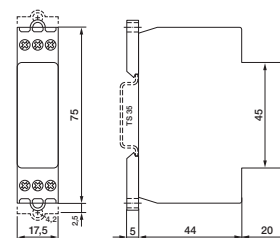


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM12R

Multifunction | 24 ... 240 V AC / DC | 1 TRIAC

Time data

Timing functions	fig. 1 1: E 2: A, K, N, B1, S, LS 3: B, W
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ TRIAC
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	2 A
Minimum load	50 mA, 12 V
Inrush current	100 A, 10 ms
Rated limit load	78 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load AC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM12R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

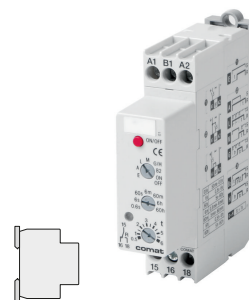


fig. 1. Wiring diagram

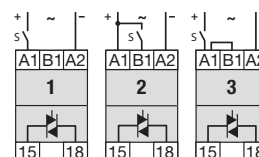
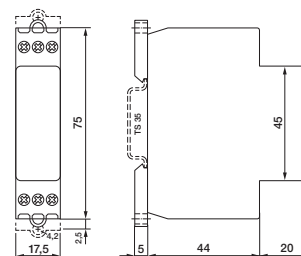


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM13R

Multifunction | 24 ... 240 V AC / DC | 1 MOSFET

Time data

Timing functions	fig. 1 1: E 2: A, K, N, B1, S, LS 3: B, W
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ MOSFET
Rated voltage	24 V DC
Rated current	5 A
Minimum load	1 mA, 1 V
Inrush current	40 A, 10 us
Typ. leakage current	10 µA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load DC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Ambient temperature operation derated power	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM13R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

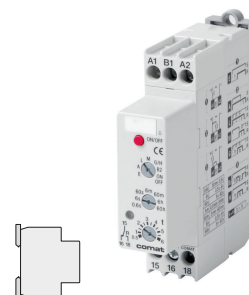


fig. 1. Wiring diagram

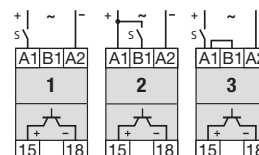
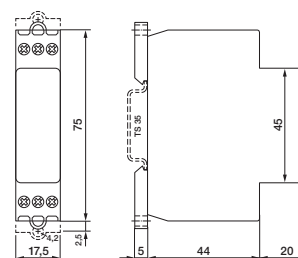


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM2R

Multifunction | 24 ... 240 V AC / DC | 1 CO

Time data

Timing functions	fig. 1 1: E 2: A, L, M, G 3: B2, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	16 A
Minimum load	10 mA, 10 V
Inrush current	30 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	$\geq 30\,000\,000$
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Rated test voltage open contact	1 kV rms / 1 min
Pollution degree	2
Overtoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 4
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM2R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

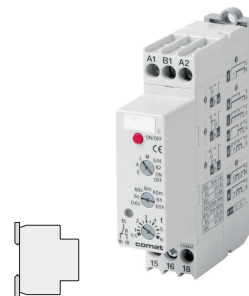


fig. 1. Wiring diagram

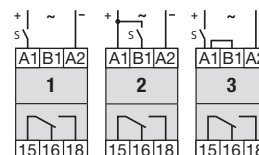


fig. 2. AC voltage endurance

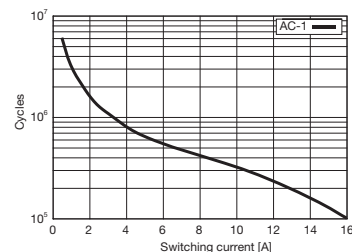


fig. 3. DC load limit curve

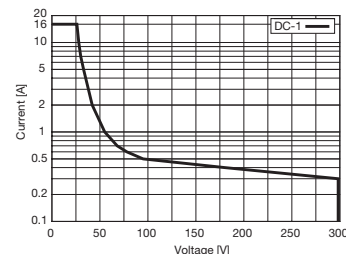
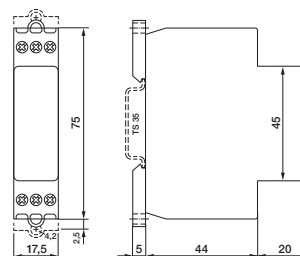


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM22R

Multifunction | 24 ... 240 V AC / DC | 1 TRIAC

Time data

Timing functions	fig. 1 1: E 2: A, L, M, G 3: B2, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ TRIAC
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	2 A
Minimum load	50 mA, 12 V
Inrush current	100 A, 10 ms
Rated limit load	78 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Electrical endurance at rated load AC-1 (cycles)	∞
Electrical endurance at rated load DC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM22R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

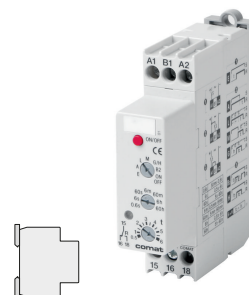


fig. 1. Wiring diagram

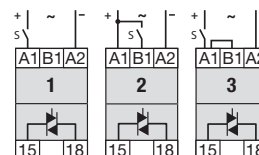
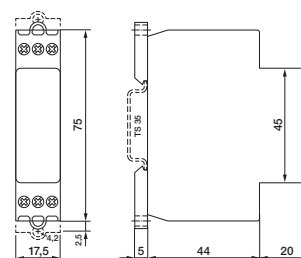


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM23R

Multifunction | 24 ... 240 V AC / DC | 1 MOSFET

Time data

Timing functions	fig. 1 1: E 2: A, L, M, G 3: B2, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ MOSFET
Rated voltage	24 V DC
Rated current	5 A
Minimum load	1 mA, 1 V
Inrush current	40 A, 10 us
Typ. leakage current	10 µA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load DC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM23R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

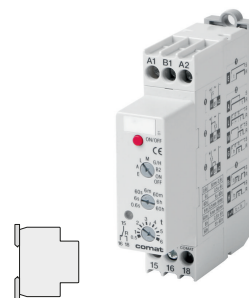


fig. 1. Wiring diagram

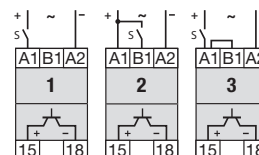
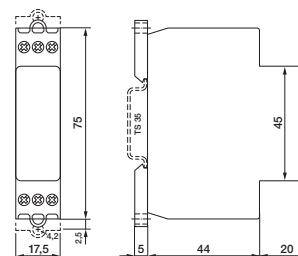


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM3R

Multifunction | 24 ... 240 V AC / DC | 1 CO



Time data

Timing functions	fig. 1 2: F, Q, G 3: I, P, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	16 A
Minimum load	10 mA, 10 V
Inrush current	30 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	$\geq 30\,000\,000$
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 4
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM3R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

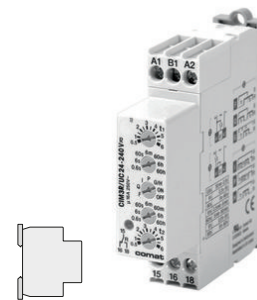


fig. 1. Wiring diagram

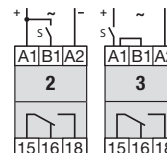


fig. 2. AC voltage endurance

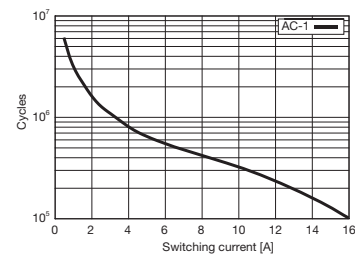


fig. 3. DC load limit curve

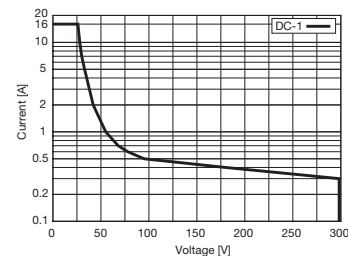
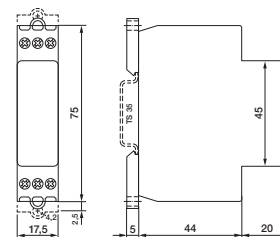


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

CIM32R

Multifunction | 24 ... 240 V AC / DC | 1 TRIAC

Time data

Timing functions	fig. 1 2: F, Q, G 3: I, P, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ TRIAC
Rated voltage	250 V AC
Switching at zero crossing	yes ($t_d > 0.6$ s)
Rated current	2 A
Minimum load	50 mA, 12 V
Inrush current	100 A, 10 ms
Rated limit load	78 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load AC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM32R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

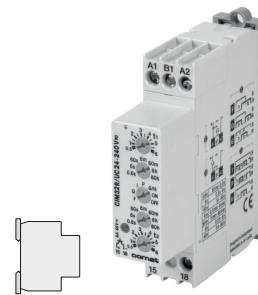


fig. 1. Wiring diagram

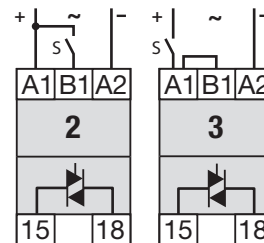
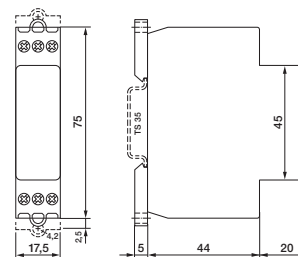


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.1 Multifunction Time Relays

CIM33R

Multifunction | 24 ... 240 V AC / DC | 1 MOSFET

Time data

Timing functions	fig. 1 2: F, Q, G 3: I, P, H
Timing range	50 ms ... 60 h
Timing scale	0.6 s / 6 s / 60 s / 6 min / 60 min / 6 h / 60 h

Main circuit

Number of outputs	1 NO
Output type	⚡ MOSFET
Rated voltage	24 V DC
Rated current	5 A
Minimum load	1 mA, 1 V
Inrush current	40 A, 10 us
Typ. leakage current	10 µA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load DC-1 (cycles)	∞

Control circuit

Nominal voltage	24 ... 240 V AC / DC
Operating voltage range	16.8 ... 250 V AC / DC
Power consumption AC / DC	1.2 VA / 430 mW
Current consumption on supply A1-A2 AC / DC	< 23 mA / < 23 mA
Current consumption on input control B1 AC / DC	< 22 mA / < 22 mA
Threshold voltage on input control B1 AC / DC	13 V / 15 V
Frequency range	0; 16 ... 63 Hz

Insulation

Rated test voltage control / main circuit	2.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 2
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM33R/UC...V	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List control circuit voltage to complete product references.

