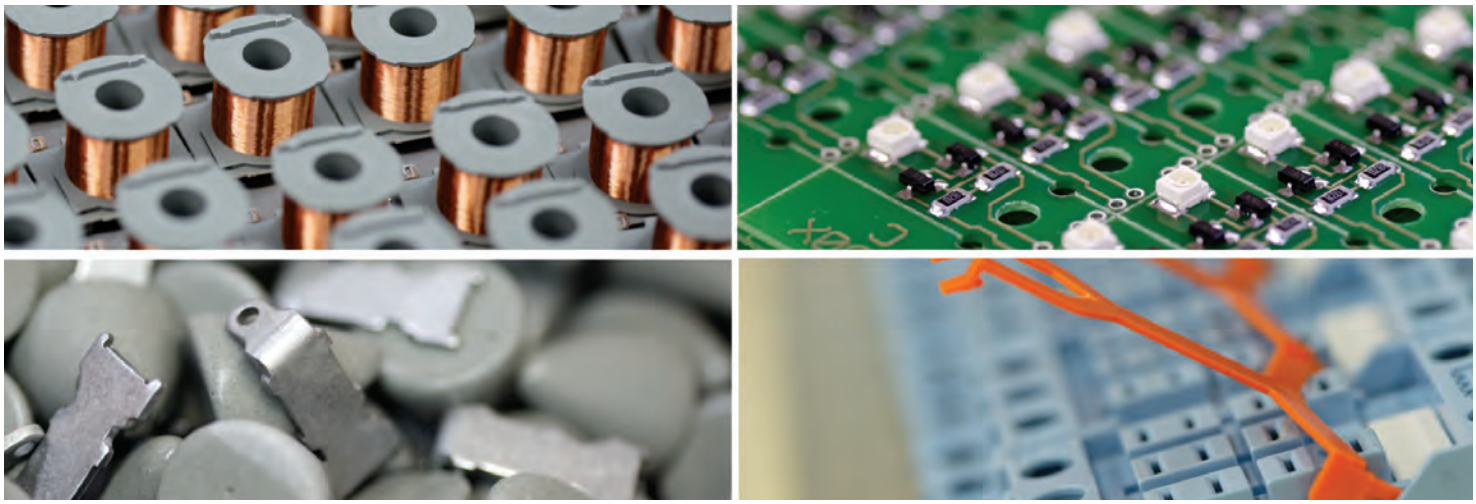
comat RELECO

WORLD OF RELAYS

Railway
Catalogue

WoR 3.0 | 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.

W O R L D O F R E L A Y S

Find your suitable documentation

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

GENERAL-, TRANSPORTATION & RAILWAY-, SOLID STATE RELAY-CATALOGUE, PLC & HMI CATALOGUE

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

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Transportation & 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

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

ComatReleco differences to most standard industrial products are:

- Supply voltages 24 V DC, 36 V DC, 72 V DC and 110 V DC are considered standard, with other coil voltages for relays and contactors available on demand.
- Tolerance according to EN 50155 of +25% / -30% from nominal power applied to the product, i.e. special coils for relays and contactors.
- Temperature range from -40°C to +70°C (OT4 according to EN 50155) whenever possible.
- Shock and vibration tested according to EN 61373 Category 1, Class B.
- The material used complies to EN 45545-2 for fire protection on railway vehicles. 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

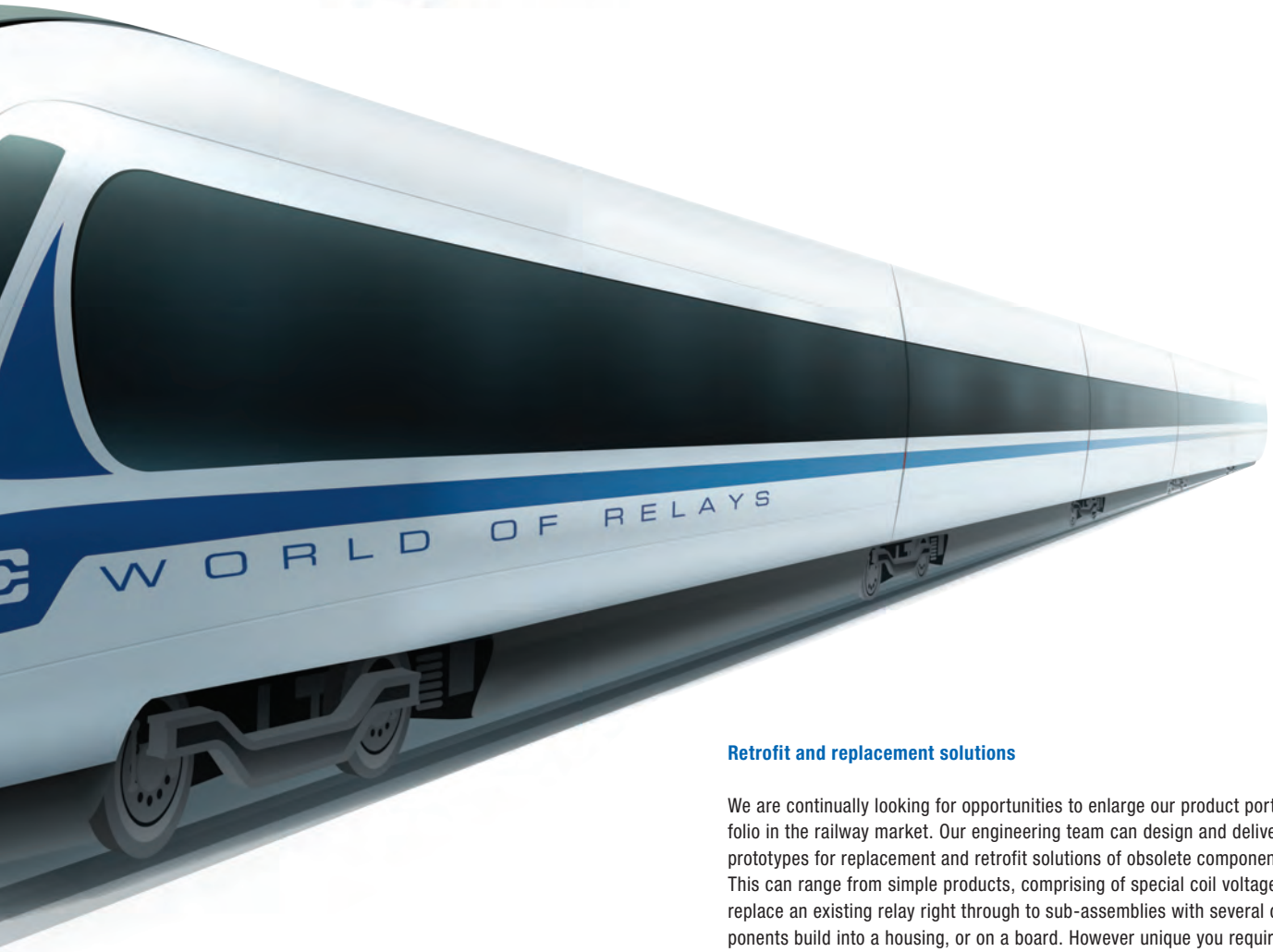
The new Push-in relay sockets from ComatReleco form a family. All relay sockets can be combined. The ComatReleco Push-in connection technology makes it possible to connect solid conductors as well as stranded wire. Solid conductors in the form of wire or stranded wire with ferrule terminals are inserted 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. All nine different product variants are also available as a special version for railway applications.

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 / Transport and traffic technology for further information.

Notes

1 Relays & Contactors

Relays

General Information

Product range

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

Relays C2, C3, C4, C5, R4

35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connectors with 2 or 3 contacts up to 10 A and different contact types and contact materials.
Standard relay 35 x 35 mm with flat blade connectors with up to 4 contacts and up to 16 A with 4 contacts.

Relays C7, C9, R7, R9

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

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

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

Special relays, remanence relays

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

Solid State Relay SSR

Solid State Relays are suitabe to either switch AC or DC loads up to 6 A. For AC relays a distinction is made between synchronously (zero crossing) and asynchronously switching versions. For switching transformer loads we recommended using asynchronously switching semiconductor switches. For incandescent lamp loads etc. synchronously switching switches are ideal for avoiding high switch-on currents.

Accessories

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

Basic identification principle (type designation code electromechanical relays)

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

1. Relay application
- **C** = Industrial relays
- **R** = Railway relays

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

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

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

5. Definition of contact material / SSR type
This code may differ depending on type.
Examples:

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

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

7. (∗) Special requirements
- **H** = Orange button. No lockable function
- **N** = Black button. No function

- **PT** = PCB pins, 3.5mm grid, transparent cover
- **PTL** = PCB pins, 5mm grid, transparent cover

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

9. Nominal coil voltage specification
- AC...V = AC 50/60 HZ, voltage 6 - 250 (400) V
- AC...V 60 Hz = AC 60 Hz, 120, 240 V
- DC...V = DC, voltage 5 - 220 V
- UC...V = AC/DC

10. Ref. nnnn
Relays with a reference number are versions with special (e.g. customised) features. These features may relate to special test criteria, tolerances or other properties.

Availability of such relays may be limited to certain customers or applications.

Coil accessories
General Information

Relays C2-C9, R4, R7, 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

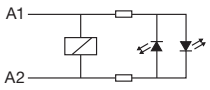
DX Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.

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

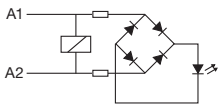
BX Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvience.
Available only in voltages up to 60 V.

R Resistor and capacitor.

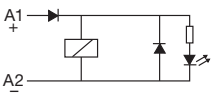
X(C7/R7, C9/R9)



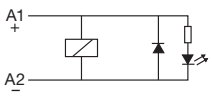
X



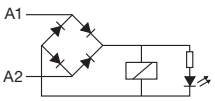
FX



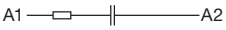
DX



BX



R



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

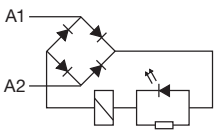
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

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

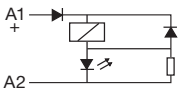
Both Polarity and Free-wheeling diodes (FX), must protect coils, to avoid malfunctions provided DC relays in battery are installed.

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.

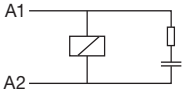
BX



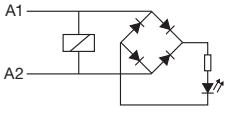
FX



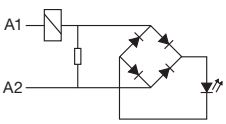
R



X≤12V



X≥24V



Relays

General Information

Contacts

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

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. 6A, 250V), but in practice values of 200mA, 30V 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 500A, 2.5ms). For some applications AgNi contacts with gold flashing (0.2µm) 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 50mΩ.

Contact spacing

Normally all contacts have an air gap between 0.5 … 1.5mm 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 3mm.

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

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 2000V. 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 230V 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.

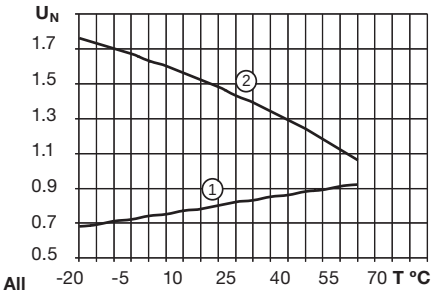
Pick-up voltage, Release voltage

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 220V /AC 400V 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 10ms to 30ms. 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

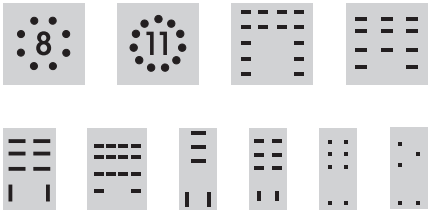
Standards, conformities
All ComatReleco relays feature the CE mark to indicate that CE standards apply e.g. 2kV surge resistance according to EN 61000-4-5.
A significant and not generally available characteristic is that the coils and in particular the connections are able to withstand the voltage spikes that may occur in practice.
In addition, the relays feature various technical approvals depending on the respective relay code, and they comply with further standards and guidelines. The main technical approvals include cURus, CCC, Lloyd's Register, cULus and EAC.The associated information is provided in the 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

UL60947 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.



Main technical approvals and standards

Country	Technical approval
China	Authority: CQC Specification GB14048.5-2001
Russia	Authority: KORPORATSIA STANDART Specification TP TC 004/2011
Wordwide / USA / Canada	Authority: UL Specification C 22.2; UL 60947
United Kingdom	Authority: GB Lloyd´s Register of Shipping
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

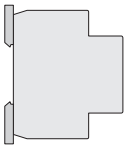
Cat. 2
Occasional conductive contamination, short duration due to moisture condensation

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

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

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.

Electrical Distributor DIN 45mm
All devices with a housing fitting in an electrical distributor with a front of 45mm 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.

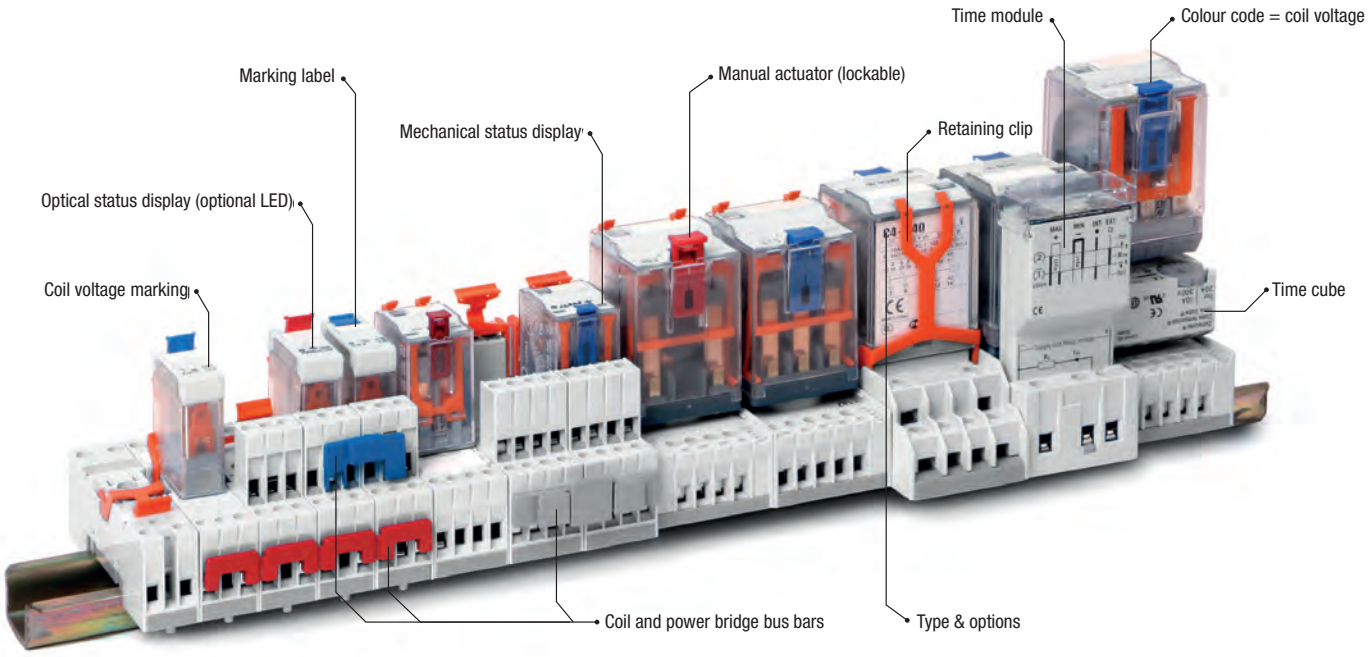
Incandescent lamps, halogen lamps
Switch-on currents during a few ms in the range 10 … 18 x rated. Switch-off at rated load.

