comat RELECO







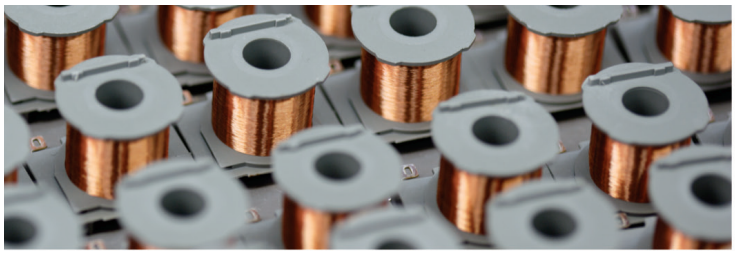
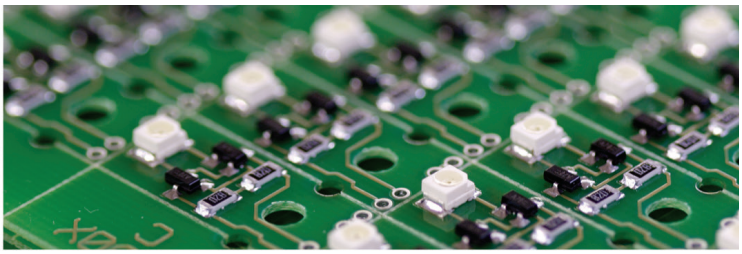


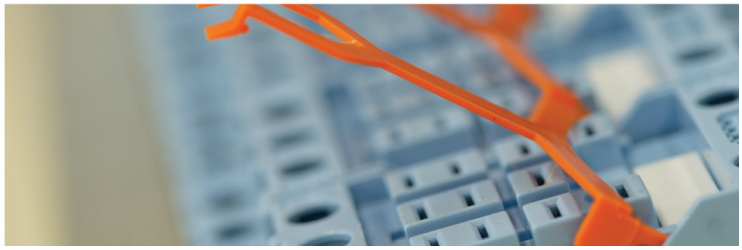


WORLD OF RELAYS

RAILWAY CATALOGUE

WoR 3.4 | 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

ComatReleco 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 61373 Railway applications – Rolling stock equipment - Shock and vibration tests
EN 45545-2 Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components

Country-specific standards can usually also be met but may require more detailed clarification.

Differences to 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. ComatReleco 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 ComatReleco 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.





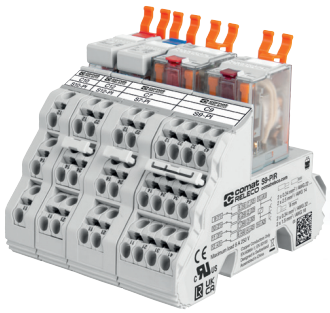
Contactors - High power switching at reduced space

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. ComatReleco also can build custom coil voltages away from those listed within in standard range.



Sockets - Smallest Push-In socket family

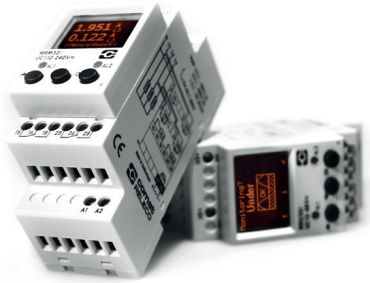
The new Push-in relay sockets from ComatReleco form a family. All relay sockets can be combined. The ComatReleco Push-in connection technology makes it possible to connect solid conductors as well as stranded wire. Solid conductors in the form of wire or stranded wire with ferrule terminals are inserted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





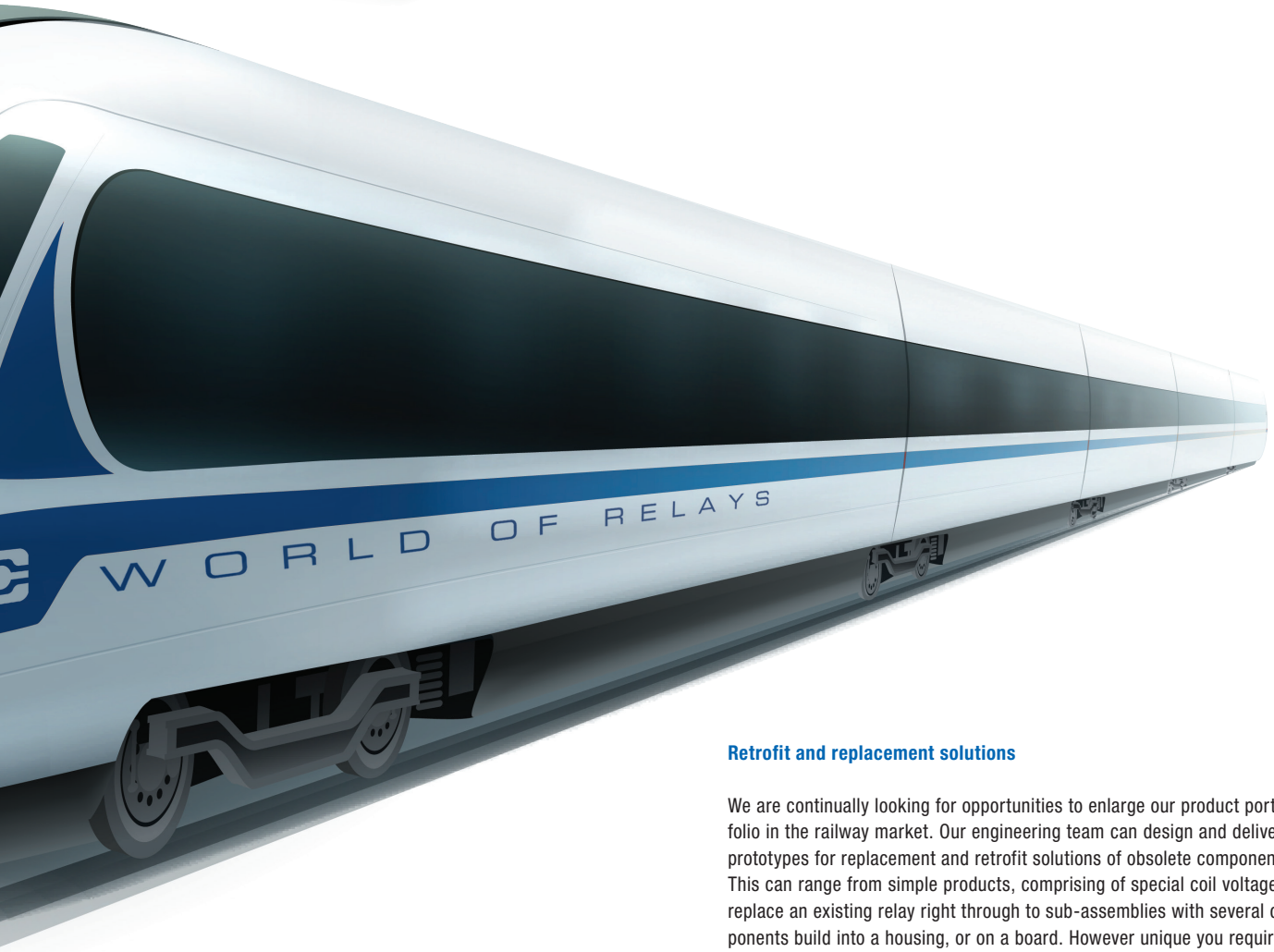
Timer series CIM

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 ΔPhi (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 you 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.).



Check also on our webpage the application notes under Area of Application / Railway technology for further information.

Notes

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, 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 suitabe 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 recommended using asynchronously switching semi-conductor 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)

C | n(n) | - | T | 1 | 0 | D | (*) | X | / | UC230V | RF-nnnn

Relais application
- **C** = Industrial relays
- **R** = Railway relays

Product family
- **n(n)** = Basic type refers to the product line

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

Number of contacts
- **1-4** = Number of contacts

Definition of contacts 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)

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.

Control voltage
- **AC** = Alternating current 50/60 Hz
- **DC** = Direct current
- **UC** = AC/DC

Relay with LED
- **X** = relays with LED

Special requirements (x)
- **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

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

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 realy being operated by such devices as transistors, Triacs, etc; it may be necessary to protect against transients.

Transients carried in the line

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

Protection circuits

A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1.2/50\mu s.}$)
ComatReleco Relays are available with integrated protection circuits.

X LED indication with rectifier.
For DC and AC relays up to 250 V

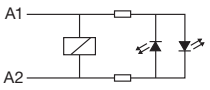
DX Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.

FX Polarity + free wheeling diode + LED
A diode in series with the coil protects the relay from reverse connection.

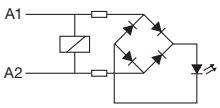
BX Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvience.
Available only in voltages up to 60 V.

R Resistor and capacitor.

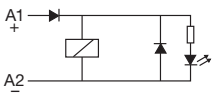
X(C7/R7, C9/R9)



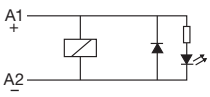
X



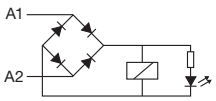
FX



DX



BX



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

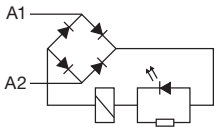
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

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

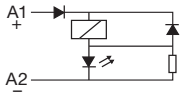
Both Polarity and Free-wheeling diodes (FX), must protect coils, to avoid malfunctions provided DC relays in battery are installed.

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

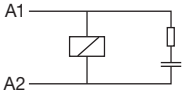
BX



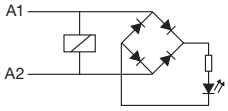
FX



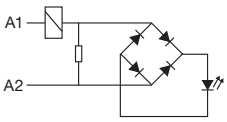
R



X≤12V



X≥24V



Contacts

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

Contact Material

There is no all-purpose contact!
AgNi is used as standard material for a wide range of applications. AgNi contacts with hard gold plating (up to 5µm) are offered for applications in aggressive atmosphere.
Relays with gold contacts are approved for relatively high currents (e.g. 6 A, 250 V), but in practice values of 200 mA, 30 V should not be exceeded for operation with intact gold plating.
Relays with a tungsten pre-contact are available for very high switch-on currents (up to 500 A, 2.5 ms). For some applications AgNi contacts with gold flashing (0.2 µm) are available. The purpose is corrosion protection during storage. Tin oxide is specially appropiated for load with high-inrush current.

Minimum load

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

Contact resistance

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

Contact spacing

Normally all contacts have an air gap between 0.5 … 1.5 mm when they are open. They are referred to as µ contacts. According to the Low-Voltage Directive and the associated standards these contacts are not suitable for safe disconnection.
For switching of DC loads large contact clearances are beneficial for quenching the arc. See 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 °C) and doubly insulated high-purity copper wire, temperature class F. The winding must withstand threshold voltages (EN 61000-4-5) of more than 2000 V. This is ensured through forced separation of the start and end of the winding.

Coil resistance and other properties

Each coil has an ohmic coil resistance that can be verified with an ohmmeter. The specified coil resistance applies to a temperature of 20 °C. The tolerance is ±10 %.
For AC operation the coil current will not match the ohmic value, because self-inductance plays a dominant role. At 230 V this may reach more than 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.

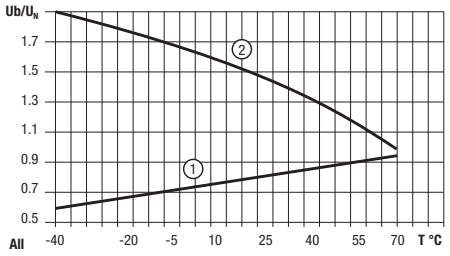
Pick-up voltage, Release voltage

The pick-up voltage is the voltage at which the relay engages safely. For DC the typical trip voltage is approx. 65 % of Unom, for AC approx. 75 %. The release voltage, on the other hand, is approx. 25 % or 60 % respectively.
For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu (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 overvoltages 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.

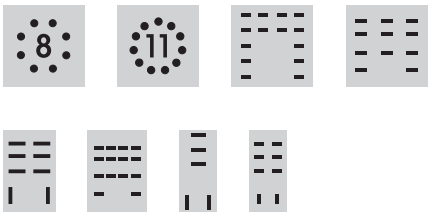
Switching classes
EN 60947 defines different switching classes that specify the suitability of contacts for different load types.

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: CEN-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

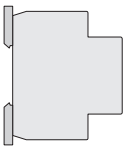
Pollution category
Cat. 1
Dry, non-conductive contamination without further effect

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.

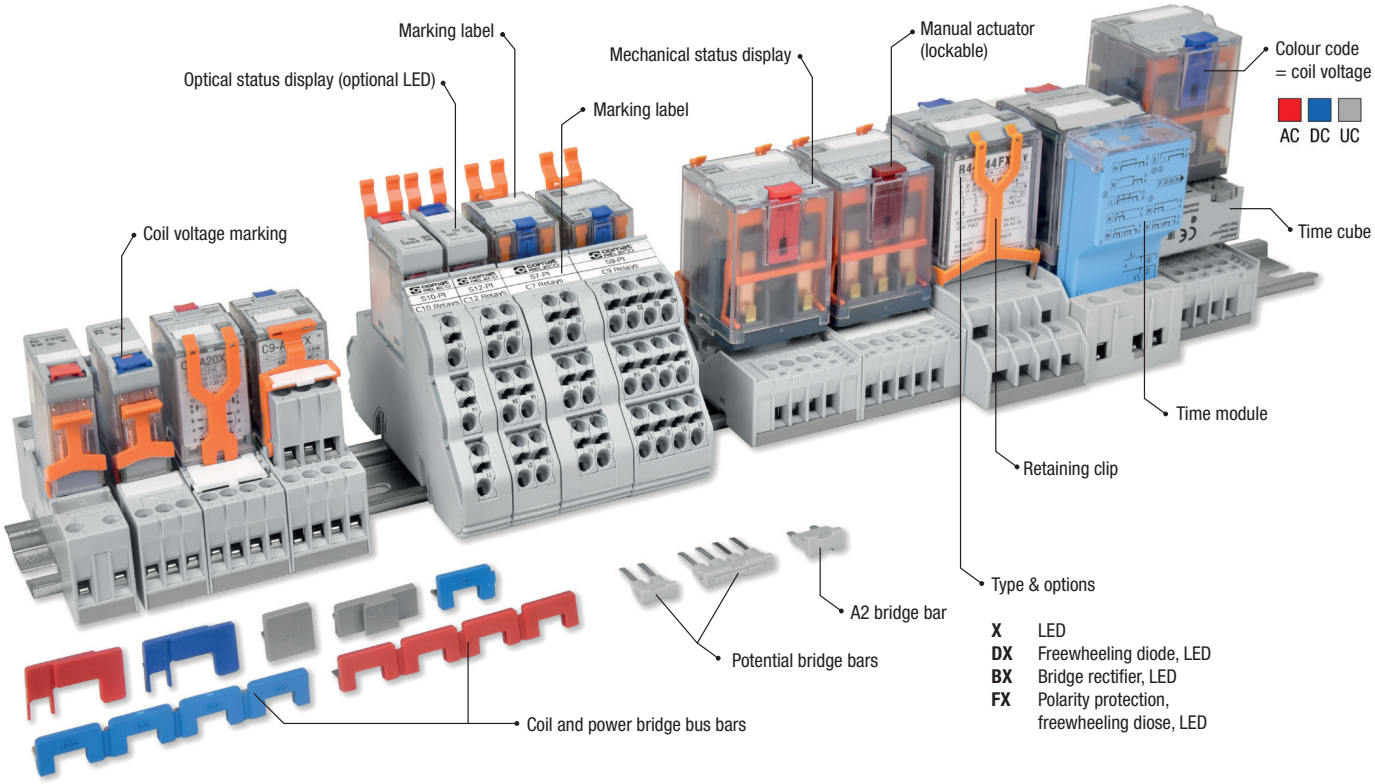
Incandescent lamps, halogen lamps
Switch-on currents during a few ms in the range 10 … 18 x rated. Switch-off at rated load.

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)

AC dark red: others V AC

UC grey: V AC/DC

DC blue: 24 V DC

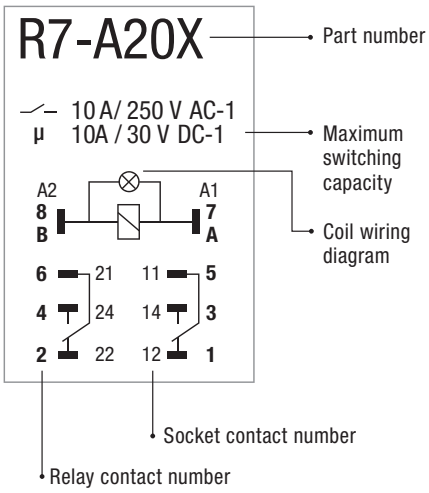
DC dark blue: others V DC

If you don´t want to have the lockable function, you can use the orange button.

Orange button, no lockable function, push only

Black button, no function

Comprehensive technical label



Relais

How do you choose the right relay?

Use the following table to quickly find the right relay for your application. All relays in this catalogue are marked with a symbol that correspondsto their application. Please also note the following parameters for the correct dimensioning:

	Type of signal	Switching frequency and duration
❶	What are the switching current and voltage of the application?	-
❷	Is the DC or AC voltage applied? Is the load inductive or capacitive?	How many switching operations per unit of time are to be expected?