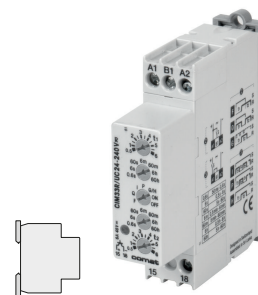


fig. 1. Wiring diagram

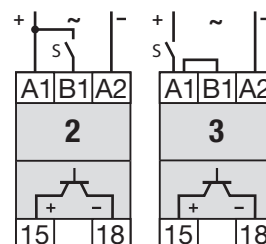
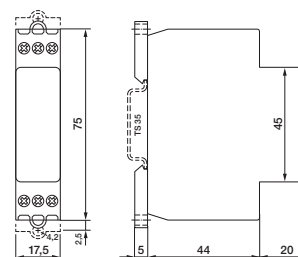


fig. 2. Dimensions (mm)



Technical approvals, conformities

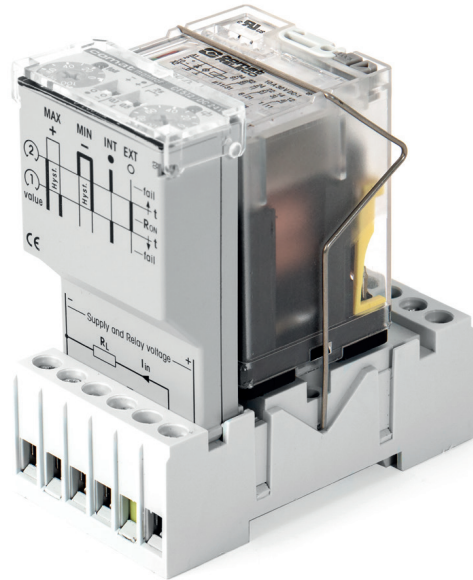
Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.2 Time Modules

	Type	Pin	Page
CT Series			
Multifunction 24 ... 48 V AC / DC 110 V DC	CT32R		73
Multifunction 24 ... 48 V AC / DC 115 V AC / DC 230 V AC / DC	CT33R		74
Multifunction 24 ... 48 V AC / DC 110 ... 240 V AC / DC	CT36R		75



The time delay relays and monitoring relays consist of plug-in CT electronic modules and 11 pole output relays. Both system components can be combined in a variety of combinations. This allows adapting the system for the specific application.

Subsequent modifications, for example a change from mechanical contacts to solid-state outputs, are possible at any time just by replacing the relay.

This system provides the user a complete universal system with worldwide unmatched flexibility.

The system sockets S3-M0R or S3-M1R serve as a basis for the secure reception of electronic modules. The sockets have a 4 pole module slot in which the CT modules lock firmly and vibration proof also without the output relay. Contact is made with reliable twin knife contacts.

With the A2 connector bridge "C-A2", the neutral conductor (N/-) can be connected from socket to socket. It reduces wiring work considerably.

Robust terminals for wires up to 4mm² and spacious labelling are other advantages of this practical ComatReleco modular system.

Clear markings close to the terminal connections on the sockets make it easy to identify the connections for wiring and servicing.

The CT modules are proof of the practical oriented experiences of ComatReleco in the field of industrial electronics. All control and display elements are arranged easy accessible at all times on the front side of the modules. The functions and settings are self-explanatory schematically illustrated on the front and allow to review the set values also during operation.

A transparent cover over the module setting components provides protection from unintentional settings and additionally links the module to the output relay.

Triggering is performed with the operating voltage. (L1 or +). No potential-free contacts are therefore required. The triggering complies to machine standards. Parallel connection to B1 is admissible.

The standard contacts have proven its reliability for high switching current applications over many years. The contact material AgCuNi permits a wide switching range and due to the large dimensioning they are designed for a high number of switching cycles. The high breaking capacity of up to 10 A / 250 V and a low load switching capability of 10 V / 50 mA makes the contact suitable for the use in main circuits as well as for low voltage applications.

The twin contacts are switching the load circuit with 2 independent contact tongues. The switching safety for low currents is therefore 100 times higher compared to a single contact relay. Despite the high switching capacity of up to 6 A / 250 V, these contacts are very suitable to switch low currents and voltages up to 1 mA / 5 V.

2.2 Time Modules

CT32R

Multifunction | 24 ... 48 V AC / DC | 110 V DC

Time data

Timing functions	fig. 1 2: E, A, K, N, B1 3: E, W, B
Timing range	0.15 s ... 1.5 s / 0.6 s ... 6 s / 1.5 s ... 15 s / 6 s ... 60 s / 0.15 min ... 1.5 min / 0.6 min ... 6 min / 1.5 min ... 15 min / 6 min ... 60 min
Timing scale	0.15 s ... 60 min

Control circuit

Nominal voltage	24 ... 48 V AC/DC	110 V DC
Operating voltage range	19 ... 60 V AC/DC	77 ... 138 V DC
Power consumption AC / DC	0.3 VA / 0.3 W	- / 0.3 W
Current consumption on supply A1-A2 AC / DC	- / 11 mA	- / 3 mA
Threshold voltage on input control B1 AC / DC	9 V / 9 V	- / 60 V
Frequency range	0; 40 ... 60 Hz	DC

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	24-48
AC / DC supply	CT32R/UC...V	✓
Other voltages on request. Please contact support@comatreleco.com.		
«...» List control voltage to complete product references.		

Accessories

Socket	S3-MOR
S5-MR	S5-MR



fig. 1. Wiring diagram

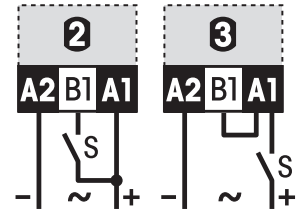
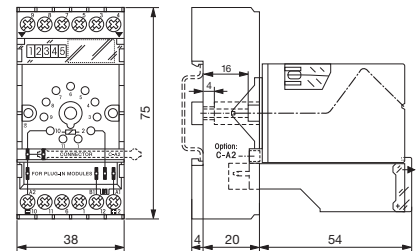


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.2 Time Modules

CT33R

Multifunction | 24 ... 48 V AC / DC | 115 V AC / DC | 230 V AC / DC

Time data

Timing functions
Timing range

fig. 1 2: E, A, K, N, B1, F, G, Q, L 3: E, W, B, H
30 ms ... 150 ms / 120 ms ... 600 ms / 0.3 s ... 1.5 s / 1.2 s ...
6 s / 3 s ... 15 s / 12 s ... 60 s / 0.3 min ... 1.5 min / 1.2 min ...
6 min / 3 min ... 15 min / 12 min ... 60 min / 0.3 ... 1.5 h / 1.2
min ... 6 h / 3 h ... 15 h / 12 ... 60 h
30 ms ... 60 h

Timing scale

Control circuit

Nominal voltage	24 ... 48 V AC/DC	115 V AC/DC	230 V AC/DC
Operating voltage range	19 ... 60 V AC/DC	90 ... 150 V AC/DC	180 ... 265 V AC/DC
Power consumption AC / DC	0.3 VA / 0.3 W	0.5 VA / 0.5 W	1 VA / 1 W
Current consumption on supply A1-A2 AC / DC	11 mA / 11 mA	7 mA / 7 mA	4 mA / 4 mA
Threshold voltage on input control B1 AC / DC	9 V / 9 V	60 V / 60 V	100 V / 100 V
Frequency range	0; 40 ... 60 Hz	0; 40 ... 60 Hz	0; 40 ... 60 Hz

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	24-48	115	230
AC / DC supply	CT33R/UC...V	✓	✓	✓
Other voltages on request. Please contact support@comatreleco.com.				
«...» List control voltage to complete product references.				

Accessories

Socket	S3-M0R, FS-C/5 (BEUTEL/UNIT 5 STK/PCS)
S5-MR	S5-MR



fig. 1. Wiring diagram

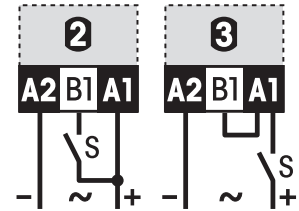
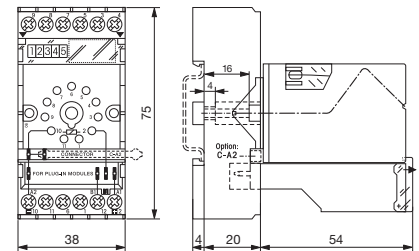


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

2.2 Time Modules

CT36R

Multifunction | 24 ... 48 V AC / DC | 110 ... 240 V AC / DC

Time data

Timing functions	fig.1 I, P	
Timing range	50 ms ... 600 ms / 0.5 ms ... 6 s / 5 s ... 60 s / 0.5 min ... 6 min / 5 min ... 60 min / 0.5 ... 6 h / 5 h ... 60 h	
Timing scale	50 ms ... 60 h	

Control circuit

Nominal voltage	24 ... 48 V AC/DC	110 ... 240 V AC/DC
Operating voltage range	19 ... 60 V AC/DC	82 ... 265 V AC/DC
Power consumption AC / DC	0.3 VA / 0.3 W	1 VA / 1 W
Current consumption on supply A1-A2 AC / DC	12 mA / 12 mA	8 mA / 8 mA
Frequency range	0; 40 ... 60 Hz	0; 40 ... 60 Hz

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	24-48	110-240
AC / DC supply	CT36R/UC...V	✓	✓
Other voltages on request. Please contact support@comatreleco.com.			
«...» List control voltage to complete product references.			