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



X	LED
DX	Freewheeling diode, LED
BX	Bridge rectifier, LED
FX	Polarity protection, freewheeling diose, LED

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

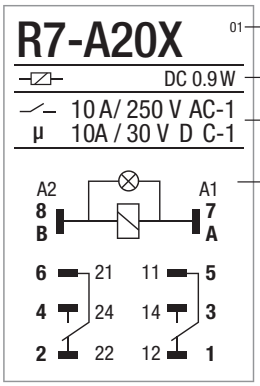
DC dark blue: others V DC

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



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

Relays

How to select the correct relay?

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

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

	Typical field of application			Contact	
Symbol	❶ Voltage	❶ Current	❷ Application	Type	Material
Signal relays	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 relays	5V…30V	1 mA…100 mA	PLC inputs, Control circuits	double contact	AgNi
				Gold-plated Single Contact	AgNi + Au
			Frequent, rapid switching procedures	Semiconductor	MOSFET (DC) Triac (AC)
Power relays	30V…400V	100 mA…16A	Increased AC or DC loads	Single Contact	AgNi
			Electromagnets (utilisation cat. AC-15 / DC-13)	Single Contact	$AgSnO_2$
			Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	MOSFET (DC) Triac (AC)
High-power relays	12V…400V	100 mA…16A	Capacitive loads	Early make contact	AgNi + W $AgSnO_2$ + W
			High DC loads, inductive loads	Series contacts	AgNi $AgSnO_2$
			Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	MOSFET (DC) Triac (AC)

Notes

1.1 Interface Relays - pluggable

R10-A10

1 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	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

V DC	Ohm	mA
24	742	32
36	1 815	20
48	3 400	14
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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	24	36	48	72	110
LED & Polarity & Free wheeling diode	R10-A10FX/DC…V	✓	✓	✓	✓	✓

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

Accessories

Socket	S10-GR
	S10-PIR

fig. 1. Wiring diagram

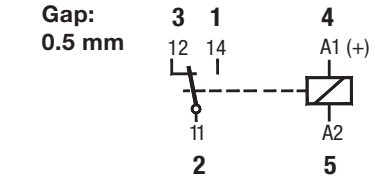


fig. 2. AC voltage endurance

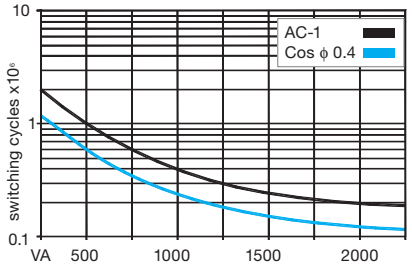


fig. 3. DC load limit curve

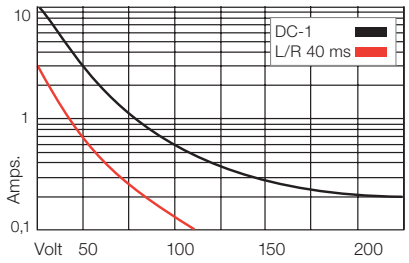
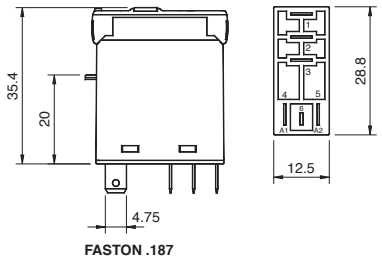


fig. 4. Dimension (mm)



Technical approvals, conformities

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

1.1 Interface Relays - pluggable
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
AC load	1200 VA
DC load	fig. 3.
Rated current	5 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 100 000

Control circuit

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

Coil table

V DC	Ohm	mA
12	224	54
24	742	32
36	1 815	20
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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	72	110
LED & Polarity & Free wheeling diode	R12-A21FX/DC…V	✓	✓	✓	✓	✓

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

Accessories

Socket	S12-PIR
	S12-GR

fig. 1. Wiring diagram

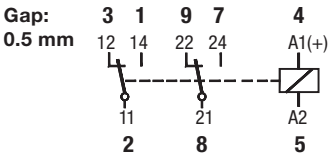


fig. 2. AC voltage endurance

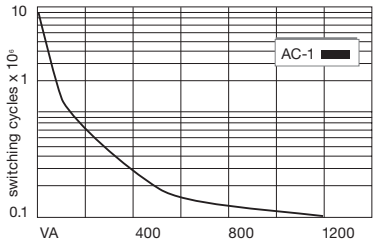


fig. 3. DC load limit curve

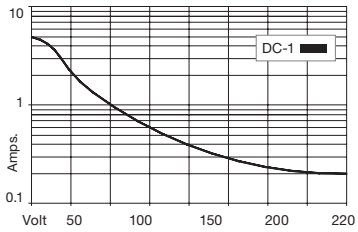
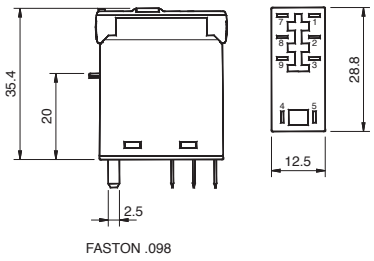


fig. 4. Dimension (mm)

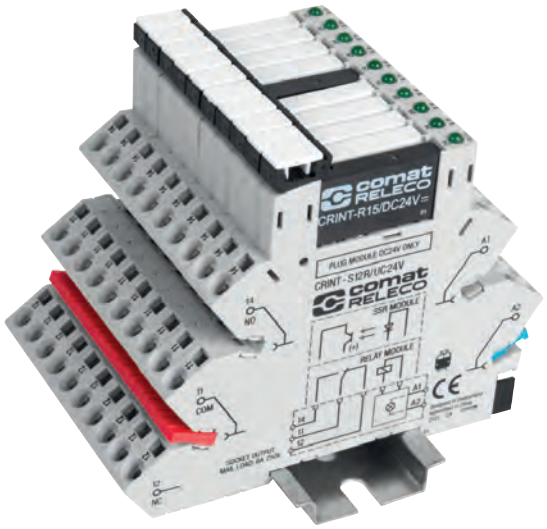


Technical approvals, conformities

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

Interface Module CRINT

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



CRINT Product Key

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

1. Product family
CRINT

2. Type
C = Combined version (Socket and Relay)

3. Contact
2 = Cage clamp
1 = One change-over contact

4. Connection type
3 = Push-in

5. Output
1 = $AgSnO_2$
2 = $AgSnO_2$ + 3µ Au
5 = NO / Solid-state DC
8 = NO / Solid-state AC

6. Options
– = Standard version
R = Railway version

7. Supply voltage
UC = AC/DC
DC = Only for C1x5 and C1x8

8. Nominal voltage
12V, 24V, 48V, 60V, 110-125V, 220-240V

RELAY Only

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

1. Product family
CRINT

2. Type
R = Relay

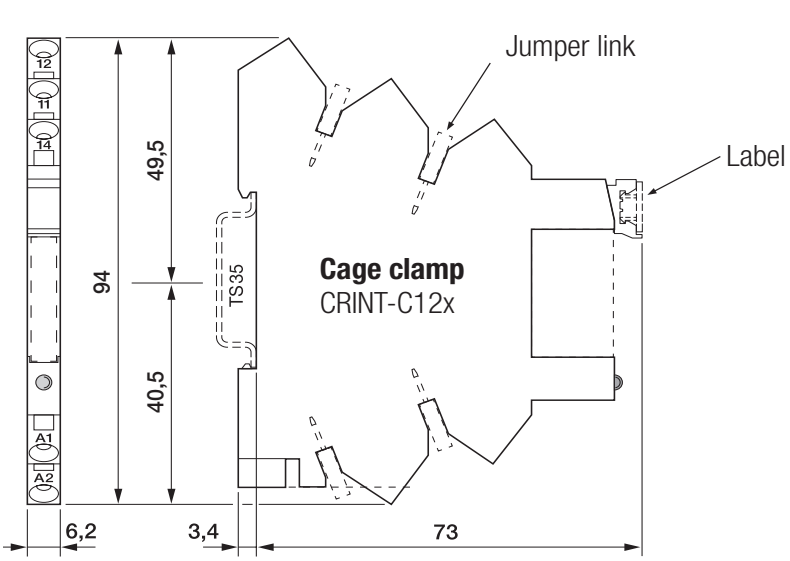
3. Contact
11 = AgSnO2
12 = AgSnO2 + 3µ Au
15 = NO / Solid-state DC
18 = NO / Solid-state AC

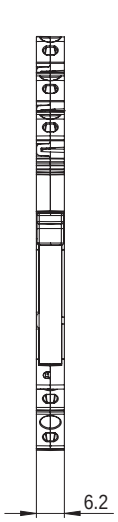
4. Supply voltage
DC

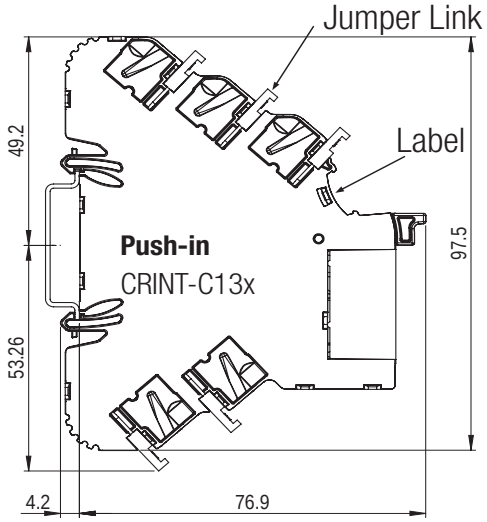
5. Nominal voltage
12 V, 24 V, 48 V, 60 V*

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

CRINT-C1xx & CINT-C5x/C6x — Dimensions (mm)







1.2 Interface Relays

CRINT-C1x1R

1 pole | changeover contact

Main circuit

Available contact materials	$AgSnO_2$
Recommended minimum contact load	10 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, 2.5 ms
AC load	1500 VA
DC load	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 1 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 10 000

Control circuit

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time / bounce time	7 ms / ≤ 8 ms
Release time / bounce time	15 ms / ≤ 4 ms
Conductor cross section screw terminal	2.5 mm²
Conductor cross section spring cage	0.75 … 2.5 mm²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimension	fig. 4.
Weight	30 g
Housing material	PA

Product references

Description	Type (x refers to contact material)	24	110-125
Cage clamp terminal	CRINT-C121R/UC…V	✓	✓
Push-in terminal	CRINT-C131R/UC…V	✓	✓

«…» List control voltage to complete product references

Accessories

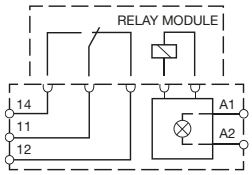
Jumper link blue	CRINT-BR20-BU (BAG 5 PCS)
Jumper link red	CRINT-BR20-RD (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Jumper link black	CRINT-BR20-BK (BAG 5 PCS)
Marking strip	BS11-PI (50m tape)

Replacement relays

Description	Type	12	24	48	60
DC	CRINT-C131R/UC…V	✓	✓	✓	✓

«…» List coil voltage to complete product references
*60 V relay used for all sockets with a nominal voltage higher or equal 60 V

fig. 1. Wiring diagram



Relay
- AgSnO2

Socket
- Screw terminal
- Cage clamp terminal
- Push-In terminal

fig. 2. AC voltage endurance

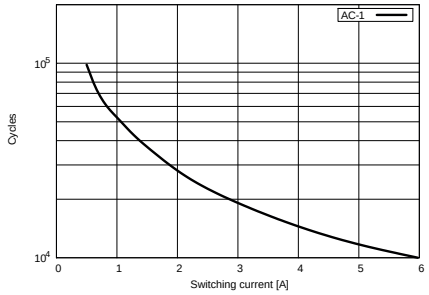


fig. 3. DC load limit curve

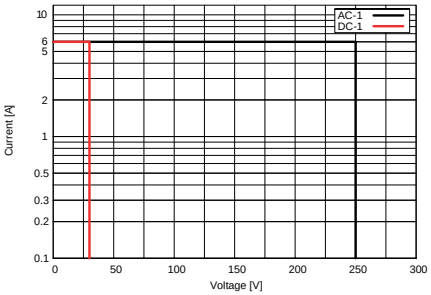
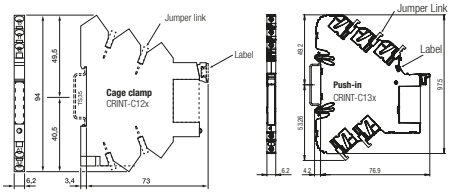


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1

Railway EN 45545-2; EN 50155

Approvals

1.2 Interface Relays
CRINT-C1x2R
1 pole | changeover contact

Main circuit

Available contact materials	$AgSnO_2$ + 3 µ Au
Recommended minimum contact load	1 mA / 1 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
AC load	1500 VA
DC load	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 1 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 10 000

Control circuit

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time / bounce time	7 ms / ≤ 8 ms
Release time / bounce time	15 ms / ≤ 4 ms
Conductor cross section screw terminal	2.5 mm²
Conductor cross section spring cage	0.75 … 2.5 mm²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimension	fig. 4.
Weight	30 g
Housing material	PA

Product references

Description	Type (x refers to contact material)	24	110-125
Cage clamp terminal	CRINT-C122R/UC...V	✓	✓
Push-in terminal	CRINT-C132R/UC..V	✓	✓

«…» List control voltage to complete product references

Accessories

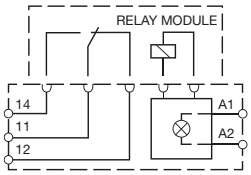
Jumper link blue	CRINT-BR20-BU (BAG 5 PCS)
Jumper link red	CRINT-BR20-RD (BAG 5 PCS)
Jumper link black	CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking strip	BS11-PI (50m tape)

Replacement relays

Description	Type	12	24	48	60
DC	CRINT-R12/DC…V	✓	✓	✓	✓

«…» List coil voltage to complete product references
*60 V relay used for all sockets with a nominal voltage higher or equal 60 V

fig. 1. Wiring diagram



Relay
- AgSnO2 + 3µ Au

Socket
- Screw terminal
- Cage clamp terminal
- Push-In terminal

fig. 2. AC voltage endurance

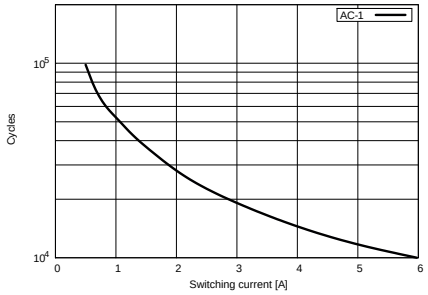


fig. 3. DC load limit curve

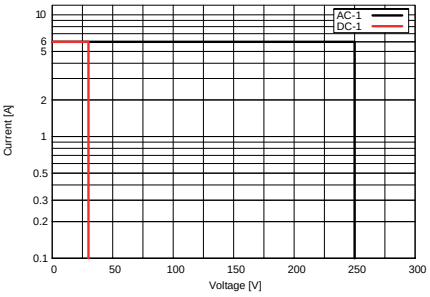
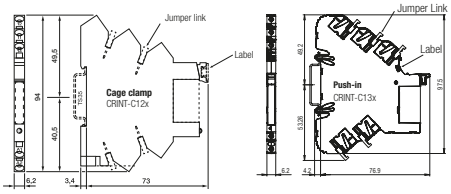


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1

Railway EN 45545-2; EN 50155

Approvals

Notes

1.3 Industrial Relays - pluggable

R3-R20N

2 pole | changeover contact | remanence

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 30 V DC-1
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 5 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 500 000

Control circuit

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

Coil table

V DC	Ohm	mA
24	60	18
36	45	15

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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Minimum pulse length ON / OFF	50 ms
Maximum switching frequency at rated load	1200 / h
Dimension	fig. 4.
Weight	81 g
Housing material	PA / PC

