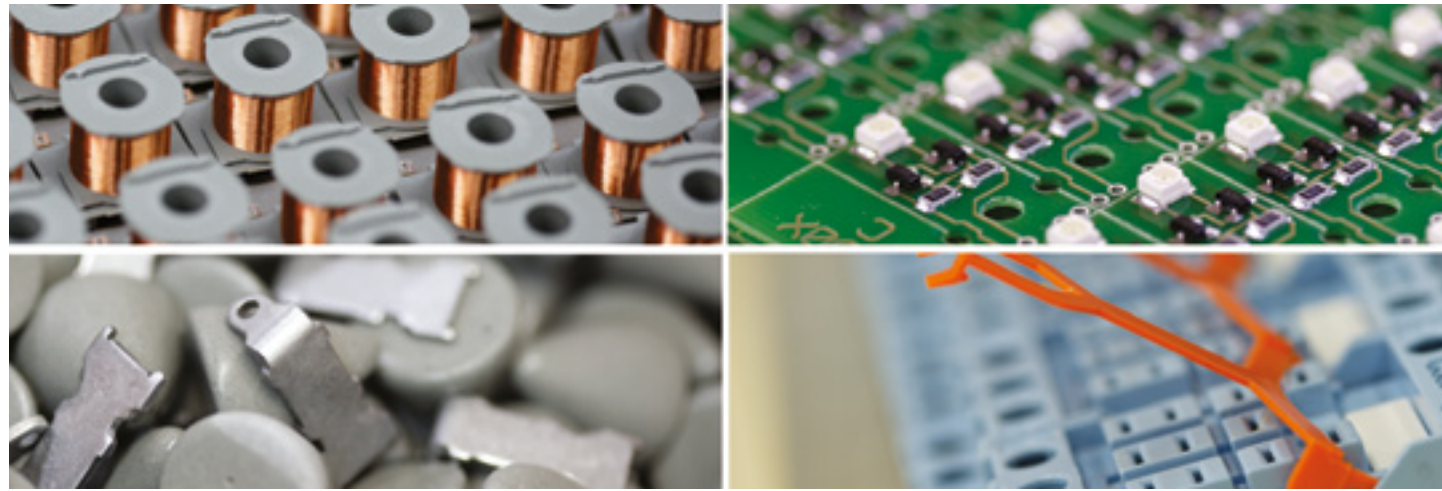




WORLD OF RELAYS

Transportation & Railway Catalogue

WoR 2.0 Rail



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.



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.

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.

Further information available on page 9



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.

Further information available on page 69



Contactors - High power switching at reduced space

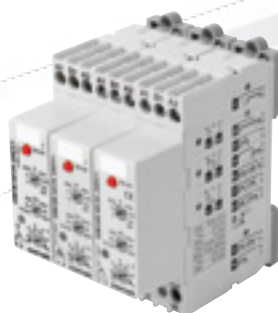
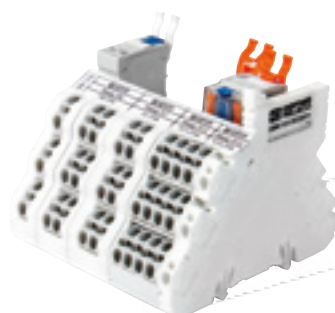
Our standard contactors are capable of switching 4 A at 110 V DC (DC-5). This is achieved with a built-in blow magnet into a 2-poles contactor with a compact width of only 17.5 mm. ComatReleco also can build custom coil voltages away from those listed within in standard range.

Further information available on page 39

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.

Further information available on page 79



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.

Further information available on page 51

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 built into a housing, or on a board. However unique your requirement may be, we have the in-house experience and expertise to deliver it.

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

Other products

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

Example:

CMS-10R ComatReleco Messaging System

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



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4 Worldwide Sales Network

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1 Relays & Contactors

Relays
General Information

Product range

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

Relays C31, C32, R4

35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connector according to IEC 67 with 2 or 3 contacts up to 10 A and different contact types and contact materials.

Standard relay 35 x 35 mm with flat blade connectors with up to 4 contacts and up to 16 A with 4 contacts.

Relays R7, R9

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

Interface Relays, 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 suitable 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)

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

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

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

X = Electric position indicating device with LED

(X) 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

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

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)

Number of contacts

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

Basic type refers to the product line
Numbers between 2 and 12 and 20, 30 are used.

R is used for railway relays
N is used for normal relays

Coil accessories
General Information

Relays C31, C32, R7, R9, R4

Protection against transients

When the coil is disconnected from an electromagnet, peaks of inverse voltage appear at the terminals which can reach very high values. These pulses can be transmitted down the line associated with the coil and could possibly affect other components.

In the case of a relay being operated by such devices as transistors, Triacs, etc; it may be necessary to protect against transients.

Transients carried in the line

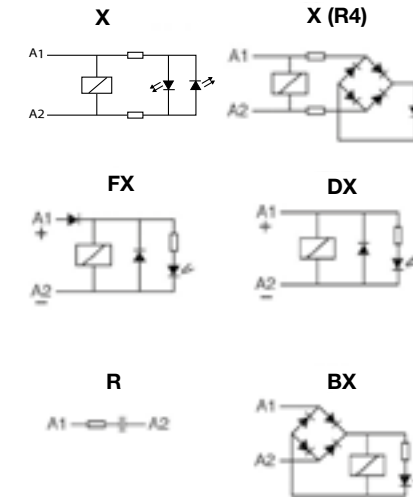
High voltage surges can be carried in the supply line to the relay coil. These may appear in the form of peaks or bursts and are generated by the connection and disconnection of electric motors, transformers, capacitors etc.

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

Protection circuits

A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1,2,50,0,5}$)
ComatReleco Relays are available with integrated protection circuits.

- X** LED indication with rectifier.
For DC and AC relays up to 250 V
Note: LED connected, in series with the coil @ 220 V DC in QRC types.
- DX** Free-wheeling diode + LED
Dampens transients caused by the relay coil on de-energisation.
- FX** Polarity + free wheeling diode + LED
A diode in series with the coil protects the relay from reverse connection.
- BX** Bridge rectifier + LED indication
Allows the relay to operate in both AC or DC without any polarity inconvenience. Available only in voltages up to 60 V.
- R** Resistor and capacitor.



Relays R10, R12

LED and protection circuit connected to coil.

- X** LED with no polarity, (standard)
Coils ≤ 12 V A DC coils
LED rectifier bridge in parallel
- X** LED with no polarity, (standard)
Coils ≥ 24 V A DC coils
LED rectifier bridge in series
- FX** LED with polarity A1+ (option)
Every DC coil voltage
Polarity and Free-wheeling diodes
- BX** LED with no polarity, (option)
Only 24 V and 48 V A DC coils
Rectifier bridge for AC/DC relays
- R** LED not available (option)
RC protection against pulses on AC

Protection against pulses

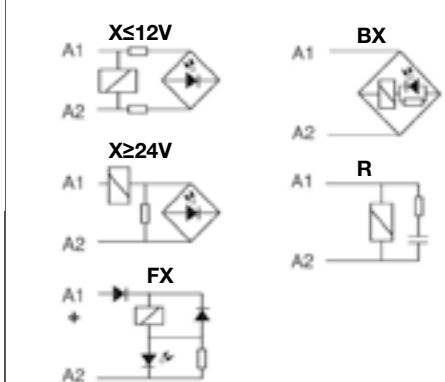
When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

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

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

Making or breaking engines, transformers or contactors in an industrial environmental, may generate high voltage pulses, either isolated or burst, through the main line.

The voltage level of those pulse may be high enough to affect the isolation of the coil.



Relays

General Information

Contacts

There are different contact types. The main distinction is between single contacts and twin contacts. While single contacts are more suitable for higher loads, twin contacts are significantly more reliable at small loads, i.e.
< 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 appropriated for load with high-inrush current.

Minimum load

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

Contact resistance

Initial values of resistance of contact can vary with the use, load and others conditions.
Typical values when the relay is new is about 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 DC switching capacity is a few 100W (DC-1).

Drive (coil)

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

Coil design

The coil consists of a plastic former (resistant up to about 130°C) and doubly insulated high-purity copper wire, temperature class F. The winding must withstand threshold voltages (EN 61000-4-5) of more than 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 U_{nom} , for AC approx. 75%. The release voltage, on the other hand, is approx. 25% or 60% respectively.

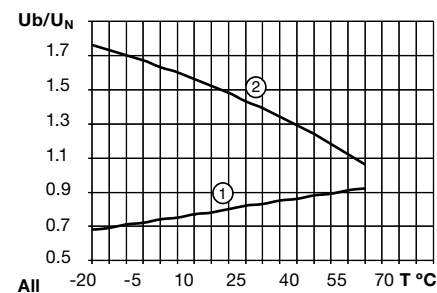
For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu. This is not the case for AC, where the inductive resistance is the controlling factor, which is practically constant over a wide temperature range.

With AC, in a certain undervoltage range the relay may hum, and the armature may flutter. This voltage range must be avoided.

Operating voltage range

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

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



General design

ComatReleco Relays are made from high-quality, carefully selected materials. They comply with the latest environmental regulations such as RoHS. Their meticulous design makes them particularly suitable for industrial applications and installation engineering. They are particularly service-friendly through robust terminals, mechanical position indicating device a standard, manual operation, dynamic, permanent characteristics.

Colour coding for manual operation as a function of the coil voltage is another useful feature. Further options such as different coil connections, free-wheeling diode, LED display, bridge rectifier for AC/DC drives etc., and short-term availability of special versions for practically any drive voltage up to DC 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.

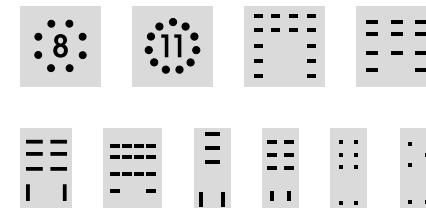
Example:

- 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
Worldwide / 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

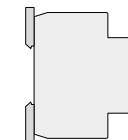
Protection class IP according to EN 60529 and other standards. Industrial relays and their sockets can be classified as follows:

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

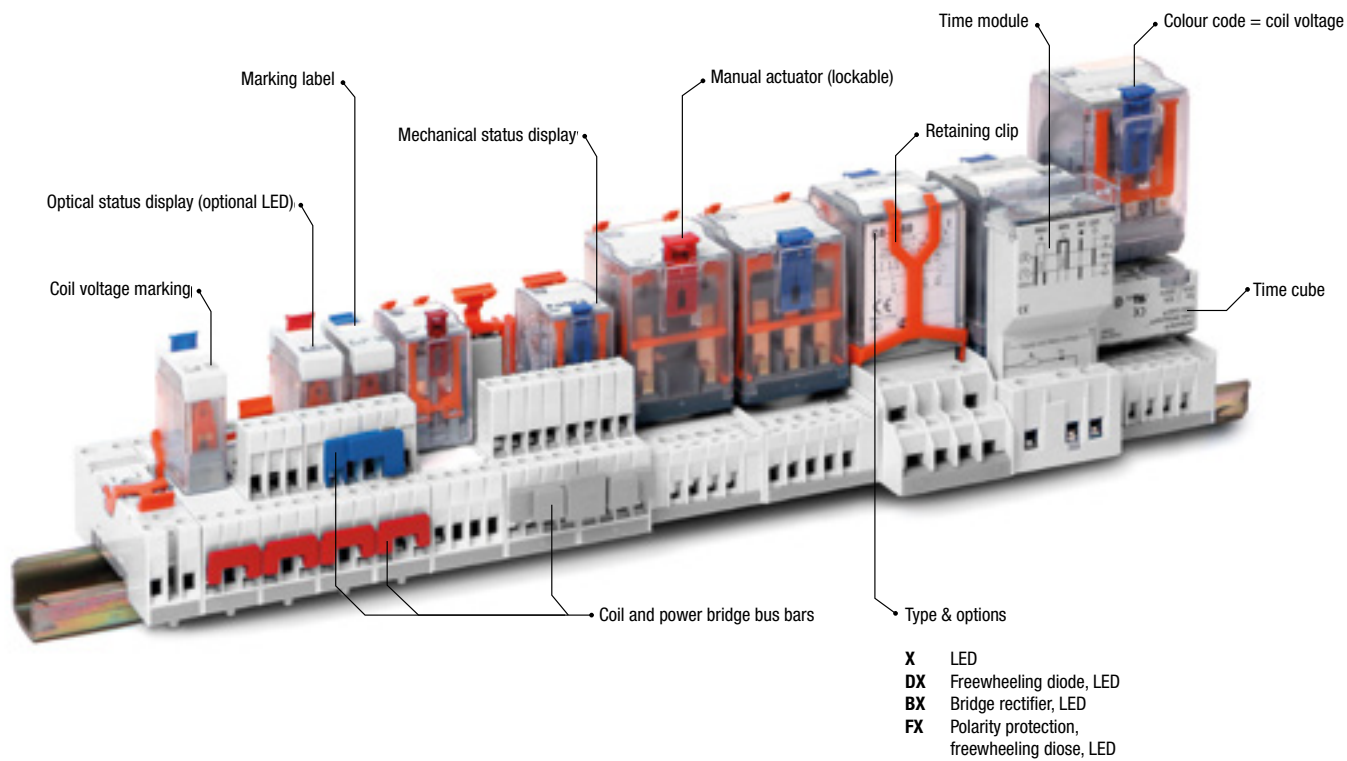
Switch-on currents during a few ms in the range 10 ... 18 x rated. Switch-off at rated load.