Accessories

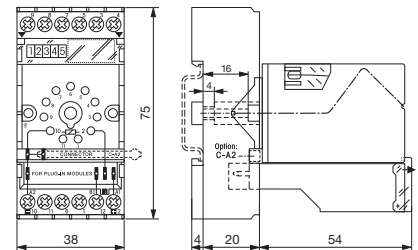
Socket	S3-M0R, FS-C/5 (BEUTEL/UNIT 5 STK/PCS)
S5-MR	S5-MR



fig. 1. Wiring diagram



fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

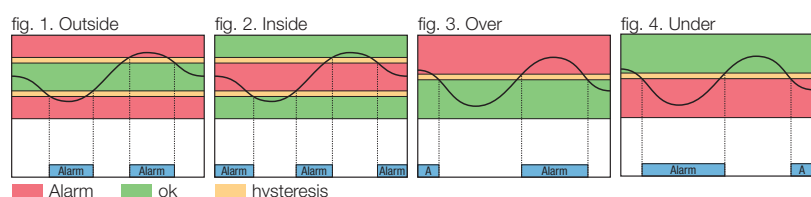
Railway EN 45545-2; EN 50155

Approvals

3 Monitoring & Measuring Devices

Chapter	Page
3.1 Multifunction Monitoring	79
3.2 Voltage Monitoring	83
3.3 Voltage Monitoring - pluggable	87
3.4 Current Monitoring	89
3.5 Monitoring Modules	93

	Description	MRM11	MRM11R	MRM32	MRM32R	MRU11	MRU32	IV53	SSU34	SSU31	SSU33L	MRI11	MRI32	TSR19	ESU-D2R	CT516R	CT524R		
Monitoring	One phase voltage monitoring	●	●			●		●											
	Three phase voltage monitoring			●	●		●		●		●								
	Four channel voltage measuring																		
	DC Voltage monitoring	●	●	●	●	●	●											●	
	One phase current monitoring	●	●										●						
	Three phase current monitoring			●	●									●					
	Four channel current measuring																		
	DC current monitoring	●	●	●	●								●	●				●	
	Phase failure			●	●		●		●	●	●								
	Phase sequence monitoring			●	●		●		●	●	●								
	Phase angle monitoring / measuring*			●	●		●		●		●								
	Differential voltage monitoring / measuring*								●		●								
	Neutral failure monitoring								●		●								
	Frequency monitoring / measuring*	●	●	●	●	●	●		●		●	●	●	●					
	Apparent power monitoring / measuring*	●	●	●	●														
	Active power monitoring / measuring*	●	●	●	●														
	Power factor monitoring / measuring*	●	●	●	●														
	Active energy measuring																		
	THDI / THDU measuring																		
	PTC monitoring														●				
Earth failure monitoring															●				
Functions	Threshold „over“ exceeded fig. 3.	●	●	●	●	●	●	●	●		●	●	●	●		●	●		
	Theshold „under“ exceeded fig. 4.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	„Inside“ band entered fig. 2.	●	●	●	●	●	●					●	●				●	●	
	„Outside“ band entered fig. 1.	●	●	●	●	●	●						●	●				●	●
	Alarm on-delay	●	●	●	●	●	●	●	●		●	●	●			●	●	●	
	Alarm off-delay	●	●	●	●	●	●	●					●	●					
	Latching alarm output function	●	●	●	●	●	●						●	●	●				
	Threshold selectable	●	●	●	●	●	●	●	●				●	●	●	●	●	●	
	Threshold fixed									●	●				●				
Power supply	Supply isolated from measuring circuit	●	●	●	●	●	●					●	●	●	●				
	Supply from measure circuit							●	●	●	●						●	●	
Mounting	DIN rail mounting	●	●	●	●	●	●	●				●	●		●				
	Housing according IEC/EN 43880 (electrical distribution mounting)	●	●	●	●	●	●	●				●	●						
	Plug-in (socket mounting)									●	●	●		●		●	●		



3.1 Multifunction Monitoring

	Type	Pin	Page
MRM Series			
1 phase 1 CO multifunction monitoring	MRM11R		80
3 phase 2 CO multifunction monitoring	MRM32R		81

3.1 Multifunction Monitoring

MRM11R

1 phase | 1 CO | multifunction monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	77 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	U, I, P, S, f, Cosφ
Min. setting step, resolution	0.1 V / 0.1 A / 1 W / 1 VA / 1 Hz / 0.05
Monitoring functions	Under, over, inside, outside
Number of voltage measurement inputs	1
Rated AC voltage L-N / L-L	230 V / -
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	+0.1 ... +690 V, -0.1 ... -690 V
Undervoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
Overvoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
AC voltage measurement range L-N / L-L	0.1 ... 480 V
Number of current measurement inputs	1
Rated measurement current	5 A
Measurement current range	0.1 ... 5 A
Undercurrent setting range	0.1 ... 6 A
Overcurrent setting range	0.1 ... 6 A
Rated base frequency	15 ... 150 Hz
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,250 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	107 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	12-48	110-240
Single phase monitoring	MRM11R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.

«...» List coil voltage to complete product references



fig. 1. Wiring diagram

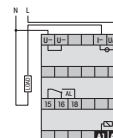


fig. 2. AC voltage endurance

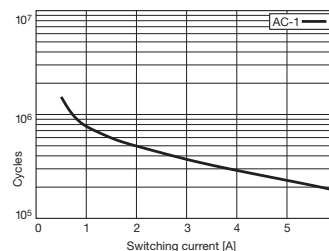


fig. 3. DC load limit curve

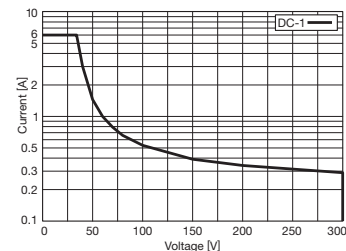
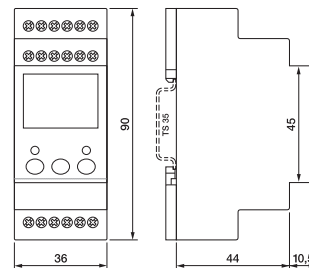


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947-1; EN 61000-6-2; EN 61000-6-3
 Railway EN 45545-2; EN 50155

Approvals

3.1 Multifunction Monitoring

MRM32R

3 phase | 2 CO | multifunction monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	77 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	U, I, P, S, f, Cosφ, ΔPhi, phase sequence
Min. setting step, resolution	0.1 V / 0.1 A / 1 W / 1 VA / 1 Hz / 0.05 / 1°
Monitoring functions	Under, over, inside, outside, phase sequence, phase failure
Number of voltage measurement inputs	3
Rated AC voltage L-N / L-L	230 V / 400 V
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	± 0.1 ... 690 V
Undervoltage setting range	± 0.1 ... 700 V
Overvoltage setting range	± 0.1 ... 700 V
AC voltage measurement range L-N / L-L	0.1 ... 480 V
Number of current measurement inputs	3
Rated measurement current	5 A
Measurement current range	0.1 ... 5 A
Undercurrent setting range	0.1 ... 6 A
Overcurrent setting range	0.1 ... 6 A
Rated base frequency	15 ... 150 Hz
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	2 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,250 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage main / main circuit	1.5 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	125 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	12-48	110-240
Single phase monitoring	MRM32R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.



fig. 1. Wiring diagram

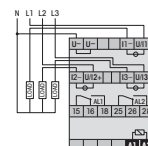


fig. 2. AC voltage endurance

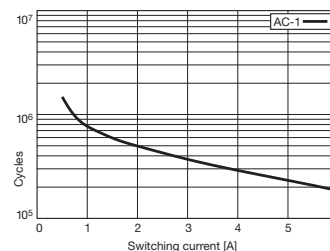


fig. 3. DC load limit curve

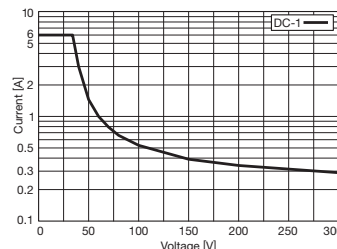
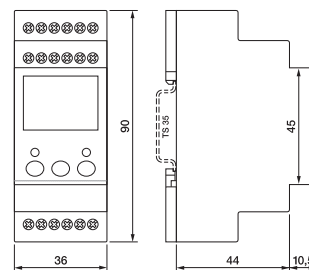


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155



3.2 Voltage Monitoring

	Type	Pin	Page
MRU Series			
1 phase 1 CO voltage monitoring	MRU11R		84
3 phase 2 CO voltage monitoring	MRU32R		85

3.2 Voltage Monitoring

MRU11R

1 phase | 1 CO | voltage monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	85 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	U, f
Min. setting step, resolution	0.1 V / 1 Hz
Monitoring functions	Under, over, inside, outside
Number of voltage measurement inputs	1
Rated AC voltage L-N / L-L	230 V / -
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	+0.1 ... +690 V, -0.1 ... -690 V
Undervoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
Overvoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,200 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 60 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	107 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	12-48	110-240
Single phase monitoring	MRU11R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.