	Typical application			Contact	
Symbol	❶ Tension	❶ Current affairs	❷ Registration	Type	Material
Signalling relay	100 mV…5V	10 uA…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 relay	5V…30V	1 mA…100 mA	PLC inputs, control circuits	Double contact	AgNi
				Gold-plated single contact	AgNi + Au
			Fast and frequent changeover processes	Semiconductors	MOSFET (DC) Triac (AC)
Power relay	30V…400V	100 mA…16A	Increased loads AC or DC loads	Simple contact	AgNi
			Electromagnets (Cat. of Use AC-15 / DC-13)	Simple contact	$AgSnO_2$
			Fast and frequent gear changes, high reliability, silent shifting	Semiconductors	MOSFET (DC) Triac (AC)
High-power relays	12V…400V	100 mA…16A	Capacitive loads	Before the race Contact during the race	AgNi + W $AgSnO_2$ + W
			High DC loads, inductive loads	Standard contacts	AgNi $AgSnO_2$
			Fast and frequent gear changes, high reliability, silent shifting	Semiconductors	MOSFET (DC) Triac (AC)

Notes

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
CRINT Series			
1 pole | Changeover contact	CRINT-C1x1R		21
1 pole | Changeover contact	CRINT-C1x2R		22

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 … 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

U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR



fig. 1. Wiring diagram

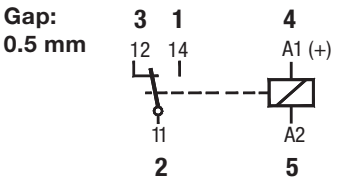


fig. 2. AC voltage endurance

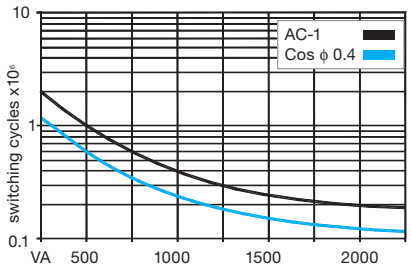


fig. 3. DC load limit curve

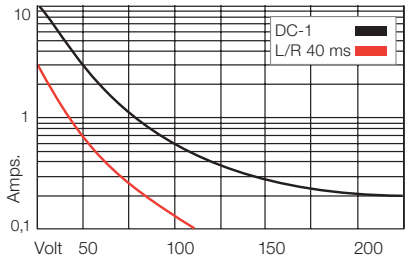
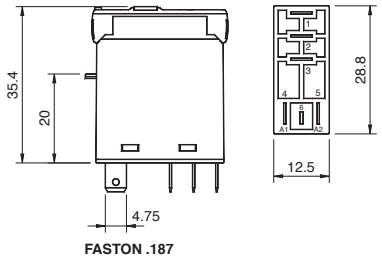


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810; IEC/EN 60947
Railway EN 50155; EN 45545-2
Approvals

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

U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

Accessories

Socket	S12-GR, S12-PIR



fig. 1. Wiring diagram

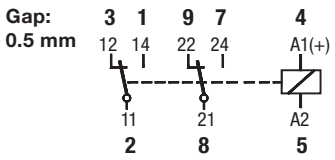


fig. 2. AC voltage endurance

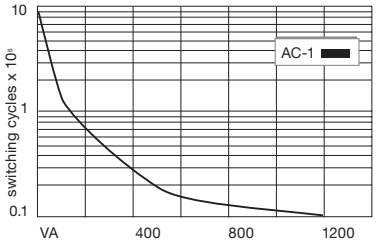


fig. 3. DC load limit curve

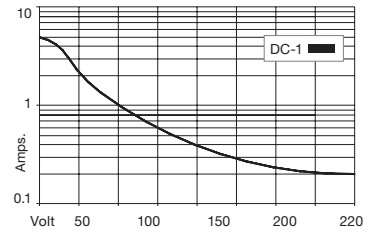
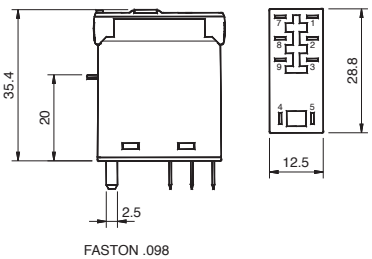


fig. 4. Dimensions (mm)



Technical approvals, conformities

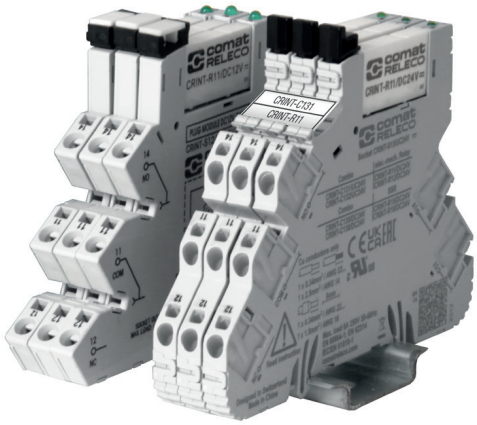
Standards	IEC/EN 61810; IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	

CRINT-C1xxR

Product Key and dimensions

Interface Module CRINT

- Electromechanical relay modules up to 6 A 250 V, different contact materials
- Coil UC = AC/DC, no protection circuit required
- LED status display
- Push-in or cage clamp
- Potential bridge bars
- Super small mounting: 6.2 mm width



Product key relay and socket

CRINT - R 1 1 / DC24V

CRINT - C 1 3 1 R / UC24V

Product family

CRINT = **C**omat**R**eleco **Int**erface relay

Product type

C = Relay and socket combined
R = Relay
S = Socket

Contacts

1 = 1 change-over contact
2 = 2 change-over contact
3 = 1 change-over contact, dual terminal

Connection type

1 = Screw terminal
2 = Cage clamp terminal
3 = Push-in

Control voltage

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

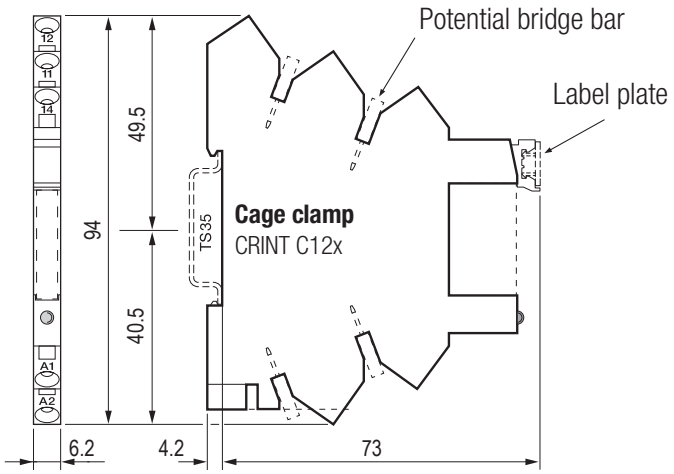
Area of application

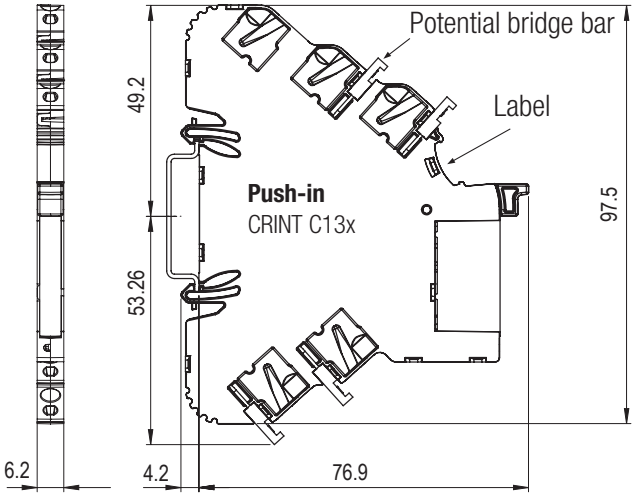
None = Industry
R = Railway

Contact materials

1 = $AgSnO_2$
2 = $AgSnO_2$ + Au
3 = AgNi
4 = AgNi + Au
5 = NO / Solid state DC MOSFET
8 = NO / Solid state AC TRIAC

CRINT-C1xxR — Dimensions (mm)





1.1 Interface Relays - pluggable

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
Frequency range	0; 50 ... 60 Hz

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	4 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)
Relative huminity, no condensation	5% to 85% RH
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 mm²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (crimped)	0.34 mm² / AWG 22 … 1.5 mm² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Mounting position	Any
Dimensions	fig. 4.
Weight	30 g
Housing material	PA

Product references

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

«…» List control voltage to complete product references

Accessories

Potential bridge bar	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	BS11-PI (50m tape)

Replacement relays

Description	Type	18	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

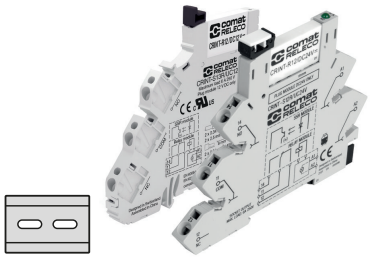


fig. 1. Wiring diagram

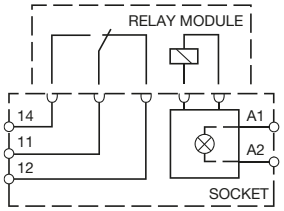


fig. 2. AC voltage endurance

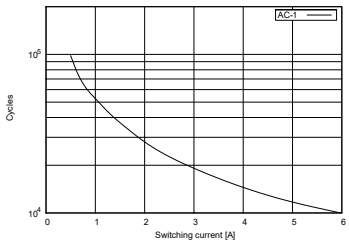


fig. 3. DC load limit curve

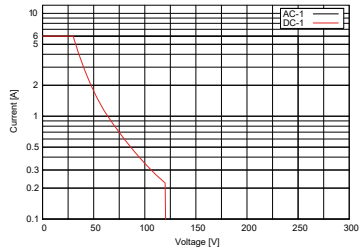
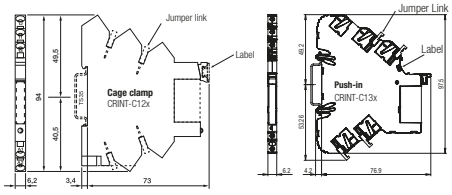


fig. 4. Dimensions (mm)



Technical approvals, conformities

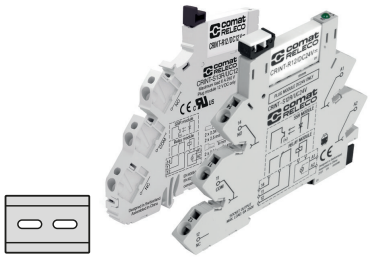
Standards IEC/EN 61810-1; EN 60664-1

Railway EN 50155; EN 45545-2

Approvals

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	4 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 mm²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (crimped)	0.34 mm² / AWG 22 … 1.5 mm² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Dimensions	fig. 4.
Weight	30 g
Housing material	PA

Product references

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

«…» List control voltage to complete product references

Accessories

Potential bridge bar	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	BS11-PI (50m tape)

Replacement relays

Description	Type	12
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

«…» List control voltage to complete product references

fig. 1. Wiring diagram

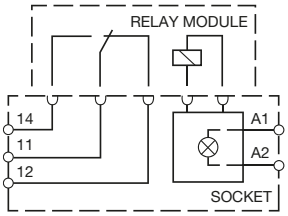


fig. 2. AC voltage endurance

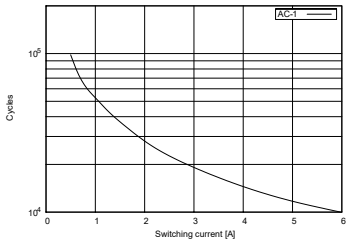


fig. 3. DC load limit curve

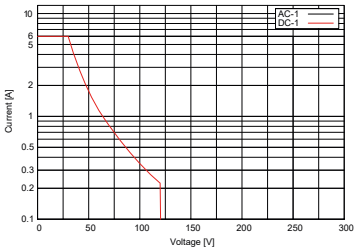
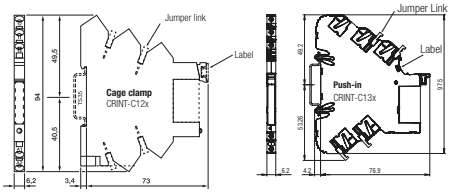


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 61810-1; EN 60664-1
Railway	EN 50155; EN 45545-2
Approvals	

1.2 Industrial Relays - pluggable

	Type	Pin	Page
C3 Series / R3 Series			
3 pole | Changeover contact | Sensitive coil	R3-N34		24
C4 Series / R4 Series			
4 pole | Changeover contact | Faston	R4-A40		25
C5 Series			
3 pole | Changeover contact | Faston	R5-A30U		26
1 pole | Normally open serial contact with blow magnet | Faston	R5-M10		27
C7 Series / R7 Series			
2 pole | Changeover contact | Faston	R7-A20		28
2 pole | Changeover twin contact | Faston	R7-T2x		29
C9 Series / R9 Series			
4 pole | Changeover contact | Faston	R9-A41		30

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

U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	72	110
Free wheeling 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)

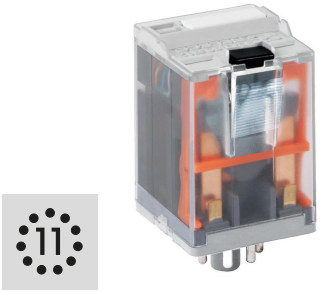


fig. 1. Wiring diagram

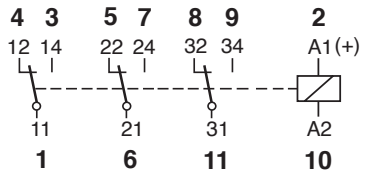


fig. 2. AC voltage endurance

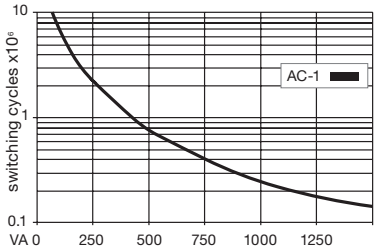


fig. 3. DC load limit curve

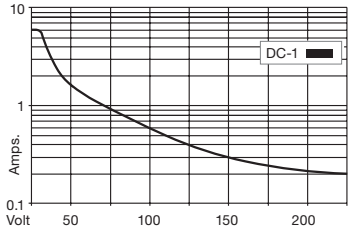
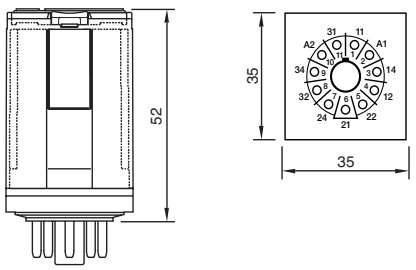


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 50155; EN 45545-2

Approvals

1.2 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

U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

Accessories

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

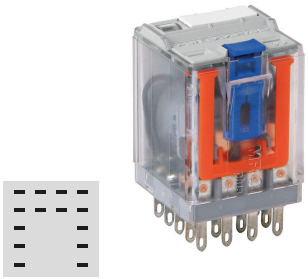


fig. 1. Wiring diagram

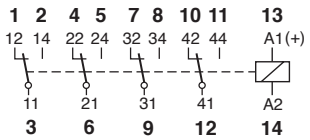


fig. 2. AC voltage endurance

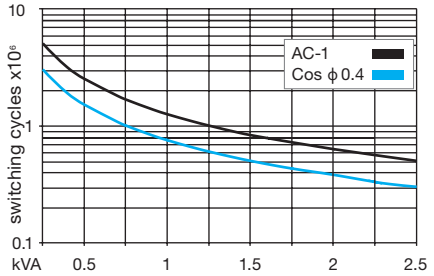


fig. 3. DC load limit curve

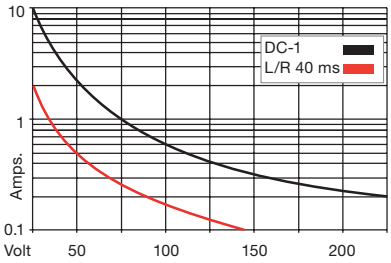
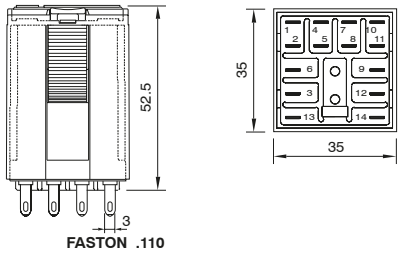


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810; IEC/EN 60947
Railway EN 50155; EN 45545-2
Approvals

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

U_{DC}(V)	R(Ω)	I(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
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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

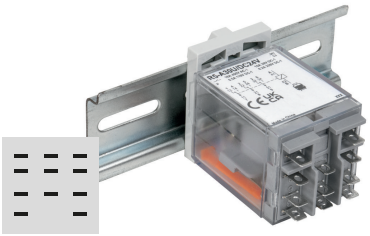


fig. 1. Wiring diagram

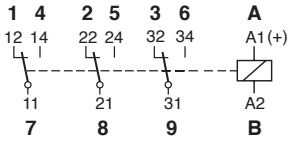


fig. 2. AC voltage endurance

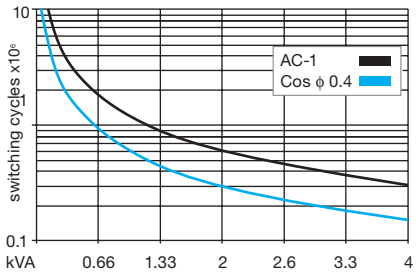


fig. 3. DC load limit curve

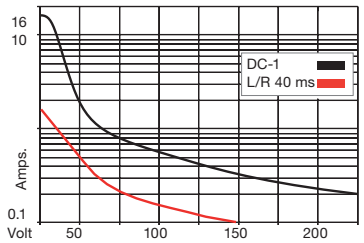
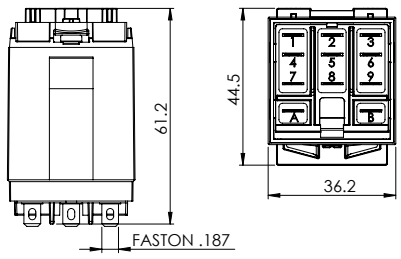


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 60947; IEC/EN 61810
Railway	EN 50155; EN 45545-2
Approvals	

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 … 1.25 U_N
Pick-up voltage	≤ 0.7 U_N
Release voltage	≥ 0.1 U_N
Power consumption AC / DC	2.4 VA / 1.3 W

Coil table

U_{DC}(V)	R(Ω)	I(mA)
24	443	54
110	443	55

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
Dimensions	fig. 4.
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	24	110
LED & Pol. & Free wheeling diode	R5-M10FX/DC...V	✓	✓

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

Accessories

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

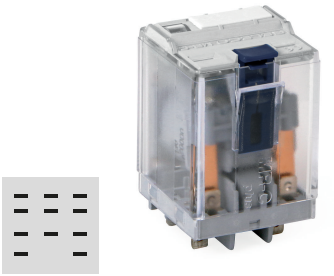


fig. 1. Wiring diagram

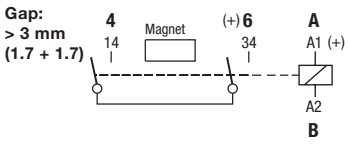


fig. 2. AC voltage endurance

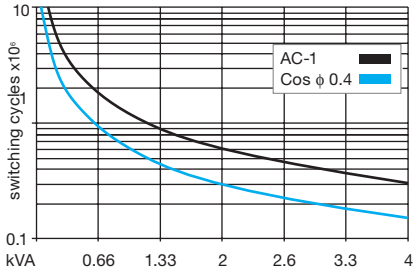


fig. 3. DC load limit curve

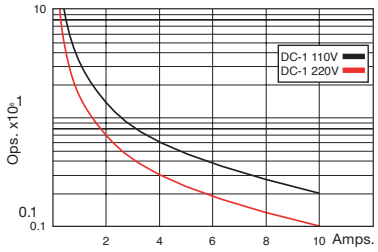
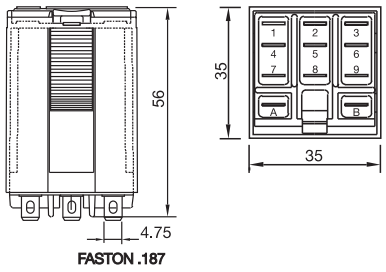


fig. 4. Dimensions (mm)