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

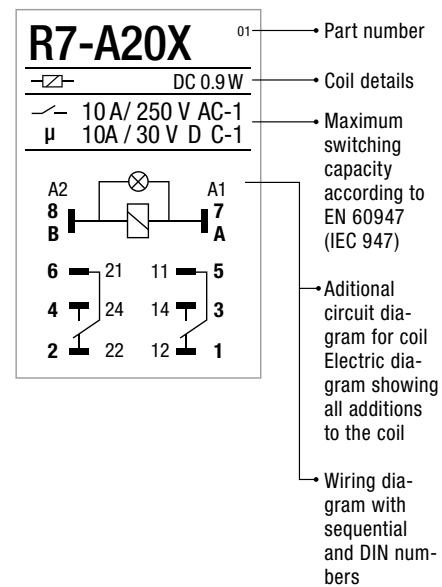
Switching on during zero-transition may lead to switch-on currents of 8 ... 15 x rated. High inductive switch-off energy is possible. The load must be connected, not least due to EMC problems.



Five colours for an easier identification of coil voltage

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

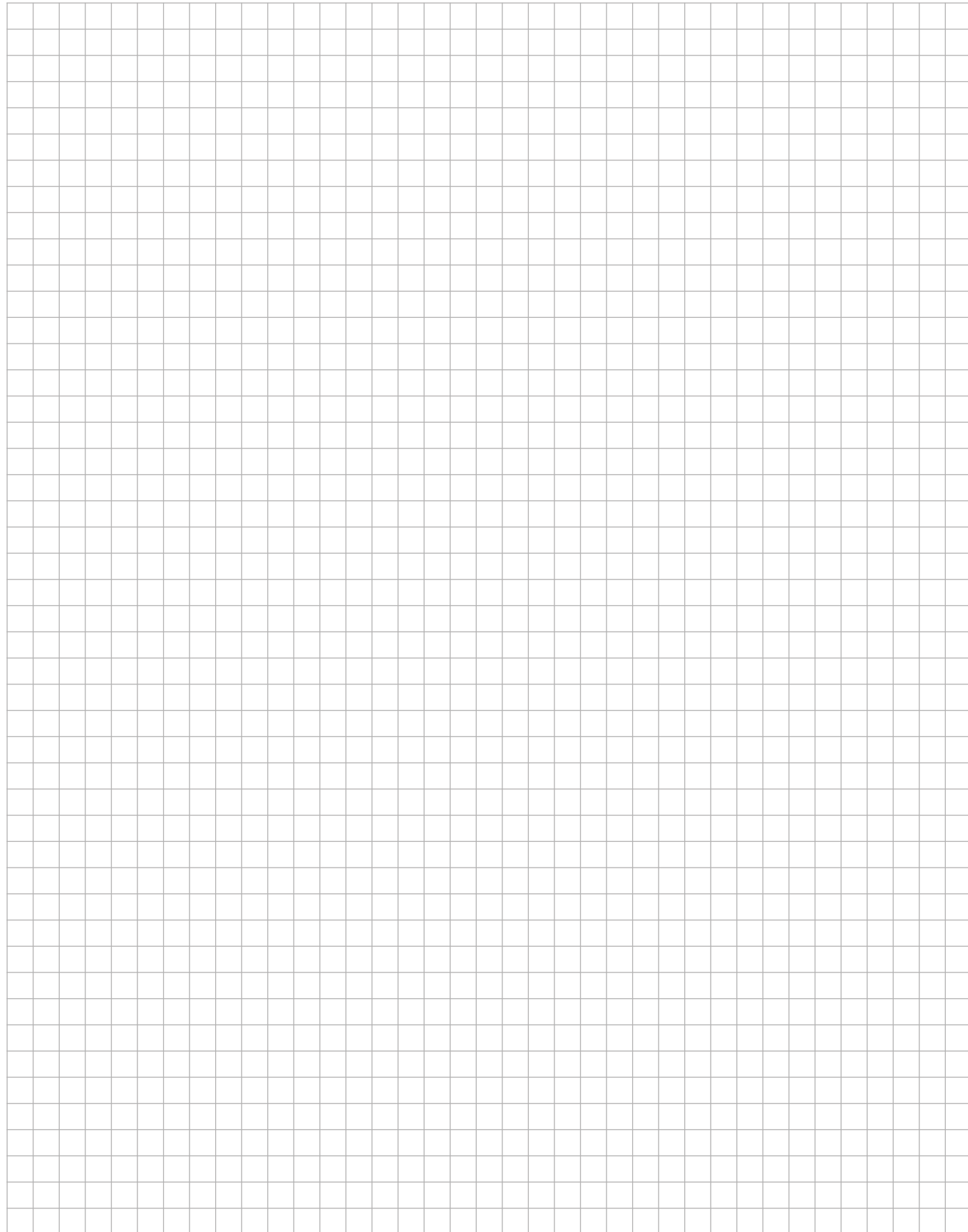
Comprehensive technical label



- Level of switching current and voltage of the application?
- DC or AC switching?
- Inductive or capacitive load?
- Expected number of switching cycles?

Symbol	Voltage	Current	Use	Type	Material	
	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	
	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)
	30V...400V	100 mA...16A	Electromagnets (utilisation cat. AC-15 / DC-13)	Increased AC or DC loads	Single Contact	AgNi
				Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	Mosfet (DC) Triac (AC)
	12V...400V	100 mA...16A	High DC loads, inductive loads	Capacitive loads	Early make contact	AgNi + W AgSnO ₂ + W
				Frequent, rapid switching procedures, high reliability, noiseless switching	Series contacts	AgNi AgSnO ₂
	12V...400V	100 mA...16A	High DC loads, inductive loads	Frequent, rapid switching procedures, high reliability, noiseless switching	Semiconductor	Mosfet (DC) Triac (AC)

Notes



1.1 Relays

Application	Type	Pin	Page
R10 Series			
1 pole changeover contact Faston	R10-A10		18
1 pole normally open solid state AC Faston	R10-Z1I		19
1 pole normally open solid state AC Faston	R10-Z1Z		20
1 pole normally open solid state DC Faston	R10-Z1N		21
1 pole normally open solid state DC Faston	R10-Z1P		22
R12 Series			
2 pole changeover contact Faston	R12-A21		23
R7 Series			
2 pole changeover contact Faston	R7-A20		24
2 pole changeover twin contact	R7-T22		25
R9 Series			
4 pole changeover contact Faston	R9-A41		26
C3x Series			
Power relay	C31		27
Control relay	C32		28
R4 Series			
4 pole changeover contact Faston	R4-A40		29

R10-A10

1 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Rated load	10 A
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
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	Ω	mA
12	224	54
24	742	32
36	1 815	20
48	3 400	14
60	5 400	11
72	8 467	9
110	19 923	6

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / coil	5 kV / 1 min
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
Dimensions	fig. 4.
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110
DC								
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

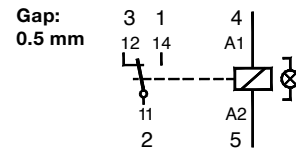


fig. 2. AC voltage endurance

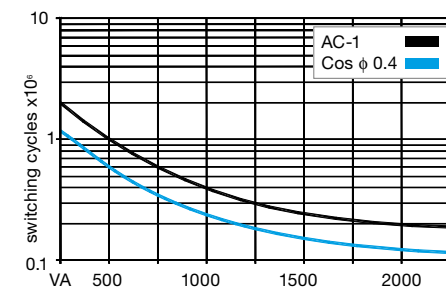


fig. 3. DC load limit curve

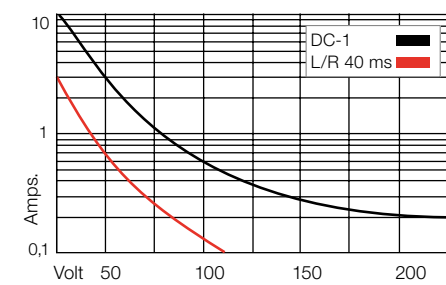
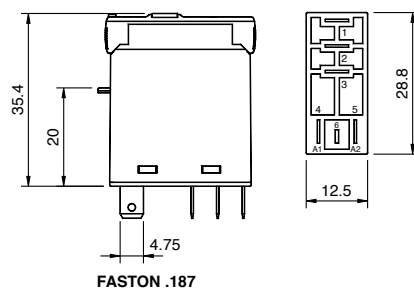


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



R10-Z11

1 pole | normally open solid state AC | Faston

Main circuit

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

Control circuit

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

Output current

Type	Instantaneous
Maximum output current	3 A
Minimum output current	35 mA
Output voltage range	24 ... 250 V AC
Residual current	1 mA
I ² t value	210 A ² s
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
Dimensions	fig. 3.
Weight	28 g
Housing material	PA

Product reference

Description	Type	5-48
DC	R10-Z11X/DC...V	✓

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

Accessories

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

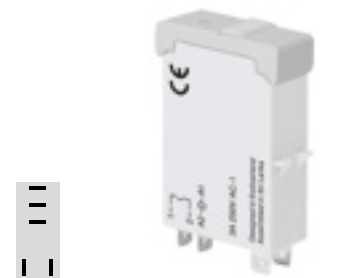


fig. 1. Wiring diagram

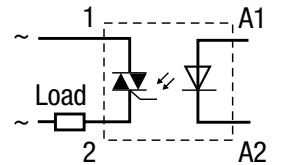


fig. 2. AC derating curve

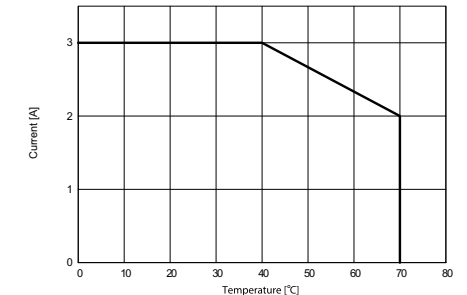
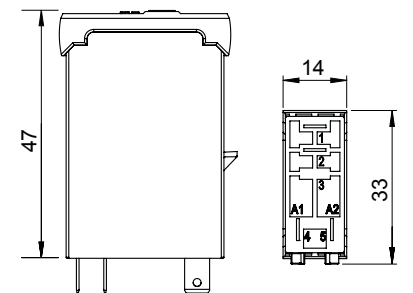


fig. 3. Dimensions (mm)



Technical approvals, conformities

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



R10-Z1Z

1 pole | normally open solid state AC | Faston

Main circuit

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

Control circuit

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

Output current

Type	Synchronized zero
Maximum output current	3 A
Minimum output current	35 mA
Output voltage range	24 ... 250 V AC
Residual current	1 mA
i ² t value	210 A ² s
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
Dimensions	fig. 3.
Weight	28 g
Housing material	PA

Product reference

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

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

Accessories

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



fig. 1. Wiring diagram

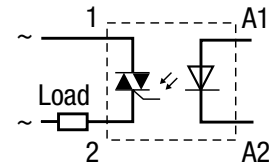


fig. 2. AC derating curve

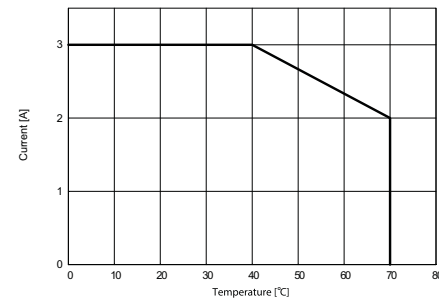
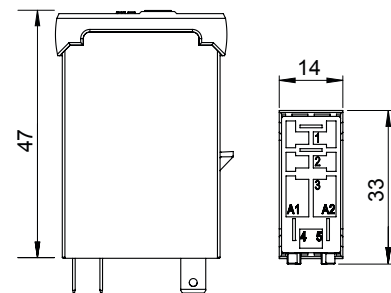


fig. 3. Dimensions (mm)