fig. 1. Wiring diagram

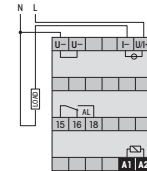


fig. 2. AC voltage endurance

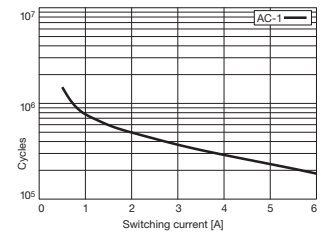


fig. 3. DC load limit curve

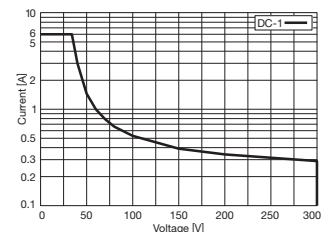
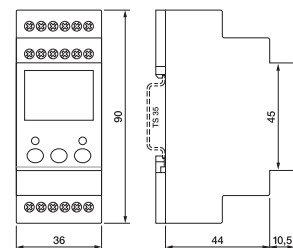


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155

Approvals

3.2 Voltage Monitoring

MRU32R

3 phase | 2 CO | voltage monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	85 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	U, f, ΔPhi, phase sequence
Min. setting step, resolution	0.1 V / 1 Hz / 1°
Monitoring functions	Under, over, inside, outside, phase sequence, phase failure
Number of voltage measurement inputs	3
Rated AC voltage L-N / L-L	230 V / 400 V
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	+0.1 ... +690 V, -0.1 ... -690 V
Undervoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
Overvoltage setting range	+0.1 ... +700 V, -0.1 ... -700 V
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	2 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,500 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage main / main circuit	1.5 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 60 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	125 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	12-48	110-240
Three phase monitoring	MRU32R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.



fig. 1. Wiring diagram

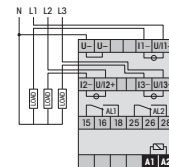


fig. 2. AC voltage endurance

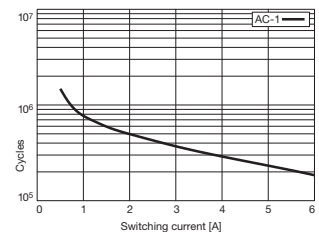


fig. 3. DC load limit curve

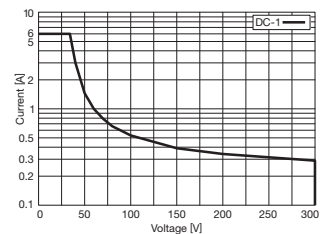
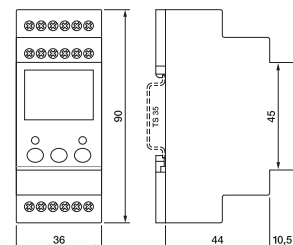


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155

Approvals

3.3 Voltage Monitoring - pluggable

	Type	Pin	Page
SSU Series			
3 phase + N 1 CO voltage monitoring	SSU33R		88

3.3 Voltage Monitoring - pluggable

SSU33R

3 phase + N | 1 CO | voltage monitoring

Power supply

Nominal voltage	230 V AC	400 V AC
Operating voltage range	160 ... 275 V	280 ... 470 V
Power consumption AC / DC	3 VA / -	3 VA / -
Frequency range	50 Hz	50 Hz

Measuring circuit

Measured parameters	U, ΔPhi, Δf	
Monitoring functions	Under, over, phase failure, phase sequence	
Number of voltage measurement inputs	4 (L1 / L2 / L3 / N)	3 (L1 / L2 / L3)
Rated AC voltage L-N / L-L	230 V / 400 V	- / 400 V
Undervoltage setting range	≤ 160 V	≤ 280 V
Overvoltage setting range	≥ 275 V	≥ 480 V
AC voltage measurement range L-N / L-L	160 ... 275 V / -	- / 280 ... 480 V
Voltage difference setting range L-N / L-L	20 ... 100 V / 35 ... 173 V	- / 35 ... 173 V
Rated base frequency	50 Hz	50 Hz
Frequency difference setting range L-N / L-L	3 ... 15 Hz	3 ... 15 Hz
Phase angle difference setting range L-N / L-L	3 ... 15°	3 ... 15°
Alarm delay	0.2 ... 5 s	0.2 ... 5 s

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 5 V
Inrush current	15 A, 20 ms
Rated load DC	fig. 3
Rated load AC-1	1,500 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage open contact	1 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-25 ... 60 °C
Dimensions	fig. 4
Weight	300 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	400
Three phase monitoring	SSU33R/AC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

Accessories

Socket	S3-MR
Retaining spring I steel	HF-24
Transparent front cover kit for CT3x	FS-23
Frontpanel mounting set	FZ-23



fig. 1. Wiring diagram

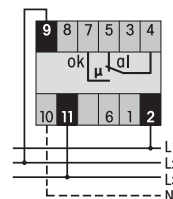


fig. 2. AC voltage endurance

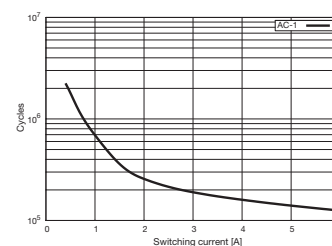


fig. 3. DC load limit curve

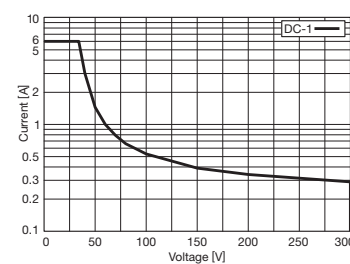
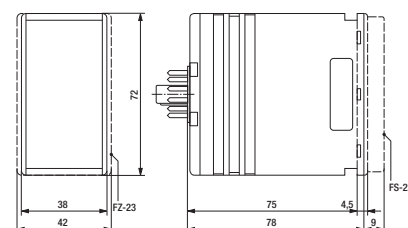


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

3.4 Current Monitoring

	Type	Pin	Page
MRI Series			
1 phase 1 CO current monitoring	MRI11R		90
3 phase 2 CO current monitoring	MRI32R		91

3.4 Current Monitoring

MRI11R

1 phase | 1 CO | current monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	85 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	I, f
Min. setting step, resolution	0.1 A / 1 Hz
Monitoring functions	Under, over, inside, outside
Number of voltage measurement inputs	1
Rated measurement current	5 A
Measurement current range	0.1 ... 5 A
Undercurrent setting range	0.1 ... 6 A
Overcurrent setting range	0.1 ... 6 A
Rated base frequency	15 ... 150 Hz
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	1 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,250 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 60 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	107 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	12-48	110-240
Single phase monitoring	MRI11R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

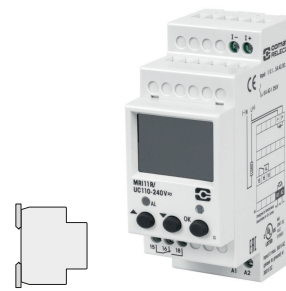


fig. 1. Wiring diagram

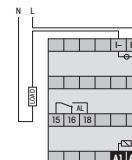


fig. 2. AC voltage endurance

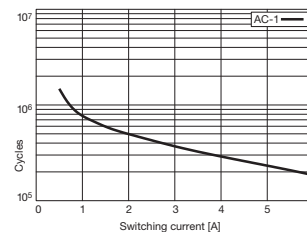


fig. 3. DC load limit curve

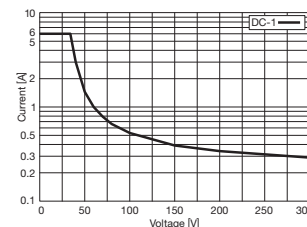
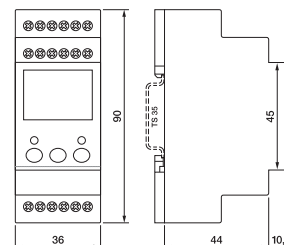


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155

Approvals

3.4 Current Monitoring

MRI32R

3 phase | 2 CO | current monitoring

Power supply

Nominal voltage	12 ... 48 V AC / DC	110 ... 240 V AC / DC
Operating voltage range	10 ... 60 V	85 ... 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Frequency range	16 ... 63 Hz	16 ... 63 Hz

Measuring circuit

Measured parameters	I, f
Min. setting step, resolution	0.1 A / 1 Hz
Monitoring functions	Under, over, inside, outside
Number of voltage measurement inputs	3
Rated measurement current	5 A
Measurement current range	0.1 ... 5 A
Undercurrent setting range	0.1 ... 6 A
Overcurrent setting range	0.1 ... 6 A
Rated base frequency	15 ... 150 Hz
Alarm delay	0.5 ... 999.9 s
Alarm reset delay	0.5 ... 999.9 s

Main circuit

Number of contacts	2 CO
Available contact materials	⚡ AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,250 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Insulation

Rated test voltage measuring / measuring circuit	1.5 kV rms / 1 min
Rated test voltage measuring circuit / power supply	2 kV rms / 1 min
Rated test voltage measuring circuit / main circuit	2 kV rms / 1 min
Rated test voltage main circuit / power supply	2 kV rms / 1 min
Rated test voltage main / main circuit	1.5 kV rms / 1 min
Rated test voltage open contact	1.5 kV rms / 1 min
Pollution degree	2
Overvoltage category	III

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 60 °C
Conductor cross section control / main circuit	2.5 mm ²
Nominal screw torque control / main circuit	0.6
Dimensions	fig. 4
Weight	125 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	12-48	110-240
Three phase monitoring	MRI32R/UC...V	✓	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.