Product references

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

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

Accessories

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

fig. 1. Wiring diagram

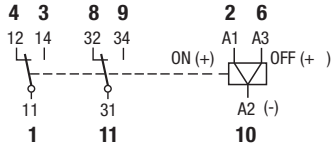


fig. 2. AC voltage endurance

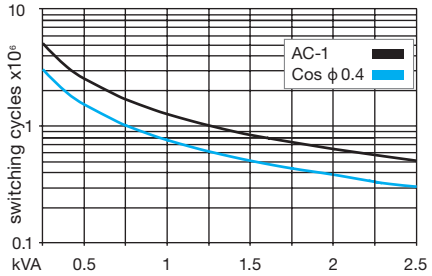


fig. 3. DC load limit curve

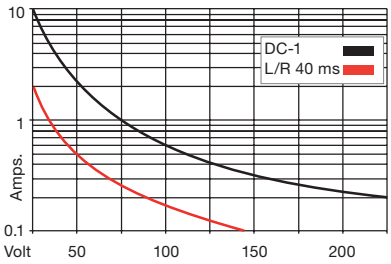
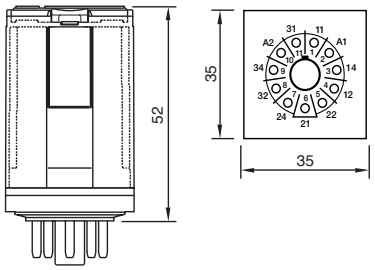


fig. 4. Dimension (mm)



Technical approvals, conformities

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

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
AC load	2500 VA
DC load	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 20 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 500 000

Control circuit

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

Coil table

V DC	Ohm	mA
24	414	58
72	3 775	20
110	8 117	14

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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	24	72	110
LED & Polarity & Free wheeling diode	R4-A40FX/DC…V	✓	✓	✓

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

Accessories

Socket	S4-GR
Blanking plug	SO-NP (BAG 10 PCS)
Wall mounting adapter	S5-R

fig. 1. Wiring diagram

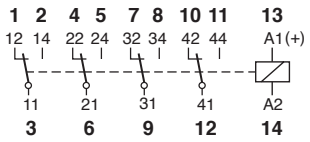


fig. 2. AC voltage endurance

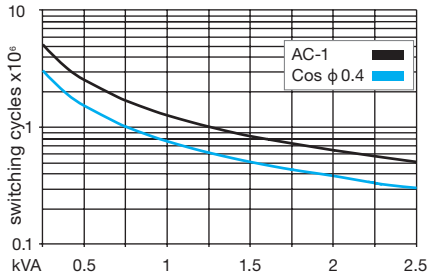


fig. 3. DC load limit curve

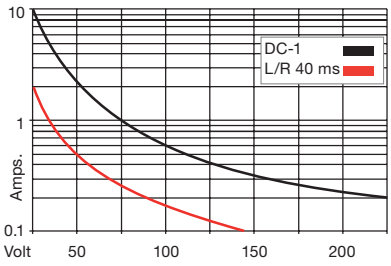
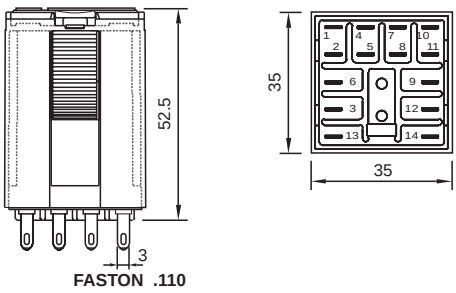


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

R7-A20

2 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	10 A / 250 V AC-1
Maximum contact load DC	10 A / 24 V DC-1
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
Rated current	10 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 300 000 / ≥ 100 000

Control circuit

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

Coil table

V DC	Ohm	mA
12	158	76
24	632	38
72	5 692	13

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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	35 g
Housing material	PA / PC

Product references

Description	Type	24
LED & Free wheeling diode	R7-A20DX/DC...V	✓

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

Accessories

Socket	S7-GR
Push-in socket	S7-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Push only	S9-OP (BAG 10 PCS)

fig. 1. Wiring diagram

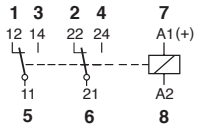


fig. 2. AC voltage endurance

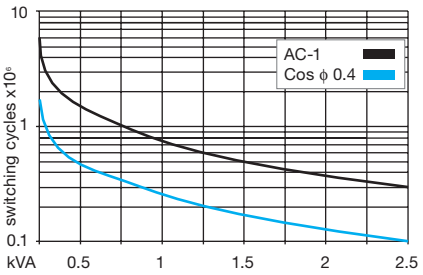


fig. 3. DC load limit curve

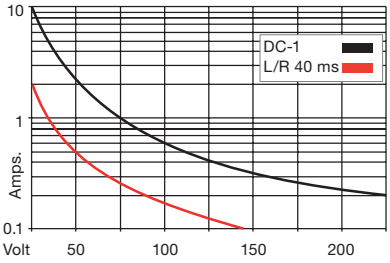
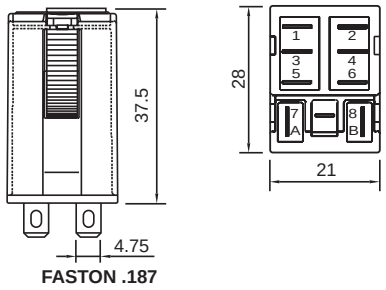


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.3 Industrial Relays - pluggable

R7-T2x

2 pole | changeover twin contact | faston

Main circuit

Available contact materials	AgNi + 0.2 µ Au for R7-T21
	AgNi + 5 µ Au for R7-T22
Recommended minimum contact load	5 mA / 5 V for R7-T21
	1 mA / 1 V for R7-T22
Maximum contact load AC	6 A / 250 V AC-1
Maximum contact load DC	6 A / 30 V DC-1
Inrush current	15 A, 20 ms
AC load	1200 VA
DC load	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

V DC	Ohm	mA
12	158	76
24	632	38
48	2 530	19
72	5 692	13
110	13 286	8

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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	35 g
Housing material	PA / PC

Product references

Description	Type (x refers to contact material)	24	72	230
LED & Free wheeling diode	R7-T22FX/DC…V	✓	✓	✓

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

Accessories

Socket	S7-GR
Push-in socket	S7-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Push only	S9-OP (BAG 10 PCS)

fig. 1. Wiring diagram

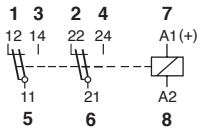


fig. 2. AC voltage endurance

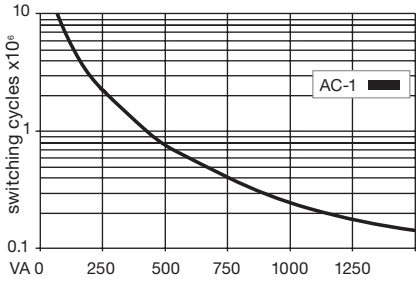


fig. 3. DC load limit curve

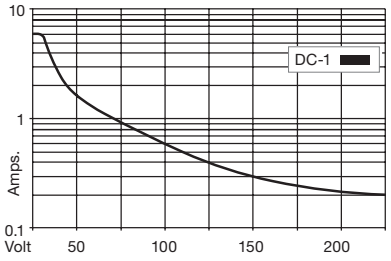
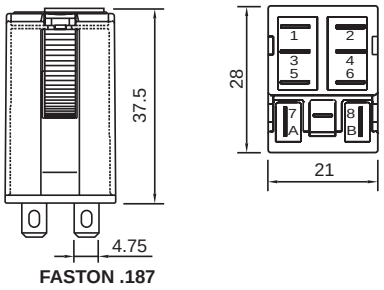


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

R9-A41

4 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi + 0.2 µ Au
Recommended minimum contact load	10 mA / 10 V
Maximum contact load AC	5 A / 250 V AC-1
Maximum contact load DC	5 A / 30 V DC-1
Inrush current	15 A, 20 ms
AC load	1250 VA
DC load	fig. 3.
Rated current	5 A
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 100 000

Control circuit

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

Coil table

V DC	Ohm	mA
24	632	38
36	1 423	25
72	5 692	13
110	13 286	8

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
Pollution degree	3
Overvoltage category	III
Insulation resistance at 500 V	≥ 1 GΩ

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-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	1200 / h
Dimension	fig. 4.
Weight	43 g
Housing material	PA / PC

Product references

Description	Type	24	36	72	110
LED & Polarity & Free wheeling diode	R9-A41FX/DC...V	✓	✓	✓	✓

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

Accessories

Socket	S9-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Push only	S9-OP (BAG 10 PCS)

fig. 1. Wiring diagram

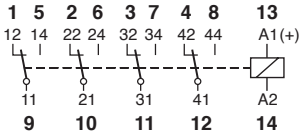


fig. 2. AC voltage endurance

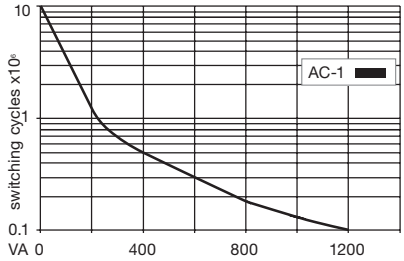


fig. 3. DC load limit curve

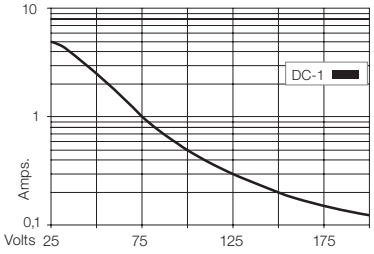
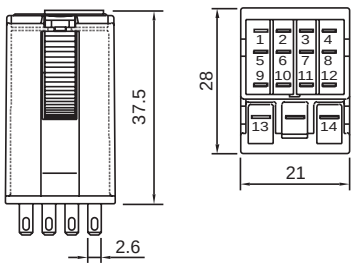


fig. 4. Dimension (mm)



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Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.4 Extended Lifetime Relays

C31

3 pole | changeover contact | Power relay

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
AC load	2500 VA
DC load	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

V AC	Ohm	mA	V DC	Ohm	mA
115	1 350	23	24	480	50
230	5 600	11.5	36	780	46
			48	1 850	26
			72	3 200	23
			110	9 000	12

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time / bounce time	3 … 10 ms / ≤ 12 ms
Release time / bounce time	2 … 15 ms / ≤ 3.5 ms
Maximum switching frequency at rated load	360 / h
Dimension	fig. 4.
Weight	80 g
Housing material	PA / PC

Product references

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

Accessories

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

fig. 1. Wiring diagram

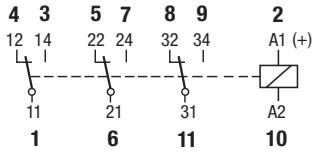


fig. 2. AC voltage endurance

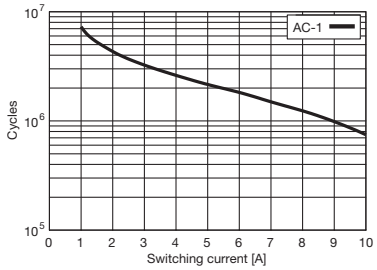


fig. 3. DC load limit curve

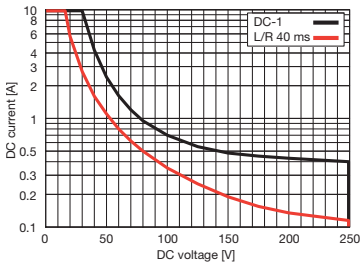
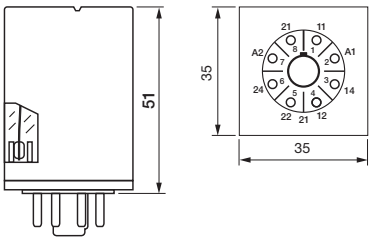


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

C32

3 pole | changeover twin contact | Control relay

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
AC load	1500 VA
DC load	fig. 3.
Rated current	6 A
Mechanical endurance (cycles)	≥ 100 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 1 500 000

Control circuit

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

Coil table

V AC	Ohm	mA	V DC	Ohm	mA
115	1 350	23	12	115	104
230	5 600	11.5	24	480	50
			36	780	46
			72	3 200	23
			110	9 000	12

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time / bounce time	3 … 10 ms / ≤ 12 ms
Release time / bounce time	2 … 15 ms / ≤ 3.5 ms
Maximum switching frequency at rated load	360 / h
Dimension	fig. 4.
Weight	80 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	72	110	115	230
Railway & LED	C32L/R AC…V		✓		✓			✓	✓
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

Accessories

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

fig. 1. Wiring diagram

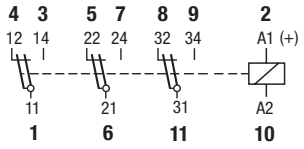


fig. 2. AC voltage endurance

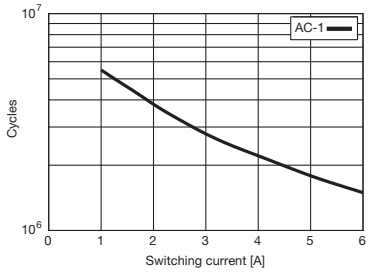


fig. 3. DC load limit curve

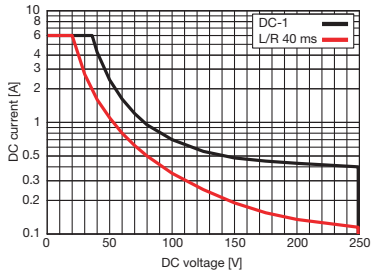
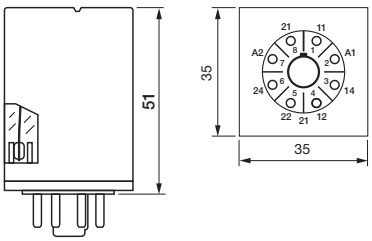


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947; IEC/EN 61810

Railway EN 45545-2; EN 50155

Approvals

Notes

1.5 Solid State Relays

R10-Z1I

1 pole | normally open solid state AC | faston

Main circuit

Available contact materials	Triac
Recommended minimum contact load	35 mA
Inrush current	150 A, 10 ms
AC load	750 VA
Rated current	3 A

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

Output current

Type	Instantaneous
Maximum output current	3 A
Minimum output current	35 mA
Output voltage range	24 … 250 V AC
Residial current	1 mA
I^2t value	210 A^2s
Maximum voltage drop	≤ 1.1 V AC

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Protection degree	IP 40
Dimension	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

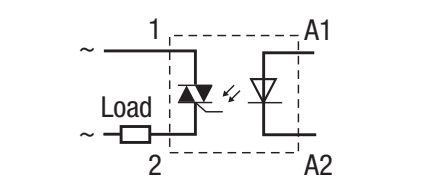


fig. 2. AC derating curve

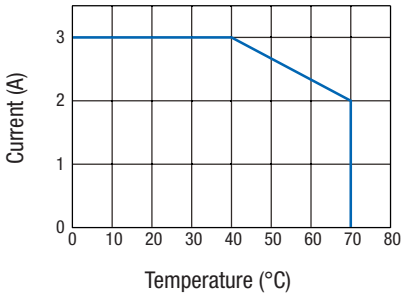
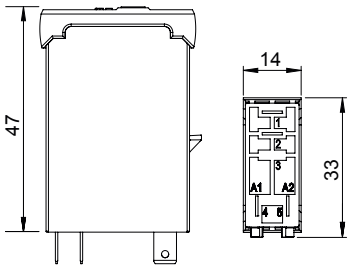


fig. 3. Dimension (mm)



Technical approvals, conformities

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

1.5 Solid State Relays

R10-Z1N

1 pole | normally open solid state DC | faston

Main circuit

Available contact materials	MOSFET
Recommended minimum contact load	1 mA
Inrush current	40 A, 10 ms
DC load	360 W
Rated current	6 A

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	NPN
Maximum output current	6 A
Minimum output current	1 mA
Output voltage range	5 … 48 V DC
Residial current	0.1 mA
Maximum voltage drop	≤ 0.14 V DC