Technical approvals, conformities

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



R10-Z1N

1 pole | normally open solid state DC | Faston

Main circuit

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

Control circuit

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

Output current

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

General data

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
Dimensions	fig. 3.
Weight	28 g
Housing material	PA

Product reference

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

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

Accessories

Socket	S10-GR, S10-PIR
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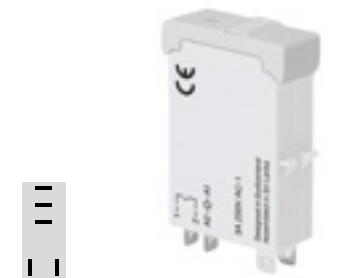


fig. 1. Wiring diagram

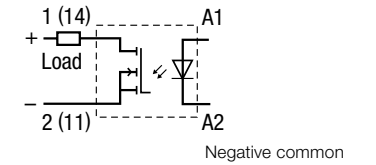


fig. 2. AC derating curve

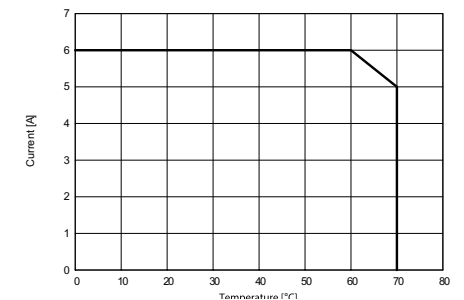
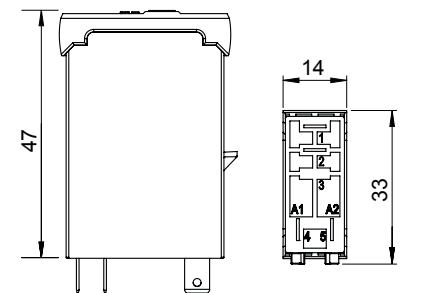


fig. 3. Dimensions (mm)



Technical approvals, conformities

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



1.1 Relays

R10-Z1P

1 pole | normally open solid state DC | Faston

Main circuit

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

Control circuit

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

Output current

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

General data

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
Dimensions	fig. 3.
Weight	28 g
Housing material	PA

Product reference

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

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

Accessories

Socket	S10-GR, S10-PIR
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fig. 1. Wiring diagram

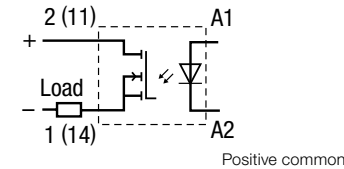


fig. 2. AC derating curve

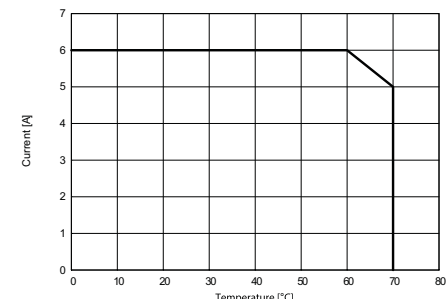
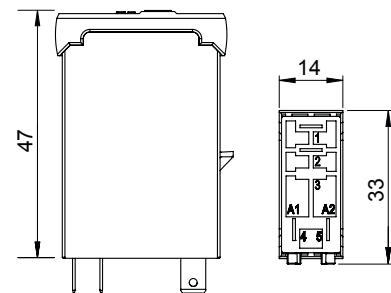


fig. 3. Dimensions (mm)



Technical approvals, conformities

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



1.1 Relays

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
Rated load	5 A
Inrush current	15 A, 20 ms
AC load	1200 VA
DC load	fig. 3.
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	Ω	mA
12	224	54
24	742	32
36	1 815	20
48	3 400	14
60	5 400	11
72	8 467	9
110	19 923	6

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	3 kV / 1 min
Test voltage contact / coil	5 kV / 1 min
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 ... 60 °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
Dimensions	fig. 4.
Weight	21 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110
DC								
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
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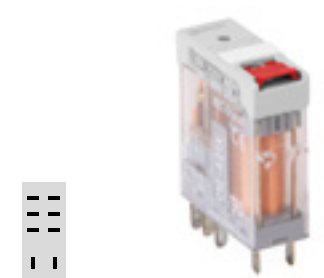


fig. 1. Wiring diagram

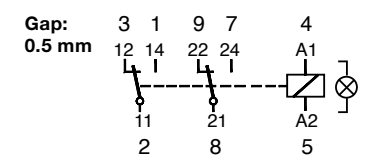


fig. 2. AC voltage endurance

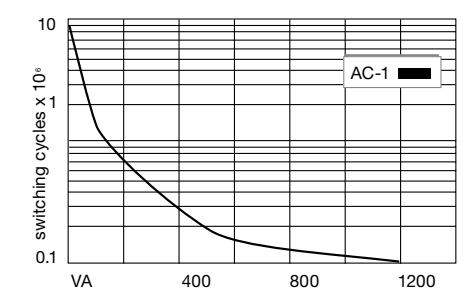


fig. 3. DC load limit curve

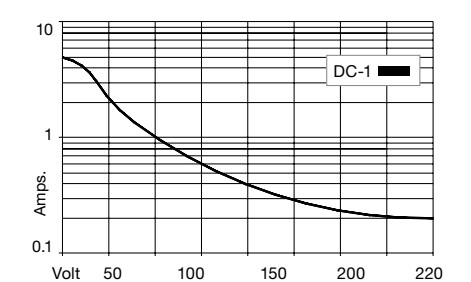
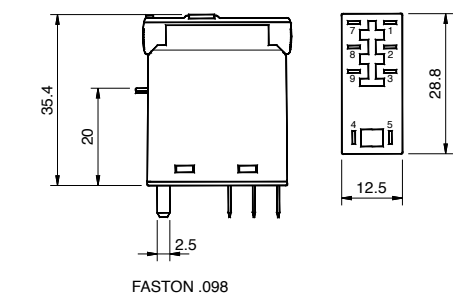


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



R7-A20

2 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Rated load	10 A
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
Mechanical endurance (cycles)	≥ 6 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 300 000

Control circuit

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

Coil table

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

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	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
Dimensions	fig. 4.
Weight	35 g
Housing material	PA / PC

Product references

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

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

Accessories

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

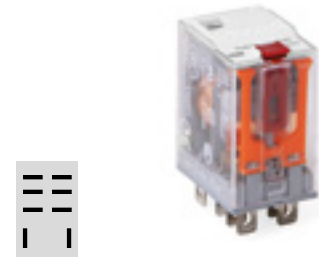


fig. 1. Wiring diagram

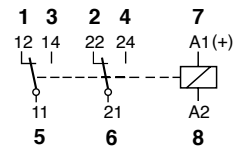


fig. 2. AC voltage endurance

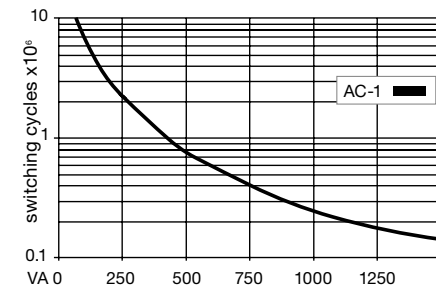


fig. 3. DC load limit curve

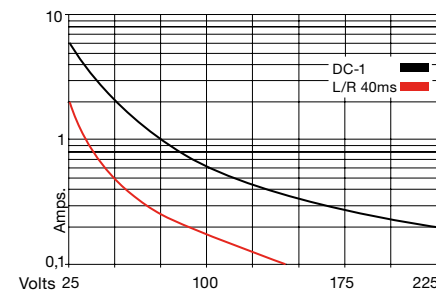
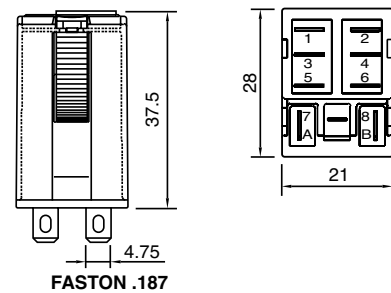


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



R7-T22

2 pole | changeover twin contact | faston

Main circuit

Available contact materials	AgNi + 5 μ Au
Recommended minimum contact load	1 mA / 5 V
Rated load	6 A
Inrush current	15 A, 20 ms
AC load	1200 VA
DC load	fig. 3.
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	Ω	mA
12	158	76
24	632	38
36	1 423	25
48	2 530	19
60	3 953	15
72	5 692	13
110	13 286	8
220	53 146	4

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
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
Dimensions	fig. 4.
Weight	35 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
DC									
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, S7-PIR
Blanking plug	S9-NP (BAG 10 PCS)
Push only	S9-OP (BAG 10 PCS)



fig. 1. Wiring diagram

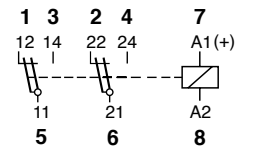


fig. 2. AC voltage endurance

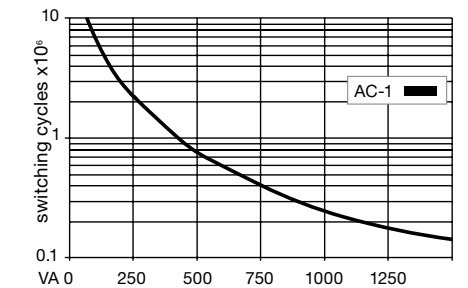


fig. 3. DC load limit curve

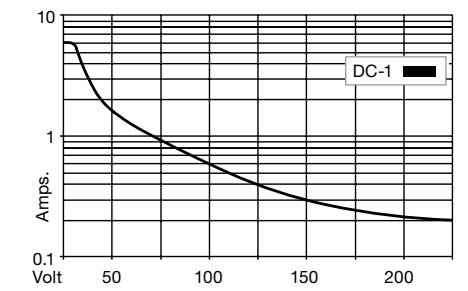
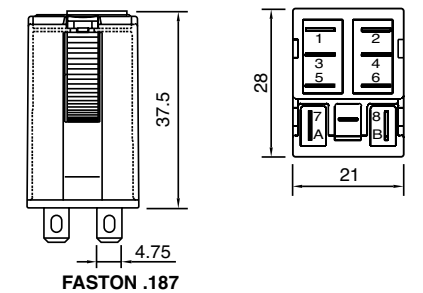


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



R9-A41

4 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 10 V
Rated load	5 A
Inrush current	15 A, 20 ms
AC load	1250 kVA
DC load	fig. 3.
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	Ω	mA
12	158	76
24	632	38
36	1 423	25
48	2 530	19
60	3 953	15
72	5 692	13
110	13 286	8
220	53 146	4

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
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
Dimensions	fig. 4.
Weight	43 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
DC									
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

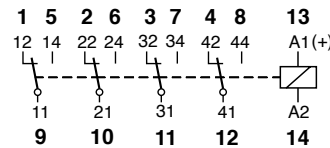


fig. 2. AC voltage endurance

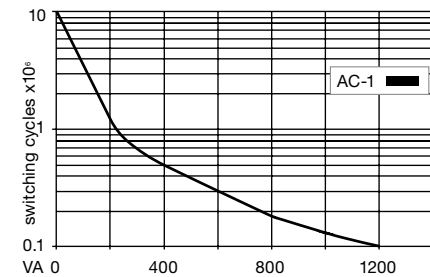


fig. 3. DC load limit curve

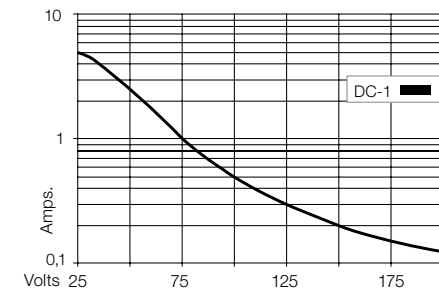
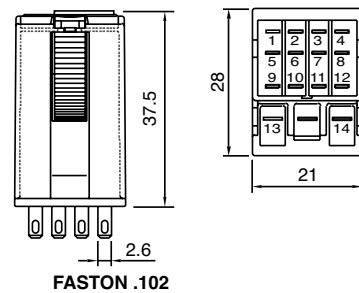