fig. 1. Wiring diagram

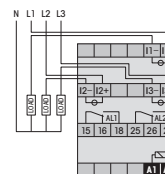


fig. 2. AC voltage endurance

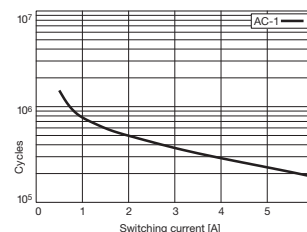


fig. 3. DC load limit curve

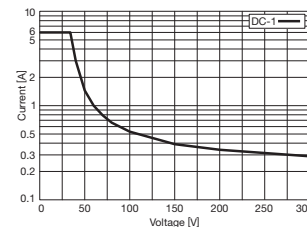
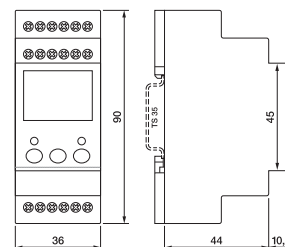


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155

Approvals

3.5 Monitoring Modules

	Type	Pin	Page
CT Series			
Current Monitoring	CT515R		94
Voltage Monitoring	CT524R		95

CT515R

Current Monitoring

Power supply

Nominal voltage	36 V DC
Operating voltage range	18 ... 45 V
Power consumption DC	≤ 0.5 W

Measuring circuit

Measured parameters	I
Monitoring functions	Under, over, inside, outside
Rated measurement current	2 A
Measurement current range	0 ... 3 A
Undercurrent setting range	0 ... 2 A
Overcurrent setting range	0 ... 2 A
Alarm delay	100 ms / 500 ms / 2 s
Alarm reset delay	100 ms

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	36
Current Monitoring	CT515R/DC...V	✓

Other voltages on request. Please contact support@comatreleco.com.
«...» List control circuit voltage to complete product references.

Accessories

Socket	S3-M0R, FS-C/5 (BEUTEL/UNIT 5 STK/PCS)
S5-MR	S5-MR



fig. 1. Wiring diagram

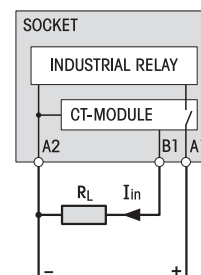
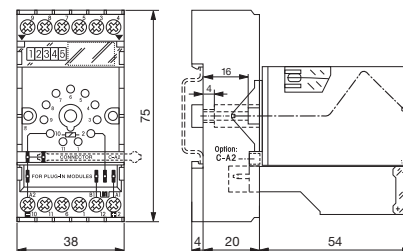


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway EN 45545-2; EN 50155

Approvals

CT524R

Voltage Monitoring

Power supply

Nominal voltage	24 V DC
Operating voltage range	18 ... 30 V
Power consumption AC / DC	≤ 0.5 W

Measuring circuit

Measured parameters	U
Monitoring functions	Under, over, inside, outside
DC voltage measurement range U+ / U-	0 ... 30 V
Undervoltage setting range	0 ... 30 V
Overvoltage setting range	0 ... 30 V
Alarm delay	100 ms / 500 ms / 2 s
Alarm reset delay	100 ms

General data

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Ingress Protection	IP 20
Housing material	PC

Product references

Description	Type	24
Voltage monitoring, railway version	CT524R/DC...V	✓
Other voltages on request. Please contact support@comatreleco.com.		
«...» List control circuit voltage to complete product references.		

Accessories

Socket	S3-M0R, FS-C/5 (BEUTEL/UNIT 5 STK/PCS)
S5-MR	S5-MR



fig. 1. Wiring diagram

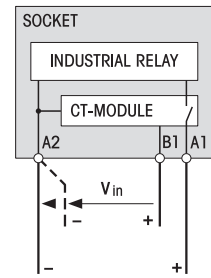
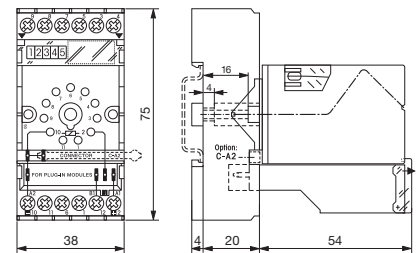


fig. 2. Dimensions (mm)



Technical approvals, conformities




Standards EN 60947-1; EN 61000-6-2; EN 61000-6-3
 Railway EN 45545-2; EN 50155

Approvals

4 Sockets

Chapter	Page
4.1 11-Pin-Sockets	99
4.2 14 Pin Sockets	103
4.3 8/14-Pin Sockets	105
4.4 5/8-Pin Sockets	109
4.5 Socket Accessories	115

4.1 11-Pin-Sockets

	Type	Pin	Page
11-Pin Series			
11-pin R3 Relay socket Time & Monitoring Module compatible screw terminal	S3-MR		100
11-pin R3 Relay socket Time & Monitoring Module compatible screw terminal	S3-M0R / S3-M1R		101
11-pin C5 Relay socket screw terminal	S5-MR		102

S3-MR

11-pin R3 Relay socket | Time & Monitoring Module compatible | screw terminal

General data

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	1 x 6 mm ² / AWG 10, 2 x 1.5 mm ² / AWG 16
- Multi wire (un-crimped)	1 x 4 mm ² / AWG 12, 2 x 1.5 mm ² / AWG 16
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	61 g
Housing material	PA

Included Accessories

4-pole potential bridge bar	C-A2 (BAG 5PCS)
-----------------------------	-----------------

Optional Accessories

Retaining spring I steel	HF-32 (BAG 10 PCS), HF-33 (BAG 10 PCS)
Coding ring	S3-BC (BAG 5 PCS)
Freewheeling diode module for S3-M, S3-M0, S5-M	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V
4-pole potential bridge bar	C-A2 (BAG 50PCS)



fig. 1. Wiring diagram

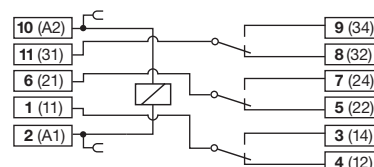
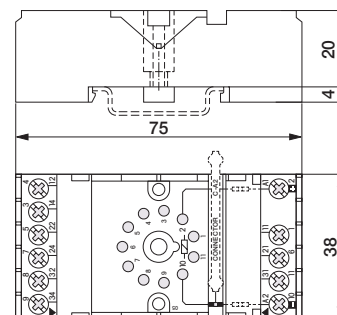


fig. 2. Dimensions (mm)

**Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals  

4.1 11-Pin-Sockets S3-M0R / S3-M1R

11-pin R3 Relay socket | Time & Monitoring Module compatible | screw terminal

General data

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	1 x 6 mm ² / AWG 10, 2 x 1.5 mm ² / AWG 16
- Multi wire (un-crimped)	1 x 4 mm ² / AWG 12, 2 x 1.5 mm ² / AWG 16
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	61 g
Housing material	PA

Included Accessories

4-pole potential bridge bar	C-A2 (BAG 5PCS)
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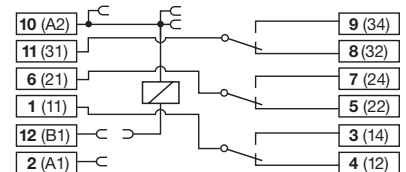
Optional Accessories

Retaining spring steel	HF-32 (BAG 10 PCS), HF-33 (BAG 10 PCS)
Coding ring	S3-BC (BAG 5 PCS)
Freewheeling diode module for S3-M, S3-M0, S5-M	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V
4-pole potential bridge bar	C-A2 (BAG 50PCS)

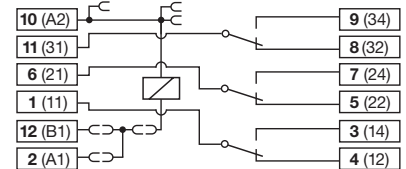


fig. 1. Wiring diagram

S3-M0R

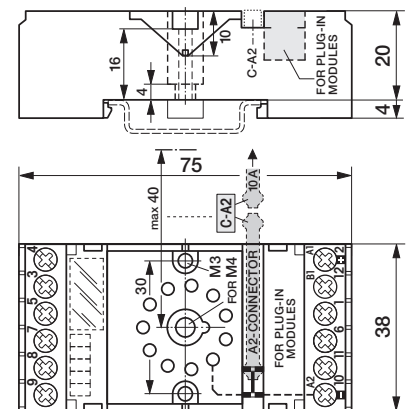


S3-M1R



Bridge Connector SC-3 included

fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

S5-MR**11-pin C5 Relay socket | screw terminal****General data**

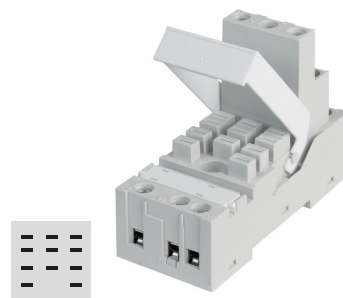
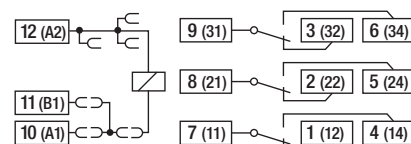
Rated load	16 A / 400 V
- All terminals / DIN rail	4 kV rms / 1 min
- Terminal / terminal	4 kV rms / 1 min
- Single wire	1 x 6 mm ² / AWG 10, 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	1 x 6 mm ² / AWG 10, 2 x 2.5 mm ² / AWG 16
Nominal screw torque	0.8 Nm
Screw Dimension	M3.5 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	92 g
Housing material	PA