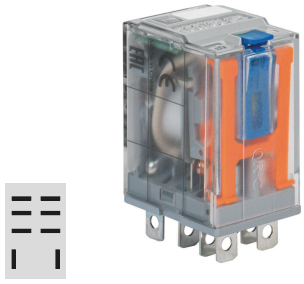


Technical approvals, conformities

Standards IEC/EN 61810; IEC/EN 60947
Railway EN 50155; EN 45545-2
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 / 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)	≥ 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

U_{DC}(V)	R(Ω)	I(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

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
Dimensions	fig. 4.
Weight	35 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
LED & Free wheeling diode	R7-A20DX/DC...V	✓	✓	✓		✓	✓	✓	✓
LED & Pol. & Free wheeling diode	R7-A20FX/DC...V		✓		✓				

Other voltages on request. Please contact support@comatreleco.com.
«…» List control circuit 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

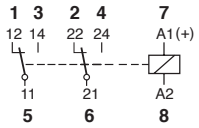


fig. 2. AC voltage endurance

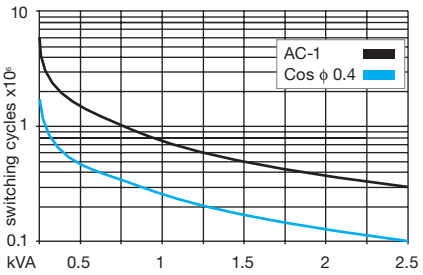


fig. 3. DC load limit curve

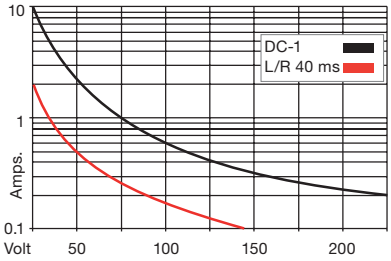
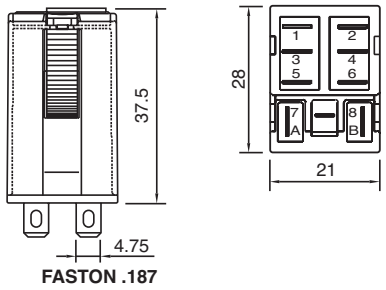


fig. 4. Dimensions (mm)



FASTON .187

Technical approvals, conformities

Standards IEC/EN 61810; IEC/EN 60947

Railway EN 50155; EN 45545-2

Approvals

1.2 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

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

U_{AC}(V)	R(Ω)	I(mA)	U_{DC}(V)	R(Ω)	I(mA)
230	15 248	6.7	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

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
Dimensions	fig. 4.
Weight	35 g
Housing material	PA / PC

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	✓	✓	✓	✓	✓	✓	

Other voltages on request. Please contact support@comatreleco.com.
«…» List control circuit 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)

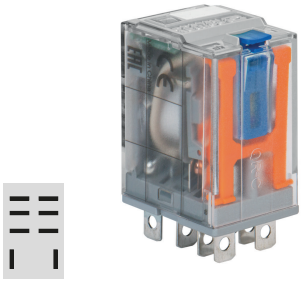


fig. 1. Wiring diagram

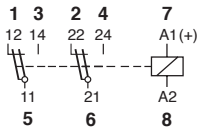


fig. 2. AC voltage endurance

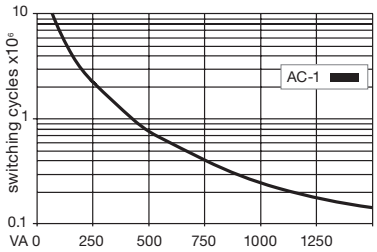


fig. 3. DC load limit curve

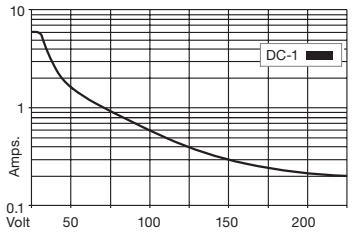
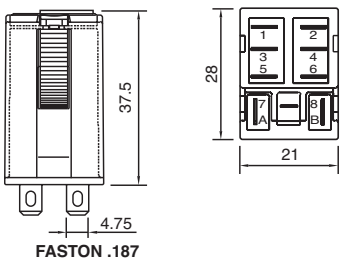


fig. 4. Dimensions (mm)



Technical approvals, conformities

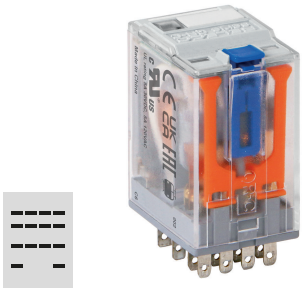
Standards IEC/EN 61810; IEC/EN 60947

Railway EN 50155; EN 45545-2

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

U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

Accessories

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

fig. 1. Wiring diagram

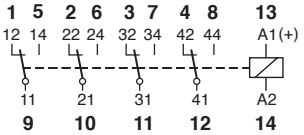


fig. 2. AC voltage endurance

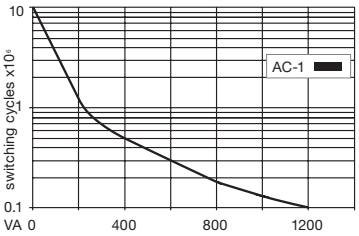


fig. 3. DC load limit curve

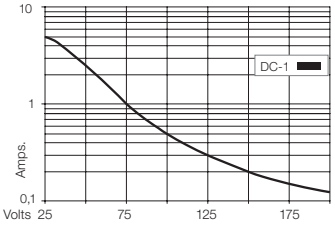
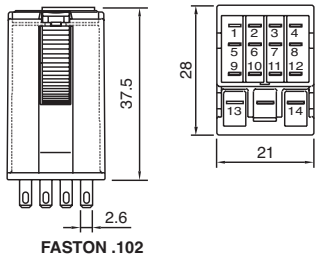


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810; IEC/EN 60947

Railway EN 50155; EN 45545-2

Approvals

1.3 Long Life Relays

	Type	Pin	Page
C3x Series			
3 pole | Changeover contact | Power relay | Railway	C31x/R		32
3 pole | Changeover twin contact | Control relay | Railway	C32x/R		33

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 … 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

U_{AC}(V)	R(Ω)	I(mA)	U_{DC}(V)	R(Ω)	I(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
Dimensions	fig. 4.
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 control circuit voltage to complete product references

Accessories

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





fig. 1. Wiring diagram

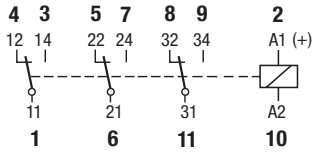


fig. 2. AC voltage endurance

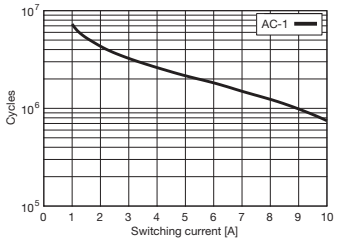


fig. 3. DC load limit curve

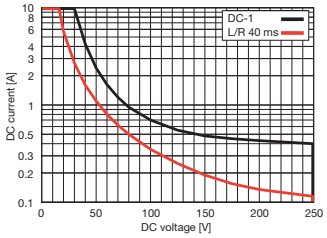
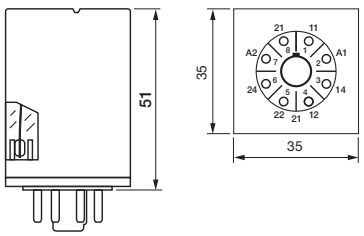


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 61810; IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	

C32x/R

3 pole | Changeover twin contact | Control relay | Railway

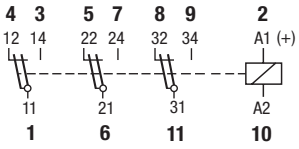


Main circuit

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



fig. 1. Wiring diagram



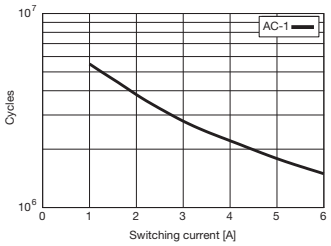
Control circuit

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	>0.15 x U_N / > 0.05 x U_N
Power consumption AC / DC	2.5 VA / 1.2 W

Coil table

U_{DC}(V)	R(Ω)	I(mA)
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

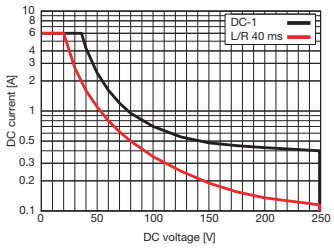
fig. 2. AC voltage endurance



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

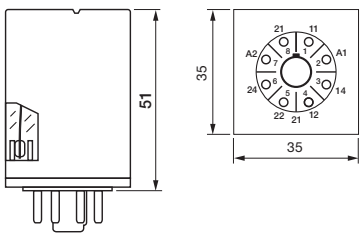
fig. 3. DC load limit curve



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
Dimensions	fig. 4.
Weight	80 g
Housing material	PA / PC

fig. 4. Dimensions (mm)



Product references

Description	Type	12	24	36	48	72	110	220
Railway & Free wheeling diode	C32D/R 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

Technical approvals, conformities

Standards	IEC/EN 61810; IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	

Accessories

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

Notes

1.4 Solid State Relays (SSR)

	Type	Pin	Page
CSS Series / R10 Series			
1 pole | Normally open solid state AC | Faston	R10-Z1I		36
1 pole | Normally open solid state AC | Faston	R10-Z1Z		37
1 pole | Normally open solid state DC | Faston	R10-Z1N		38
1 pole | Normally open solid state DC | Faston	R10-Z1P		39
CRINT Series			
1 pole | Normally open solid state DC	CRINT-C1x5R		41
1 pole | Normally open solid state AC	CRINT-C1x8R		42

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	5 mA
Maximum voltage drop	≤ 1.1 V AC
Rated current	3 A
Inrush current	150 A, 10 ms
Rated limit load I²t	210 A²s
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
Dimensions	fig. 3.
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

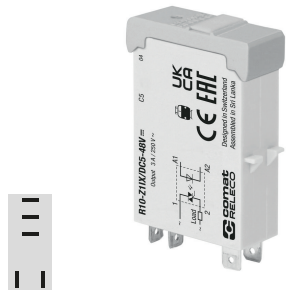


fig. 1. Wiring diagram

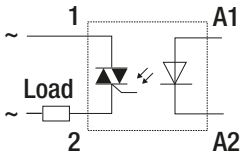


fig. 2. AC derating curve

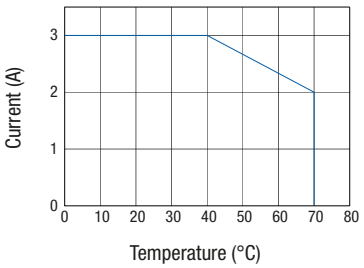
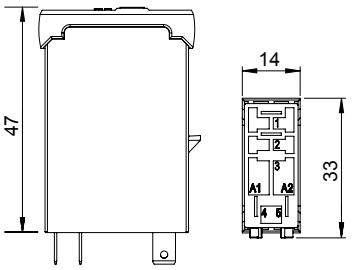


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 60947
Railway	EN 50155; EN 45545-2
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	5 mA
Maximum voltage drop	≤ 1.1 V AC
Rated current	3 A
Inrush current	150 A, 10 ms
Rated limit load I²t	210 A²s
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
Dimensions	fig. 3.
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

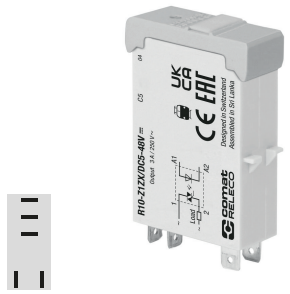


fig. 1. Wiring diagram

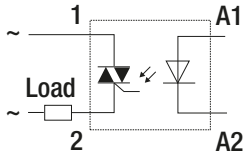


fig. 2. AC derating curve

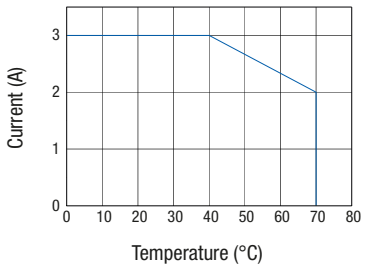
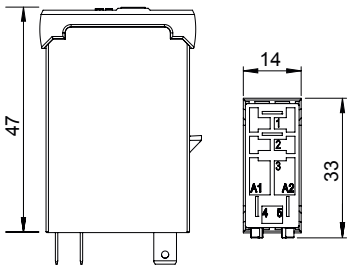


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	

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	0.012 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
Dimensions	fig. 3.
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

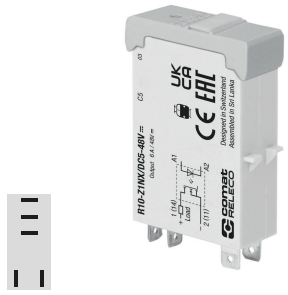
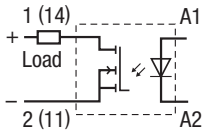


fig. 1. Wiring diagram



Negative common

fig. 2. DC derating curve

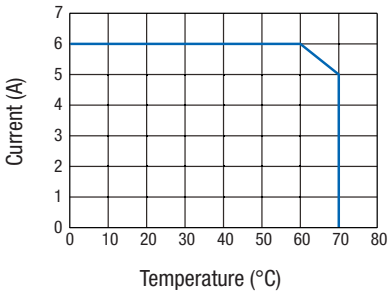
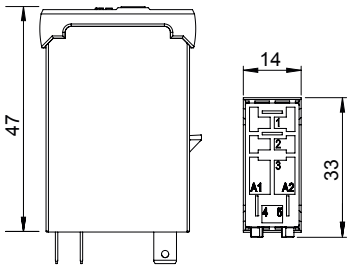


fig. 3. Dimensions (mm)

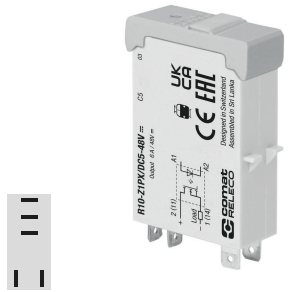


Technical approvals, conformities

Standards	IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA

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	0.012 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
Dimensions	fig. 3.
Weight	28 g
Housing material	PA

Product references

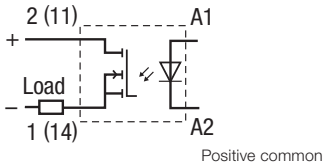
Description	Type	5-48
DC	R10-Z1PX/DC...V	✓

«…» List coil voltage to complete product references

Accessories

Socket	S10-GR, S10-PIR

fig. 1. Wiring diagram



Positive common

fig. 2. DC derating curve

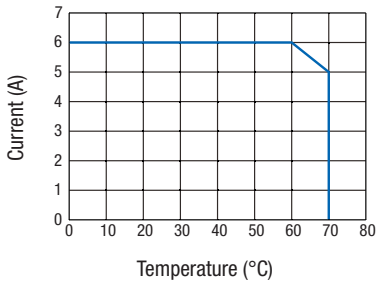
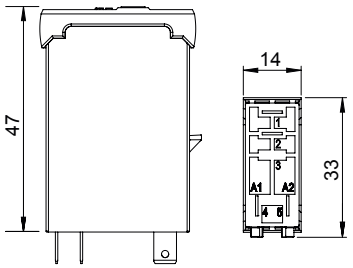


fig. 3. Dimensions (mm)



Technical approvals, conformities

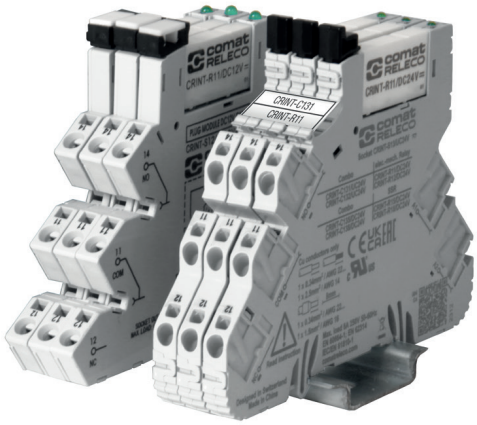
Standards	IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA

CRINT-C1xxR

Product Key and dimensions

Interface Module CRINT

- Electromechanical relay modules up to 6 A 250 V, different contact materials
- Coil UC = AC/DC, no protection circuit required
- LED status display
- Push-in or cage clamp
- Potential bridge bars
- Super small mounting: 6.2 mm width



Product key relay and socket

CRINT - R 1 1 / DC24V

CRINT - C 1 3 1 R / UC24V

Product family

CRINT = **C**omat**R**eleco **Int**erface relay

Product type

C = Relay and socket combined
R = Relay
S = Socket

Contacts

1 = 1 change-over contact
2 = 2 change-over contact
3 = 1 change-over contact, dual terminal