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



C31

Power relay

Main circuit

Available contact materials	AgCuNi
Recommended minimum contact load	50 mA / 10 V
Rated load	10 A
Inrush current	40 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
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 AC / DC	> 0.15 x U _N / > 0.05 x U _N
Power consumption AC / DC	2.5 VA / 1.2 W

Coil table

V AC	Ω	mA	V DC	Ω	mA
24	52	104	12	115	104
48	240	55	24	480	50
115	1 350	23	36	780	46
230	5 600	11.5	48	1 850	26
			72	3 200	23
			110	9 000	12
			220	29 000	7.6

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 ... 70 °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
Dimensions	fig. 4.
Weight	80 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	72	110	115	220	230
AC 50 Hz										
LED	C31L/R AC...V		✓		✓			✓		✓
DC										
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-MOR
Blanking plug	S0-NP (BAG 10 PCS)



fig. 1. Wiring diagram

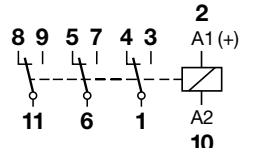


fig. 2. AC voltage endurance

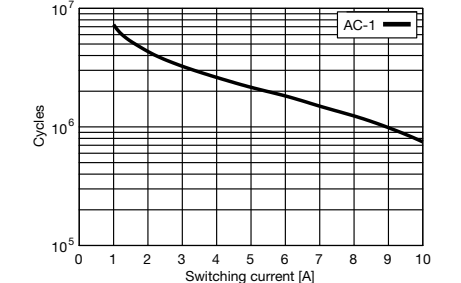


fig. 3. DC load limit curve

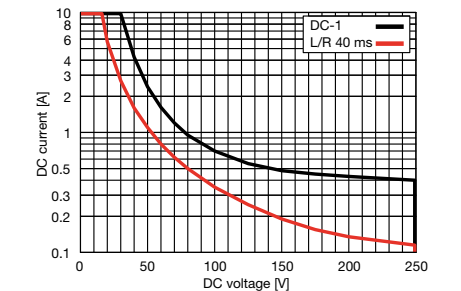
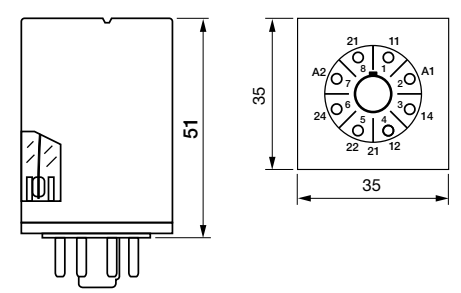


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



Control relay

Main circuit

Available contact materials	AgCuNi
Recommended minimum contact load	1 mA / 5 V
Rated load	6 A
Inrush current	15 A, 20 ms
AC load	1500 VA
DC load	fig. 3.
Mechanical endurance (cycles)	≥ 100 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 150 000

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

Coil table

V AC	Ω	mA	V DC	Ω	mA
24	52	104	12	115	104
48	240	55	24	480	50
115	1 350	23	36	780	46
230	5 600	11.5	48	1 850	26
			72	3 200	23
			110	9 000	12
			220	29 000	7.6

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 ... 70 °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
Dimensions	fig. 4.
Weight	80 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	72	110	115	220	230
AC 50 Hz										
LED	C32L/R AC...V		✓		✓			✓		✓
DC										
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-MOR
Blanking plug	SO-NP (BAG 10 PCS)



fig. 1. Wiring diagram

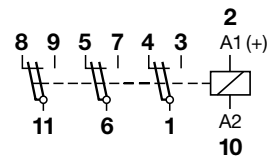


fig. 2. AC voltage endurance

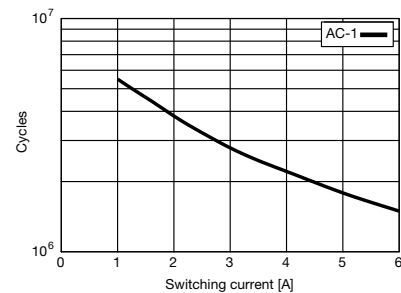


fig. 3. DC load limit curve

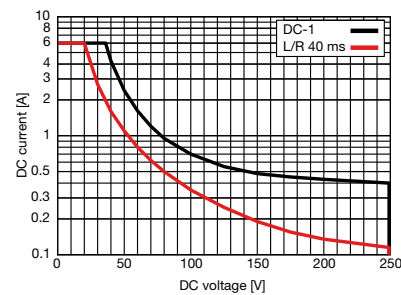
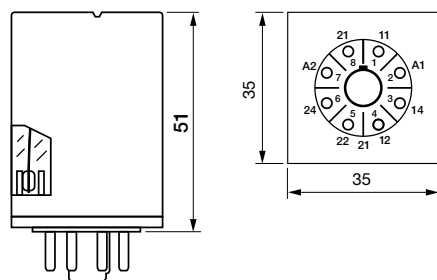


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



4 pole | changeover contact | faston

Main circuit

Available contact materials	AgNi
Recommended minimum contact load	10 mA / 5 V
Rated load	10 A
Inrush current	30 A, 20 ms
AC load	2500 VA
DC load	fig. 3.
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	≥ 0.1 U _N
Power consumption AC / DC	2.4 VA / 1.4 W

Coil table

V DC	Ω	mA
12	105	114
24	414	58
36	916	39
48	1 664	29
60	2 581	23
72	3 775	19
110	8 117	13.6
220	35 696	6.2

Insulation

Test voltage open contact	1 kV / 1 min
Test voltage contact / contact	2.5 kV / 1 min
Test voltage contact / coil	2.5 kV / 1 min
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 ... 60 °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
Dimensions	fig. 4.
Weight	90 g
Housing material	PA / PC

Product references

Description	Type	12	24	36	48	60	72	110	220
DC									
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 (BAG 5 PCS)

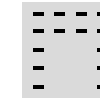


fig. 1. Wiring diagram

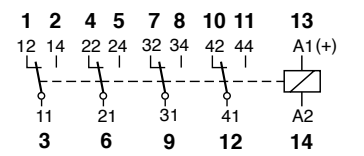


fig. 2. AC voltage endurance

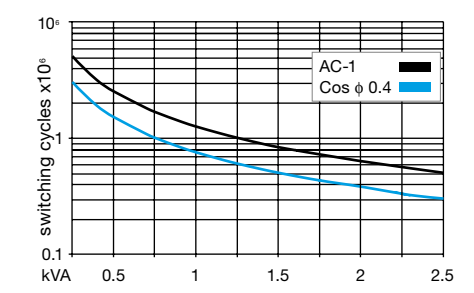


fig. 3. DC load limit curve

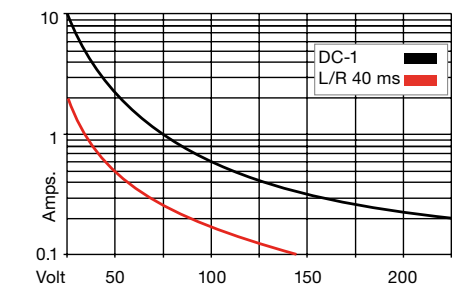
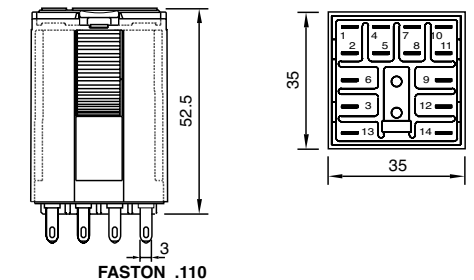


fig. 4. Dimensions (mm)



Technical approvals, conformities

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



Interface Module CRINT

- Relay module up to 6 A 250 V, different contact materials
- Solid state modules for most loads DC and AC up to 2 A
- 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 | 5. Output
1 = AgSnO ₂
2 = AgSnO ₂ + 3μ Au
5 = NO / Solid-state DC
8 = NO / Solid-state AC |
| 2. Type
C = Combined version (Socket and Relay) | 6. Options
- = Standard version
R = Railway version |
| 3. Contact
1 = One change-over contact | 7. Supply voltage
UC = AC/DC
DC = Only for C1x5 and C1x8 |
| 4. Connection type
3 = Push-in | 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 | 4. Supply voltage
DC |
| 2. Type
R = Relay | 5. Nominal voltage
12 V, 24 V, 48 V, 60 V* |
| 3. Contact
11 = AgSnO ₂
12 = AgSnO ₂ + 3μ Au
15 = NO / Solid-state DC
18 = NO / Solid-state AC | |
- *60 V Relay used for all sockets with a nominal voltage higher or equal 60V

1.2 Interface Relays

CRINT-C131R

1 pole | changeover contact

Main circuit	
Available contact materials	AgSnO ₂
Recommended minimum contact load	100 mA / 12 V
Rated load	6 A
Inrush current	15 A, 2.5 ms
AC load	1500 VA
DC load	fig. 3.
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 30 000

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 ... 85 °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 mm ²
Conductor cross section spring cage	0.75 ... 2.5 mm ²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimensions	fig. 4.
Weight	30 g
Housing material	PA

Product reference

Description	Type	12	24	48	60	110-125	220-240
Push-in	CRINT-C131R/UC...V	✓	✓	✓	✓	✓	✓

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

Accessories

Jumper link	blue: CRINT-BR20-BU (BAG 5 PCS) red: CRINT-BR20-RD (BAG 5 PCS) black: CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4x16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking (for push-in only)	WAGO Smart Printer compatible label strip (2009-110)

Replacement relays

Description	Type	12	24	48	60 *
DC	CRINT-R11/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

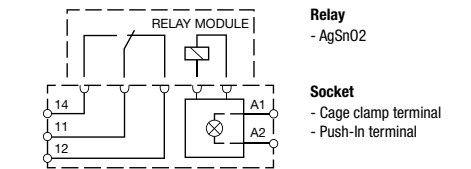


fig. 2 AC voltage endurance

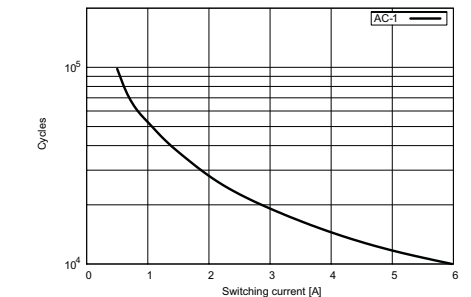


fig. 3 DC load limit curve

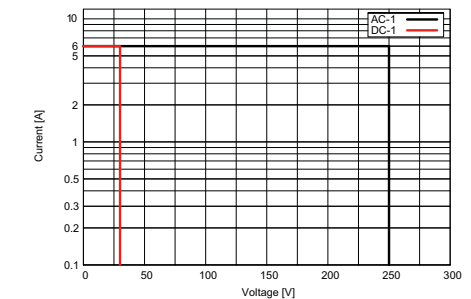
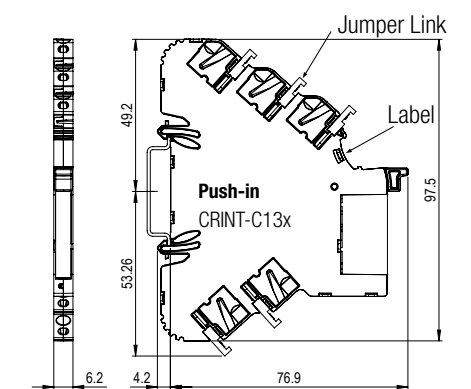
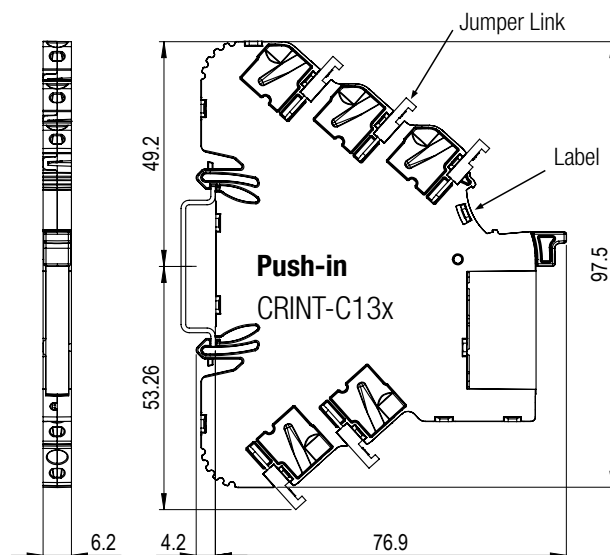


fig. 4. Dimensions (mm)