Included Accessories

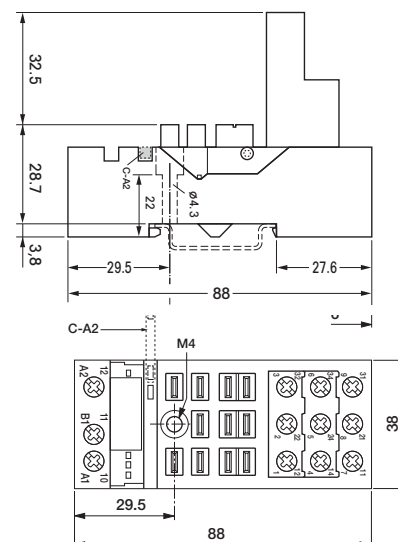
Retaining clip plastic	S5M-CP
4-pole potential bridge bar	C-A2 (BAG 5PCS)

Optional Accessories

Retaining spring steel	HF-32 (BAG 10 PCS)
A1-, B1-connector for S3-Mx, S5-M	SC-3 (BAG 10 PCS)
4-pole potential bridge bar	C-A2 (BAG 50PCS)

**fig. 1. Wiring diagram**

With Bridge Connector SC-3

fig. 2. Dimensions (mm)**Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

4.2 14 Pin Sockets

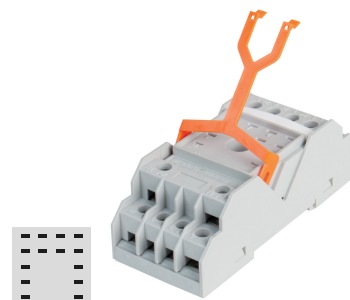
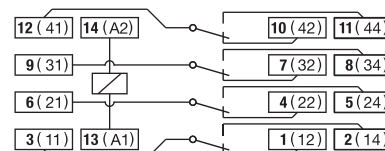
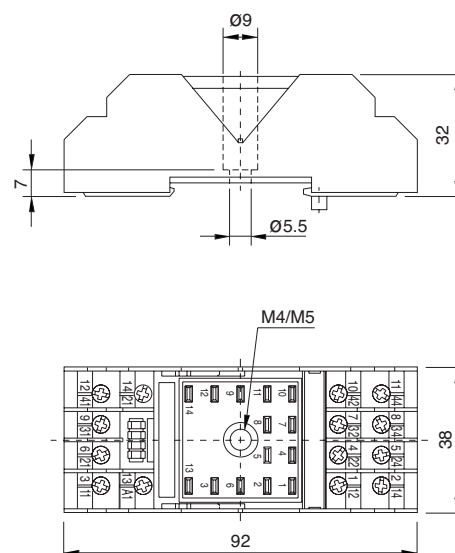
	Type	Pin	Page
14-Pin Series			
14-pin R4 Relay socket screw terminal	S4-GR		104

S4-GR**14-pin R4 Relay socket | screw terminal****General data**

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	1.5 mm ² / AWG 16 or 2 x 1.5 mm ² / AWG 16
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 1 mm ² / AWG 18
Nominal screw torque	0.8 Nm
Screw Dimension	M3.5 Phillips-slot (combo)
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	80 g
Housing material	PA

Optional Accessories

Retaining clip plastic	S3-CM/CP-15B
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**fig. 1. Wiring diagram****fig. 2. Dimensions (mm)****Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals  

4.3 8/14-Pin Sockets

	Type	Pin	Page
8/14-Pin Series			
8-pin socket for R7 relay Push-In	S7-PIR		106
8-pin socket for R7 relay screw terminal	S7-GR		107
14-pin socket for R9 relay Push-In	S9-PIR		108

S7-PIR

8-pin socket for R7 relay | Push-In

General data

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	46 g
Housing material	PA

Included Accessories

Retaining clip plastic	S7-CPI
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Optional Accessories

Retaining clip plastic	S7-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-pole potential bridge bar	Sxx-BBPI2 (BAG 20 PCS)
Multi-operation tool kit	OT-PI kit
Marking strip for Push-in	BS11-PI (50m tape)

Applicable tools

Operation tool	ISO 2380-1 Shape A, width: 2.5 mm
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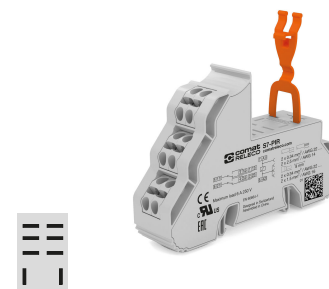


fig. 1. Wiring diagram

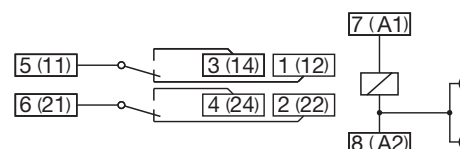
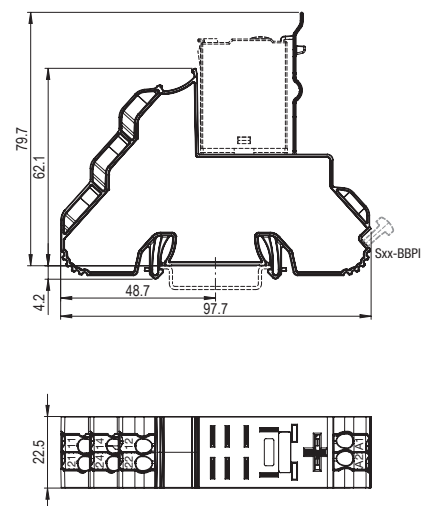


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

S7-GR

8-pin socket for R7 relay | screw terminal

General data

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	4 mm ² / AWG 12, 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	38 g
Housing material	PA

Included Accessories

Retaining clip plastic	S9-C
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Optional Accessories

Retaining clip plastic	S9-C (BAG 10 PCS)
	S7-BB (BAG 20 PCS)
Panel adapter for S7-C, S7-IO, S9-M	S9-G (BAG 10 PCS)

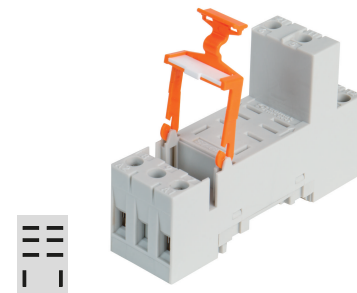


fig. 1. Wiring diagram

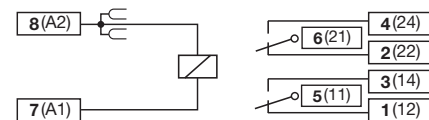
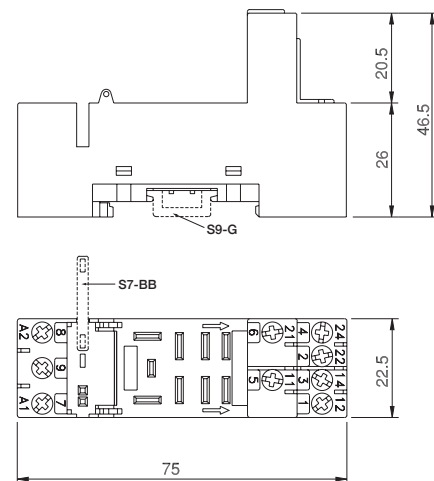


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1
 Railway EN 45545-2; EN 50155



S9-PIR

14-pin socket for R9 relay | Push-In

General data

Rated load	6 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	62 g
Housing material	PA

Included Accessories

Retaining clip plastic	S7-CPI
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Optional Accessories

Retaining clip plastic	S7-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-pole potential bridge bar	Sxx-BBPI2 (BAG 20 PCS)
4-pole potential bridge bar	Sxx-BBPI4 (BAG 20 PCS)
Multi-operation tool kit	OT-PI kit
Marking strip for Push-in	BS11-PI (50m tape)

Applicable tools

Operation tool	ISO 2380-1 Shape A, width: 2.5 mm
----------------	-----------------------------------



fig. 1. Wiring diagram

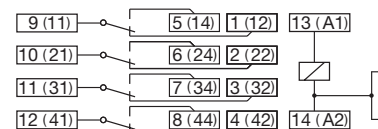
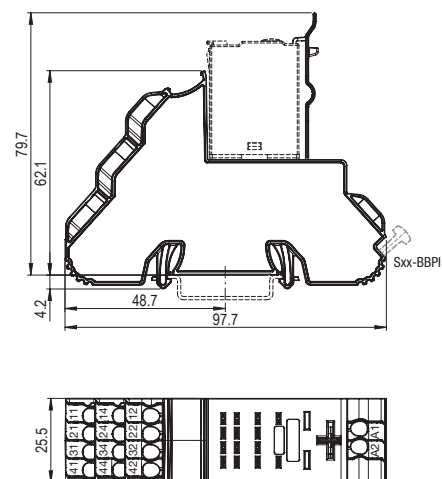


fig. 2. Dimensions (mm)







Technical approvals, conformities

Standards EN 60664-1
 Railway EN 45545-2; EN 50155



4.4 5/8-Pin Sockets

	Type	Pin	Page
5/8-Pin Series			
5-pin socket for R10 relay Push-In	S10-PIR		110
5-pin socket for R10 relay screw terminal	S10-GR		111
8-pin socket for R12 relay Push-In	S12-PIR		112
8-pin socket for R12 relay screw terminal	S12-GR		113