Connection type

1 = Screw terminal
2 = Cage clamp terminal
3 = Push-in

Control voltage

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

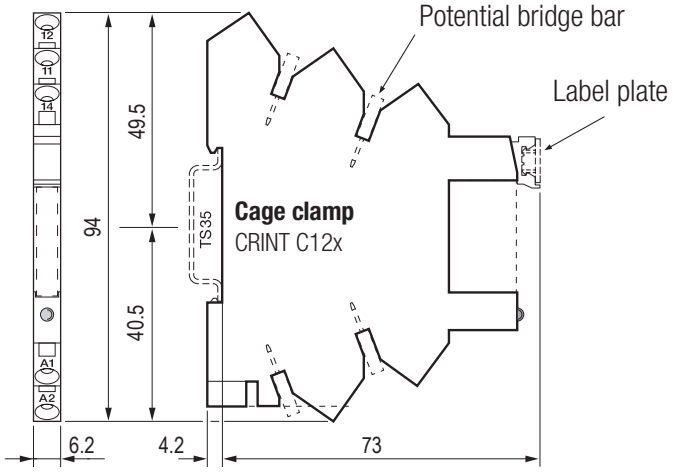
Area of application

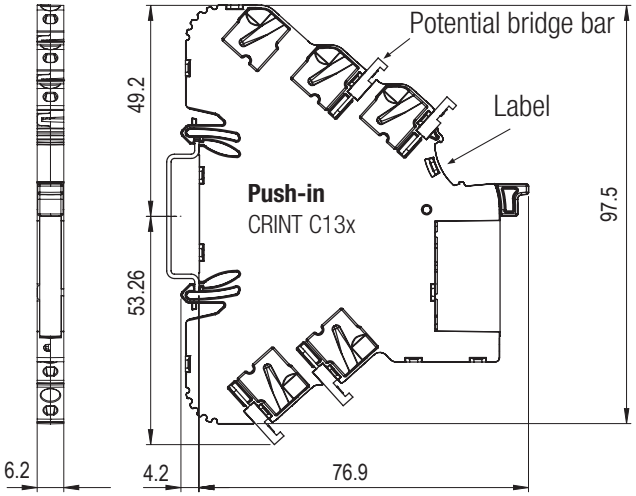
None = Industry
R = Railway

Contact materials

1 = $AgSnO_2$
2 = $AgSnO_2$ + Au
3 = AgNi
4 = AgNi + Au
5 = NO / Solid state DC MOSFET
8 = NO / Solid state AC TRIAC

CRINT-C1xxR — 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 mm²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (crimped)	0.34 mm² / AWG 22 … 1.5 mm² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Dimensions	fig. 3.
Weight	30 g
Housing material	PA

Product references

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

«…» List control voltage to complete product references

Accessories

Potential bridge bar	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	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

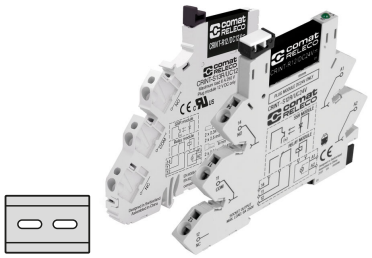


fig. 1. Wiring diagram

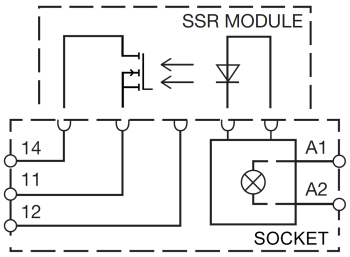


fig. 2. DC load limit curve

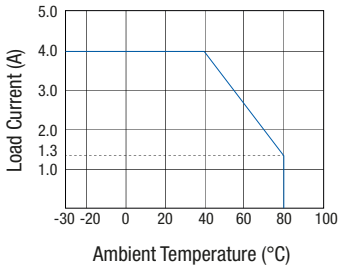
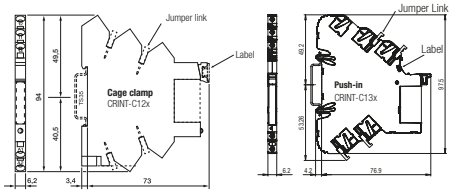


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards EN 62314; EN 60664-1

Railway EN 50155; EN 45545-2

Approvals

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 mm²
Conductor cross section control / main circuit	Push-in terminal
- Single wire	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / AWG 14
- Multi wire (crimped)	0.34 mm² / AWG 22 … 1.5 mm² / AWG 16
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Dimensions	fig. 3.
Weight	30 g
Housing material	PA

Product references

Description	Type	24	110-125
Cage clamp terminal	CRINT-C128R/DC...V	✓	✓
Push-in	CRINT-C138R/DC...V	✓	✓

«…» List control voltage to complete product references

Accessories

Potential bridge bar	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	BS11-PI (50m tape)

Replacement relays

Description	Type	24
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

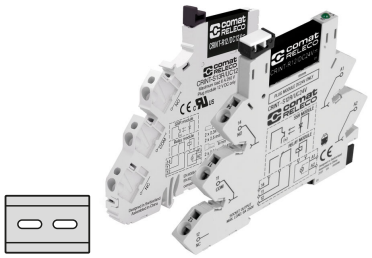


fig. 1. Wiring diagram

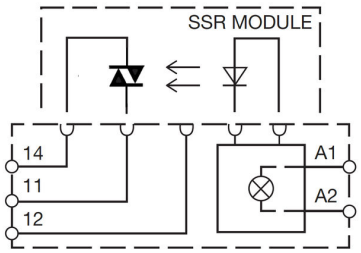


fig. 2. AC derating curve

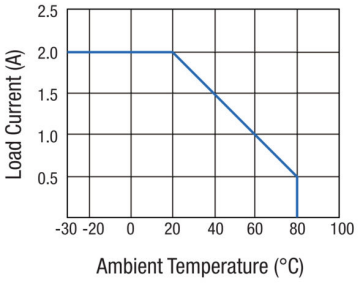
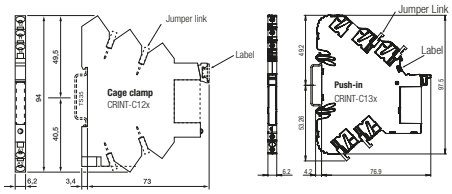


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards EN 62314; EN 60664-1

Railway EN 50155; EN 45545-2

Approvals

1.5 Installation Relays

	Type	Pin	Page
C100/200/300 Series			
2 pole | 2 coils | Signal relay	C203.06R		44

C203.06R

2 pole | 2 coils | Signal relay

Main circuit

Available contact materials	AgAu
Recommended minimum contact load	10 µA / 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)	≥ 100 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 100 000
Number of contacts	2 CO

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
Pick-up time	10 ms
Release time	20 ms
Power consumption AC	2 x 0.25 VA
Power consumption DC	2 x 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 mm², 2 x 1.5 mm², stranded & crimped wire 1 x 2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.5 Nm
Ingress Protection	IP 20
Mounting	TH35 (EN 60715)
Dimensions	fig. 4.
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

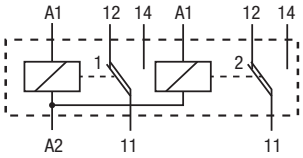


fig. 2. DC voltage endurance

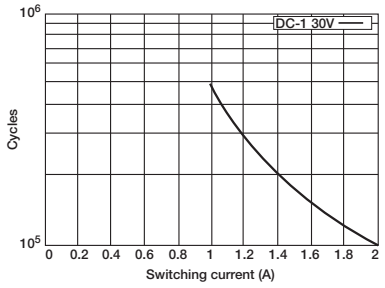


fig. 3. DC load limit curve

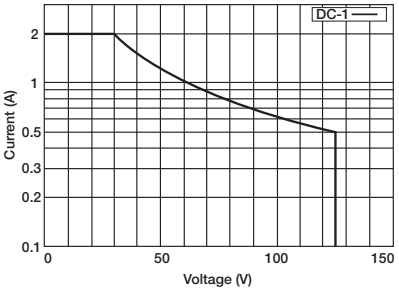
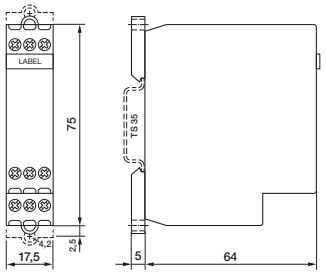


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 61810

Railway EN 50155; EN 45545-2

Approvals

1.6 Installation Contactors

	Type	Pin	Page
RIC Series			
2 pole | 20 A | 7 kW | DC-5 | 4 A 110 V DC	RIC20-xxx-R4A110V		47
2 pole | 20 A | 7 kW | DC-5 | 4 A 110 V DC | TVS suppressor	RIC20-xxx-SR		48
4 pole | 25 A | 5.4 kW	RIC25-xxx-R		49

Installation Contactors

Product Key Installation Contactors

RIC 20 – 2 0 0 – ■ R / DC24V

Product Name

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

Rated current AC-1

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

Number of main contacts NO (normally open)

Number of main contacts NC (normally closed)

Number of main contacts CO (change over)

Control voltage

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

Area of application

None = Standard version
R = Railway version

Surge protection

None = no surge protection
S = Transient voltage suppressor

Assembly information

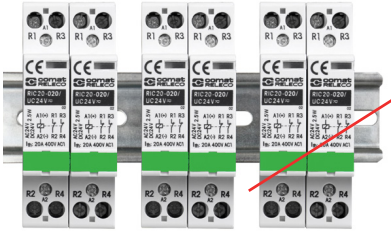
If several contactors are installed next to each other, a distance shall be provided for better air circulation and heat dissipation. If operating multiple contactors per group simultaneously, sufficient ventilation must be provided inside the switch cabinet.

Examples of the maximum number of contactors that can be mounted side-by-side:

Operating ambient temperature up to 40 °C:
min. 9 mm air gap after every third RIC, RAC and RBC



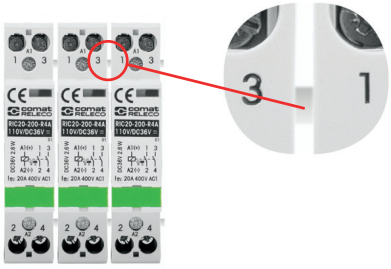
Operating ambient temperature 40 … 55 °C:
min. 9 mm air gap after every second RIC, RAC and RBC



Operating ambient temperature 55 … 70 °C:
min. 9 mm air gap on each side after every RIC, RAC and RBC



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



RIC20-xxx-R4A110V

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

Main circuit

Available contact materials	AgNi
Rated voltage	230 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 (NO) / 0.75 (NC) kW
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

Contact type control / main circuit	Screw connection, M3 / M3.5
Conductor cross section control / main circuit	2.5 mm² / 6 mm²

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Ingress Protection	IP20
Weight	133 g
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

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
Sealing cover	RIC-SEAL20 (BAG 10 PCS)

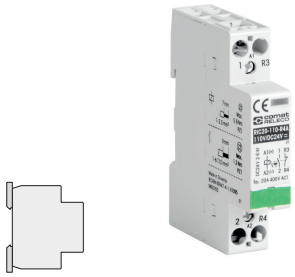


fig. 1. Wiring diagram

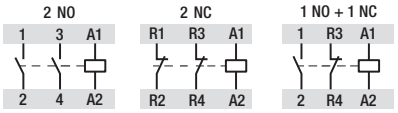


fig. 2. DC load limit curve

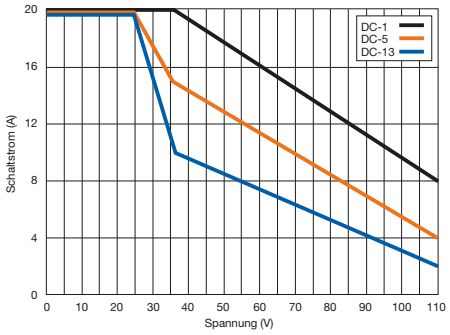
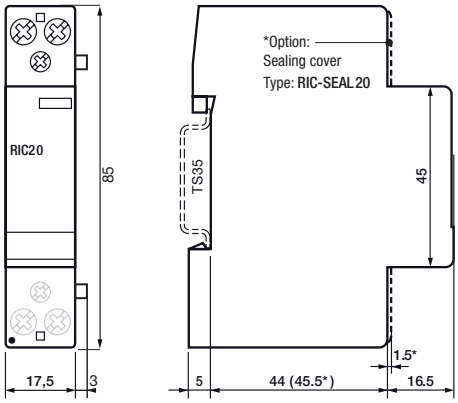


fig. 3. Dimensions (mm)

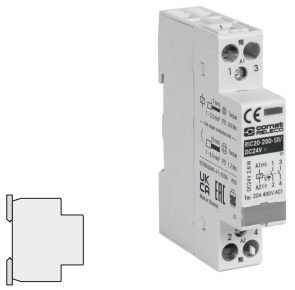


Technical approvals, conformities

Standards	IEC/EN 60947
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA EAC

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	230 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 (NO) / 0.75 (NC) kW
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

Contact type control / main circuit	Screw connection, M3 / M3.5
Conductor cross section control / main circuit	2.5 mm² / 6 mm², use copper conductors only

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Ingress Protection	IP20
Weight	135 g
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

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
Sealing cover	RIC-SEAL20 (BAG 10 PCS)

fig. 1. Wiring diagram

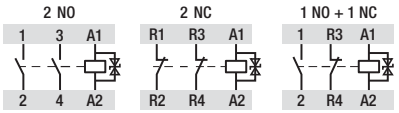


fig. 2. DC load limit curve

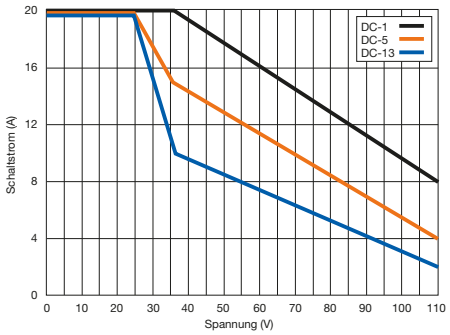
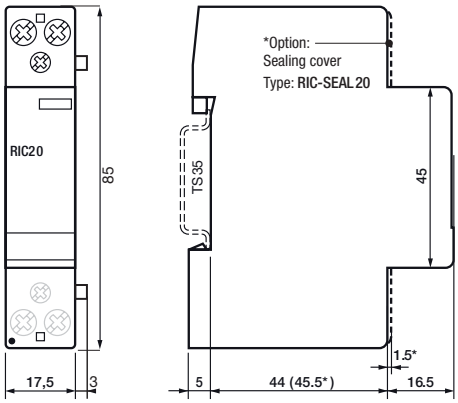


fig. 3. Dimensions (mm)



Technical approvals, conformities

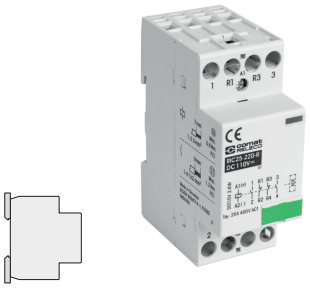
Standards IEC/EN 60947

Railway EN 50155; EN 45545-2

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

Contact type control / main circuit	Screw connection, M3 / M3.5
Conductor cross section control / main circuit	2.5 mm² / 6 mm²

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 80 °C
Operation temperature	-40 ... 70 °C
Ingress Protection	IP20
Weight	250 g
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

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

fig. 1. Wiring diagram

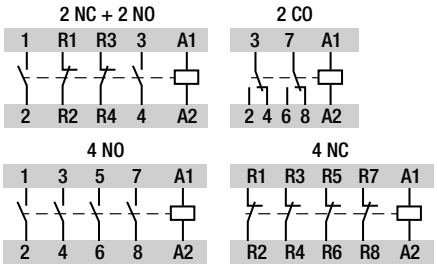


fig. 2. DC load limit curve

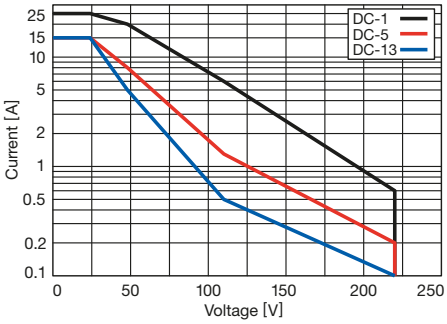
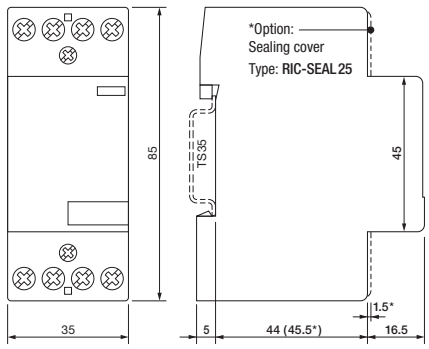


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 50155; EN 45545-2

Approvals

Notes

1.7 Contactors Accessories

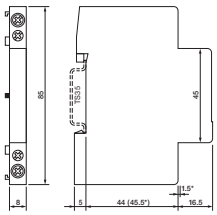
	Type	Pin	Page
Contactors Accessories			
Auxiliary module for RIC / RAC installation contactors | 2 pole | 6 A	RIC-AUX		52
Auxiliary spacer for RIC / RAC / RBC installation contactors	RIC-DIST		52
End covers for RIC-NS / RIC-PS | Set with left and right	RIC-EK		52
Neutral bridge bar for RIC / RAC | 690 V | 63 A | 1 m	RIC-NS		52
Bridge bar for load contacts for RIC / RAC | 690 V | 63 A | 1 m	RIC-PS		52
Auxiliary sealing cover for RIC20 / RAC20	RIC-SEAL		53

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
Ingress Protection	IP 20
Weight	30 g
Housing material	PA 6
Dimensions	see fig. 2





Product references

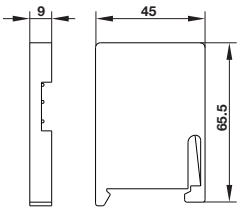
Description	Type
2 NC	RIC-AUX02
1 NO + 1 NC	RIC-AUX11
2 NO	RIC-AUX20

RIC-DIST

Auxiliary spacer 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

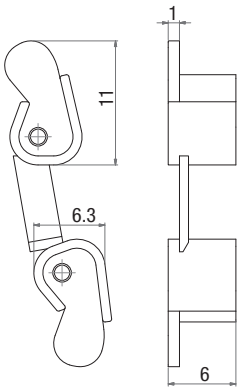
Description	Type
Auxiliary spacer module (9 mm)	RIC-DIST

RIC-EK

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

General data

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





Product references

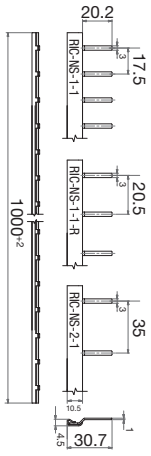
Description	Type
End cover for 1 pole bridge bar	RIC-EK-11 (BAG 25 PCS)
End cover for 2/3 pole bridge bar	RIC-EK-23 (BAG 10 PCS)
End cover for 4 pole bridge bar	RIC-EK-40 (BAG 10 PCS)

RIC-NS

Neutral bridge bar for RIC / RAC | 690 V | 63 A | 1 m

General data

Conductor cross section control / main circuit	10 mm²
Dimensions	see fig. 1
Weight	159 g
Ingress Protection	IP 20
Housing material	PC/ABS