CRINT-C1xx & CINT-C5x/C6x

Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1; EN 50155; EN 45545-2



Approvals

CRINT-C132R

1 pole | changeover contact

Main circuit

Available contact materials	AgSnO ₂ + 3μ Au
Recommended minimum contact load	10 mA / 6 V
Rated load	6 A
Inrush current	15 A, 2.5 ms
AC load	1500 VA
DC load	fig. 3.
Mechanical endurance (cycles)	≥ 10 000 000
Electrical endurance at rated load AC-1 (cycles)	≥ 30 000

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
Overtoltage category	III

General data

Ambient temperature storage (no ice)	-40 ... 85 °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 mm ²
Conductor cross section spring cage	0.75 ... 2.5 mm ²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimensions	fig. 4.
Weight	30 g
Housing material	PA

Product reference

Description	Type	12	24	48	60	110-125	220-240
Push-in	CRINT-C132R/UC...V	✓	✓	✓	✓	✓	✓

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

Accessories

Jumper link	blue: CRINT-BR20-BU (BAG 5 PCS) red: CRINT-BR20-RD (BAG 5 PCS) black: CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4x16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking (for push-in only)	WAGO Smart Printer compatible label strip (2009-110)

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

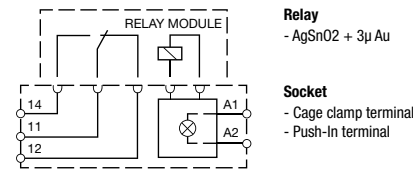


fig. 2 AC voltage endurance

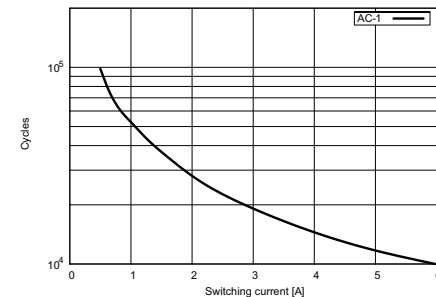


fig. 3 DC load limit curve

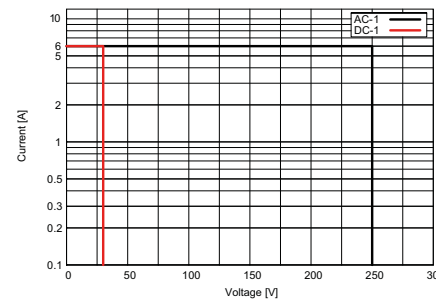
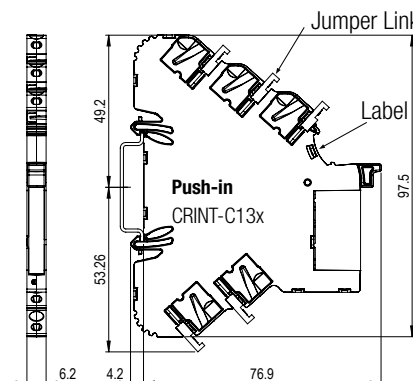


fig. 4. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810-1; EN 50155; EN 45545-2



CRINT-C135R

1 pole | normally open solid state DC

Main circuit

Available contact materials	MOSFET
Recommended minimum contact load	20 mA / 5 V
Rated load	2 A
Inrush current	48 A, 10 ms
DC load	60 W

Control circuit

Nominal voltage	see table product references
Operating voltage range	0.8 ... 1.25 U _N
Pick-up voltage	≤ 0.8 U _N
Release voltage	≤ 0.3 U _N
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
Overtoltage category	III

General data

Ambient temperature storage (no ice)	-40 ... 85 °C
Ambient temperature operation	-30 ... 70 °C
Pick-up time	1 ms
Release time	1 ms
Conductor cross section screw terminal	2.5 mm ²
Conductor cross section spring cage	0.75 ... 2.5 mm ²
Protection degree	IP 20
Mounting	TH 35 (EN 60715)
Dimensions	fig. 3.
Weight	30 g
Housing material	PA

Product reference

Description	Type	12	24	48	60	110-125	220-240
Push-in	CRINT-C135R/DC...V	✓	✓	✓	✓	✓	✓

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

Accessories

Jumper link	blue: CRINT-BR20-BU (BAG 5 PCS) red: CRINT-BR20-RD (BAG 5 PCS) black: CRINT-BR20-BK (BAG 5 PCS)
Label plate	CRINT-LAB (BAG 4x16 PCS)
Spacer	CRINT-SEP (BAG 5 PCS)
Marking (for push-in only)	WAGO Smart Printer compatible label strip (2009-110)

Replacement relays

Description	Type	12	24	48	60 *
DC	CRINT-R15/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

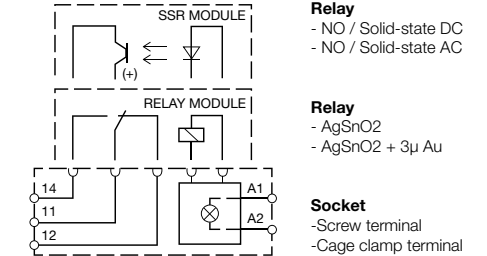


fig. 2. DC load limit curve

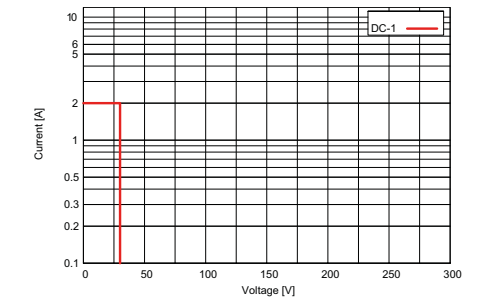
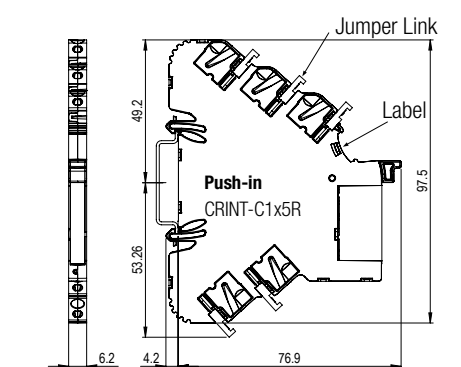


fig. 3. Dimensions (mm)



Technical approvals, conformities

Standards IEC/EN 61810; EN 50155; EN 45545-2



RIC20-xxx-R4A110V

Installation Contactor | 2 pole | 20 A | 7 kW

Main circuit

Available contact material	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	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 mm ² / 6 mm ²
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Dimensions	fig. 3
Weight	135 g
Protection degree	IP 20
Housing material	PA 6
Spacer	Integrated

Product reference

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

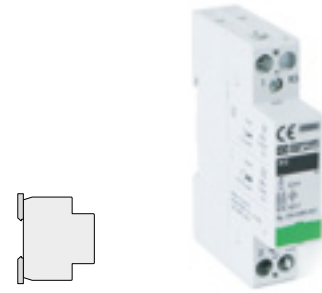


fig. 1. Wiring diagram

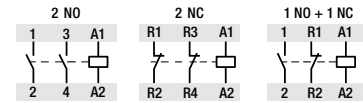


fig. 2. DC load limit curve

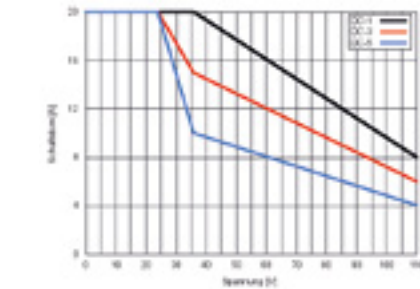
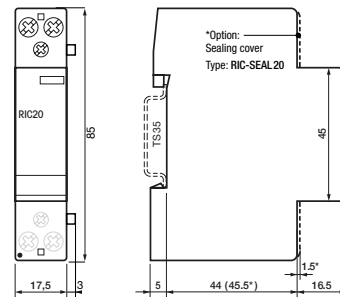


fig. 3. Dimension (mm)



Standards and approvals

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



RIC25-xxx-R

Installation Contactor | 2 or 4 pole | 25 A | 5.4 kW

Main circuit

Available contact material	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	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)	≥ 50 000 000
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 2 devices, 1 spacer	-40 ... 70 °C
Conductor cross section control / main circuit	2.5 mm ² / 6 mm ²
Nominal screw torque control / main circuit	0.6 Nm / 1.2 Nm
Dimensions	fig. 3
Weight	250 g
Protection degree	IP 20
Housing material	PA 6

Product reference

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

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

Accessories

Auxiliary module	RIC-AUX
Sealing cover	RIC-SEAL25
Spacer	RIC-DIST

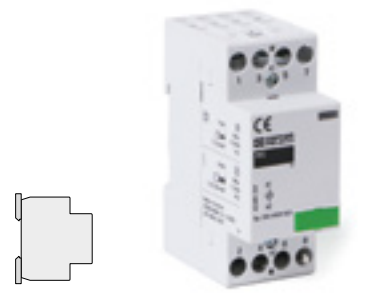


fig. 1. Wiring diagram

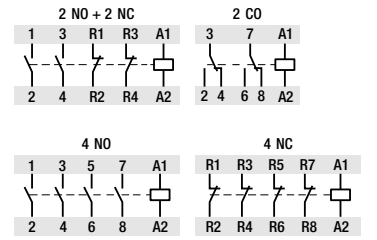


fig. 2. DC load limit curve

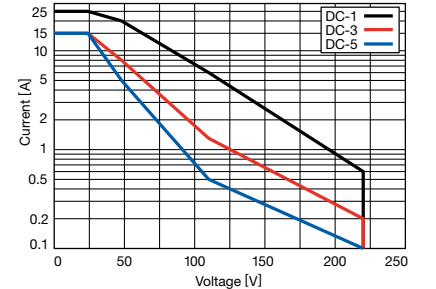
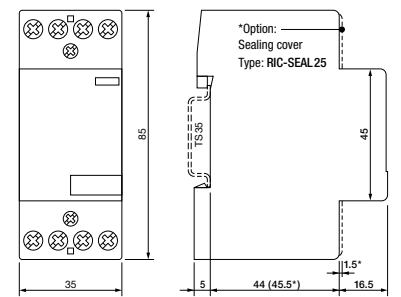


fig. 3. Dimension (mm)



Standards and approvals

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



HF-32

Retaining clip | Steel

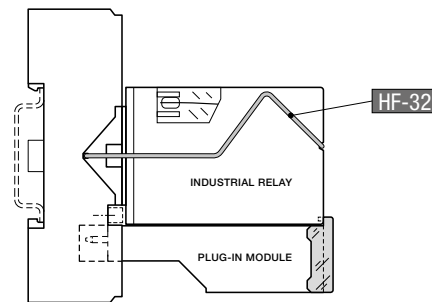
General data	
Ambient temperature storage (no ice)	-40 ... 85 °C
Ambient temperature operation	-40 ... 70 °C
Dimensions	fig. 1
Weight	2 g
Housing material	Steel

Product reference

Description	Type
Retaining clip	HF-32



fig. 1. Dimensions (mm)



FS-C

Transparent front cover

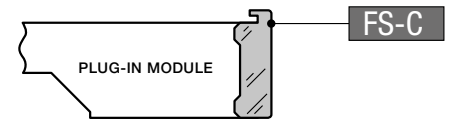
General data	
Ambient temperature storage (no ice)	-40 ... 85 °C
Ambient temperature operation	-25 ... 60 °C
Dimensions	fig. 1
Weight	5 g

Product reference

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



fig. 1. Dimensions (mm)



RIC-AUXxx

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

Main circuit

Available contact material	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 insulation voltage	500 V
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 mm ²
Nominal screw torque control / main circuit	- Nm / 0.8 Nm
Dimensions	fig. 2.
Weight	30 g
Protection degree	IP 20
Housing material	PA 6

Product references

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

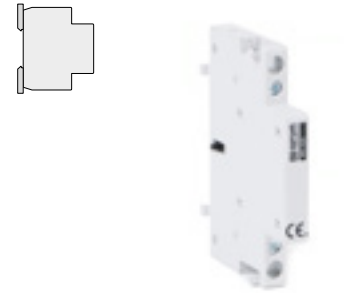


fig. 1. Wiring diagram

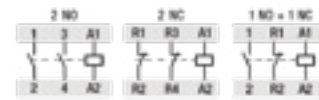
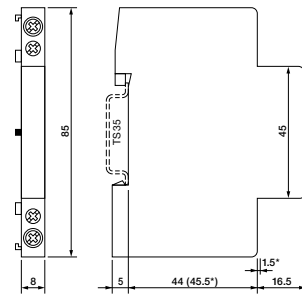
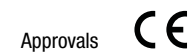


fig. 2. Dimension (mm)



Standards and approvals

Standards IEC/EN 60947



RIC-DIST

Auxiliary spacer module for RIC / RAC installation contactors

General data

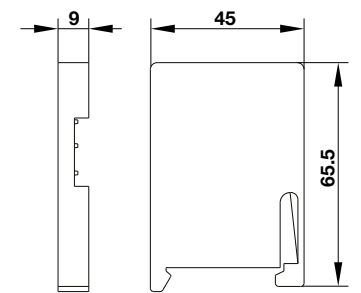
Ambient temperature storage (no ice)	-30 ... 80 °C
Dimensions	fig. 1
Weight	13 g
Material	PA 6

Product references

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



fig. 1. Dimension (mm)



RIC-SEALxx

Auxiliary sealing cover for RIC / RAC installation contactors

General data

Ambient temperature storage (no ice)	-30 ... 80 °C
Dimensions	fig. 1
Weight	1 g, 2 g, 3 g
Material	PA 6

Product references

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



2 Time Relays

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)

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

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

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

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

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: $\frac{t_2}{t_1}$

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

Special functions

Y Star-delta timer

 S ⇒ Δ on for tΔ
 ΔOFF ⇒ Δ on with delay for tΔ-Δ
 SOFF ⇒ Δ off

X1 Restart delay

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

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) **T** t is stopped ⇒ R on/off

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

S = Triggering
 R = Output circuit
 ⇒ = switches...