S10-PIR**5-pin socket for R10 relay | Push-In****General data**

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	33 g
Housing material	PA

Included Accessories

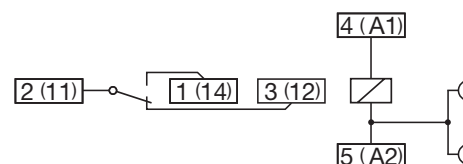
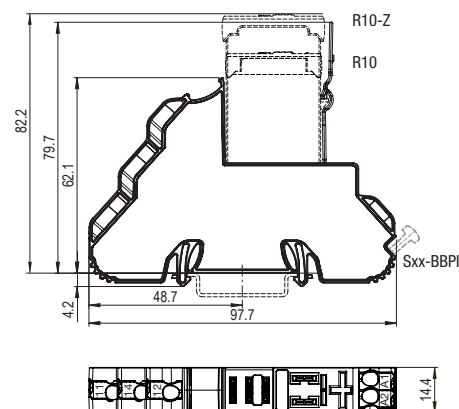
Retaining clip plastic	S10-CPI
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Optional Accessories

Retaining clip plastic	S10-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
Multi-operation tool kit	OT-PI kit
Marking strip for Push-in	BS11-PI (50m tape)

Applicable tools

Operation tool	ISO 2380-1 Shape A, width: 2.5 mm
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**fig. 1. Wiring diagram****fig. 2. Dimensions (mm)****Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

S10-GR

5-pin socket for R10 relay | screw terminal

General data

Rated load	10 A / 250 V
Dielectric strength	
- All terminals / DIN rail	5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	5 kV rms / 1 min
Conductor cross section	
- Single wire	4 mm ² / AWG 12, 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	23 g
Housing material	PA

Included Accessories

Retaining clip plastic	S10-C
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Optional Accessories

Retaining clip plastic	S10-C/CP-17B (BAG 10 PCS)
A2-Bridge for S10	S10-BB (BAG 20 PCS)
Bridge bar twofold	V10-A (BAG 5 PCS), V10-G (BAG 5 PCS), V10-R (BAG 5 PCS)
4-pole potential bridge bar for S10 / S12	V40-A (BAG 5 PCS), V40-G (BAG 5 PCS), V40-R (BAG 5 PCS)

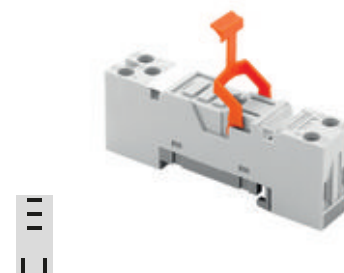


fig. 1. Wiring diagram

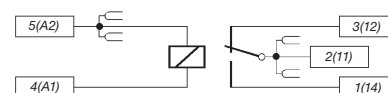
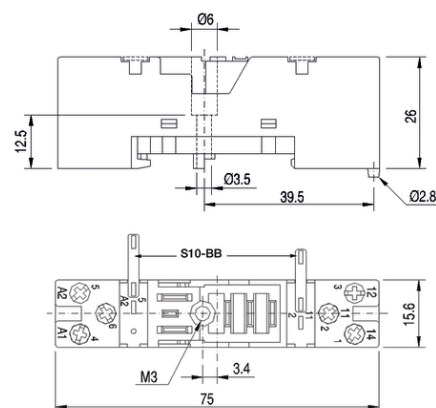


fig. 2. Dimensions (mm)

**Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

S12-PIR**8-pin socket for R12 relay | Push-In****General data**

Rated load	5 A / 250 V
Dielectric strength	
- All terminals / DIN rail	2.5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	2.5 kV rms / 1 min
Conductor cross section	
- Single wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	39 g
Housing material	PA

Included Accessories

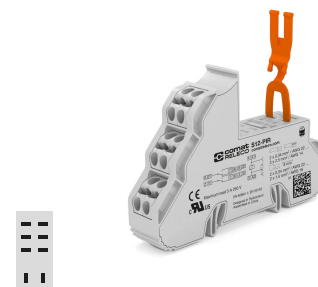
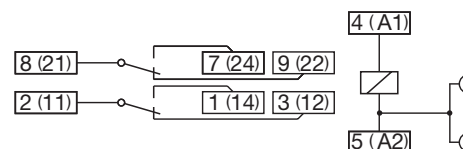
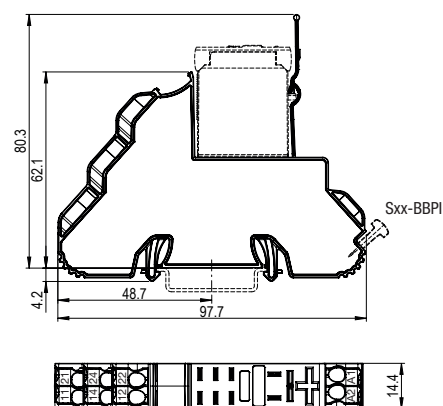
Retaining clip plastic	S10-CPI
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Optional Accessories

Retaining clip plastic	S10-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-pole potential bridge bar	Sxx-BBPI2 (BAG 20 PCS)
Multi-operation tool kit	OT-PI kit
Marking strip for Push-in	BS11-PI (50m tape)

Applicable tools

Operation tool	ISO 2380-1 Shape A, width: 2.5 mm
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**fig. 1. Wiring diagram****fig. 2. Dimensions (mm)****Technical approvals, conformities**

Standards EN 60664-1

Railway EN 45545-2; EN 50155







Approvals



S12-GR

8-pin socket for R12 relay | screw terminal

General data

Rated load	5 A / 250 V
- All terminals / DIN rail	5 kV rms / 1 min
- Terminal / terminal	2.5 kV rms / 1 min
- Contact / coil terminal	5 kV rms / 1 min
Conductor cross section	
- Single wire	4 mm ² / AWG 12, 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Weight	31 g
Housing material	PA

Included Accessories

Retaining clip plastic	S10-C
--------------------------	-------

Optional Accessories

A2-Connector	B20-A (BAG 5 PCS), B20-G (BAG 5 PCS), B20-R (BAG 5 PCS)
Bridge bar twofold	V10-A (BAG 5 PCS), V10-G (BAG 5 PCS), V10-R (BAG 5 PCS)
4-pole potential bridge bar for S10 / S12	V40-A (BAG 5 PCS), V40-G (BAG 5 PCS), V40-R (BAG 5 PCS)

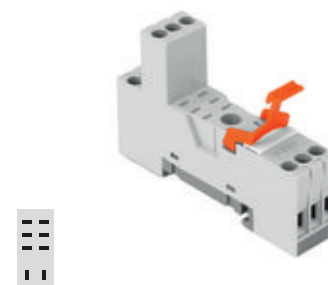


fig. 1. Image

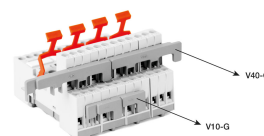


fig. 2. Image

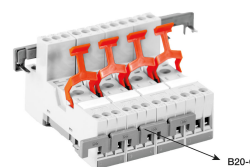


fig. 3. Wiring diagram

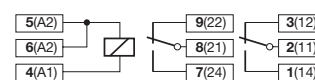
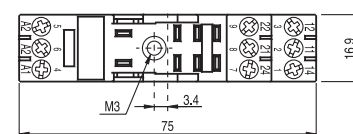
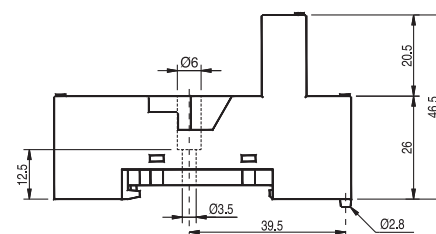


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

4.5 Socket Accessories

	Type	Pin	Page
Socket Accessories			
A1-, B1-connector for S3-Mx, S5-M	SC-3		117
A2-Connector for S12	B20		117
A2-Connector for S3-M, S5-M, S5-MR	C-A2		117
A2-Bridge for S10	S10-BB		117
A2-Bridge for S7-IO and S7-GR	S7-BB		117
Bridge A2 for Sx-PI/Sx-PIR	Sxx-BBPI		117
2-pole potential bridge bar for S7-PI(R), S9-PI(R) and S12-PI(R)	Sxx-BBPI2		118
4-pole potential bridge bar for S9-PI(R) and S9-PI(R)	Sxx-BBPI4		118
2-pole potential bridge bar for S9-M	S9M-V1		118
4-pole potential bridge bar for S9-M	S9M-V4		118
2-pole potential bridge bar for S10-M / S12	V10		118
4-pole potential bridge bar for S10 / S12	V40		118
Freewheeling diode module for S3-M, S3-M0, S5-M	RD1		119
Module for socket: free wheeling diode	RD16		119
Freewheeling diode module for S3-M, S3-M0, S5-M	RD2		119
Freewheeling diode module for S3-M, S3-M0, S5-M	RD3		119
Freewheeling diode module for S3-M, S3-M0, S5-M	RDL2		119
RC-Suppressor module	RC1		119

	Type	Pin	Page
Marking strip for Sx-PI & Sx-PIR sockets	BS11-PI (50m)		120
Retaining clip plastic	CP-07B		120
Retaining clip plastic	Retaining clip		120
Retaining spring for SSU,TSR Steel	HF-24		120
Retaining spring for C2, C2, C3, C3x relays Steel	HF-32		120
Multi-operation tool kit for Sx-PI & Sx-PIR sockets	OT-PI kit		121
Retaining clip plastic	S10-C/CP-17B		121
Retaining clip plastic	S10-CPI		121
Marking label white	S10-RH		121
Transparent cover	S10-RT		122
Retaining clip plastic	S30-CM/10		122
Retaining clip plastic	S5M-CP		122
Retaining clip plastic	S7-CPI		122
Retaining clip plastic	S9-C		122

SC-3

A1-, B1-connector for S3-Mx, S5-M

Product references

Description	Type
A1-, B1-connector for S3-Mx, S5-M	SC-3 (BAG 10 PCS)