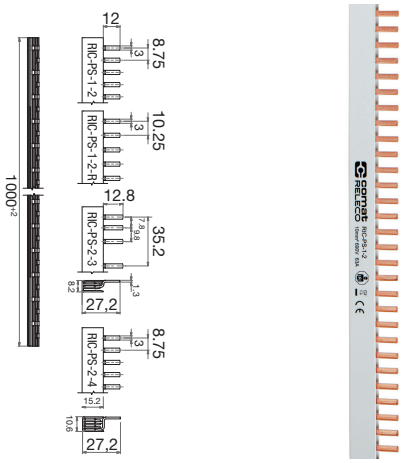


Product references

Description	Type
Neutral bridge bar for 17.5 mm RIC/RAC	RIC-NS-1-1
Neutral bridge bar for (17.5 + 3) mm RIC-R	RIC-NS-1-1-R
Neutral bridge bar for 35 mm RIC/RAC	RIC-NS-2-1

RIC-PS

Bridge bar for load contacts for RIC / RAC | 690 V | 63 A | 1 m



General data

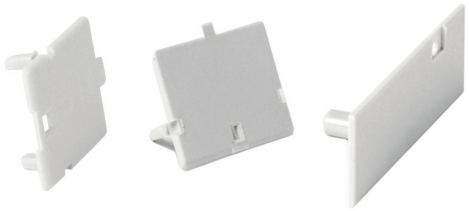
Conductor cross section control / main circuit	10 mm²
Dimensions	see fig. 1
Weight	480 g
Ingress Protection	IP 20
Housing material	PC/ABS

Product references

Description	Type
Bridge bar for load contacts for 17.5 mm RIC/RAC	RIC-PS-1-2
Bridge bar for load contacts for (17.5 + 3) mm RIC-R	RIC-PS-1-2-R
Bridge bar for 3 load contacts for 35 mm RIC/RAC	RIC-PS-2-3
Bridge bar for 4 load contacts for 35 mm 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 (BAG 10 pcs)
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL25 (BAG 10 pcs)
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL40/63 (BAG 10 pcs)

Notes

2 Time Relays

Chapter	Page
2.1 Multifunction Time Relays	57
2.2 Time Modules	69

Time functions

Delay functions

E **On delay**



S ⇒ R on with delay
S OFF ⇒ R off

A **Off delay**



S ⇒ R on
S OFF ⇒ R off with delay

F **On and off delay**



S ⇒ R on with delay (t1)
S OFF ⇒ R off with delay (t2)

Puls shaping

K **Puls shaping**



S (pulse or continuous contact)
⇒ 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)
⇒ R on for t
S on for t = t RESET

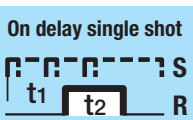
M **Puls shaping**



S OFF ⇒ R on for t
S ‒‒ no influence on R and t

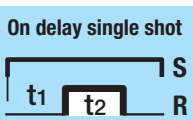
Delayed pulse

G **On delay single shot**



S (pulse or continuous contact)
⇒ R after t1 on for t2
S ‒‒ no influence on R and t

H **On delay single shot**



S ⇒ R after t1 on for t2
S OFF ⇒ R off

Special functions

Y **Star-delta timer**



S ⇒ Y on for tY
YOFF ⇒ Δ on with delay for tY-Δ
S OFF ⇒ Δ off

Shot timing modes

W **One shot leading edge**



S ⇒ R on for t
S OFF ⇒ R off
(pulse clipping)

N **One shot trailing edge**



S OFF ⇒ R on for t
S on for t ⇒ R off

Q **One shot leading and trailing edge**



S ⇒ R on for t1
S OFF ⇒ R on for t2
S OFF off for t1 ⇒ R off

Blinker functions

B **Blinker,** pulse start



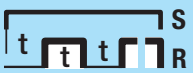
S ⇒ R on/off periodically
according to t
S OFF ⇒ R off

B1 **Blinker,** pulse start, trailing pulse



S ⇒ R on/off periodically
according to t
S OFF: last pulse = t

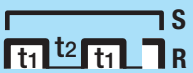
B2 **Blinker,** interval start



S ⇒ R after t on/off periodically
according to t
S OFF ⇒ R off

Repeat cycle timer

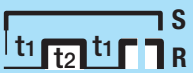
I **Repeat cycle timer,** pulse start



S ⇒ R on/off periodically
according to t1 and t2
S OFF ⇒ R off

P **Repeat cycle timer,** interval start

C55, CT1: t2/t1



S ⇒ R after t1 (t2) on/off periodically according to t2 and t1
S OFF ⇒ R off

Special functions

S **Step-on / Step-off switch**



S ⇒ R on/off

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



S ⇒ R on and starts t
S on for t ⇒ R off

Stop / Reset

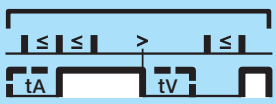
t STOP	S STOP interrupts t (t-addition)	T	t is stopped ⇒ R on/off
t RESET	S RESET reset t t restarts immediately	T	Test

S = Triggering
R = Output circuit
⇒ = switches…

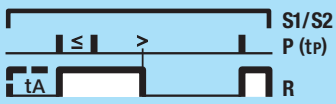


Pulse sequence monitoring

U



V



S1/S2 = Monitoring start
P = Pulse sequence
tP = Pulse separation

≤: 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		58
Multifunction | 24 … 240 V AC / DC | 1 TRIAC	CIM12R		59
Multifunction | 24 … 240 V AC / DC | 1 MOSFET	CIM13R		60
Multifunction | 24 … 240 V AC / DC | 1 CO	CIM2R		61
Multifunction | 24 … 240 V AC / DC | 1 TRIAC	CIM22R		62
Multifunction | 24 … 240 V AC / DC | 1 MOSFET	CIM23R		63
Multifunction | 24 … 240 V AC / DC | 1 CO	CIM3R		64
Multifunction | 24 … 240 V AC / DC | 1 TRIAC	CIM32R		65
Multifunction | 24 … 240 V AC / DC | 1 MOSFET	CIM33R		66
CTF Series			
2 CO | Forcibly guided time relay | without microprocessor	CTF-x24R		67
1 NO + 1 NC | Forcibly guided time relay | without microprocessor	CTF-x34R		68

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)	≥ 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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

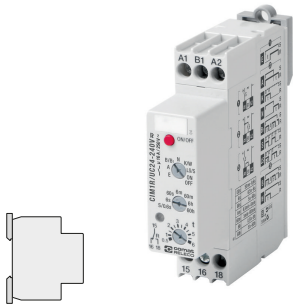


fig. 1. Wiring diagram

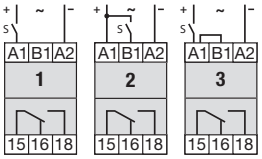


fig. 2. AC voltage endurance

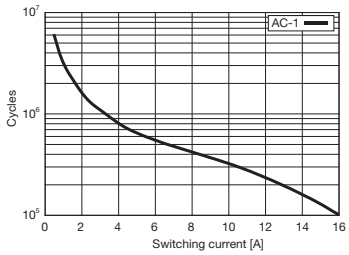


fig. 3. DC load limit curve

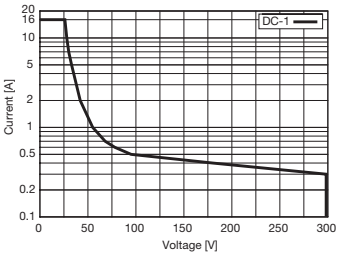
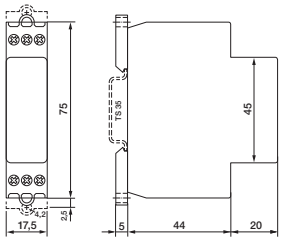


fig. 4. Dimensions (mm)

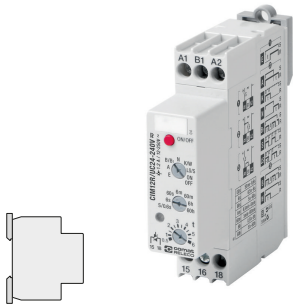


Technical approvals, conformities

Standards IEC/EN 61812-1
Railway EN 50155; EN 45545-2
Approvals

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 A²s
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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

fig. 1. Wiring diagram

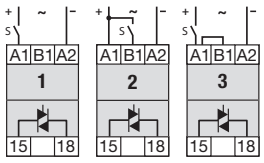
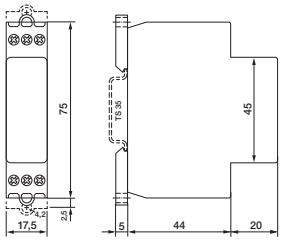


fig. 2. Dimensions (mm)

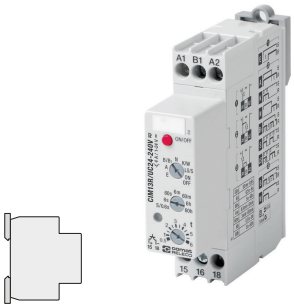


Technical approvals, conformities

Standards	IEC/EN 61812-1
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA EAC

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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

fig. 1. Wiring diagram

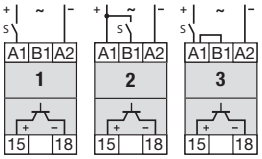
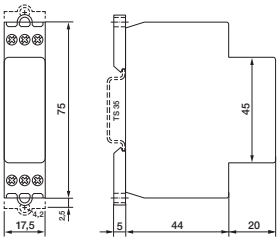


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 61812-1
Railway	EN 50155; EN 45545-2
Approvals	

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)	≥ 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 mm², 2 x 1.5 mm²
Nominal screw torque control / main circuit	0.5 Nm
Dimensions	fig. 4
Weight	70 g
Ingress Protection	IP 20
Housing material	PA

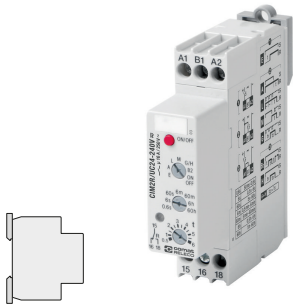
Product references

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

Accessories

Labels	BZS DIN 17.5MM



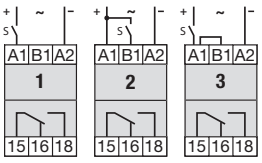


fig. 1. Wiring diagram

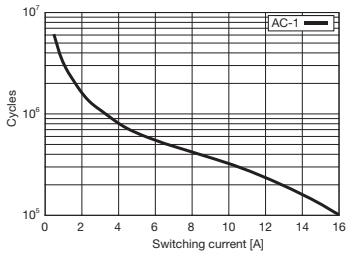


fig. 2. AC voltage endurance

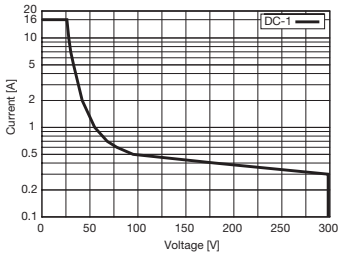


fig. 3. DC load limit curve

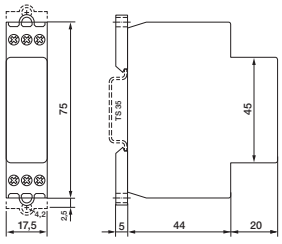


fig. 4. Dimensions (mm)

Technical approvals, conformities

Standards IEC/EN 61812-1
Railway EN 50155; EN 45545-2
Approvals

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 A²s
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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

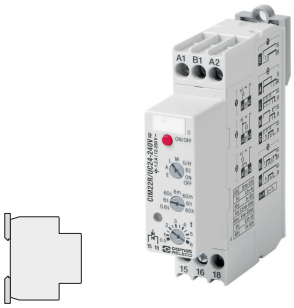


fig. 1. Wiring diagram

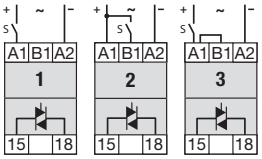
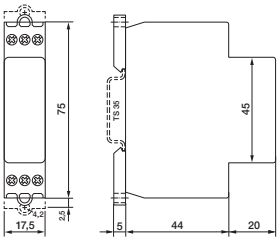


fig. 2. Dimensions (mm)

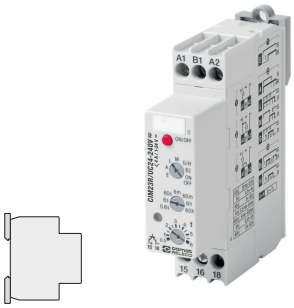


Technical approvals, conformities

Standards	IEC/EN 61812-1
Railway	EN 50155; EN 45545-2
Approvals	

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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

fig. 1. Wiring diagram

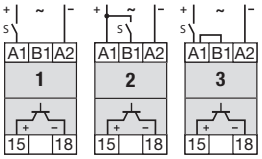
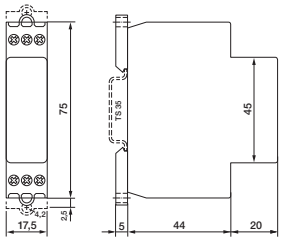


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61812-1

Railway EN 50155; EN 45545-2

Approvals

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)	≥ 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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

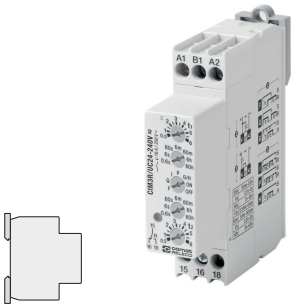


fig. 1. Wiring diagram

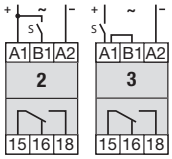


fig. 2. AC voltage endurance

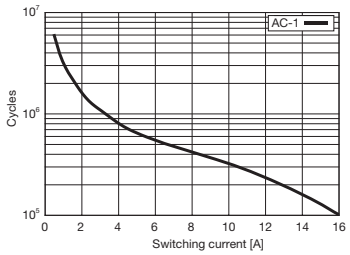


fig. 3. DC load limit curve

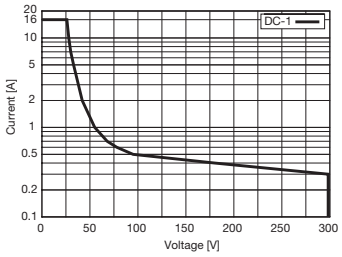
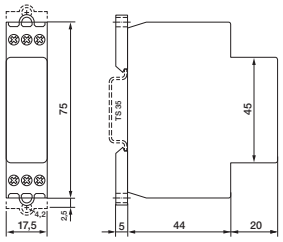


fig. 4. Dimensions (mm)

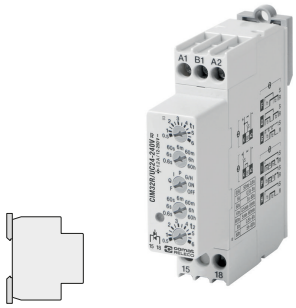


Technical approvals, conformities

Standards IEC/EN 61812-1
Railway EN 50155; EN 45545-2
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^2s
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

Accessories

Labels	BZS DIN 17.5MM

fig. 1. Wiring diagram

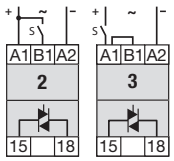
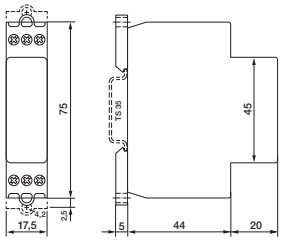


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 61812-1
Railway	EN 50155; EN 45545-2
Approvals	

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 mm², 2 x 1.5 mm²
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

Accessories

Labels	BZS DIN 17.5MM

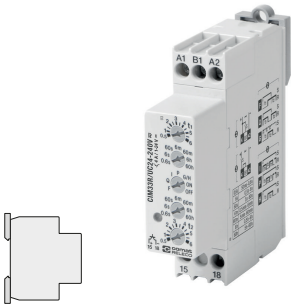


fig. 1. Wiring diagram

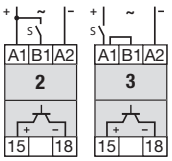
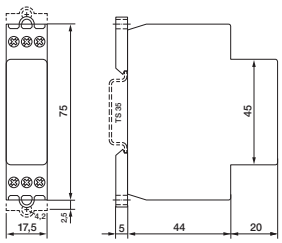


fig. 2. Dimensions (mm)

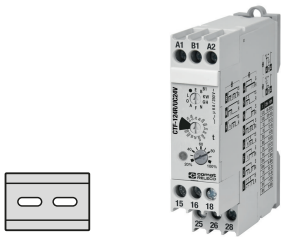


Technical approvals, conformities

Standards	IEC/EN 61812-1
Railway	EN 50155; EN 45545-2
Approvals	

CTF-x24R

2 CO | Forcibly guided time relay | without microprocessor



Time data

Timing functions	CTF-124: B1, K, G, N, F, A, Q, L, E, B, W, H CTF-224: LS
Timing range	40 ms ... 200 ms / 0.16 s ... 0.8 s / 0.4 s ... 2 s / 1.6 s ... 8 s / 4 s ... 20 s / 16 s ... 80 s / 0.4 min ... 2 min / 1.6 min ... 8 min / 4 min ... 20 min / 16 min ... 80 min / 0.4 h ... 2 h / 1.6 h ... 8 h / 4 h ... 20 h / 16 h ... 80 h
Timing scale	0.2 s / 0.8 s / 2 s / 8 s / 20 s / 80 s / 2 min / 8 min / 20 min / 80 min / 2 h / 8 h / 20 h / 80 h

Main circuit

Number of forcibly guided contacts	2 CO (Type B)
Available contact materials	AgNi + 0.2 µ Au
Rated voltage	250 V
Rated current	6 A
Minimum load	10 mA, 12 V
Inrush current	16 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,500 VA
Mechanical endurance (cycles)	20 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U_N … 1.25 U_N
Power consumption AC / DC	1.6 VA / 1.2 W
Current consumption on supply A1-A2 AC / DC	< 55 mA
Current consumption on input control B1 AC / DC	< 2 mA
Inrush current	< 250 mA
Recovery time	≥ 40 ms
Minimum control impulse time	≥ 20 ms
Contains microprocessor	no
Frequency range	0, 50 ... 60 Hz

Insulation

Type of insulation	basic
Rated test voltage control / 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	-40 ... 70 °C
Dimensions	fig. 4
Weight	75 g
Ingress Protection	IP 20
Housing material	PA / PC

Wiring

Contact type control / main circuit	Screw terminal
Conductor cross section control / main circuit	4 mm² / AWG12 (Wire), 2.5 mm² / AWG14 (Stranded), 1.00 mm² / AWG17 (Ferrule). Use copper conductors only.