Pulse sequence monitoring

U
V

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

≤: Pulse separation is smaller than the time tr
 >: Pulse separation is larger than the time tr

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

Application	Type	Page
CIM Series		
Multifunction 24 ... 240 V UC 1 CO	CIM1R	52
Multifunction 24 ... 240 V UC 1 Triac	CIM12R	53
Multifunction 24 ... 240 V UC 1 MOSFET	CIM13R	54
Multifunction 24 ... 240 V UC 1 CO	CIM2R	55
Multifunction 24 ... 240 V UC 1 Triac	CIM22R	56
Multifunction 24 ... 240 V UC 1 MOSFET	CIM23R	57
Multifunction 24 ... 240 V UC 1 CO	CIM3R	58
Multifunction 24 ... 240 V UC 1 Triac	CIM32R	59
Multifunction 24 ... 240 V UC 1 MOSFET	CIM33R	60

CIM1R

Multifunction | 24 ... 240 V UC | 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
Contact material	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	4000 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM1R/UC...V	✓

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

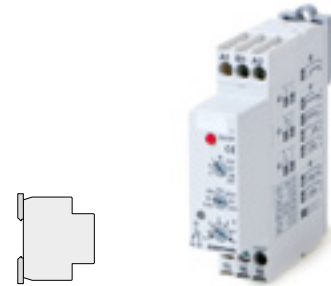


fig. 1. Wiring diagram

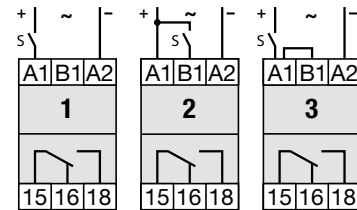


fig. 2. DC load limit curve

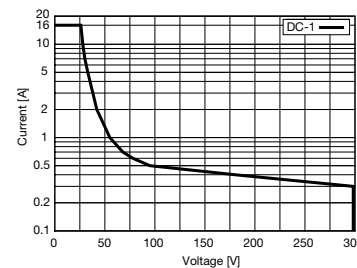


fig. 3. AC voltage endurance

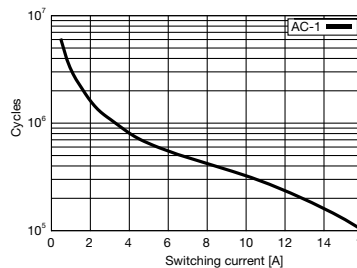
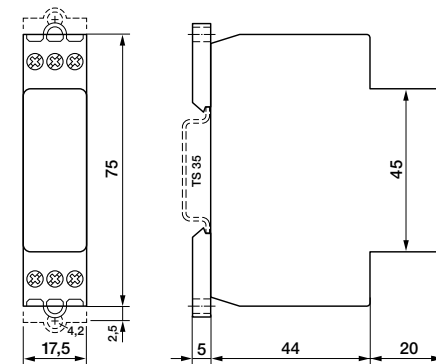


fig. 4. Dimensions (mm)



Standards and approvals

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

CIM12R

Multifunction | 24 ... 240 V UC | 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 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load AC-1 (cycles)	∞

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM12R/UC...V	✓

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

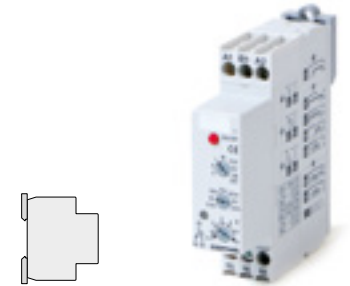


fig. 1. Wiring diagram

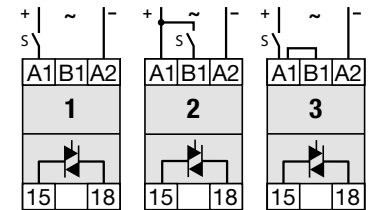
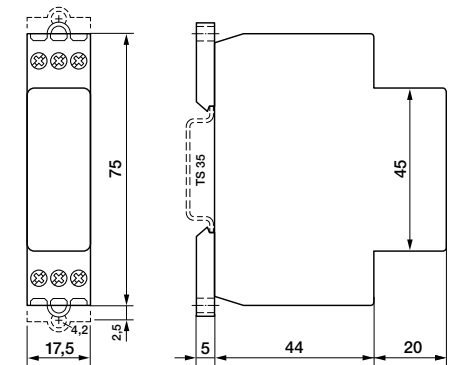


fig. 2. Dimensions (mm)



Standards and approvals

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

CIM13R

Multifunction | 24 ... 240 V UC | 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	4 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 UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM13R/UC...V	✓

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

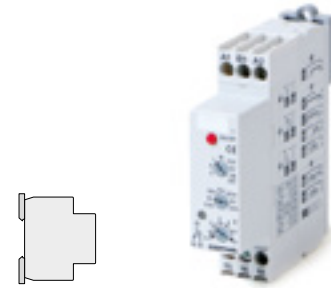


fig. 1. Wiring diagram

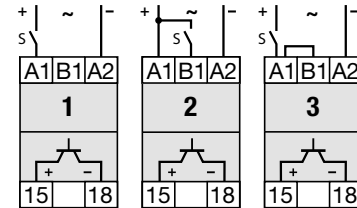
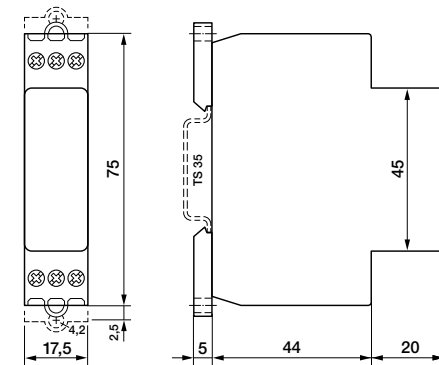


fig. 2. Dimensions (mm)



Standards and approvals

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



CIM2R

Multifunction | 24 ... 240 V UC | 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
Contact material	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	4000 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 4
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM2R/UC...V	✓

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

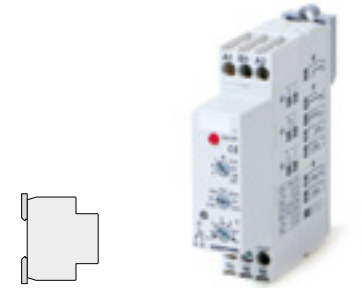


fig. 1. Wiring diagram

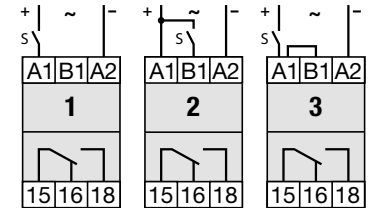


fig. 2. DC load limit curve

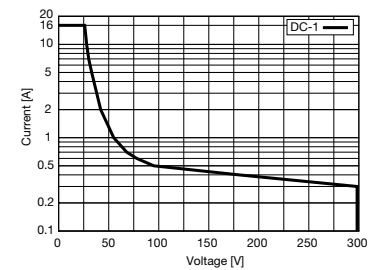


fig. 3. AC voltage endurance

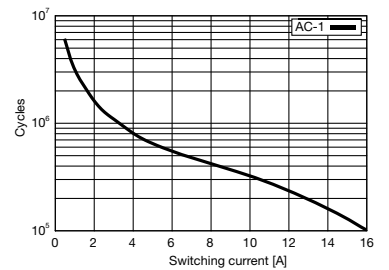
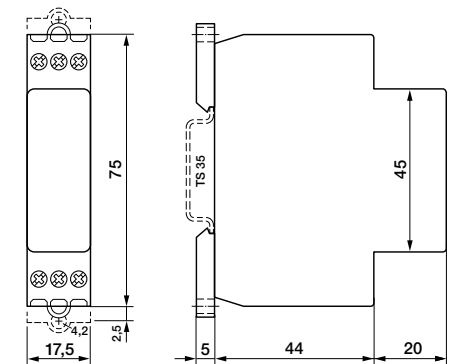


fig. 4. Dimensions (mm)



Standards and approvals

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



2.1 Multifunction Time Relays

CIM22R

Multifunction | 24 ... 240 V UC | 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 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load AC-1 (cycles)	∞

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference

Description	Type	24-240
UC supply, Railway version	CIM22R/UC...V	✓

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

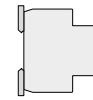


fig. 1. Wiring diagram

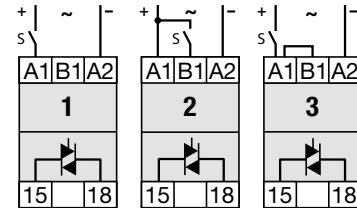
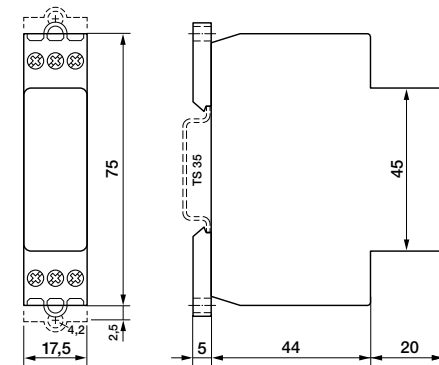


fig. 2. Dimensions (mm)



Standards and approvals

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

Approvals

2.1 Multifunction Time Relays

CIM23R

Multifunction | 24 ... 240 V UC | 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	4 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 UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference

Description	Type	24-240
UC supply, Railway version	CIM23R/UC...V	✓

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

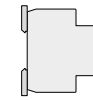


fig. 1. Wiring diagram

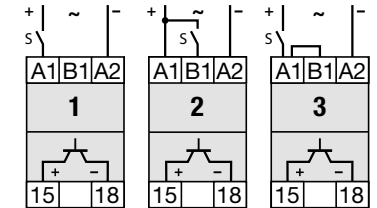
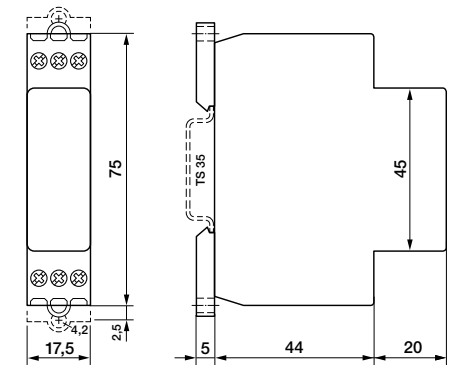


fig. 2. Dimensions (mm)



Standards and approvals

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

Approvals

CIM3R

Multifunction | 24 ... 240 V UC | 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
Contact material	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	4000 VA
Mechanical endurance (cycles)	30 000 000
Electrical endurance at rated load AC-1 (cycles)	fig. 3