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Protection degree	IP 40
Dimension	fig. 3.
Weight	28 g
Housing material	PA

Product references

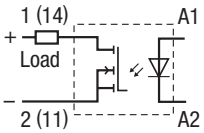
Description	Type	5-48
DC	R10-Z1NX/DC...V	✓

«…» List coil voltage to complete product references

Accessories

Socket	S10-GR S10-PIR

fig. 1. Wiring diagram



Negative common

fig. 2. DC derating curve

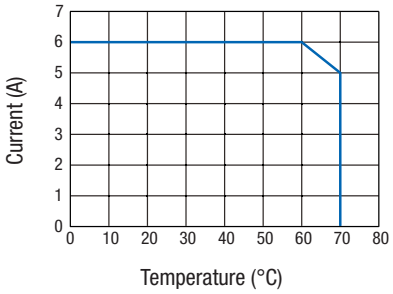
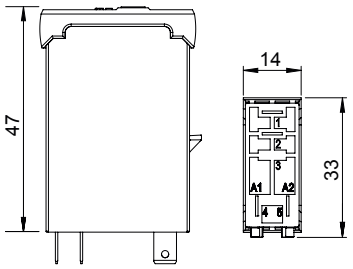


fig. 3. Dimension (mm)



Technical approvals, conformities

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

R10-Z1P

1 pole | normally open solid state DC | faston

Main circuit

Available contact materials	MOSFET
Recommended minimum contact load	1 mA
Inrush current	40 A, 10 ms
DC load	360 W
Rated current	6 A

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
Residial current	0.1 mA
Maximum voltage drop	≤ 0.14 V DC

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time	0.06 ms
Release time	0.06 ms
Protection degree	IP 40
Dimension	fig. 3.
Weight	28 g
Housing material	PA

Product references

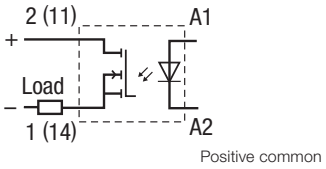
Description	Type	5-48
DC	R10-Z1PX/DC...V	✓

«…» List coil voltage to complete product references

Accessories

Socket	S10-GR
	S10-PIR

fig. 1. Wiring diagram



Positive common

fig. 2. DC derating curve

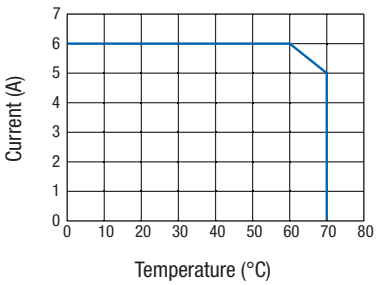
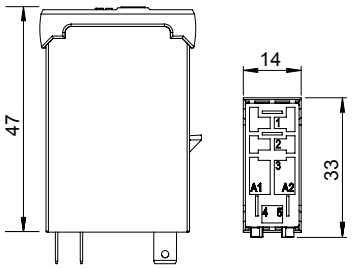


fig. 3. Dimension (mm)



Technical approvals, conformities

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

1.5 Solid State Relays

R10-Z1Z

1 pole | normally open solid state AC | faston

Main circuit

Available contact materials	Triac
Recommended minimum contact load	35 mA
Inrush current	150 A, 10 ms
AC load	750 VA
Rated current	3 A

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

Output current

Type	Synchronized zero
Maximum output current	3 A
Minimum output current	35 mA
Output voltage range	24 … 250 V AC
Residial current	1 mA
I^2t value	210 A^2s
Maximum voltage drop	≤ 1.1 V AC

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Pick-up time	10 ms
Release time	10 ms
Protection degree	IP 40
Dimension	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

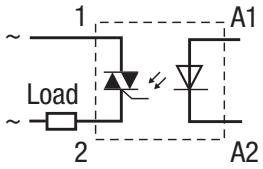


fig. 2. AC derating curve

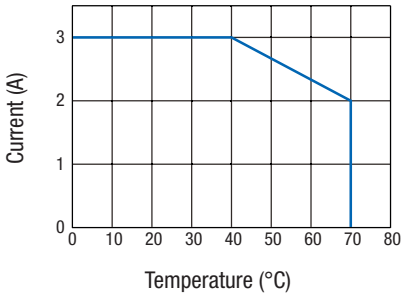
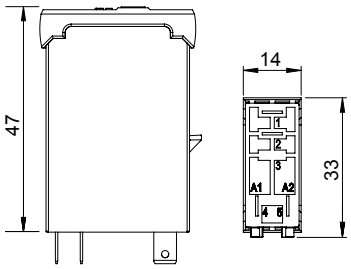


fig. 3. Dimension (mm)



Technical approvals, conformities

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

CRINT-C1x5R

1 pole | normally open solid state DC

Main circuit

Available contact materials	MOSFET
Recommended minimum contact load	20 mA / 5 V
Inrush current	48 A, 10 ms
AC load	115 W
DC load	115 W
Rated current	4 A

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
Pollution degree	3
Overvoltage category	III

Output current

Type	Instantaneous
Maximum output current	4 A
Minimum output current	20 mA
Output voltage range	3 … 28.8 V DC
Residial current	0.1 mA
Maximum voltage drop	0.35 V DC

General data

Ambient temperature storage (no ice)	-30 … 80 °C
	-30 … 85 °C
Ambient temperature operation	-30 … 70 °C
Pick-up time	1 ms
Pick-up time / bounce time	1 ms
Release time / bounce time	1 ms
Release time	1 ms
Conductor cross section screw terminal	2.5 mm²
Conductor cross section spring cage	0.75 … 2.5 mm²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimension	fig. 3.
Weight	30 g
Housing material	PA

Product references

Description	Type (x refers to contact material)	24	110	110-125
Screw terminal	CRINT-C125R/DC...V	✓	✓	
Push-in terminal	CRINT-C135R/DC..V	✓		✓

«…» List coil voltage to complete product references

Accessories

Jumper link blue	CRINT-BR20-BU (BAG 5 PCS)
Jumper link red	CRINT-BR20-RD (BAG 5 PCS)
Jumper link black	CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking strip	BS11-PI (50m tape)

Replacement relays

Description	Type	12	24	48	60
DC	CRINT-R15/DC…V	✓	✓	✓	✓

fig. 1. Wiring diagram

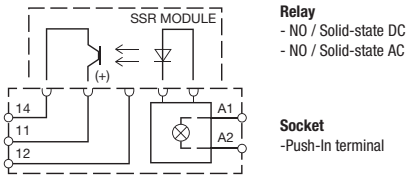


fig. 2. DC load limit curve

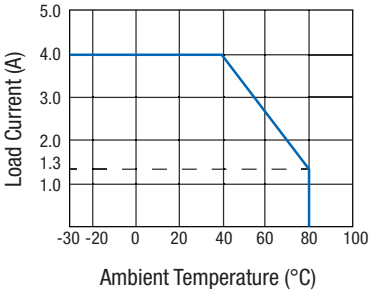
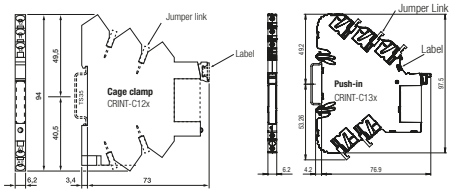


fig. 3. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1

Railway EN 45545-2; EN 50155

Approvals

1.5 Solid State Relays

CRINT-C1x8R

1 pole | normally open solid state AC

Main circuit

Available contact materials	Triac
Recommended minimum contact load	20 mA / 5 V
Inrush current	80 A, 10 ms
AC load	fig. 2.
Rated current	2 A

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
Pollution degree	3
Overvoltage category	III

Output current

Type	Synchronized zero
Maximum output current	2 A
Minimum output current	100 mA
Output voltage range	48 … 280 V DC 48 … 280 V AC
Residial current	1.5 mA
Maximum voltage drop	1.2 V AC

General data

Ambient temperature storage (no ice)	-30 … 80 °C
Ambient temperature operation	-30 … 70 °C
Pick-up time	1 ms
Pick-up time / bounce time	1 ms
Release time / bounce time	1 ms
Release time	1 ms
Conductor cross section screw terminal	2.5 mm²
Conductor cross section spring cage	0.75 … 2.5 mm²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimension	fig. 3.
Weight	30 g
Housing material	PA

Product references

Description	Type (x refers to contact material)	24	110-125
Cage clamp terminal	CRINT-C128R/DC...V	✓	✓
Push-in terminal	CRINT-C138R/DC…V	✓	✓

«…» List coil voltage to complete product references

Accessories

Jumper link blue	CRINT-BR20-BU (BAG 5 PCS)
Jumper link red	CRINT-BR20-RD (BAG 5 PCS)
Jumper link black	CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4X16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking strip	BS11-PI (50m tape)

Replacement relays

Description	Type	12	24	60
DC	CRINT-R15/DC…V	✓	✓	✓

fig. 1. Wiring diagram

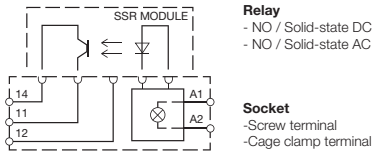


fig. 2. DC load limit curve

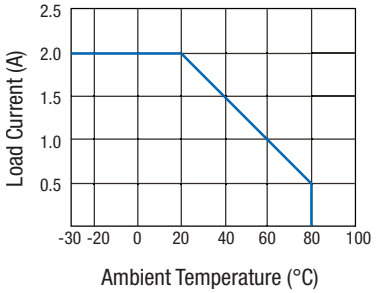
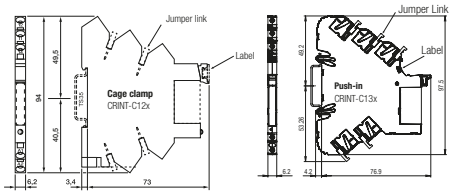


fig. 3. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1

Railway EN 45545-2; EN 50155

Approvals

Notes

1.6 Installation Relays

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

C203.06R

2 pole | 2 coil | 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
AC load	100 VA
DC load	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
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
Rated impulse withstand voltage open contact	1 kV / 1 min
Pollution degree	3
Overvoltage category	III

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-25 … 55 °C
Response time	10 ms
Pick-up time / bounce time	10 ms
Release time	20 ms
Conductor cross section screw terminal	2.5 mm²
Nominal screw torque	0.7 Nm
Protection degree	IP 20
Dimension	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 coil voltage to complete product references

fig. 1. Wiring diagram

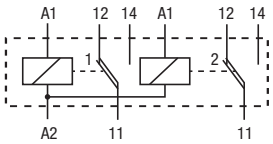


fig. 2. DC voltage endurance

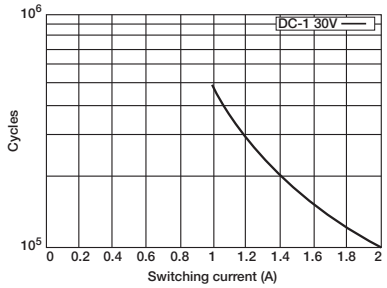


fig. 3. DC load limit curve

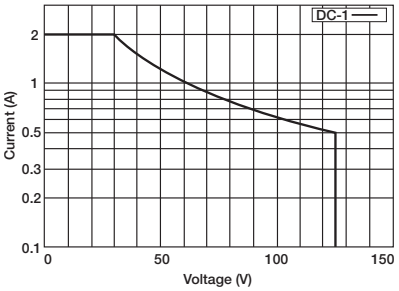
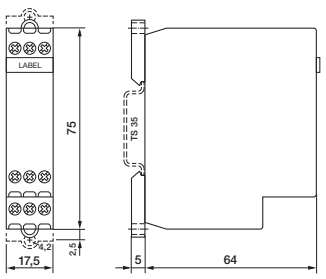


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards EN 61810

Railway EN 45545-2; EN 50155

Approvals

1.7 Installation Contactors

RIC20-xxx-R4A110V

2 pole | 20 A | 7 kW

Main circuit

Available contact materials	AgNi
Rated voltage	400 V AC
Rated current AC-1	20 A
Recommended minimum contact load	50 mA, 17 V
Inrush current	50 A, 100 ms / 180 A, 300 µs
AC-1 load	7 kW
AC-3 load	1.3 kW (NO) / 0.75 kW (NC)
DC-1 load	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

General data

Ambient temperature storage (no ice)	-40 ... 80 °C
Ambient temperature operation 2 devices, 1 spacer	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm² / 6 mm²
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Dimension	see fig. 3
Weight	135 g
Protection degree	IP 20
Housing material	PA 6
Spacer	Integrated

Product references

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

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

Accessories

Sealing cover	RIC-SEAL20
End covers	EK-11
	EK-23
Busbar	RIC-NS-1-1-R (1m)
	RIC-PS-1-2-R (1m)

fig. 1. Wiring diagram

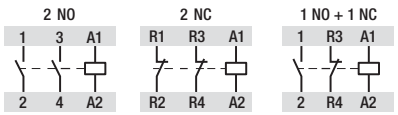


fig. 2. DC load limit curve

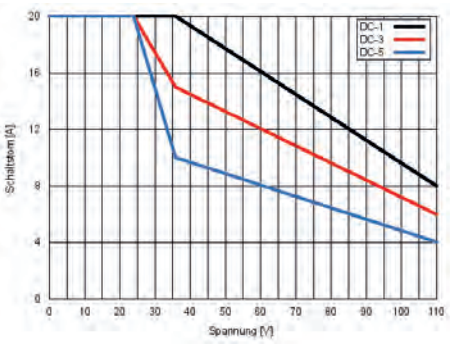
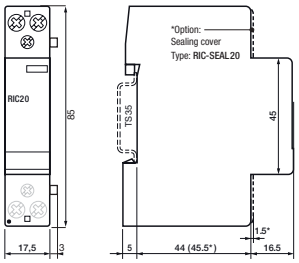


fig. 3. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

RIC25-xxx-R

4 pole | 25 A | 5.4 kW

Main circuit

Available contact materials	AgNi
Rated voltage	400 V AC
Rated current AC-1	25 A
Recommended minimum contact load	50 mA, 17 V
Inrush current	60 A, 100 ms / 280 A, 300 µs
AC-1 load	5.4 kW
AC-3 load	1.3 kW
DC-1 load	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

General data

Ambient temperature storage (no ice)	-40 ... 80 °C
Ambient temperature operation 3 devices, 1 spacer	40 ... 55 °C
Conductor cross section control / main circuit	2.5 mm² / 6 mm²
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Dimension	see fig. 3
Weight	250 g
Protection degree	IP 20
Housing material	PA 6

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

Auxiliary module	RIC-AUXxx
Sealing cover	RIC-SEAL25
Spacer	RIC-DIST
Busbar	RIC-NS-2-1 (1m)
	RIC-PS-2-3 (1m)
	RIC-PS-2-4 (1m)
End covers	EK-11
	EK-23
	EK-40

fig. 1. Wiring diagram

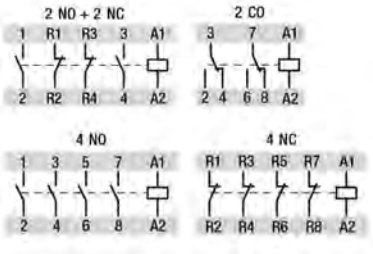


fig. 2. DC load limit curve

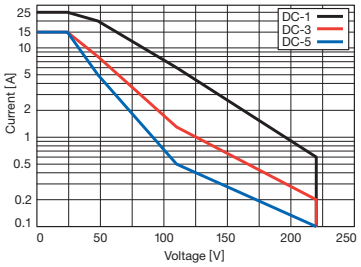
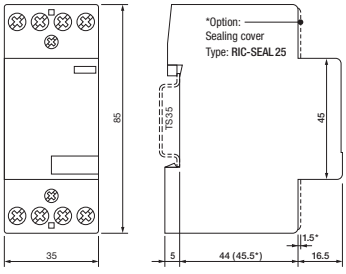


fig. 3. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

Notes

1.8 Relays & Contactors Accessories

RIC-AUX

Auxiliary module for RIC | RAC Installation contactors | 2 pole | 6 A

Main circuit

Available contact materials	AgNi
Rated voltage	230 V / 400 V
Rated current AC-1	6 A / 4 A
Recommended minimum contact load	5 mA, 12 V