Product references

Description	Type	24	110-240
Monofunction (LS)	CTF-224R/UC…V	✓	✓
Multifunction	CTF-124R/UC…V	✓	✓

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

The CTF in a sidy-by-side installation complies with the fire integrity requirements of EN 45545-2:2020 if limited to 10 devices.

fig. 1. Wiring diagram

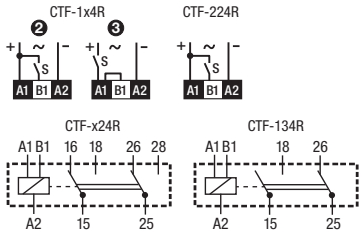


fig. 2. AC voltage endurance

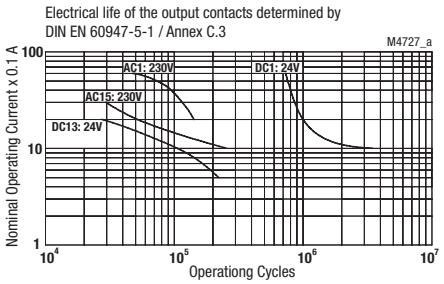


fig. 3. DC load limit curve

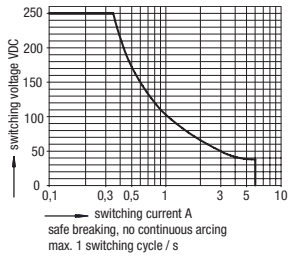
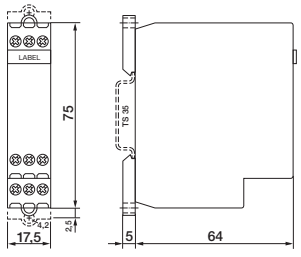


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61812-1, IEC/EN 61810-3
Railway EN 50155, EN 45545-2
Approvals

CTF-x34R

1 NO + 1 NC | Forcibly guided time relay | without microprocessor

Time data

Timing functions	CTF-134: B1, K, G, N, F, A, Q, L, E, B, W, H CTF-234: LS
Timing range	40 ms ... 200 ms / 0.16 s ... 0.8 s / 0.4 s ... 2 s / 1.6 s ... 8 s / 4 s ... 20 s / 16 s ... 80 s / 0.4 min ... 2 min / 1.6 min ... 8 min / 4 min ... 20 min / 16 min ... 80 min / 0.4 h ... 2 h / 1.6 h ... 8 h / 4 h ... 20 h / 16 h ... 80 h
Timing scale	0.2 s / 0.8 s / 2 s / 8 s / 20 s / 80 s / 2 min / 8 min / 20 min / 80 min / 2 h / 8 h / 20 h / 80 h

Main circuit

Number of forcibly guided contacts	1 NO + 1 NC (Type A)
Available contact materials	AgNi + 0.2 µ Au
Rated voltage	250 V
Rated current	6 A
Minimum load	10 mA, 12 V
Inrush current	16 A, 10 ms
Rated load DC	fig. 3
Rated load AC-1	1,500 VA
Mechanical endurance (cycles)	20 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.7 U_N ... 1.25 U_N
Power consumption AC / DC	1.6 VA / 1.2 W
Current consumption on supply A1-A2 AC / DC	< 55 mA
Current consumption on input control B1 AC / DC	< 2 mA
Inrush current	< 250 mA
Recovery time	≥ 40 ms
Minimum control impulse time	≥ 20 ms
Contains microprocessor	no
Frequency range	0, 50 ... 60 Hz

Insulation

Type of insulation	basic
Rated test voltage control / 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	-40 ... 70 °C
Dimensions	fig. 4
Weight	75 g
Ingress Protection	IP 20
Housing material	PA / PC

Wiring

Contact type control / main circuit	Screw terminal
Conductor cross section control / main circuit	4 mm² / AWG12 (Wire), 2.5 mm² / AWG14 (Stranded), 1.00 mm² / AWG17 (Ferrule). Use copper conductors only.

Product references

Description	Type	24	110-240
Multifunction	CTF-134R/UC…V	✓	✓
Monofunction (LS)	CTF-234R/UC…V	✓	✓

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

The CTF in a sidy-by-side installation complies with the fire integrity requirements of EN 45545-2:2020 if limited to 10 devices.

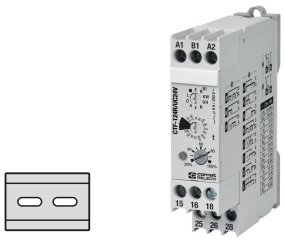


fig. 1. Wiring diagram

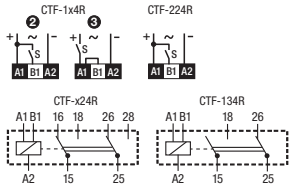


fig. 2. AC voltage endurance

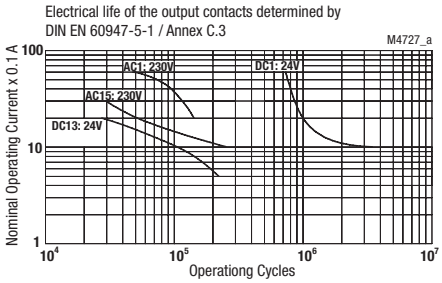


fig. 3. DC load limit curve

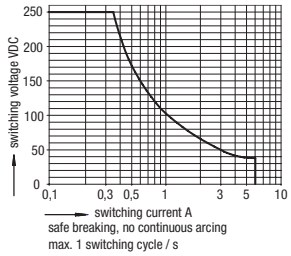
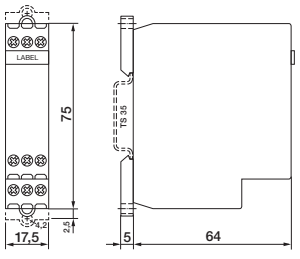


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 61812-1, IEC/EN 61810-3
Railway	EN 50155, EN 45545-2
Approvals	

2.2 Time Modules

	Type	Pin	Page
CT Series			
Multifunction | 24 … 48 V AC / DC | 230 V AC / DC	CT33R		71

ComatReleco timer / monitoring CT modules



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 4mm^2 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.

CT33R

Multifunction | 24 … 48 V AC / DC | 230 V AC / DC

Time data

Timing functions	fig. 1 2: E, A, K, N, B1, F, G, Q, L 3: E, W, B, H
Timing range	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
Timing scale	30 ms … 60 h

Control circuit

Nominal voltage	24 … 48 V AC/DC	230 V AC/DC
Operating voltage range	19 … 60 V AC/DC	180 ... 265 V AC/DC
Power consumption AC / DC	0.3 VA / 0.3 W	1 VA / 1W
Current consumption on supply A1-A2 AC / DC	11 mA / 11 mA	4 mA / 4 mA
Threshold voltage on input control B1 AC / DC	9 V / 9 V	100 V / 100 V
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	230
AC / DC Supply	CT33R/UC...V	✓	✓

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

Accessories

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



fig. 1. Wiring diagram

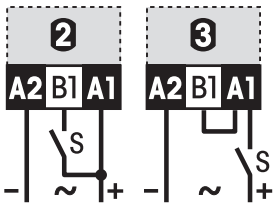
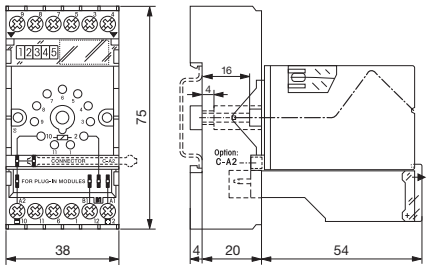


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61812-1

Railway EN 50155; EN 45545-2

Approvals

Notes

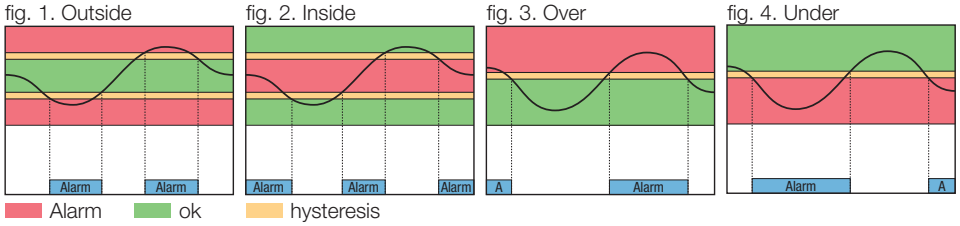
3 Monitoring & Measuring Devices

Chapter	Page
3.1 Multifunction Monitoring	75
3.2 Voltage Monitoring - pluggable	79
3.3 Current monitoring	81
3.4 Isolation Monitoring	83
3.5 Monitoring Modules	85

	Description	MRM11	MRM11R	MRM32	MRM32R	MRS13R	SSU31	SSU33L	SSU33R	SSU34	TSR19	ESU-D2R	CT515R	CT524R
Monitoring	One phase voltage monitoring	●	●											
	Three phase voltage monitoring Y			●	●			●	●	●				
	Three phase voltage monitoring Δ						●	●	●	●				
	DC Voltage monitoring	●	●	●	●									●
	One phase current monitoring	●	●			●								
	Three phase current monitoring			●	●									
	Short-circuit monitoring					●								
	DC current monitoring	●	●	●	●	●							●	
	Phase failure			●	●		●	●	●	●				
	Phase sequence monitoring			●	●		●	●	●	●				
	Phase angle monitoring			●	●			●	●	●				
	Differential voltage monitoring							●	●	●				
	Neutral failure monitoring							●	●	●				
	Frequency monitoring	●	●	●	●			●	●	●				
	Apparent power monitoring	●	●	●	●									
	Active power monitoring	●	●	●	●									
	Power factor monitoring	●	●	●	●									
	Thermo-Switch										●			
	PTC monitoring										●			
	Earth failure monitoring										●	●		
Functions	Treshold „over“ exceeded fig. 3.	●	●	●	●	●		●	●	●	●		●	●
	Theshold „under“ exceeded fig. 4.	●	●	●	●		●	●	●	●	●	●	●	●
	„Inside“ band entered fig. 2.	●	●	●	●									
	„Outside“ band entered fig. 1.	●	●	●	●									
	Threshold selectable	●	●	●	●	●				●	●	●	●	●
	Threshold fixed						●	●	●		●			
	Alarm on-delay *	●	●	●	●	0.2	●	●	●	●	2.5	●	●	●
	Alarm off-delay *	●	●	●	●	●	●							
	Latching alarm output function	●	●	●	●						●			
	Diagnostic input					●								
Power supply	Supply isolated from measuring circuit	●	●	●	●	●					●	●		
	Supply from measure circuit						●	●	●	●			●	●
Mounting	Socket required						●	●	●		●		●	●
	DIN rail mounting	●	●	●	●	●	●	●	●	●	●	●	●	●
	Housing according IEC/EN 43880 (electrical distribution mounting)	●	●	●	●	●								
Suitable for railways			●		●	●			●			●	●	●

* Fixed delays are given in seconds

Monitoring functions:



3.1 Multifunction Monitoring

	Type	Pin	Page
MRM Series			
1 phase | 1 CO | Multifunction monitoring	MRM11R		76
3 phase | 2 CO | Multifunction monitoring	MRM32R		77

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
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 threshold I_{th} 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 mm²
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 control circuit voltage to complete product references



fig. 1. Wiring diagram

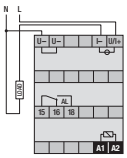


fig. 2. AC voltage endurance

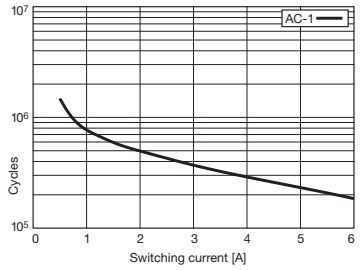


fig. 3. DC load limit curve

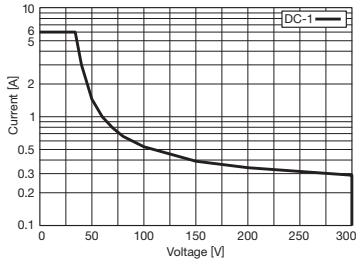
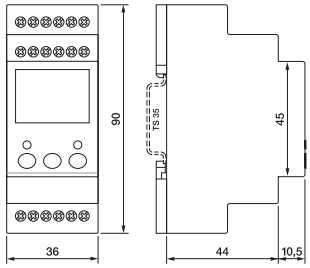


fig. 4. Dimensions (mm)



Technical approvals, conformities

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

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
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 threshold I_{th} 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 mm²
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

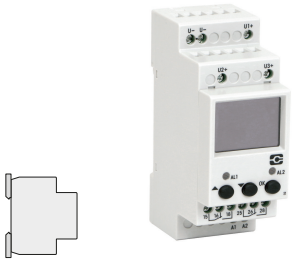


fig. 1. Wiring diagram

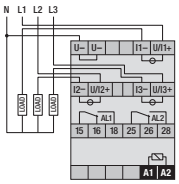


fig. 2. AC voltage endurance

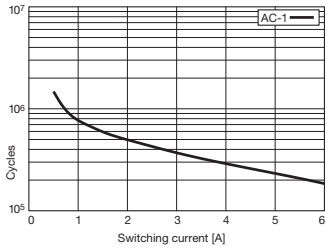


fig. 3. DC load limit curve

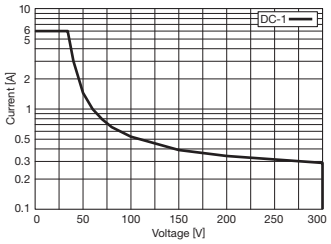
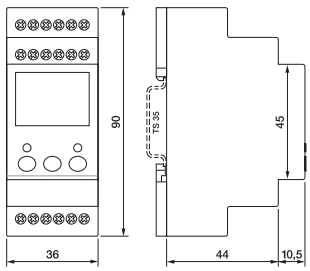


fig. 4. Dimensions (mm)



Technical approvals, conformities

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

Notes

3.2 Voltage Monitoring - pluggable

	Type	Pin	Page
SSU Series			
3 phase + N | 1 CO | Voltage monitoring	SSU33R		80

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
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	FS-23
Frontpanel mounting set	FZ-23

fig. 1. Wiring diagram

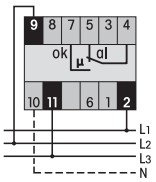


fig. 2. AC voltage endurance

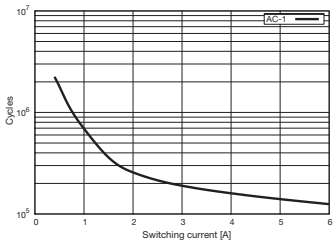


fig. 3. DC load limit curve

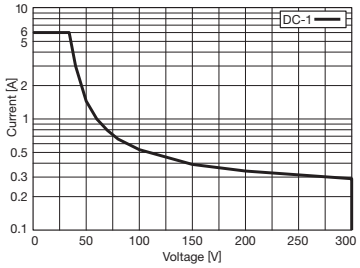
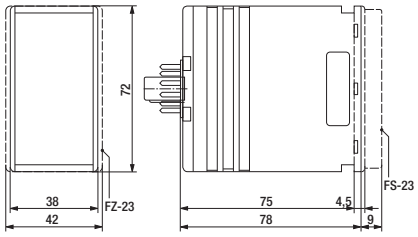


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 60947
Railway EN 50155; EN 45545-2
Approvals

3.3 Current monitoring

	Type	Pin	Page
MRS Series			
1 phase | 1 NO + 1 NC forcibly guided | Overcurrent protection	MRS13R		82

MRS13R

1 phase | 1 NO + 1 NC forcibly guided | Overcurrent protection

Power supply

Nominal voltage	12 ... 48 V AC / DC
Operating voltage range	10 ... 60 V AC / DC
Power consumption AC / DC	3.2 VA / 1.6 W
Frequency range	0; 16 ... 63 Hz

Measuring circuit

Measured parameters	I (Load current)
Min. setting step, resolution	0.1 A
Monitoring functions	Overcurrent detection
Rated measurement current	5 A
Measurement current range	-5 ... 5 A
Overcurrent threshold I_{th} setting range	0.1 ... 5 A, default = 3.0 A
Saturation current threshold I_{max}	± 5 A
Maximum pulse current	See extended datasheet
Alarm switch-on delay T_{Don}	0 ... 999.9 s, default = 0.0 s
Alarm switch-off delay T_{Doff}	0.1 ... 999.9 s, default = 3.0 s
Hysteresis	3% ... 50%, default = 5%
Scaling factor	0.1 ... 1000, default = 400
Minimum overcurrent detection time	4.5 ms
Minimum saturation current detection time	3.1 ms
Response time in case of overcurrent or saturation current event	See extended datasheet

Main circuit

Number of forcibly guided contacts	1 NO + 1 NC (Type A)
Available contact materials	AgCuNi + 0.2 … 0.4 µ Au
Rated voltage	240 V AC
Rated current	6 A
Minimum load	3 mA, 15 V (40 mW)
Inrush current	30 A, 20 ms
Rated load DC	fig. 3
Rated load AC-1	1,500 VA
Mechanical endurance (cycles)	10 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 2

Test/Diagnostic input

Maximal voltage digital inputs	160 V DC
Logic level "1"	≥ 14 V
Logic level "0"	≤ 5 V
Sampling Rate	667 Hz

Insulation

Rated test voltage current loop / diagnostic input	3.0 kV / 1 Min.
Rated test voltage power supply / current loop	3.0 kV / 1 Min.
Rated test voltage power supply / diagnostic input	3.0 kV / 1 Min.
Rated test voltage power supply / relay NO	3.0 kV / 1 Min.
Rated test voltage power supply / relay NC	3.0 kV / 1 Min.
Rated test voltage current loop / relay NO	3.0 kV / 1 Min.
Rated test voltage diagnostic input / relay NO	2.0 kV / 1 Min.
Rated test voltage diagnosis input / relay NC	2.0 kV / 1 Min.
Rated test voltage current loop / relay NC	3.0 kV / 1 Min.
Rated test voltage relay NO / relay NC	2.5 kV / 1 Min.
Pollution degree	2
Overvoltage category	III

Housing and environmental conditions

Storage temperature (no ice)	-40 ... 85 °C
Operation temperature	-40 ... 70 °C (display -20 ... 70 °C)
Ingress Protection	IP 20
Weight	107 g
Housing material	PA
Operation Position	any
Dimensions	fig. 4

Wiring

Contact type control / main circuit	screw terminal
Conductor cross section control / main circuit	2.5 mm², AWG14 (stranded) / 4mm², AWG12 (wire) Only copper conductors must be used