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	16 ... 63 Hz

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

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

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM3R/UC...V	✓

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

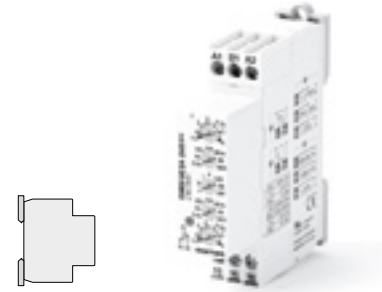


fig. 1. Wiring diagram

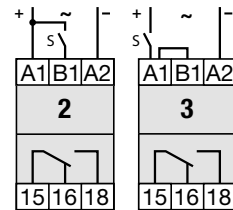


fig. 2. DC load limit curve

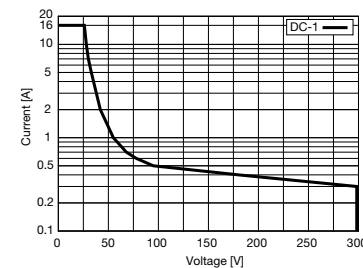


fig. 3. AC voltage endurance

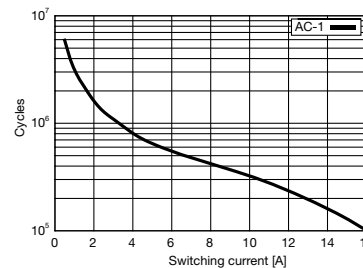
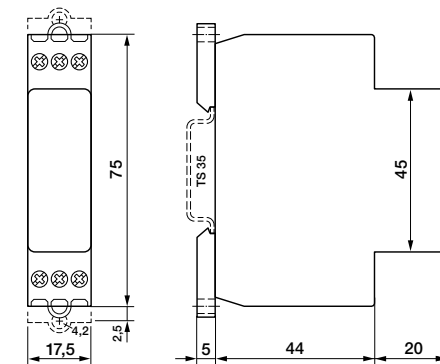


fig. 4. Dimensions (mm)



Standards and approvals

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

CIM32R

Multifunction | 24 ... 240 V UC | 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 A ² s
Typ. leakage current	1 mA
Rated load AC-1	300 VA
Mechanical endurance (cycles)	∞
Electrical endurance at rated load AC-1 (cycles)	∞

Control circuit	
Nominal voltage	24 ... 240 V UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	16 ... 63 Hz

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

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

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM32R/UC...V	✓

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

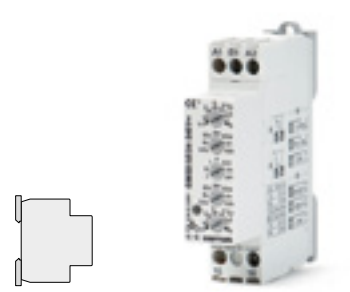


fig. 1. Wiring diagram

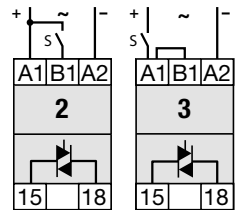
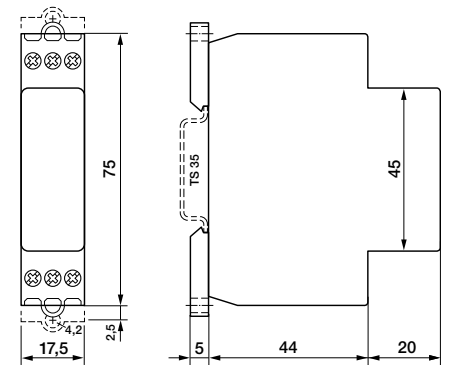


fig. 2. Dimensions (mm)



Standards and approvals

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

CIM33R

Multifunction | 24 ... 240 V UC | 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	4 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 UC
Operating voltage range	16.8 ... 250 V
Power consumption AC / DC	1.2 VA / 430 mW
Typ. input current on command input AC / DC	22 / 22 mA
Threshold voltage on command input AC / DC	13 V / 15 V
Rated frequency	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 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.4 Nm
Dimensions	fig. 2
Weight	70 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-240
UC supply, Railway version	CIM33R/UC...V	✓

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

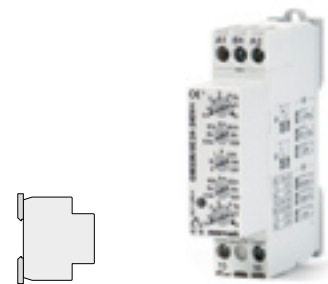


fig. 1. Wiring diagram

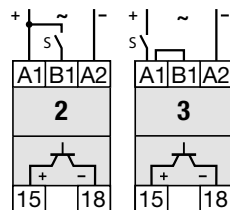
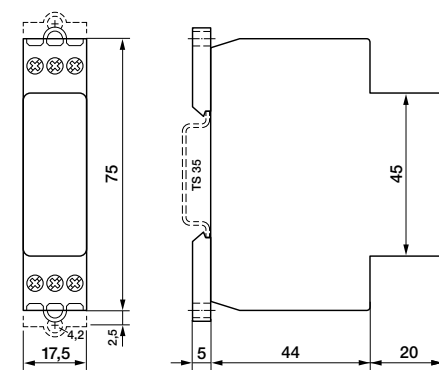


fig. 2. Dimensions (mm)



Standards and approvals

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

Approvals

2.2 Time Modules

Application	Type	Page
CT Series		
Multifunction 24 ... 48 V UC 110 V DC	CT32R	64
Multifunction 24 ... 48 V UC 115 V UC 230 V UC	CT33R	65
Multifunction 24 ... 48 V UC 110 ... 240 V UC	CT36R	66



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.

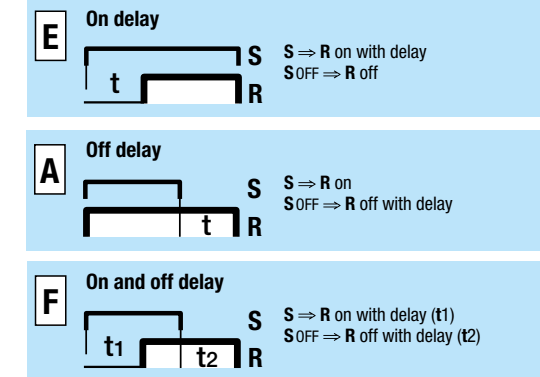
Triggering is performed with the operating voltage. (L1 or +). No potential-free contacts are therefore required. The triggering complies to machine standards. Parallel connection to B1 is admissible.

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.

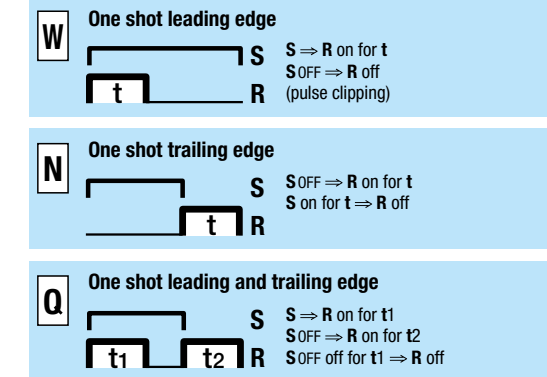
The twin contacts are switching the load circuit with 2 independent contact tongues. The switching safety for low currents is therefore 100 times higher compared to a single contact relay. Despite the high switching capacity of up to 6 A / 250 V, these contacts are very suitable to switch low currents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

Time functions

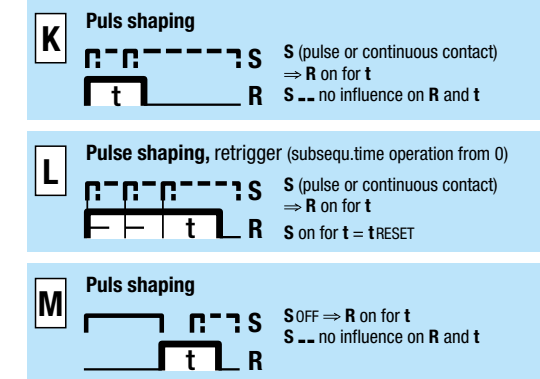
Delay functions



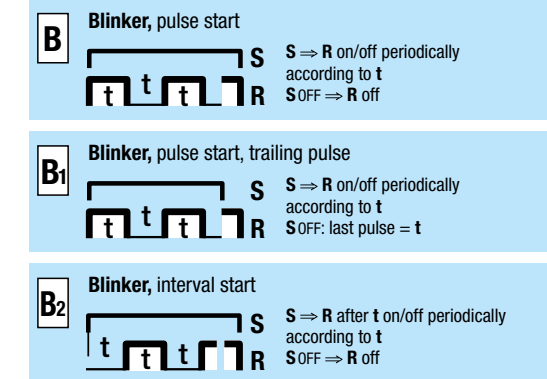
Shot timing modes



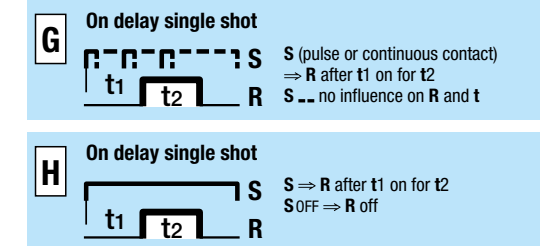
Puls shaping



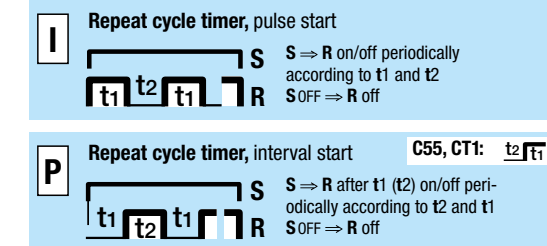
Blinker functions



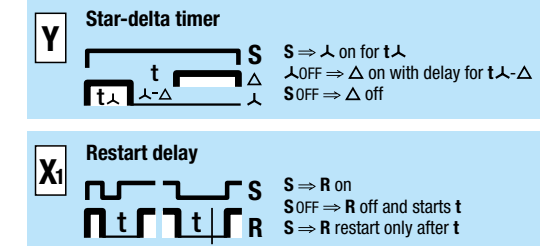
Delayed pulse



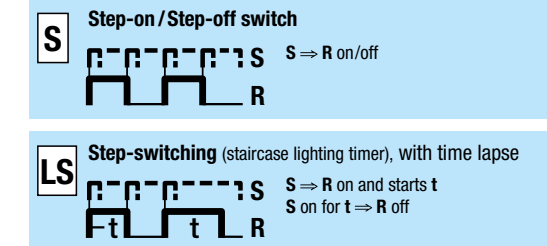
Repeat cycle timer



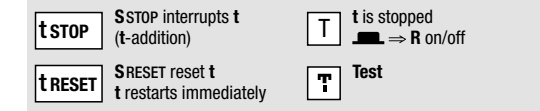
Special functions



Special functions

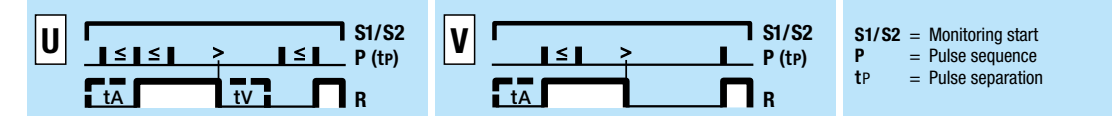


Stop/Reset



S = Triggering
R = Output circuit
=> = switches...
ON OFF

Pulse sequence monitoring



≤: 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 (tA = tv)

CT32R

Multifunction | 24 ... 48 V UC | 110 V DC

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

Control circuit	
Nominal voltage	24 ... 48 V UC 110 V DC
Operating voltage range	19 ... 60 V 90 ... 140 V
Power consumption AC / DC	0.3 VA / 0.3 W - / 0.3 W
Threshold voltage on command input AC / DC	9 V 60 V

General data	
Ambient temperature storag (no ice)	-40 ... 85 °C
Ambient temperature operation	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

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

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

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



fig. 1. Wiring diagram

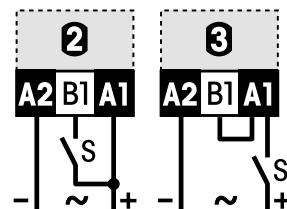
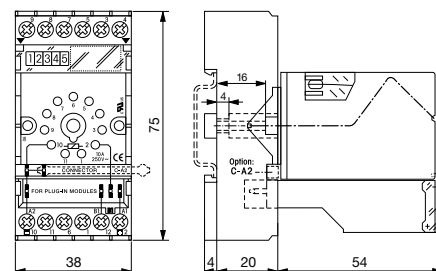


fig. 2. Dimensions (mm)