Insulation

Rated impulse withstand voltage	4 kV
Pollution degree	3
Overvoltage category	III
Clearance of open contact	3.6 mm

General data

Ambient temperature storage (no ice)	-30 ... 80 °C
Ambient temperature operation	-25 ... 55 °C
Conductor cross section	2.5 mm²
Nominal screw torque control / main circuit	- Nm / 0.8 Nm
Dimension	see fig. 2.
Weight	30 g
Protection degree	IP 20
Housing material	PA

Product references

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

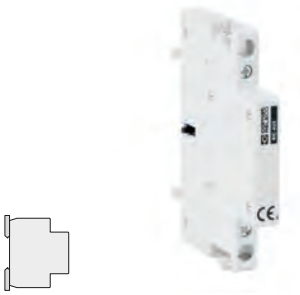
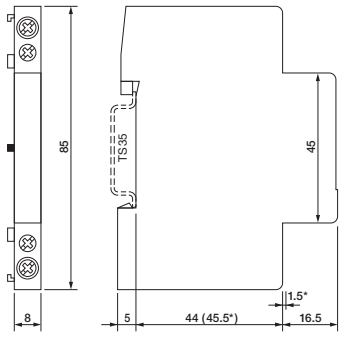


fig. 1. Wiring diagram

fig. 2. Dimension (mm)



Technical approvals, conformities

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

RIC-DIST

Auxiliary spacer module for RIC / RAC installation contactors

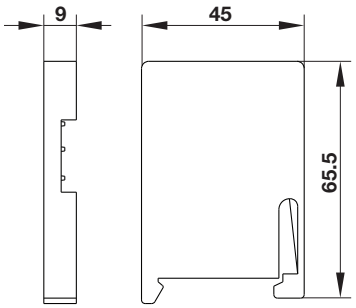
General data

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

Product references

Description	Type
Auxiliary spacer module for RIC / RAC installation contactors	RIC-DIST

fig. 1. Dimension (mm)



RIC-EK

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

General data

Dimension	12 x 6 x 6 mm 15 x 8.5 x 16 mm
Weight	0.17 g 0.31 g
Housing material	PC/ABS

Product references

Description	**Type** (x refers to contact material)
End covers for RIC-NS / RIC-PS Busbar | set with left and right	RIC-EK-11
End covers for RIC-NS / RIC-PS Busbar | set with left and right	RIC-EK-23

Technical approvals, conformities

Approvals CE

RIC-NS

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

Main circuit

Available contact materials	Cu
Rated voltage	690 V
Rated current AC-1	63 A

General data

Conductor cross section	10 mm²
Dimension	see fig. 1
Weight	159 g
Protection degree	IP 20
Housing material	PC/ABS

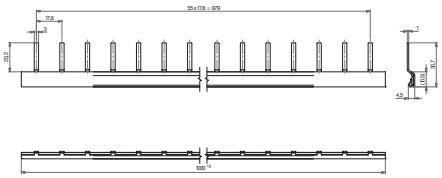
Product references

Description	**Type** (x refers to contact material)
Neutral busbar for RIC / RAC	RIC-NS-1-1-R
Neutral busbar for RIC / RAC	RIC-NS-2-1

Accessories

End covers	EK-11

fig. 1. Dimension (mm)



Technical approvals, conformities

Approvals CE

RIC-PS

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

Main circuit

Available contact materials	Cu
Rated voltage	690 V
	690 V
Rated current AC-1	63 A

General data

Conductor cross section	10 mm²
Dimension	see fig. 1
Weight	480 g
	742 g
	742
Protection degree	IP 20
Housing material	PC/ABS

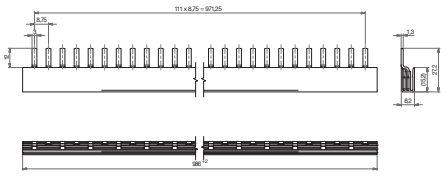
Product references

Description	**Type** (x refers to contact material)
Phase busbar for RIC / RAC	RIC-PS-1-2-R
Phase busbar for RIC / RAC	RIC-PS-2-3
Phase busbar for RIC / RAC	RIC-PS-2-4

Accessories

End covers	EK-23
	EK-40

fig. 1. Dimension (mm)



Technical approvals, conformities

Approvals CE

RIC-SEAL

Auxiliary sealing cover for RIC20 / RAC20

General data

Ambient temperature storage (no ice)	-30 ... 80 °C
Dimension	21 x 16 x 1 mm 21 x 35 x 1 mm
Weight	1 g 2 g
Housing material	PA

Product references

Description	**Type** (x refers to contact material)
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL20
Auxiliary sealing module for RIC / RAC installation contactors	RIC-SEAL25

Notes

2 Time Relays

Time functions

Delay functions

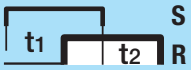
E **On delay**

S ⇒ R on with delay
SOFF ⇒ R off

A **Off delay**

S ⇒ R on
SOFF ⇒ R off with delay

F **On and off delay**



S ⇒ R on with delay (t1)
SOFF ⇒ 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)

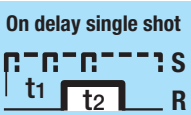
S (pulse or continuous contact)
⇒ R on for t
S on for t = tRESET

M **Puls shaping**

SOFF ⇒ R on for t
S ▬ no influence on R and t

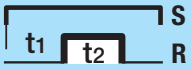
Delayed pulse

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
SOFF ⇒ R off

Special functions

Y **Star-delta timer**

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

X1 **Restart delay**

S ⇒ R on
SOFF ⇒ R off and starts t
S ⇒ R restart only after t

Shot timing modes

W **One shot leading edge**

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

N **One shot trailing edge**

SOFF ⇒ R on for t
S on for t ⇒ R off

Q **One shot leading and trailing edge**

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

Blinker functions

B **Blinker,** pulse start

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

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

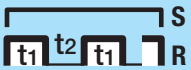
S ⇒ R on/off periodically
according to t
SOFF: last pulse = t

B2 **Blinker,** interval start

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

Repeat cycle timer

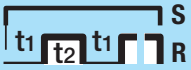
I **Repeat cycle timer,** pulse start



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

P **Repeat cycle timer,** interval start

C55, CT1: t2/t1



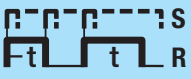
S ⇒ R after t1 (t2) on/off periodically according to t2 and t1
SOFF ⇒ R off

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

tSTOP — SSTOP interrupts t (t-addition)

tRESET — SRESET reset t, t restarts immediately

T — t is stopped ⇒ R on/off

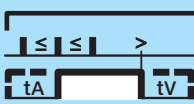
T — Test

S = Triggering
R = Output circuit
⇒ = switches…

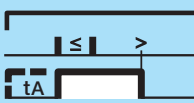
ON OFF

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

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. 2
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	≥ 30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product references

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

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

fig. 1. Wiring diagram

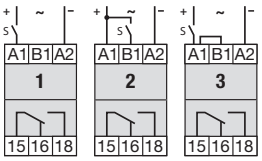


fig. 2. AC voltage endurance

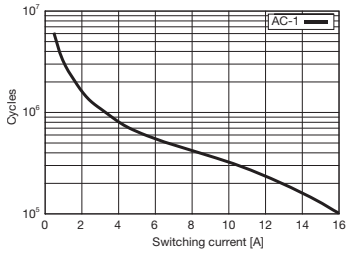


fig. 3. DC load limit curve

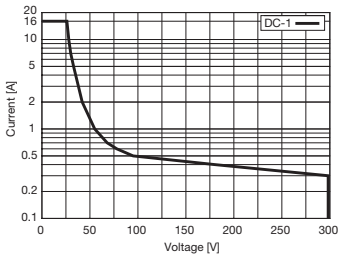
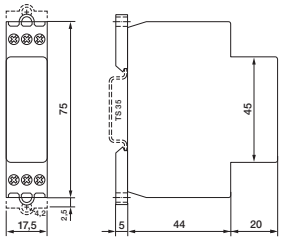


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

CIM1R.C2393

RELAY SWITCH ON DELAY 0.6 s | 24 … 240 V AC/DC | 1 CO

Time data

Timing functions	fig. 1 1: E
Timing range	0.6 s
Timing scale	n/a

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM1R.C2393/UC...V	✓

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

This is a customised, adapted CIM1R product to replace an obsolete SAIA product.
Don't hesitate to contact us if you need another fix programmed product.

fig. 1. Wiring diagram

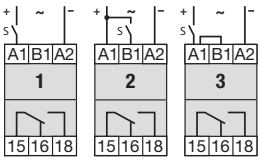


fig. 2. AC voltage endurance

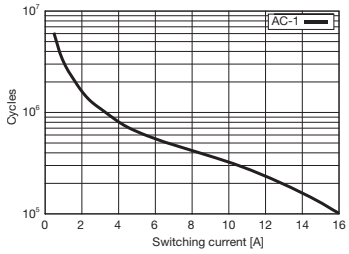


fig. 3. DC load limit curve

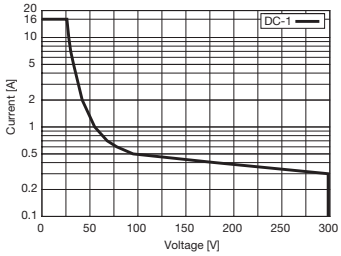
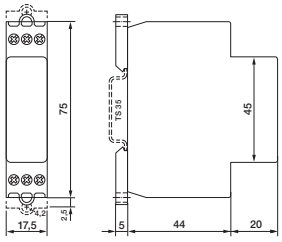


fig. 4. Dimension (mm)



Technical approvals, conformities

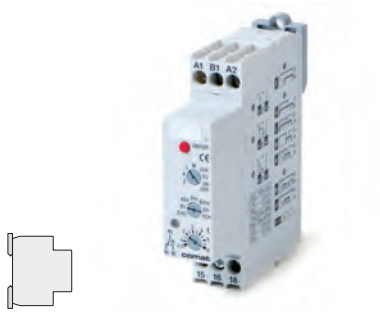
Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals CE

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, zero crossing
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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

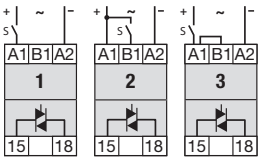
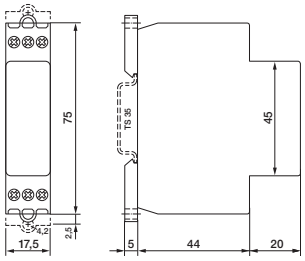


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

CIM12R.C2390

AC Blinking SSR, 1s | 24 … 240 V AC/DC | 1 TRIAC

Time data

Timing functions	fig. 1 1: B
Timing range	1 s
Timing scale	n/a

Main circuit

Number of outputs	1 NO
Output type	TRIAC, zero crossing
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)	∞

Control circuit

Nominal voltage	24 … 240 V UC
Operating voltage range	16.8 … 250 V UC
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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	65 g
Protection degree	IP 20
Housing material	PA

Product references

Description	Type	24-240
AC / DC supply	CIM12R.2390/UC...V	✓

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

This is a customised, adapted CIM12R product to replace an obsolete Celduc ST600700 product.
Don't hesitate to contact us if you need another fix programmed product.

fig. 1. Wiring diagram

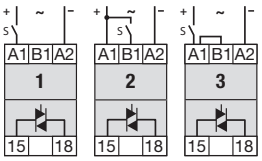
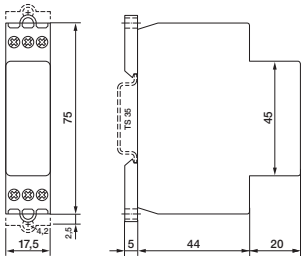


fig. 2. Dimension (mm)

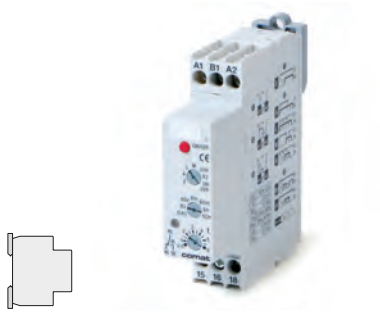


Technical approvals, conformities

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

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation derated power	-40 °C ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

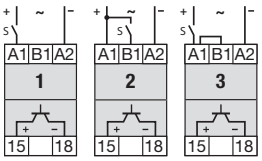
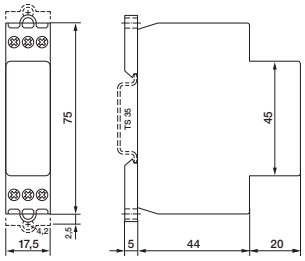


fig. 2. Dimension (mm)



Technical approvals, conformities

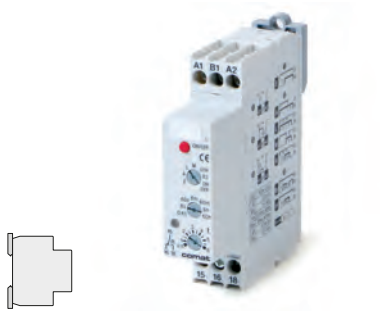
Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

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. 2
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	≥ 30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

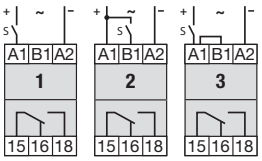


fig. 2. AC voltage endurance

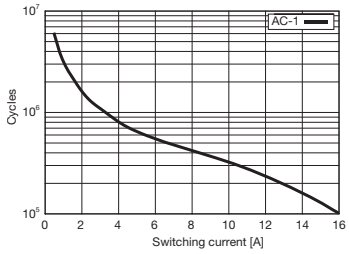


fig. 3. DC load limit curve

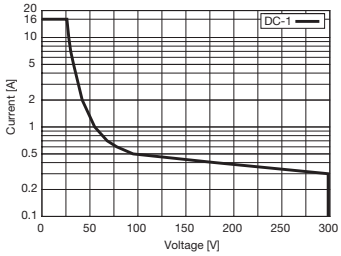
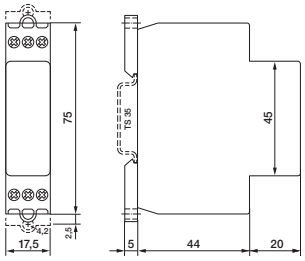


fig. 4. Dimension (mm)



Technical approvals, conformities

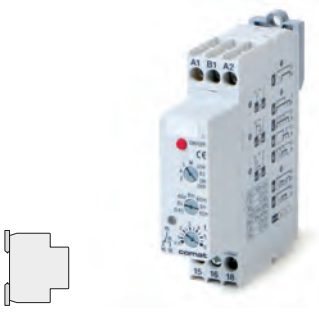
Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

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, zero crossing
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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 ... 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

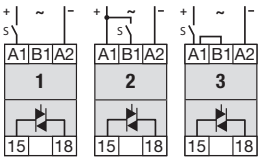
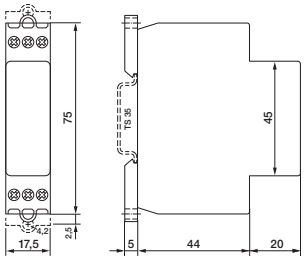


fig. 2. Dimension (mm)



Technical approvals, conformities

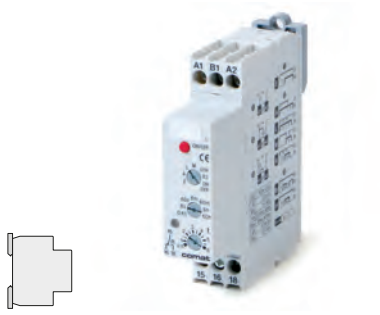
Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