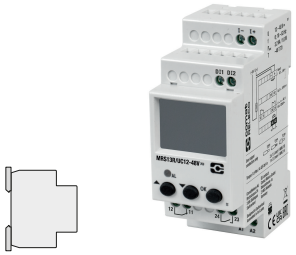


fig. 1. Wiring diagram

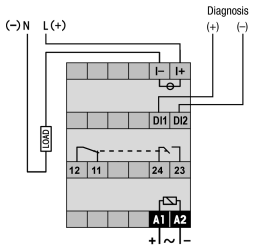


fig. 2. AC voltage endurance

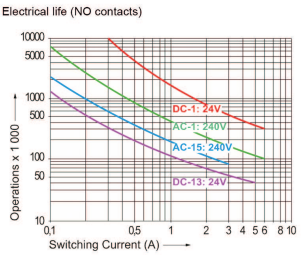


fig. 3. DC load limit curve

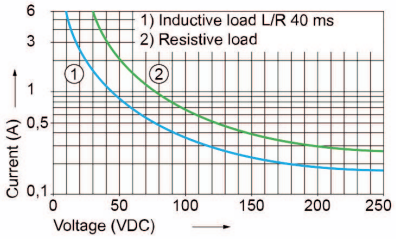
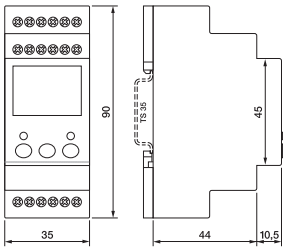


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC 61810-3 (Type A)

Railway EN 50155; EN 45545-2; EN 61373

Approvals

3.4 Isolation Monitoring

	Type	Pin	Page
ESU Series			
DC Isolation monitoring | 1 NO + 2 CO	ESU-D2.C2354		84

ESU-D2.C2354

DC Isolation monitoring | 1 NO + 2 CO

Power supply

Nominal voltage	24 … 48 V UC
Operating voltage range	16.8 … 60 V
Power consumption AC / DC	2 VA / 2 W
Frequency range	0, 40 … 60 Hz

Measuring circuit

Measured parameters	Ω
Monitoring functions	under, ground fault
Rated DC voltage U+ / U-	60 V
Overvoltage setting range	> 60 VDC
Pre alarm setting range	4 … 30 kΩ
Main alarm	≤ 4 kΩ
Alarm delay	0.1 ... 10 s
Alarm reset delay	1 s

Main circuit

Number of contacts	1 NO + 2 CO
Available contact materials	AgNi
Rated voltage	250 V AC
Rated current	5 A
Minimum load	10 mA, 12 V
Rated load DC	fig. 3
Rated load AC-1	1,250 VA
Mechanical endurance (cycles)	5 000 000
Electrical endurance at rated load AC-1 (cycles)	1 000 000

Insulation

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 mm², 2 x 1.5 mm²
Nominal screw torque control / main circuit	0.5
Dimensions	fig. 4
Weight	250 g
Ingress Protection	IP 20
Housing material	PA

Product references

Description	Type	24-48
DC Isolation monitoring, railway version	ESU-D2.C2354/UC…V	✓

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

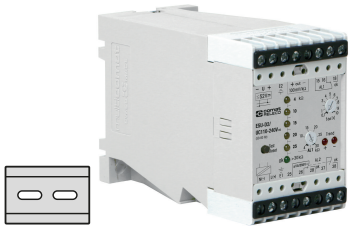


fig. 1. Wiring diagram

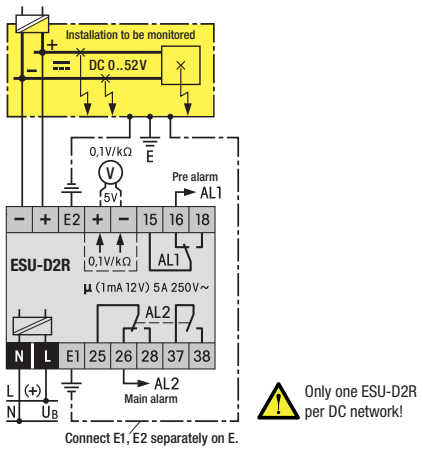


fig. 2. DC load limit curve

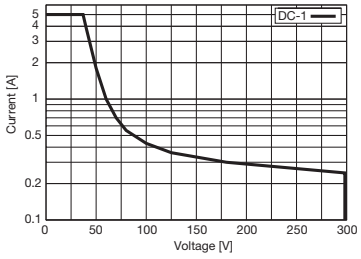
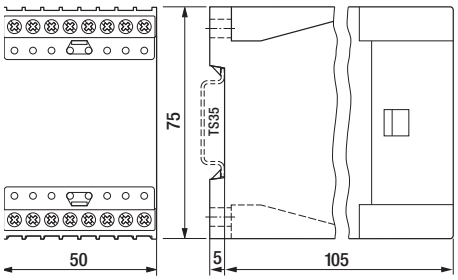


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards	IEC/EN 60947; EN 61000-6-2; EN 61000-3
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA

3.5 Monitoring Modules

	Type	Pin	Page
CT Series			
Current monitoring	CT515R		86
Voltage monitoring	CT524R		87

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 threshold I_{th} 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, S5-MR
Transparent cover	FS-C/5 (BEUTEL/UNIT 5 STK/PCS)



fig. 1. Wiring diagram

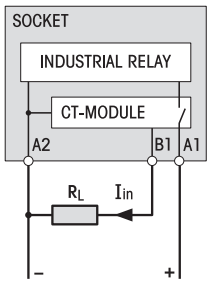
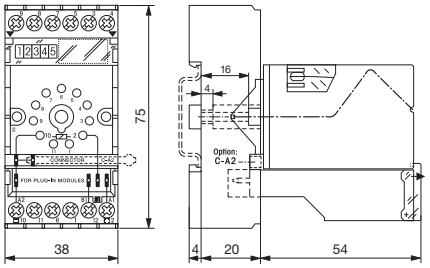


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	EN 60947-1; EN 61000-6-2; EN 61000-6-3
Railway	EN 50155; EN 45545-2
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, S5-MR
Transparent cover	FS-C/5 (BEUTEL/UNIT 5 STK/PCS)



fig. 1. Wiring diagram

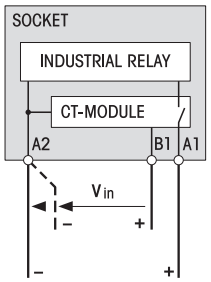
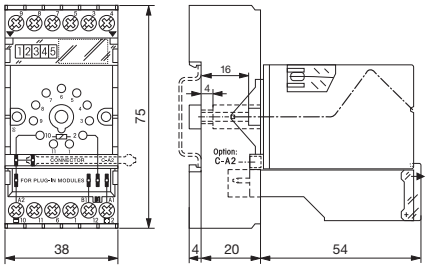


fig. 2. Dimensions (mm)



Technical approvals, conformities

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

Notes

4 Sockets

Chapter	Page
4.1 11-Pin-Sockets	90
4.2 14 Pin Sockets	95
4.3 8/11/14-Pin Sockets	97
4.4 5/8-Pin Sockets	103
4.5 Socket Accessories	109

4.1 11-Pin-Sockets

	Type	Pin	Page
11-Pin Series			
11-pin R3 relay socket | Time & Monitoring | Screw terminal	S3-MR		91
11-pin R3 relay socket | Time & Monitoring | Screw terminal	S3-M0R / S3-M1R		92
11-pin R5 relay socket | Screw terminal	S5-MR		93

S3-MR

11-pin R3 relay socket | Time & Monitoring | 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 mm² / AWG 10, 2 x 1.5 mm² / AWG 16
- Multi wire (un-crimped)	1 x 4 mm² / AWG 12, 2 x 1.5 mm² / 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

A2-Bridge	C-A2 (BAG 5PCS)

Optional Accessories

Retaining spring | steel	HF-32 (BAG 10 PCS), HF-33 (BAG 10 PCS), HF-24
Coding ring	S3-BC (BAG 5 PCS)
Free wheeling diode module for S3-M, S3-M0, S5-M	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V
A2-Bridge	C-A2 (BAG 50PCS)





fig. 1. Wiring diagram

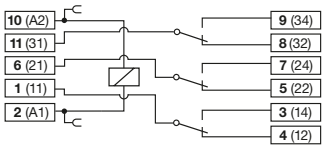
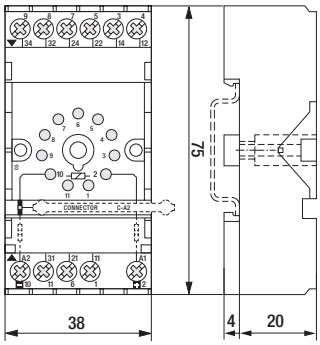


fig. 2. Dimensions (mm)



Technical approvals, conformities

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

S3-M0R / S3-M1R

11-pin R3 relay socket | Time & Monitoring | 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 mm² / AWG 10, 2 x 1.5 mm² / AWG 16
- Multi wire (un-crimped)	1 x 4 mm² / AWG 12, 2 x 1.5 mm² / 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

Optional Accessories

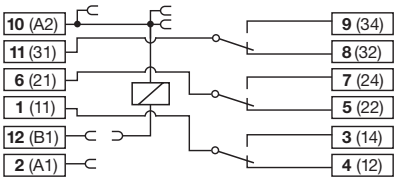
Retaining spring I steel	HF-32 (BAG 10 PCS), HF-33 (BAG 10 PCS), HF-24
Coding ring	S3-BC (BAG 5 PCS)
A2-Bridge	C-A2 (BAG 5PCS), C-A2 (BAG 50PCS)
Free wheeling diode module for S3-M, S3-M0, S5-M	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V



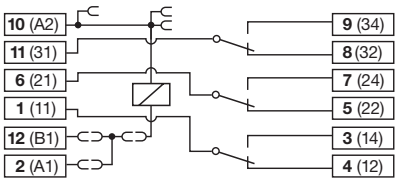
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fig. 1. Wiring diagram

S3-M0R

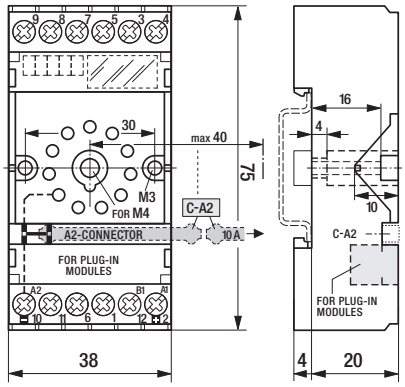


S3-M1R



Bridge Connector SC-3 included

fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 50155; EN 45545-2
Approvals	CE UKCA

S5-MR

11-pin R5 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 mm² / AWG 10, 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	1 x 6 mm² / AWG 10, 2 x 2.5 mm² / 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 I Plastic	S5M-CP
A2-Bridge	C-A2 (BAG 5PCS)

Optional Accessories

Retaining spring I steel	HF-32 (BAG 10 PCS)
A1-, B1-Bridge for S3-Mx, S5-M	SC-3 (BAG 10 PCS)
A2-Bridge	C-A2 (BAG 50PCS)

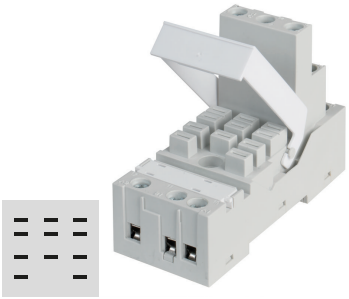
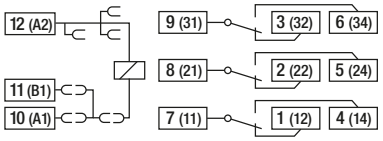
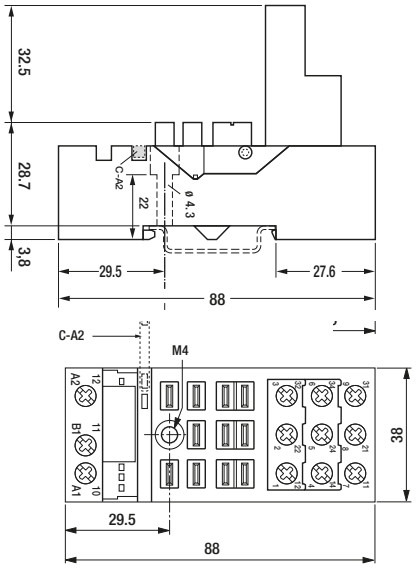


fig. 1. Wiring diagram



With Bridge Connector SC-3

fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 45545-2; EN 50155
Approvals	CE UKCA

Notes

4.2 14 Pin Sockets

	Type	Pin	Page
14-Pin Series			
14-pin R4 relay socket | Screw terminal	S4-GR		96

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 mm² / AWG 16 or 2 x 1.5 mm² / AWG 16
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 1 mm² / AWG 18
Nominal screw torque	0.8 Nm
Screw Dimension	M3.5 Philips-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 I Plastic	S3-CM/CP-15B (BAG 10 PCS)

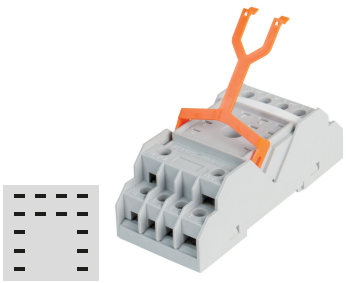


fig. 1. Wiring diagram

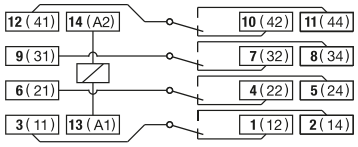
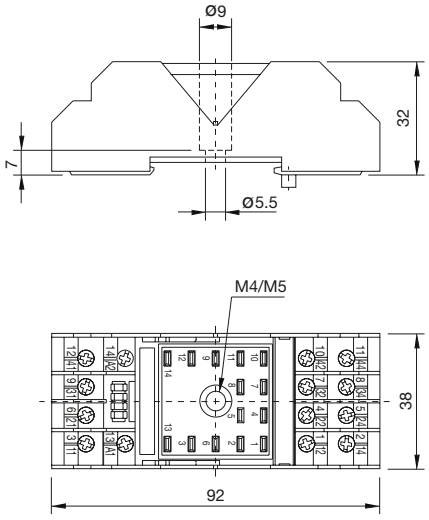


fig. 2. Dimensions (mm)



Technical approvals, conformities

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

4.3 8/11/14-Pin Sockets

	Type	Pin	Page
8/11/14-Pin Series			
8-pin socket for R7 relay | Push-in	S7-PIR		98
8-pin socket for R7 relay | Screw terminal	S7-GR		99
14-pin socket for R9 relay | Push-in	S9-PIR		100
14-pin C9 relay socket | Screw terminal	S9-MR		101

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 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 … 80 °C
Operation temperature	-40 … 70 °C
Weight	46 g
Housing material	PA

Optional Accessories

Retaining clip | Plastic	S7-CPI (BAG 10 PCS)
A2-Bridge 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	BS11-PI (50m tape)
Cable Bridge	BC-78-15-8-BK (BAG 20 PCS), BC-78-15-8-BU (BAG 20 PCS), BC-78-15-8-RD (BAG 20 PCS)

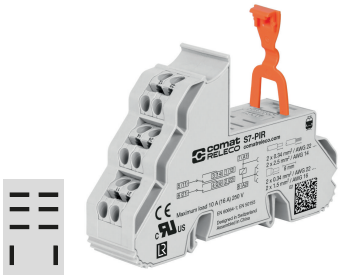


fig. 1. Wiring diagram

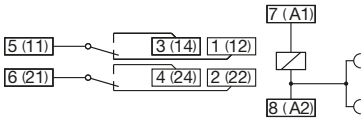
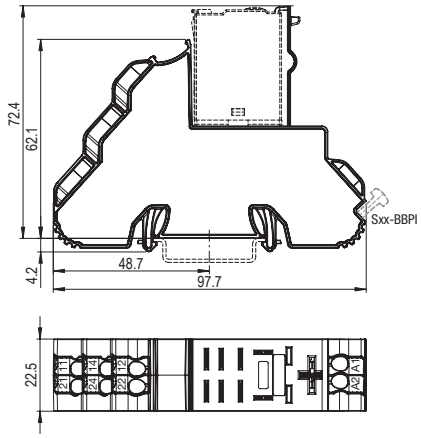


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 50155; EN 45545-2

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 mm² / AWG 12, 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / 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

Optional Accessories

Retaining clip I Plastic	S9-C/CP-01B (BAG 10 PCS)
A2-Bridge	S7-BB (BAG 20 PCS)
Panel adapter for S7-C, S7-IO, S9-M(R)	S9-G (BAG 10 PCS)

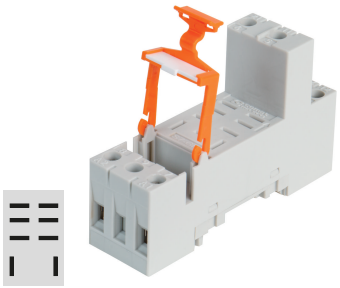


fig. 1. Wiring diagram

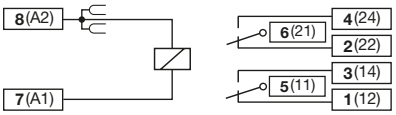
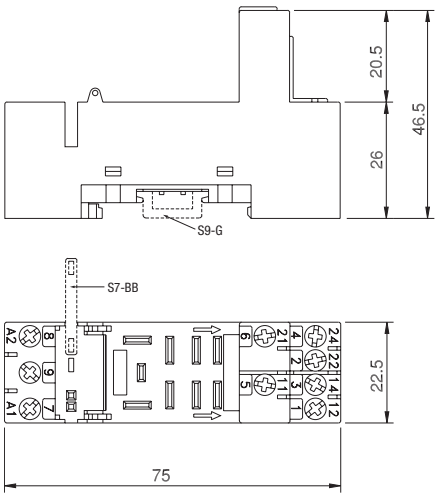


fig. 2. Dimensions (mm)



Technical approvals, conformities

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

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 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 … 80 °C
Operation temperature	-40 … 70 °C
Weight	62 g
Housing material	PA

Optional Accessories

Retaining clip | Plastic	S7-CPI (BAG 10 PCS)
A2-Bridge 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	BS11-PI (50m tape)
Cable Bridge	BC-78-15-8-BK (BAG 20 PCS), BC-78-15-8-BU (BAG 20 PCS), BC-78-15-8-RD (BAG 20 PCS)