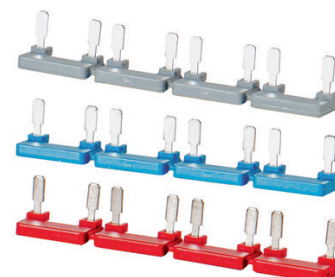


B20

A2-Connector for S12

Product references

Description	Type
A2-Connector for S12 blue	B20-A (BAG 5 PCS)
A2-Connector for S12 grey	B20-G (BAG 5 PCS)
A2-Connector for S12 red	B20-R (BAG 5 PCS)

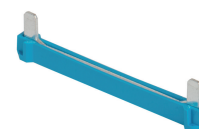


C-A2

A2-Connector for S3-M, S5-M, S5-MR

Product references

Description	Type
A2-Connector for S3-M, S5-M, S5-MR	C-A2 (BAG 50PCS)
A2-Connector for S3-M, S5-M, S5-MR	C-A2 (BAG 5PCS)



S10-BB

A2-Bridge for S10

Product references

Description	Type
A2-Connector for S10	S10-BB (BAG 20 PCS)

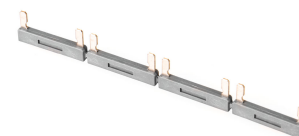


S7-BB

A2-Bridge for S7-IO and S7-GR

Product references

Description	Type
A2-Connector for S7-C, S7-IO	S7-BB (BAG 20 PCS)



Sxx-BBPI

Bridge A2 for Sx-PI/Sx-PIR

Product references

Description	Type
A2-Connector for Push-In sockets	Sxx-BBPI (BAG 20 PCS)



Sxx-BBPI2

2-pole potential bridge bar for S7-PI(R), S9-PI(R) and S12-PI(R)

General data

Rated load 6 A

Product references

Description	Type
Bridge bar twofold for Push-in sockets	Sxx-BBPI2 (BAG 20 PCS)



Sxx-BBPI4

4-pole potential bridge bar for S9-PI(R) and S9-PI(R)

General data

Rated load 6 A

Product references

Description	Type
Bridge bar fourfold for Push-in sockets	Sxx-BBPI4 (BAG 20 PCS)



S9M-V1

2-pole potential bridge bar for S9-M

Product references

Description	Type
Bridge bar twofold	S9M-V1 (BAG 5 PCS) R



S9M-V4

4-pole potential bridge bar for S9-M

Product references

Description	Type
Bridge bar fourfold	S9M-V4 (BAG 5 PCS) R



V10

2-pole potential bridge bar for S10-M / S12

Product references

Description	Type
Bridge bar twofold blue	V10-A (BAG 5 PCS)
Bridge bar twofold grey	V10-G (BAG 5 PCS)
Bridge bar twofold red	V10-R (BAG 5 PCS)



V40

4-pole potential bridge bar for S10 / S12

Product references

Description	Type
Bridge bar fourfold blue	V40-A (BAG 5 PCS)
Bridge bar fourfold grey	V40-G (BAG 5 PCS)
Bridge bar fourfold red	V40-R (BAG 5 PCS)



RD1

Freewheeling diode module for S3-M, S3-M0, S5-M

Product references

Description	Type
Freewheeling diode module	RD1/DC12-220V



RD16

Module for socket: free wheeling diode

Product references

Description	Type
Module for socket: free wheeling diode	RD16/DC12-240V



RD2

Freewheeling diode module for S3-M, S3-M0, S5-M

Product references

Description	Type
Freewheeling diode module	RD2/DC...V



RD3

Freewheeling diode module for S3-M, S3-M0, S5-M

Product references

Description	Type
Freewheeling diode module	RD3/DC...V



RDL2

Freewheeling diode module for S3-M, S3-M0, S5-M

Product references

Description	Type
Freewheeling diode module with LED	RDL2/DC...V



RC1

RC-Suppressor module

Product references

Description	Type
RC-Suppressor module 110 - 240 V UC for S3-M, S3-M0, S5-M	RC1/UC...V



BS11-PI (50m)

Marking strip for Sx-PI & Sx-PIR sockets

Product references

Description	Type
Marking strip Roll of 50 m	BS11-PI (50m tape)



CP-07B

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S7-C	CP-07B (BAG 50PCS) R
Retaining clip plastic for S7-C	CP-07B for C7 / C7x Relays



Retaining clip

Retaining clip | plastic

Product references

Description	Type
Retaining clip	CP-24B



HF-24

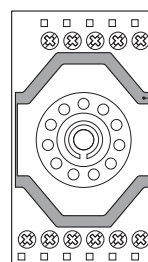
Retaining spring for SSU,TSR | Steel

General data

Mounting fig. 1 Mounting

Product references

Description	Type
Retaining spring steel	HF-24



HF-24

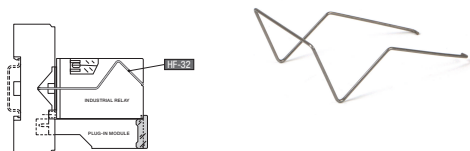


HF-32

Retaining spring for C2, C2, C3, C3x relays | Steel

General data

Mounting fig. 1 Mounting



Product references

Description	Type
Retaining spring steel	HF-32 (BAG 10 PCS)

OT-PI kit

Multi-operation tool kit for Sx-PI & Sx-PIR sockets

General data

Weight 30 g



Product references

Description	Type
Operating tool	OT-PI kit

S10-C/CP-17B

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S10 10 PCS	S10-C/CP-17B (BAG 10PCS) R
Retaining clip plastic for S10 10 PCS	S10-C



S10-CPI

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S10-PI(R), S12-PI(R)	S10-CPI (BAG 10 PCS)
Retaining clip plastic for S10-PI(R), S12-PI(R)	S10-CPI



S10-RH

Marking label | white

Product references

Description	Type
Marking label	S10-RH (BAG 10 PCS)



S10-RT

Transparent cover

Product references

Description	Type
Transparent cover	S10-RT (BAG 20 PCS)



S30-CM/10

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S2-B, S3-B, S3-S	S30-CM/10 (10-PIECES)



S5M-CP

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S5-M	S5M-CP



S7-CPI

Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S7-PI(R), S9-PI(R)	S7-CPI (BAG 10 PCS)
Retaining clip plastic for S7-PI(R), S9-PI(R)	S7-CPI



S9-C

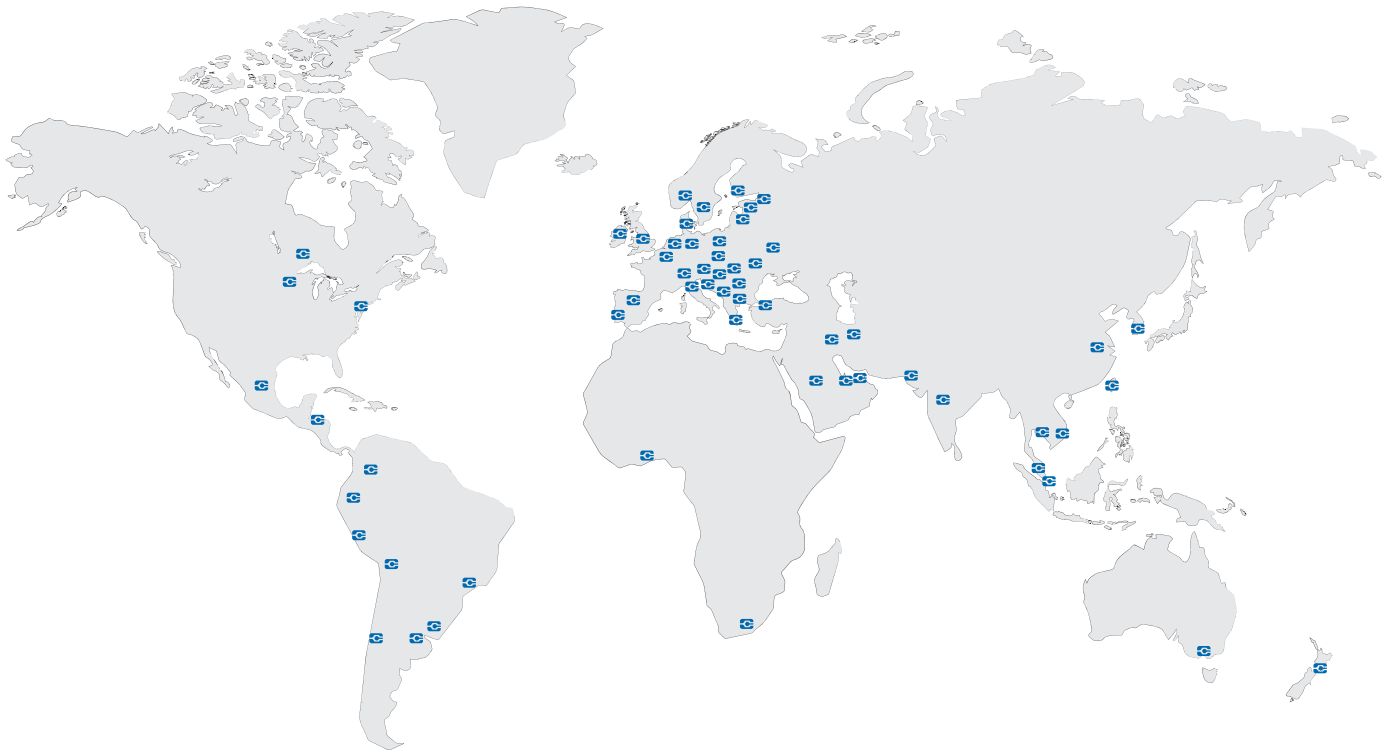
Retaining clip | plastic

Product references

Description	Type
Retaining clip plastic for S9-M 10 PCS	S9-C/CP-01B (BAG 10 PCS)
Retaining clip plastic	S9-C



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