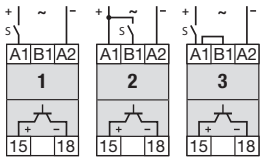
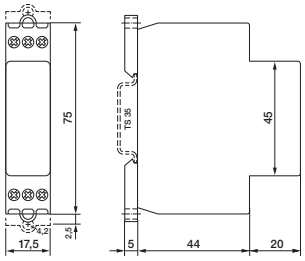


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

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. 2
Rated load AC-1	4,000 VA
Mechanical endurance (cycles)	≥ 30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

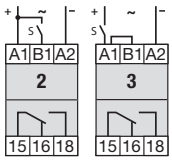


fig. 2. AC voltage endurance

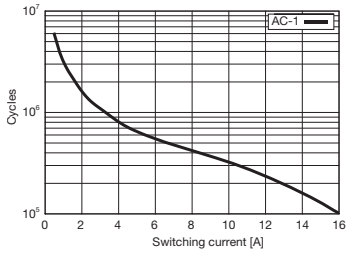


fig. 3. DC load limit curve

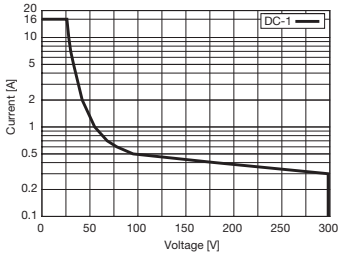
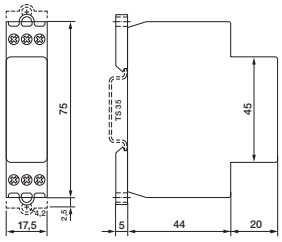


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

CIM32R

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

Time data

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

Main circuit

Number of outputs	1 NO
Output type	TRIAC, zero crossing
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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

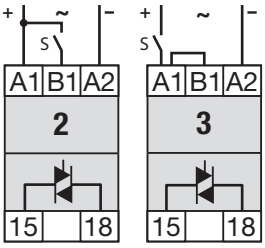
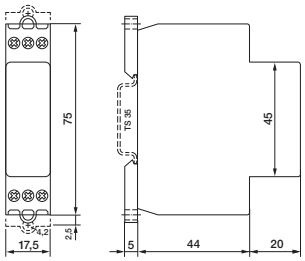


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

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
Rated frequency	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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.4 Nm
Dimension	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

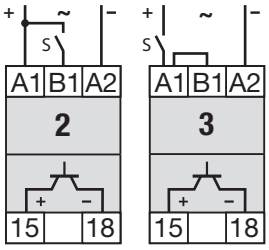
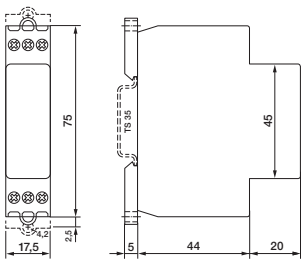


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

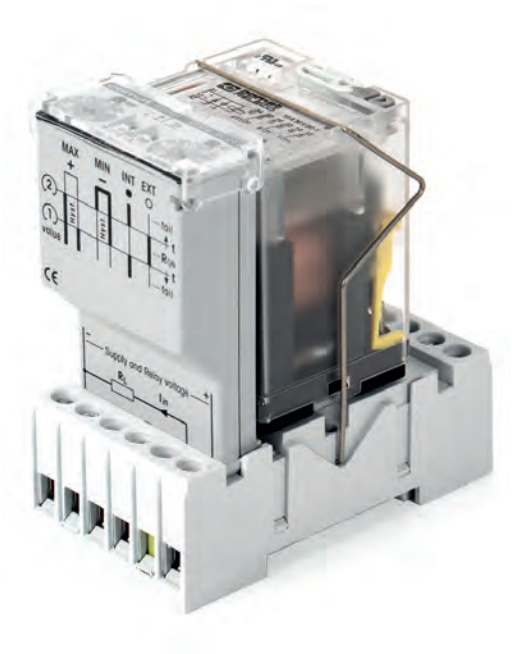
Railway EN 45545-2; EN 50155

Approvals

Notes

The 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 4mm2 and spacious labelling are other advantages of this practical ComatReleco modular system.
Clear markings close to the terminal connections on the sockets make it easy to identify the connections for wiring and servicing.

The CT modules are proof of the practical oriented experiences of ComatReleco in the field of industrial electronics. All control and display elements are arranged easy accessible at all times on the front side of the modules. The functions and settings are self-explanatory schematically illustrated on the front and allow to review the set values also during operation.
A transparent cover over the module setting components provides protection from unintentional settings and additionally links the module to the output relay.
Triggering is performed with the operating voltage. (L1 or +). No potential-free contacts are therefore required. The triggering complies to machine standards. Parallel connection to B1 is admissible.

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

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

2.2 Time Modules

CT32R

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

Time data

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

Control circuit

Nominal voltage	24 … 48 V AC/DC	110 V DC
Operating voltage range	19 … 60 V AC/DC	130 V DC
Power consumption AC / DC	0.3 VA / 0.3 W	- / 0.3 W
Current consumption on supply A1-A2 AC / DC	- / 11 mA	- / 3 mA
Threshold voltage on input control B1 AC / DC	- / 9 V	- / 60 V
Rated frequency	0; 40 … 60 Hz	DC

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product references

Description	Type	24-48	110
AC / DC supply	CT32R/UC...V	✓	
DC supply	CT32R/DC...V		✓

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

Accessories

Socket	S3-MR
	S3-M0R
	S3-M1R

fig. 1. Wiring diagram

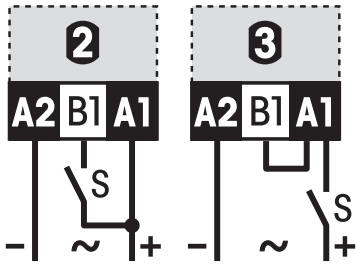
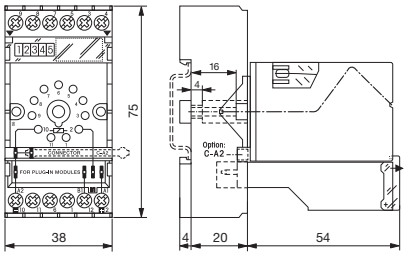


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 45545-2; EN 50155

Approvals

CT33R

Multifunction | 24 … 48 V AC/DC | 115 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	115 V AC/DC
Operating voltage range	19 … 60 V AC/DC	90 … 150 V AC/DC
Power consumption AC / DC	0.3 VA / 0.3 W	0.5 VA / 0.5 W
Current consumption on supply A1-A2 AC / DC	11 mA / 11 mA	7 mA / 7 mA
Threshold voltage on input control B1 AC / DC	9 V / 9 V	60 V / 60 V
Rated frequency	0; 40 … 60 Hz	0; 40 … 60 Hz

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product references

Description	Type	24-48	115	230
AC / DC supply	CT33R/UC...V	✓	✓	✓

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

Accessories

Socket	S3-M0R
	FS-C

fig. 1. Wiring diagram

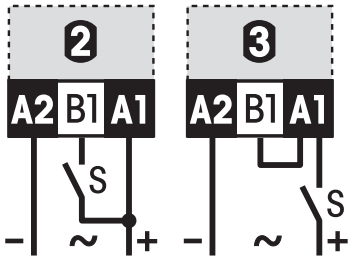
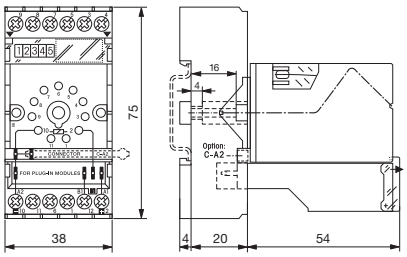


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 45545-2; EN 50155

Approvals

CT36R

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

Time data

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

Control circuit

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

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product references

Description	Type	24-48	110-240
AC / DC supply	CT36R/UC...V	✓	✓

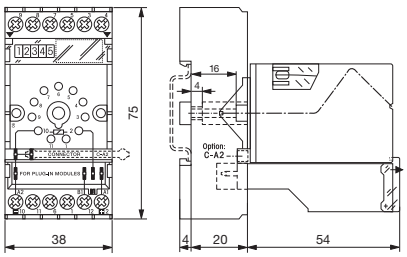
Other voltages on request. Please contact support@comatreleco.com.
«…» List control voltage to complete product references.

Accessories

Socket	S3-M0R
	FS-C

fig. 1. Wiring diagram

fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 45545-2; EN 50155

Approvals

2.3 Timing Relay Accessories

FS-C

Transparent front cover

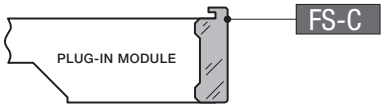
General data

Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-25 … 60 °C
Dimension	fig. 1
Weight	5 g

Product references

Description	Type
Transparent front cover	FS-C/5 (BEUTEL/UNIT 5 STK/PCS)

fig. 1. Dimension (mm)



HF-32

Retaining clip | Steel

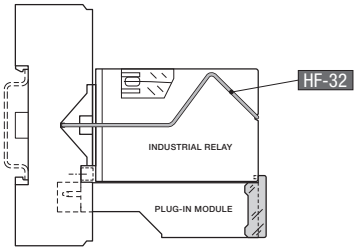
General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 1
Weight	2 g
Housing material	Steel

Product references

Description	Type
Retaining clip	HF-32 (BAG 10 PCS)

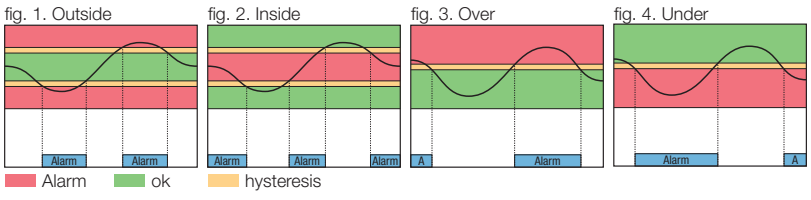
fig. 1. Dimension (mm)



Notes

3 Monitoring & Measuring Devices

	Description	MRM11	MRM11R	MRM32	MRM32R	MRU11	MRU32	MV53	SSU34	SSU31	SSU33L	MRI11	MRI32	TSR19	ESU-D2R	CT515R	CT524R
Monitoring	One phase voltage monitoring	●	●			●		●									
	Three phase voltage monitoring			●	●		●		●		●						
	Four channel voltage measuring																
	DC Voltage monitoring	●	●	●	●	●	●										●
	One phase current monitoring	●	●									●					
	Three phase current monitoring			●	●								●				
	Four channel current measuring																
	DC current monitoring	●	●	●	●							●	●			●	
	Phase failure			●	●		●		●	●	●						
	Phase sequence monitoring			●	●		●		●	●	●						
	Phase angle monitoring / measuring*			●	●		●		●		●						
	Differential voltage monitoring / measuring*								●		●						
	Neutral failure monitoring								●		●						
	Frequency monitoring / measuring*	●	●	●	●	●	●		●		●	●	●				
	Apparent power monitoring / measuring*	●	●	●	●												
	Active power monitoring / measuring*	●	●	●	●												
	Power factor monitoring / measuring*	●	●	●	●												
	Active energy measuring																
	THDI / THDU measuring																
	PTC monitoring													●			
	Earth failure monitoring														●		
Functions	Treshold „over“ exceeded fig. 3.	●	●	●	●	●	●	●	●		●	●	●	●		●	●
	Theshold „under“ exceeded fig. 4.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	„Inside“ band entered fig. 2.	●	●	●	●	●	●					●	●			●	●
	„Outside“ band entered fig. 1.	●	●	●	●	●	●					●	●			●	●
	Alarm on-delay	●	●	●	●	●	●	●	●		●	●	●		●	●	●
	Alarm off-delay	●	●	●	●	●	●	●				●	●				
	Latching alarm output function	●	●	●	●	●	●					●	●	●			
	Threshold selectable	●	●	●	●	●	●	●	●			●	●	●	●	●	●
	Threshold fixed									●	●			●			
Power supply	Supply isolated from measuring circuit	●	●	●	●	●	●					●	●	●	●		
	Supply from measure circuit							●	●	●	●					●	●
Mounting	DIN rail mounting	●	●	●	●	●	●	●	●			●	●		●		
	Housing according IEC/EN 43880 (electrical distribution mounting)	●	●	●	●	●	●	●				●	●				
	Plug-in (socket mounting)									●	●	●		●		●	●



3.1 Multifunction Monitoring

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
Rated frequency	16 … 63 Hz	16 … 63 Hz

Measuring circuit

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

Main circuit

Number of contacts	1 CO
Available contact materials	AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 2
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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70°C
Conductor cross section	2.5 mm²
Nominal screw torque	0.6 Nm
Dimension	fig. 4
Weight	107 g
Protection degree	IP 20
Housing material	PA

Product references

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

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

fig. 1. Wiring diagram

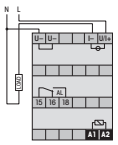


fig. 2. AC voltage endurance

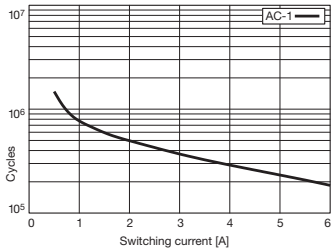


fig. 3. DC load limit curve

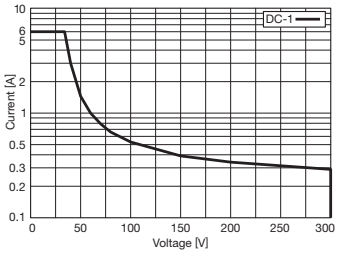
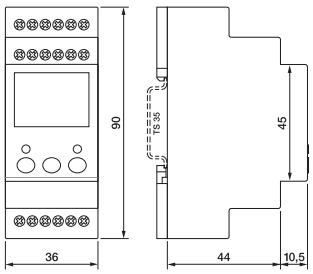


fig. 4. Dimension (mm)



Technical approvals, conformities

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

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
Rated frequency	16 … 63 Hz	16 … 63 Hz

Measuring circuit

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

Main circuit

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm²
Nominal screw torque	0.6 Nm
Dimension	fig. 4
Weight	125 g
Protection degree	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

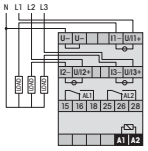


fig. 2. AC voltage endurance

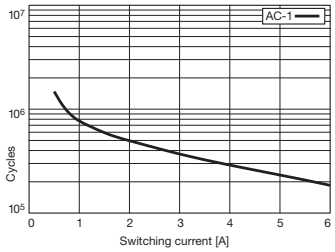


fig. 3. DC load limit curve

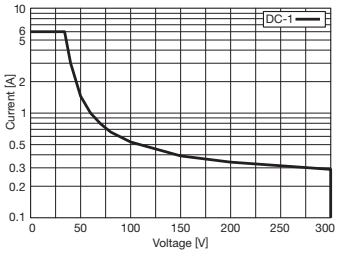
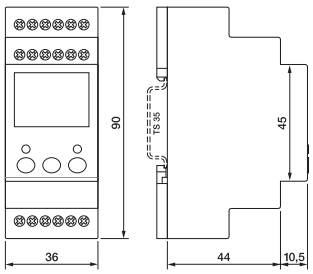


fig. 4. Dimension (mm)



Technical approvals, conformities

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

Notes

3.2 Voltage Monitoring

MRU11R

Single phase multifunction monitoring | 12 … 48 V UC | 110 … 240 V UC

Power supply

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

Measuring circuit

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

Main circuit

Number of contacts	1 CO
Available contact materials	AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 2
Rated load AC-1	1,200 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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 60 °C
Conductor cross section	2.5 mm²
Nominal screw torque	0.6 Nm
Dimension	fig. 4
Weight	107 g
Protection degree	IP 20
Housing material	PC