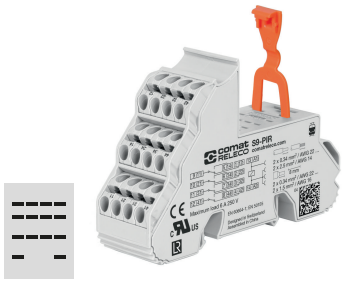


fig. 1. Wiring diagram

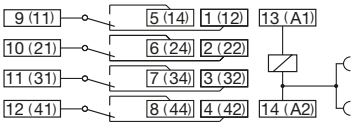
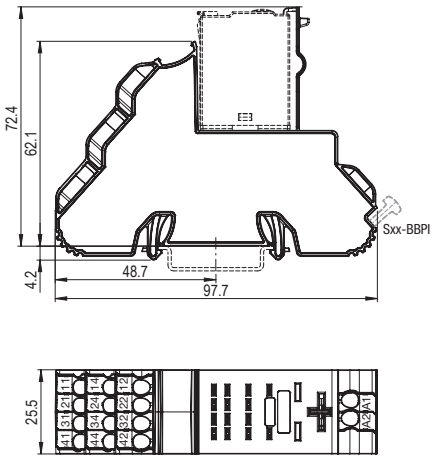


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 50155; EN 45545-2

Approvals

S9-MR

14-pin C9 relay socket | Screw terminal

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
Conductor cross section	
- Single wire	4 mm² / AWG 12, 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / 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 … 60 °C
Weight	54 g
Housing material	PA / PC

Accessories

Retaining clip I Plastic	S9-C/CP-01B (BAG 10 PCS)
Panel adapter for S7-C, S7-IO, S9-M(R)	S9-G (BAG 10 PCS)
2-pole potential bridge bar for S9-M(R)	S9M-V1 (BAG 5 PCS), S9M-BX (BAG 5 PCS)
4-pole potential bridge bar for S9-M(R)	S9M-V4 (BAG 5 PCS)

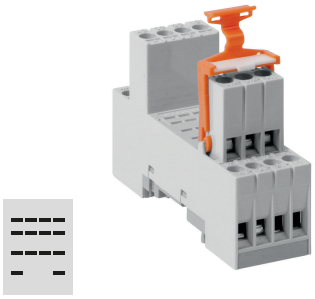


fig. 1. Wiring diagram

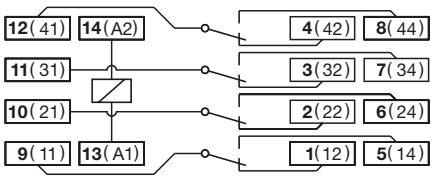
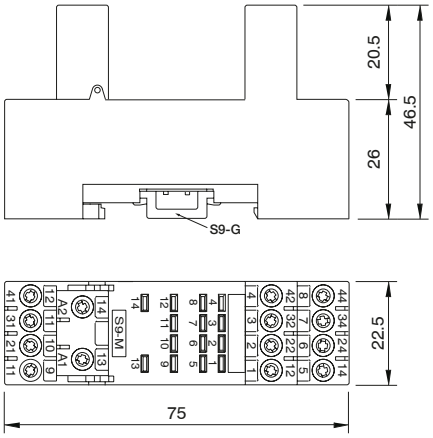


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Approvals

Notes

4.4 5/8-Pin Sockets

	Type	Pin	Page
5/8-Pin Series			
5-pin socket for R10 relay | Push-in	S10-PIR		104
5-pin socket for R10 relay | Screw terminal	S10-GR		105
8-pin socket for R12 relay | Push-in	S12-PIR		106
8-pin socket for R12 relay | Screw terminal	S12-GR		107

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 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 … 80 °C
Operation temperature	-40 … 70 °C
Weight	33 g
Housing material	PA
Dimensions	see fig. 1

Optional Accessories

Retaining clip | Plastic	S10-CPI (BAG 10 PCS)
A2-Bridge for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
Multi-operation tool kit	OT-PI kit
Marking strip	BS11-PI (50m tape)
Cable Bridge	BC-78-15-8-BK (BAG 20 PCS), BC-78-15-8-BU (BAG 20 PCS), BC-78-15-8-RD (BAG 20 PCS)

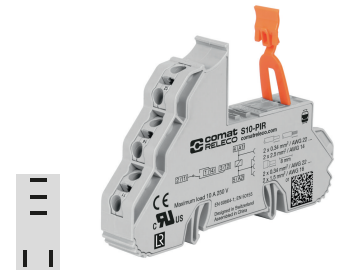


fig. 1. Wiring diagram

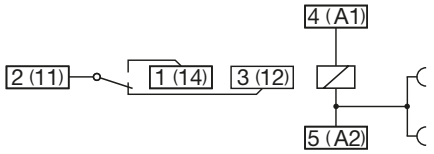
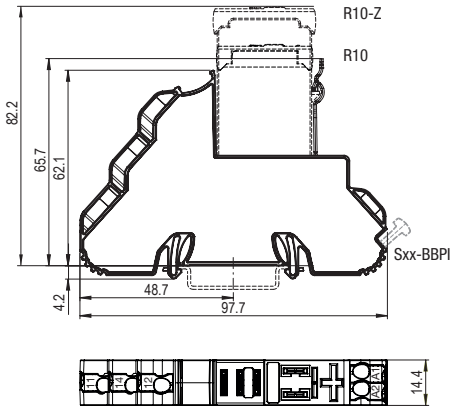


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 50155; EN 45545-2

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 mm² / AWG 12, 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / 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

Optional Accessories

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

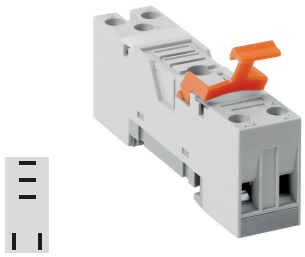


fig. 1. Wiring diagram

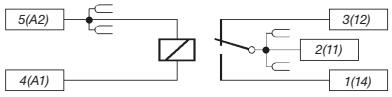
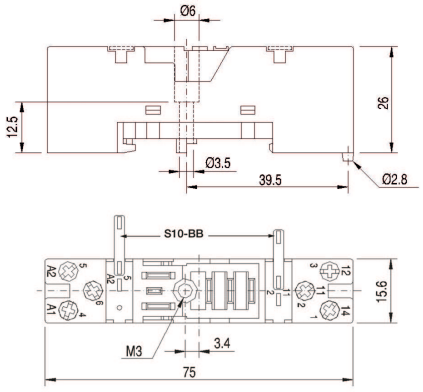


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 50155; EN 45545-2
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 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16
Mounting	TH35 (EN 60715)
Storage temperature (no ice)	-40 … 80 °C
Operation temperature	-40 … 70 °C
Weight	39 g
Housing material	PA

Optional Accessories

Retaining clip | Plastic	S10-CPI (BAG 10 PCS)
A2-Bridge 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	BS11-PI (50m tape)
Cable Bridge	BC-78-15-8-BK (BAG 20 PCS), BC-78-15-8-BU (BAG 20 PCS), BC-78-15-8-RD (BAG 20 PCS)

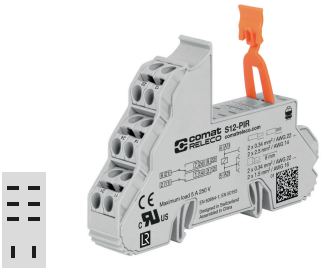


fig. 1. Wiring diagram

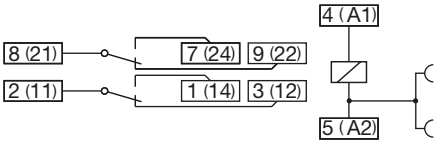
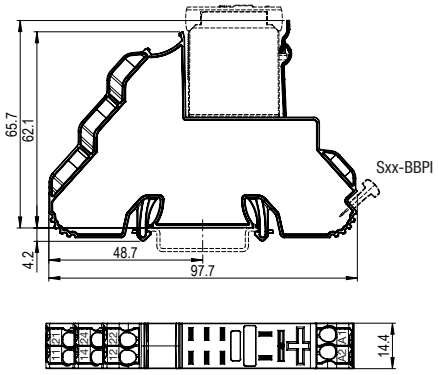


fig. 2. Dimensions (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 50155; EN 45545-2
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 mm² / AWG 12, 2 x 2.5 mm² / AWG 14
- Multi wire (un-crimped)	0.34 mm² / AWG 22 … 2.5 mm² / 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

Optional Accessories

A2-Bridge	B20-A (BAG 5 PCS), B20-G (BAG 5 PCS), B20-R (BAG 5 PCS)
2-pole potential bridge bar	V10-A (BAG 5 PCS), V10-G (BAG 5 PCS), V10-R (BAG 5 PCS)
4-pole potential bridge bar	V40-A (BAG 5 PCS), V40-G (BAG 5 PCS), V40-R (BAG 5 PCS)

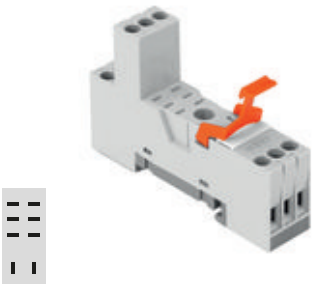


fig. 1. Image

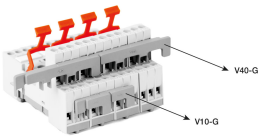


fig. 2. Image

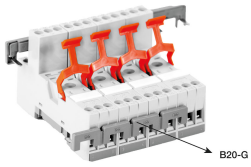


fig. 3. Wiring diagram

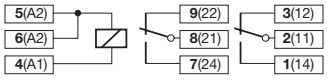
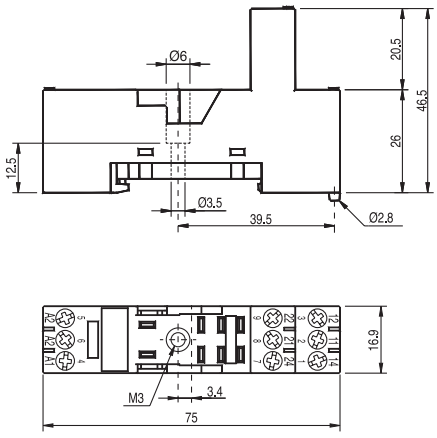


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 50155; EN 45545-2

Approvals

Notes

4.5 Socket Accessories

	Type	Pin	Page
Socket Accessories			
A1-, B1-Bridge for S3-Mx, S5-M	SC-3		111
A2-Bridge for S12	B20		111
A2-Bridge for S3-M, S5-M, S5-MR	C-A2		111
A2-Bridge for S10	S10-BB		111
A2-Bridge for S7-IO, S7-C and S7-GR	S7-BB		111
A2-Bridge for Sx-PI / Sx-PIR	Sxx-BBPI		111
2-pole potential bridge bar for S7-PI(R), S9-PI(R) and S12-PI(R)	Sxx-BBPI2		112
4-pole potential bridge bar for S9-PI(R) and S9-PI(R)	Sxx-BBPI4		112
2-pole potential bridge bar for S9-M(R)	S9M-V1		112
4-pole potential bridge bar for S9-M(R)	S9M-V4		112
2-pole potential bridge bar for S10-M / S12	V10		112
4-pole potential bridge bar	V40		112
Free wheeling diode module for S3-M, S3-M0, S5-M	RD1		113
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Marking strip for Sx-PI & Sx-PIR sockets	BS11-PI (50m)		113
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Multi-operation tool kit for Sx-PI & Sx-PIR sockets	OT-PI kit		114
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Retaining clip | Plastic	S9-C		116

SC-3

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

Product references

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

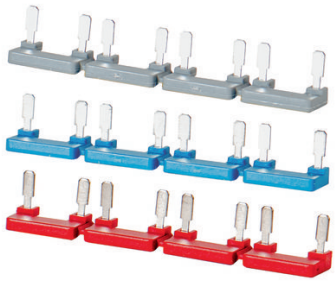


B20

A2-Bridge for S12

Product references

Description	Type
A2-Bridge, blue	B20-A (BAG 5 PCS)
A2-Bridge I grey	B20-G (BAG 5 PCS)
A2-Bridge I red	B20-R (BAG 5 PCS)

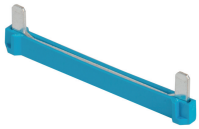


C-A2

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

Product references

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



S10-BB

A2-Bridge for S10

Product references

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



S7-BB

A2-Bridge for S7-IO, S7-C and S7-GR

Product references

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



Sxx-BBPI

A2-Bridge for Sx-PI / Sx-PIR



Product references

Description	Type
A2-Bridge 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
2-pole potential bridge bar 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
4-pole potential bridge bar for Push-in sockets	Sxx-BBPI4 (BAG 20 PCS)

S9M-V1

2-pole potential bridge bar for S9-M(R)



Product references

Description	Type
2-pole potential bridge bar for S9-M(R)	S9M-V1 (BAG 5 PCS) R

S9M-V4

4-pole potential bridge bar for S9-M(R)



Product references

Description	Type
4-pole potential bridge bar for S9-M(R)	S9M-V4 (BAG 5 PCS) R

V10

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



Product references

Description	Type
2-pole potential bridge bar for S10-M / S12 I blue	V10-A (BAG 5 PCS)
2-pole potential bridge bar for S10-M / S12 I grey	V10-G (BAG 5 PCS)
2-pole potential bridge bar for S10-M / S12 I red	V10-R (BAG 5 PCS)

V40

4-pole potential bridge bar

Product references

Description	Type
4-pole potential bridge bar for S10 / S12 I blue	V40-A (BAG 5 PCS)
4-pole potential bridge bar for S10 / S12 I grey	V40-G (BAG 5 PCS)
4-pole potential bridge bar for S10 / S12 I red	V40-R (BAG 5 PCS)



RD1

Free wheeling diode module for S3-M, S3-M0, S5-M

Product references

Description	Type
Free wheeling diode module	RD1/DC12-220V



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 I Roll of 50 m	BS11-PI (50m tape)



CP-07B

Retaining clip | Plastic

Product references

Description	Type
Retaining clip I plastic for S7-C	CP-07B (BAG 50PCS) R



Retaining clip

Retaining clip | Plastic

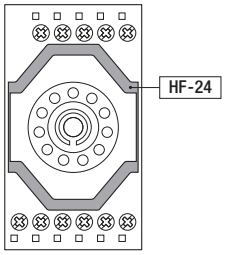


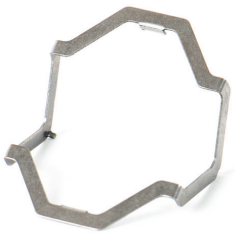
Product references

Description	Type
Retaining clip	CP-24B

HF-24

Retaining spring for SSU,TSR | Steel





General data

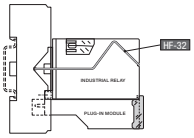
Mounting	fig. 1 Mounting

Product references

Description	Type

HF-32

Retaining spring for C2, C2x, 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 I plastic for S10 I 10 PCS	S10-C/CP-17B (BAG 10PCS) R

S10-CPI

Retaining clip | Plastic



Product references

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

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 I plastic for S2-B, S3-B, S3-S	S30-CM/10 (10-PIECES)

S5M-CP

Retaining clip | Plastic



Product references

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

S7-CPI

Retaining clip | Plastic



Product references

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

S9-C

Retaining clip | Plastic

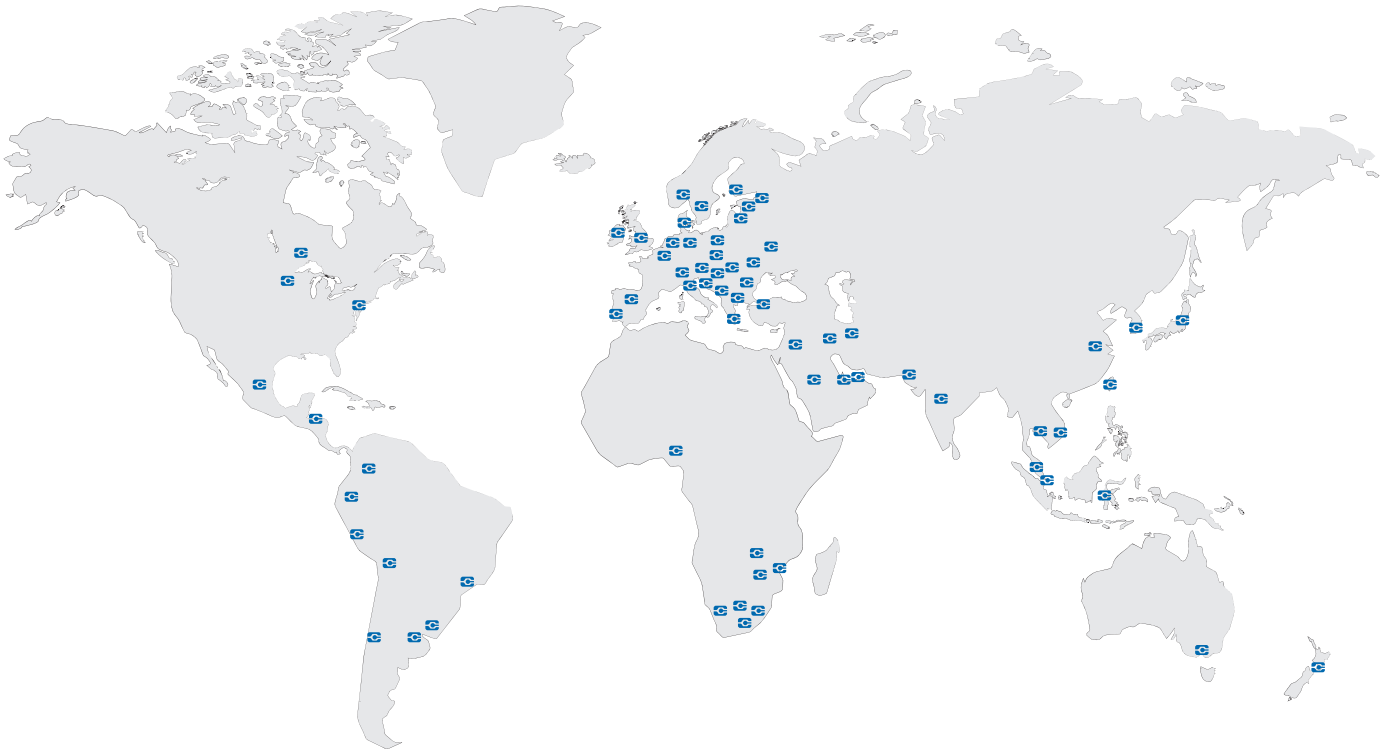


Product references

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

8 Worldwide Sales Network

Worldwide Sales Network



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ComatReleco AG
Birchstrasse 24 | 3186 Düdingen | Switzerland
Tel. +41 31 838 55 77
Fax +41 31 838 55 99
info@comatreleco.com | comatreleco.com
support@comatreleco.com | WorldofRelays.com