Product references

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

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

fig. 1. Wiring diagram

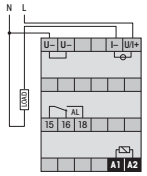


fig. 2. AC voltage endurance

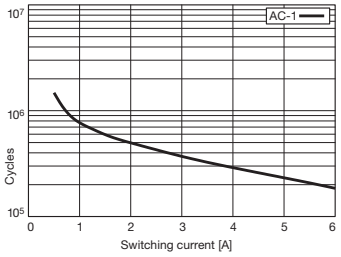


fig. 3. DC load limit curve

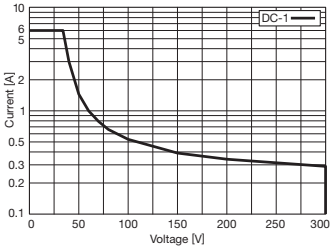
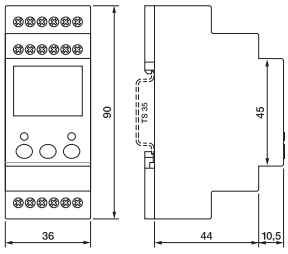


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947; EN 61000-6-2; EN 61000-6-3

Approvals

MRU32R

3 phase | 2 CO | voltage monitoring

Power supply

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

Measuring circuit

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

Main circuit

Number of contacts	2 CO
Available contact materials	AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 2
Rated load AC-1	1,500 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 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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 60 °C
Conductor cross section	2.5 mm²
Nominal screw torque	0.6 Nm
Dimension	fig. 4
Weight	125 g
Protection degree	IP 20
Housing material	PC

Product references

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

Other voltages on request. Please contact support@comatreleco.com.
"…" list control circuit voltage to complete product references.

fig. 1. Wiring diagram

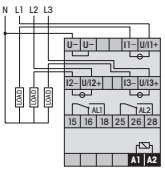


fig. 2. AC voltage endurance

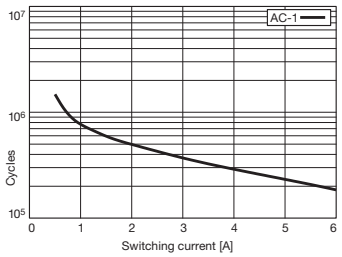


fig. 3. DC load limit curve

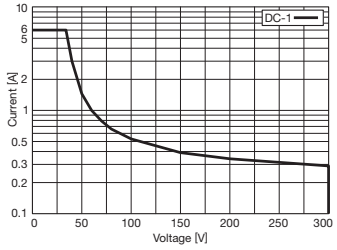
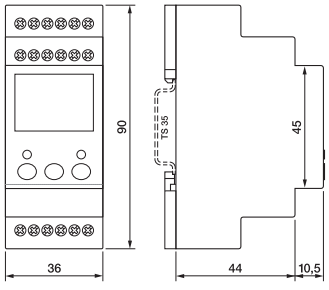


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 43880; IEC/EN 60730; IEC/EN 60947

Approvals

Notes

3.3 Voltage Monitoring - pluggable

	Type	Pin	Page
SSU Series			
3 phase + N | 1 CO | voltage monitoring	SSU33R		92

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 / -
Rated frequency	50 Hz	50 Hz

Measuring circuit

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

Main circuit

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

Insulation

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

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-25 … 60 °C
Dimension	fig. 4
Weight	300 g
Protection degree	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 clip, steel	HF-24
Transparent front cover	FS-23
Front panel mounting set	FZ-23

fig. 1. Wiring diagram

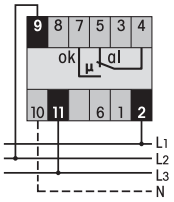


fig. 2. AC voltage endurance

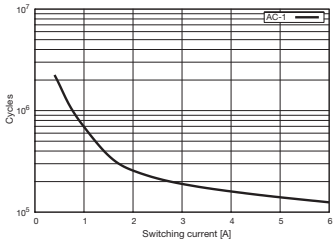


fig. 3. DC load limit curve

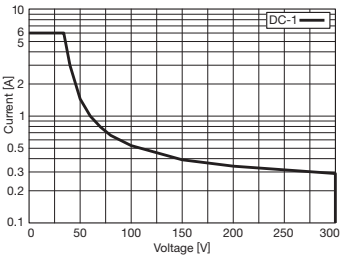
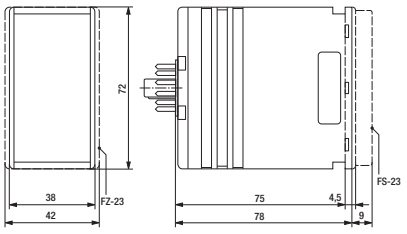


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards IEC/EN 60947

Railway EN 45545-2; EN 50155

Approvals

3.4 Current Monitoring

MRI11R

1 phase | 1 CO | current monitoring

Power supply		
Nominal voltage	12 … 48 V AC / DC	110 … 240 V AC / DC
Operating voltage range	10 … 60 V	85 … 250 V
Power consumption AC / DC	3.2 VA / 1.6 W	2.6 VA / 1.5 W
Rated frequency	16 … 63 Hz	16 … 63 Hz
Measuring circuit		
Measured parameters	I, f	
Min. setting step, resolution	0.1 A / 1 Hz	
Monitoring functions	Under, over, inside, outside	
Number of voltage measurement inputs	1	
Rated measurement current	5 A	
Measurement current range	0.1 … 5 A	
Undercurrent setting range	0.1 … 6 A	
Overcurrent setting range	0.1 … 6 A	
Rated base frequency	15 … 150 Hz	
Alarm delay	0.5 … 999.9 s	
Alarm reset delay	0.5 … 999.9 s	
Main circuit		
Number of contacts	1 CO	
Available contact materials	AgNi	
Rated voltage	250 V AC	
Rated current	6 A	
Minimum load	10 mA, 10 V	
Inrush current	10 A, 10 ms	
Rated load DC	fig. 2	
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		
Ambient temperature storage (no ice)	-40 … 85 °C	
Ambient temperature operation	-40 … 60 °C	
Conductor cross section	2.5 mm²	
Nominal screw torque	0.6 Nm	
Dimension	fig. 4	
Weight	107 g	
Protection degree	IP 20	
Housing material	PC	

Product references

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

Other voltages on request. Please contact support@comatreleco.com.
"..." list control circuit voltage to complete product references.

fig. 1. Wiring diagram

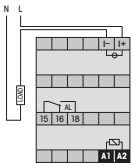


fig. 2. AC voltage endurance

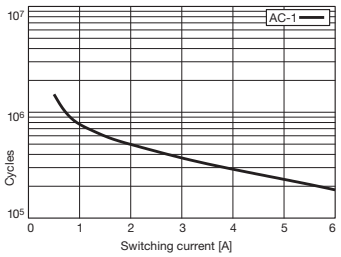


fig. 3. DC load limit curve

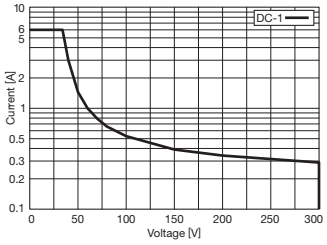
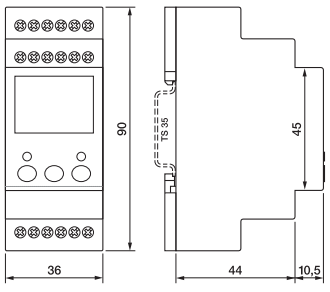


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947; EN 61000-6-2; EN 61000-6-3

Approvals

MRI32R

3 phase | 2 CO | current monitoring

Power supply

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

Measuring circuit

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

Main circuit

Number of contacts	2 CO
Available contact materials	AgNi
Rated voltage	250 V AC
Rated current	6 A
Minimum load	10 mA, 10 V
Inrush current	10 A, 10 ms
Rated load DC	fig. 2
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 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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 60 °C
Conductor cross section	2.5 mm²
Nominal screw torque	0.6 Nm
Dimension	fig. 4
Weight	125 g
Protection degree	IP 20
Housing material	PC

Product references

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

Other voltages on request. Please contact support@comatreleco.com.
"..." list control circuit voltage to complete product references.

fig. 1. Wiring diagram

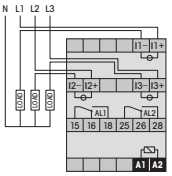


fig. 2. AC voltage endurance

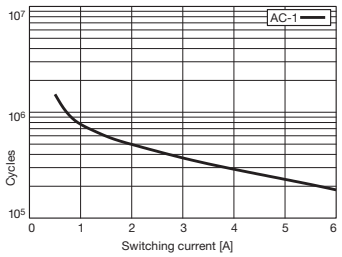


fig. 3. DC load limit curve

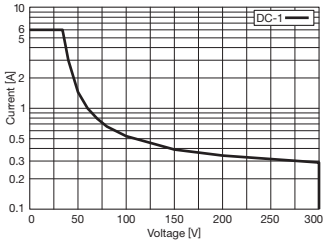
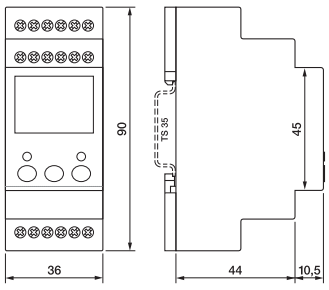


fig. 4. Dimension (mm)



Technical approvals, conformities

Standards EN 60730-1; EN 60947; EN 61000-6-2; EN 61000-6-3

Approvals

Notes

3.5 Isolation Monitoring

	Type	Pin	Page
ESU Series			
DC Isolation monitoring | 1 NO + 2 CO	ESU-D2R		98

ESU-D2R

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
Rated frequency	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
Circuit / ground resistance measurement range	1 … 50 kΩ
Pre alarm setting range	4 … 30 kΩ
Main alarm	≤ 4 kΩ
Alarm delay	0.1 ... 10 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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Conductor cross section	2.5 mm², 2 x 1.5 mm²
Nominal screw torque	0.5 Nm
Dimension	fig. 4
Weight	250 g
Protection degree	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

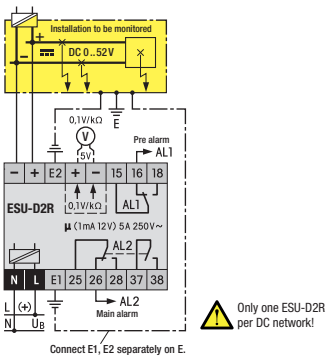


fig. 2. DC load limit curve

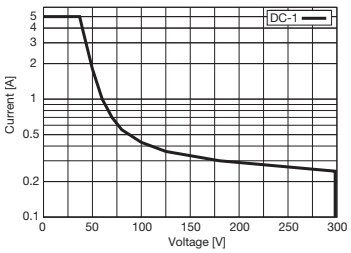
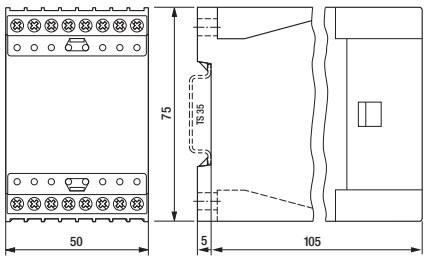


fig. 3. Dimension (mm)



Technical approvals, conformities

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

3.6 Monitoring Modules

CT515R

Current monitoring

Power supply

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

Measuring circuit

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

General data

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product references

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

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

Accessories

Socket	S3-M0R
	FS-C

fig. 1. Wiring diagram

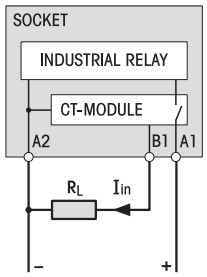
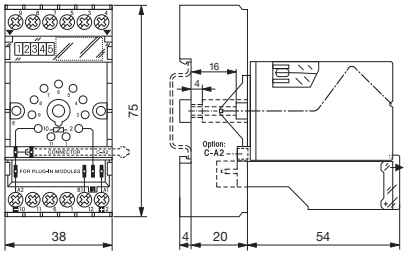


fig. 2. Dimension (mm)



Technical approvals, conformities

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

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

Ambient temperature storage (no ice)	-40 … 85 °C
Ambient temperature operation	-40 … 70 °C
Dimension	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product references

Description	Type	24
Voltage monitoring, railway version	CT524R/DC...V	✓

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

Accessories

Socket	S3-M0R
	FS-C

fig. 1. Wiring diagram

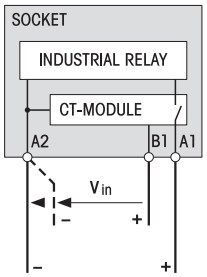
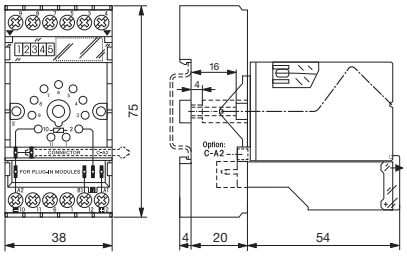


fig. 2. Dimension (mm)



Technical approvals, conformities

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

Notes

4 Sockets

Notes

4.1 11-Pin Sockets

S3-MR

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

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
Cross-section of connecting wire	
- 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
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	61 g
Housing material	PA

Included Accessories

A2-Connector	C-A2

Optional Accessories

Retaining clip, steel	HF-32 (BAG 10 PCS) HF-33 (BAG 10 PCS) for Time Cube CTx
A2-Connector	C-A2 (BAG 5PCS)
Freewheeling diode module	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V
Coding ring	S3-BC (BAG 5 PCS) for C3 / C3x Relays

fig. 1. Wiring diagram

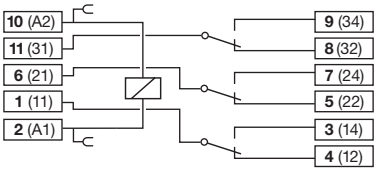
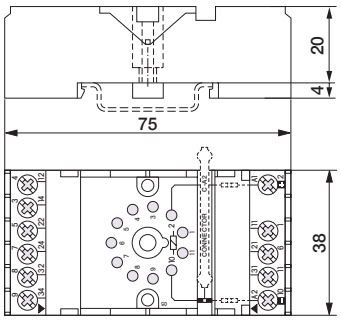


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals CE

S3-M0R / S3-M1R

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

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
Cross-section of connecting wire	
- 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
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	61 g
Housing material	PA

Included Accessories

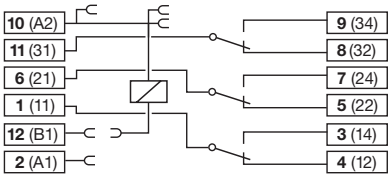
A2-Connector	C-A2

Optional Accessories

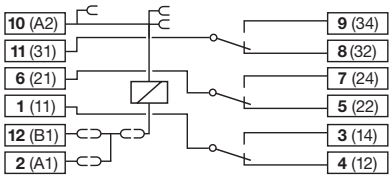
Retaining clip, steel	HF-32 (BAG 10 PCS)
	HF-33 (BAG 10 PCS) for Time Cube CTx
Coding ring	S3-BC (BAG 5 PCS) for C3 / C3x Relays
A2-Connector	C-A2 (BAG 5PCS)
Freewheeling diode module	RD1/DC12-220V
RC-Suppressor module	RC1/UC110-240V

fig. 1. Wiring diagram

S3-M0R

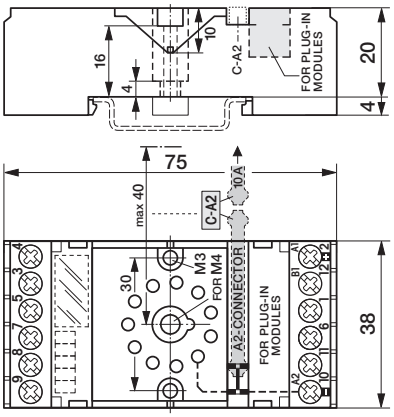


S3-M1R



Bridge Connector SC-3 included

fig. 2. Dimension (mm)



Technical approvals, conformities

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

Notes

4.2 14-Pin Sockets

	Type	Pin	Page
14-Pin Series			
14-pin R4 Relay socket	S4-GR		110

S4-GR

14-pin R4 Relay socket

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
Cross-section of connecting wire	
- 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	1 Nm
Screw Dimension	M3.5 Philips-slot (combo)
Mounting	TH35 (EN 60715) or back panel mounting
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	80 g
Housing material	PA

Included Accessories

Retaining clip, plastic	S3-C for R4 / R4x Relays

Optional Accessories

Retaining clip, plastic	S3-C (BAG 10 PCS) for R4 / R4x Relays

fig. 1. Wiring diagram

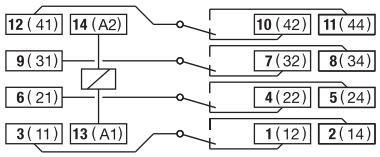
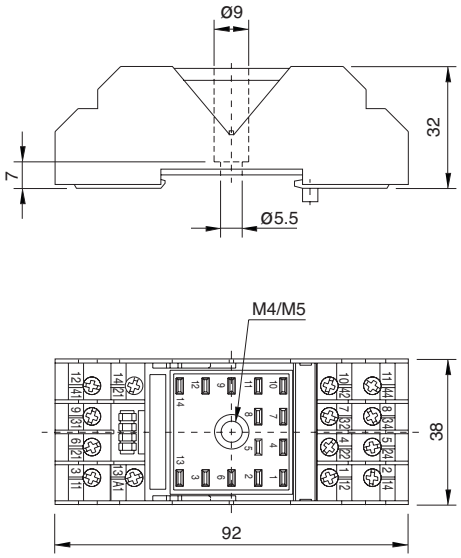


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals CE

4.3 8/14-Pin Sockets

S7-GR

8-pin socket for R7 relay

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
Cross-section of connecting wire	
- 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
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	38 g
Housing material	PA

Included Accessories

Retaining clip, plastic	S9-C

Optional Accessories

A2-Connector	S7-BB (BAG 20 PCS)
Panel adapter	S9-G (BAG 10 PCS)

fig. 1. Wiring diagram

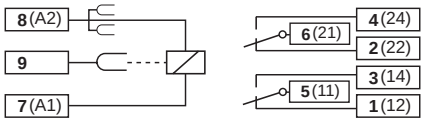
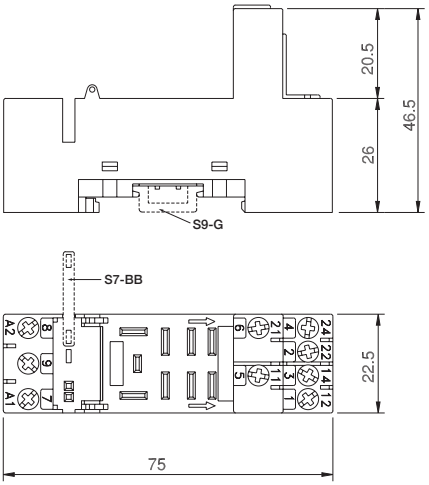


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals CE

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
- Conatct / coil terminal	2.5 kV rms / 1 min
Cross-section of connecting wire	
- Single wire	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
Mounting	TH35 (EN 60715)
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C (50 °C for 16 A)
Weight	46 g
Housing material	PA

Included Accessories

Retaining clip, steel	S7-CPI

Optional Accessories

Retaining clip, steel	S7-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-way bridge for main circuit terminals	Sxx-BBPI2 (BAG 20 PCS)
4-way bridge for main circuit terminals	Sxx-BBPI4 (BAG 20 PCS)
Multi-operation tool kit for Push-in sockets	OT-PI kit
Marking strip	BS11-PI (50m tape)

Applicable tools

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

fig. 1. Wiring diagram

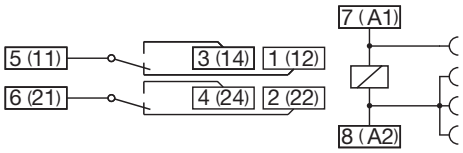
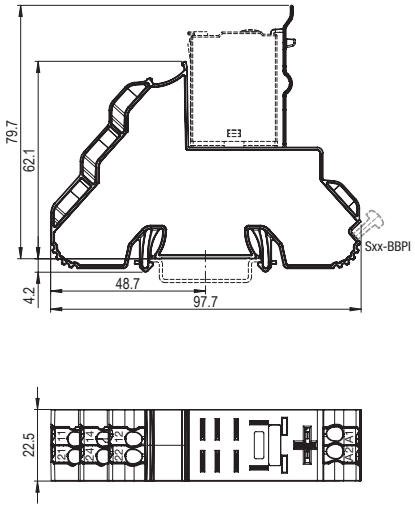


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 45545-2; EN 50124-1; EN 50155
Approvals	cULus

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
- Conatct / coil terminal	2.5 kV rms / 1 min
Cross-section of connecting wire	
- Single wire	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
Mounting	TH35 (EN 60715)
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	62 g
Housing material	PA

Included Accessories

Retaining clip, steel	S7-CPI

Optional Accessories

Retaining clip, steel	S7-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-way bridge for main circuit terminals	Sxx-BBPI2 (BAG 20 PCS)
4-way bridge for main circuit terminals	Sxx-BBPI4 (BAG 20 PCS)
Multi-operation tool kit for Push-in sockets	OT-PI kit
Marking strip	BS11-PI (50m tape)

Applicable tools

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

fig. 1. Wiring diagram

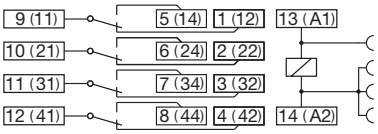
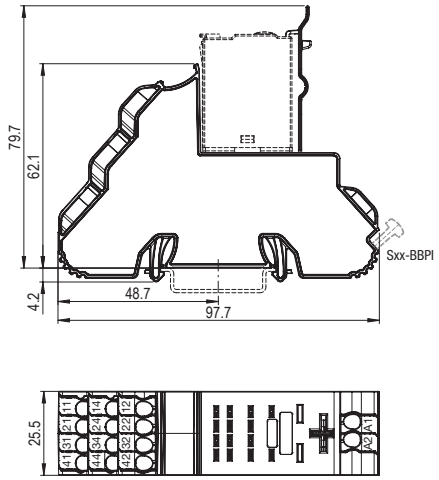


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards	EN 60664-1
Railway	EN 45545-2; EN-50124-1; EN 50155
Approvals	cULus

4.4 5/8-Pin Sockets

S10-GR

5-pin socket for R10 relay

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
- Conatct / coil terminal	5 kV rms / 1 min
- Single wire	4 mm^2 / AWG 12, 2 x 2.5 mm^2 / AWG 14
- Multi wire (un-crimped)	0.34 mm^2 / AWG 22 … 2.5 mm^2 / AWG 14
Nominal screw torque	0.7 Nm
Screw Dimension	M3 Pozi slot
Mounting	TH35 (EN 60715) or back panel mounting
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	23 g
Housing material	PA

Optional Accessories

Bridge bar	S10-BB (BAG 20 PCS)
Socket	S10

fig. 1. Wiring diagram

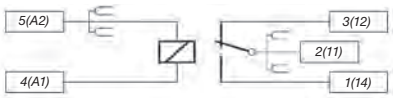
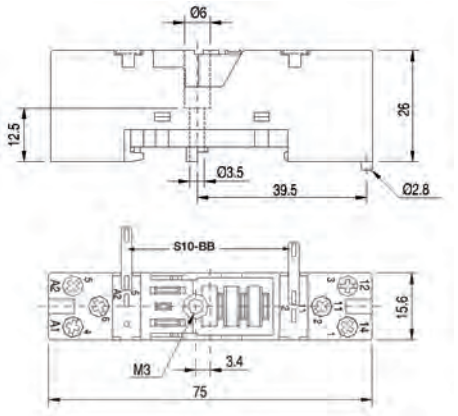


fig. 2. Dimension (mm)



Technical approvals, conformities

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

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
- Conatct / coil terminal	2.5 kV rms / 1 min
Cross-section of connecting wire	
- Single wire	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
Mounting	TH35 (EN 60715)
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	33 g
Housing material	PA

Included Accessories

Retaining clip, steel	S10-CPI

Optional Accessories

Retaining clip, steel	S10-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-way bridge for main circuit terminals	Sxx-BBPI2 (BAG 20 PCS)
4-way bridge for main circuit terminals	Sxx-BBPI4 (BAG 20 PCS)
Multi-operation tool kit for Push-in sockets	OT-PI kit
Marking strip	BS11-PI (50m tape)

Applicable tools

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

fig. 1. Wiring diagram

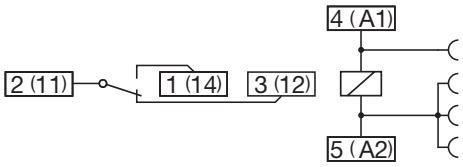
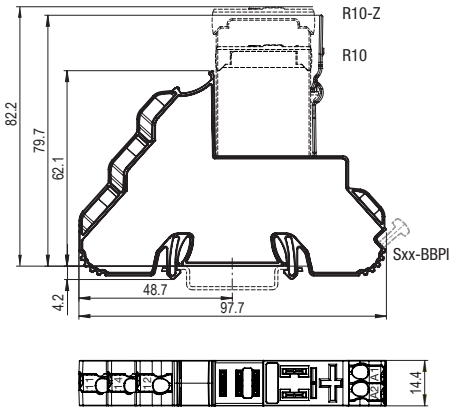


fig. 2. Dimension (mm)



Technical approvals, conformities

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

S12-GR

8-pin socket for R12 relay

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
- 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
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	31 g
Housing material	PA

fig. 1. Wiring diagram

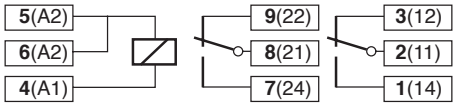
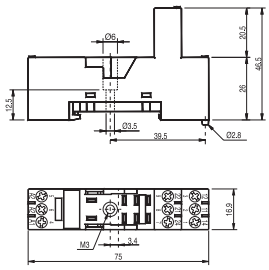


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals CE

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
- Conatct / coil terminal	2.5 kV rms / 1 min
Cross-section of connecting wire	
- Single wire	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (un-crimped)	2 x 0.34 mm² / AWG 22 … 2 x 2.5 mm² / AWG 14 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
- Multi wire (crimped)	2 x 0.34 mm² / AWG 22 … 2 x 1.5 mm² / AWG 16 Use copper conductors only Max. jacket diameter 4.0 mm Stripping length 8 mm
Mounting	TH35 (EN 60715)
Ambient temperature storage (no ice)	-40 … 80 °C
Ambient temperature operation	-40 … 70 °C
Weight	39 g
Housing material	PA

Included Accessories	
Retaining clip, steel	S10-CPI

Optional Accessories	
Retaining clip, steel	S10-CPI (BAG 10 PCS)
Bridge A2 for Sx-PI / Sx-PIR	Sxx-BBPI (BAG 20 PCS)
2-way bridge for main circuit terminals	Sxx-BBPI2 (BAG 20 PCS)
4-way bridge for main circuit terminals	Sxx-BBPI4 (BAG 20 PCS)
Multi-operation tool kit for Push-in sockets	OT-PI kit
Marking strip	BS11-PI (50m tape)

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

fig. 1. Wiring diagram

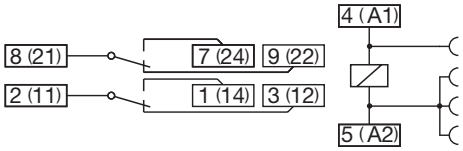
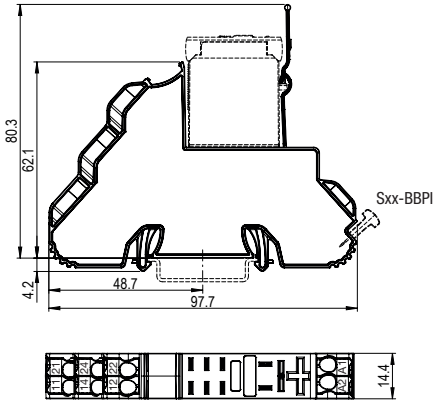


fig. 2. Dimension (mm)



Technical approvals, conformities

Standards EN 60664-1

Railway EN 45545-2; EN 50155

Approvals

Notizen

4.5 Socket Accessories

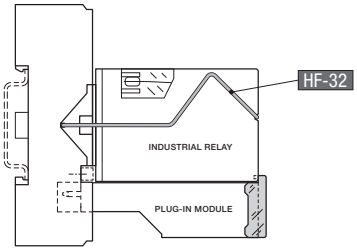
HF-32

Retaining clip | Steel

Product references

Description	Type
Retaining clip	HF-32 (BAG 10 PCS)

fig. 1. Dimension (mm)



5 Worldwide Sales Network

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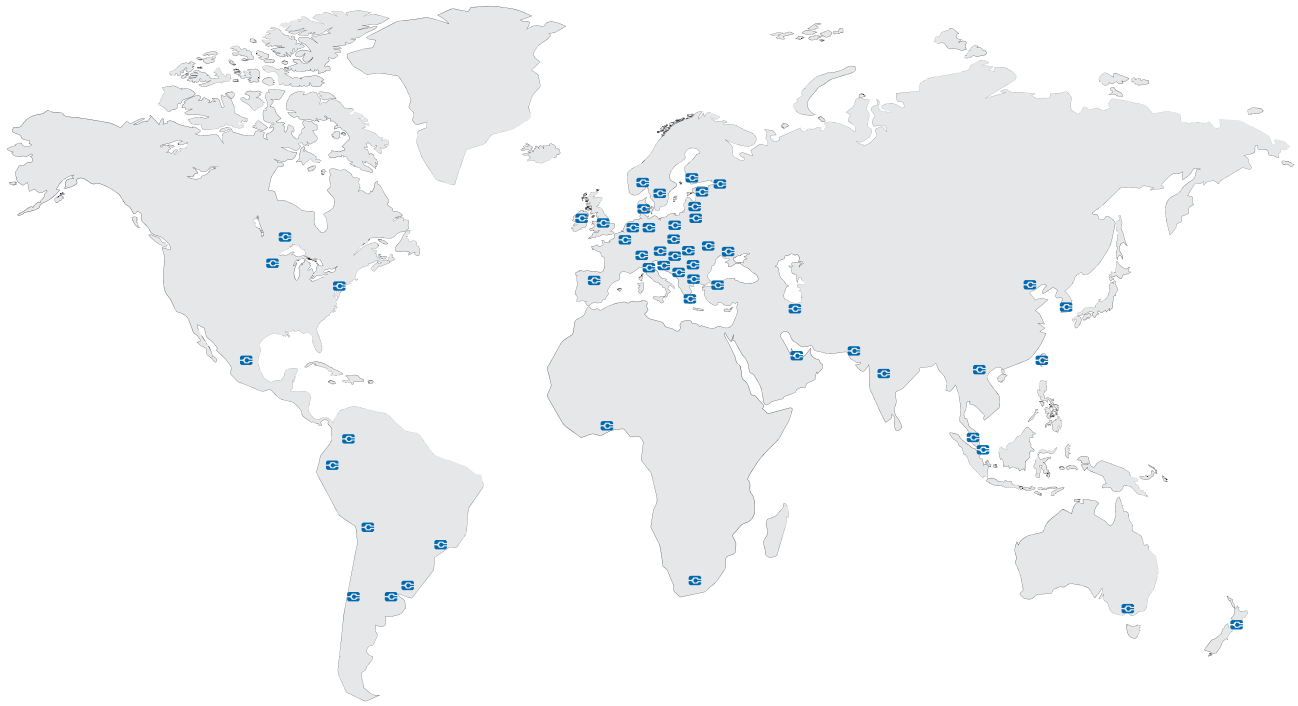
WORLD OF RELAYS



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