Standards and approvals

Standards EN 50155; EN 45545-2

Approvals CE C RU US

CT33R

Multifunction | 24 ... 48 V UC | 115 V UC | 230 V UC

Time data	
Timing functions	fig. 1 2: E, A, K, N, B1, F, G, Q, L 3: E, W, B, H
Timing range	150 ms / 600 ms / 1.5 s / 6 s / 15 s / 60 s / 1.5 min / 6 min / 60 min / 1.5 h / 6 h / 15 h / 60 h
Timing scale	30 ms ... 60 h

Control circuit	
Nominal voltage	24 ... 48 V UC 115 V UC 230 V UC
Operating voltage range	19 ... 60 V 90 ... 150 V 180 ... 265 V
Power consumption AC / DC	0.3 VA / 0.3 W 0.5 VA / 0.5 W 1 VA / 1 W
Threshold voltage on command input AC / DC	9 V 60 V 100 V

General data	
Ambient temperature storag (no ice)	-40 ... 85 °C
Ambient temperature operation	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product reference			
Description	Type	24-48 115 230	
UC supply	CT33R/UC...V	✓ ✓ ✓	

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

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



fig. 1. Wiring diagram

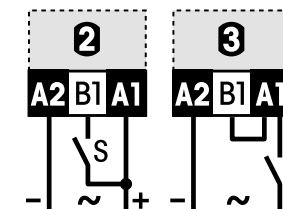
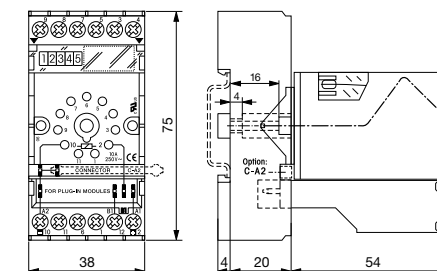


fig. 2. Dimensions (mm)



Standards and approvals

Standards EN 50155; EN 45545-2

Approvals CE C RU US

CT36R

Multifunction | 24 ... 48 V UC | 110 ... 240 V UC

Time data

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

Control circuit

Nominal voltage	24 ... 48 V UC	110 ... 240 V UC
Operating voltage range	19 ... 60 V	90 ... 265 V
Power consumption AC / DC	0.3 VA / 0.3 W	1 VA / 1 W

General data

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

Product reference

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

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

Accessories

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



fig. 1. Wiring diagram

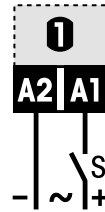
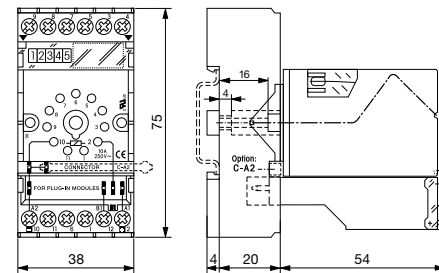


fig. 2. Dimensions (mm)



Standards and approvals

Standards EN 50155; EN 45545-2

Approvals

3 Monitoring & Measuring Devices

MRM11R

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

Power supply		
Nominal voltage	12 ... 48 V UC	110 ... 240 V UC
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	

Measuring circuit	
Measured parameters	U, I, P, S, f, Cosφ
Min. setting step, resolution	0.1 V / 0.1 A / 1 W / 1 VA / 0.1 Hz / 0.01
Monitoring functions	Under, over, inside, outside
Number of voltage measurement inputs	1
Rated AC voltage L-N / L-L	230 V / -
AC voltage measurement range L-N / L-L	0.1 ... 480 V
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	± 0.1 ... 690 V
Undervoltage setting range	± 0.1 ... 700 V
Overvoltage setting range	± 0.1 ... 700 V
Number of current measurement inputs	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
Contact material	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	1500 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 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 mm ²
Nominal screw torque	0.6 Nm
Dimensions	fig. 4
Weight	107 g
Protection degree	IP 20
Housing material	PC

Product reference

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

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



fig. 1. Wiring diagram

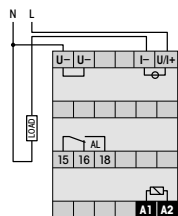


fig. 2. DC load limit curve

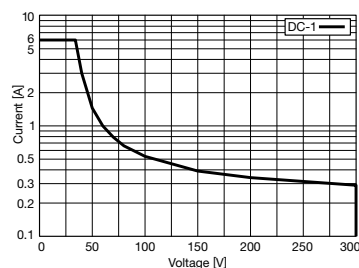


fig. 3. AC voltage endurance

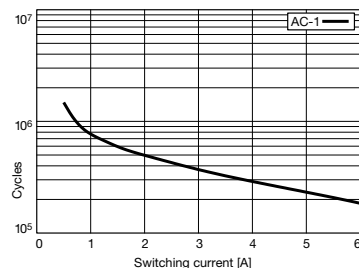
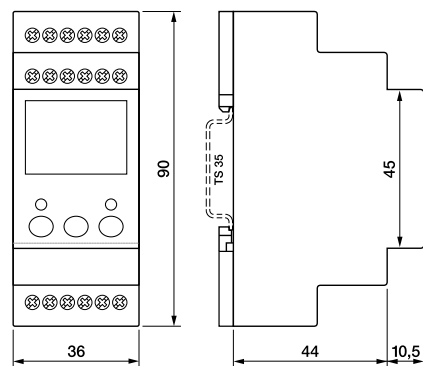


fig. 4. Dimensions (mm)



Standards and approvals

Standards IEC/EN 60947; IEC/EN 60730; EN 50155; EN 45545-2; IEC/EN 43880



MRM32R

Three phase multifunction monitoring | 12 ... 48 V UC | 110 ... 240 V UC

Power supply		
Nominal voltage	12 ... 48 V UC	110 ... 240 V UC
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	

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 / 0.1 Hz / 0.01 / 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
AC voltage measurement range L-N / L-L	0.1 ... 480 V
Rated DC voltage U+ / U-	300 V
DC voltage measurement range U+ / U-	± 0.1 ... 690 V
Undervoltage setting range	± 0.1 ... 700 V
Overvoltage setting range	± 0.1 ... 700 V
Number of current measurement inputs	3
Rated measurement current	5 A
Measurement current range	0.1 ... 5 A
Undercurrent setting range	0.1 ... 6 A
Overcurrent 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
Contact material	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	1500 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 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 mm ²
Nominal screw torque	0.6 Nm
Dimensions	fig. 4
Weight	125 g
Protection degree	IP 20
Housing material	PC

Product reference

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

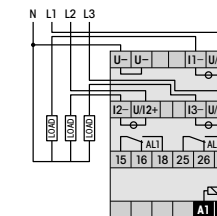


fig. 2. DC load limit curve

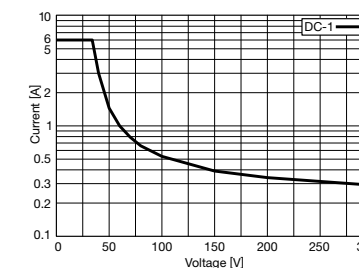


fig. 3. AC voltage endurance

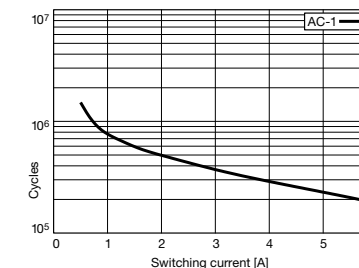
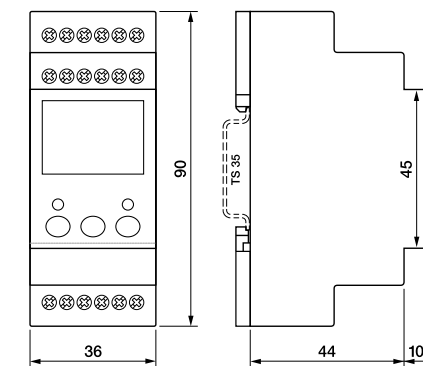


fig. 4. Dimensions (mm)



Standards and approvals

Standards IEC/EN 60947; IEC/EN 60730; EN 50155; EN 45545-2; IEC/EN 43880



ESU-D2R

DC Isolation monitoring | 24 ... 48 V UC

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	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 k Ω
Pre alarm setting range	4 ... 30 k Ω
Main alarm	≤ 4 k Ω
Alarm delay	0.1 ... 10 s

Main circuit	
Number of contacts	1 NO + 2 CO
Contact material	AgNi
Rated voltage	250 V
Rated current	5 A
Minimum load	10 mA, 12 V
Rated load DC	fig. 2
Rated load AC-1	1250 VA
Mechanical endurance (cycles)	5 000 000
Electrical endurance at rated load AC-1 (cycles)	100 000

Insulation	
Pollution degree	2
Overvoltage category	III

General data	
Ambient temperature storag (no ice)	-40 ... 85 °C
Ambient temperature operation railway version	-40 ... 70 °C
Conductor cross section	2.5 mm ² , 2 x 1.5 mm ²
Nominal screw torque	0.5 Nm
Dimensions	fig. 4
Weight	250 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	24-48
DC Isolation monitoring, railway version	ESU-D2R/UC...V	✓

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



fig. 1. Wiring diagram

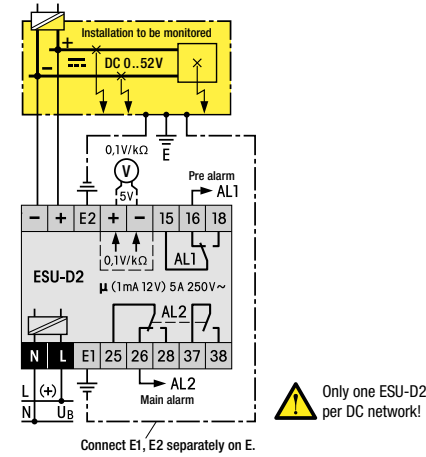


fig. 2. DC load limit curve

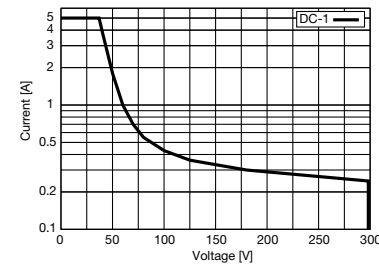
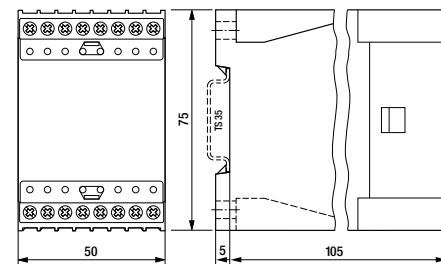


fig. 3. Dimensions (mm)



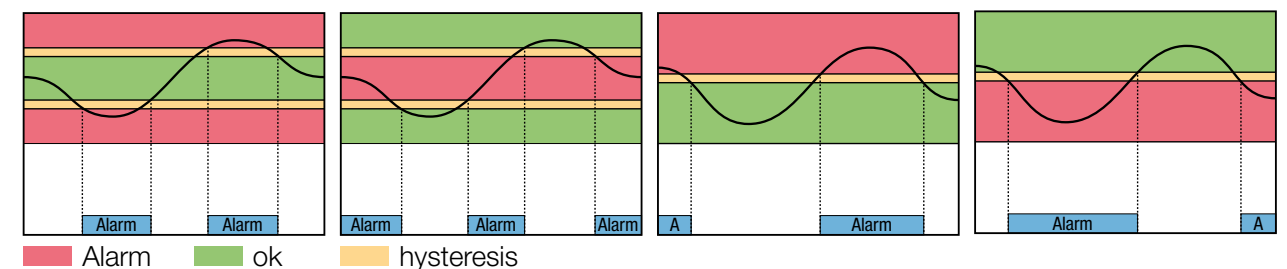
Standards and approvals

Standards IEC/EN 60947; EN 50155

Approvals

3.3 Monitoring Modules

Application	Type	Page
CT Series		
Current monitoring 36 V DC	CT515R	76
Voltage monitoring 24 V DC	CT524R	77



CT515R

Current monitoring | 36 V DC

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 railway version	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

Product reference		
Description	Type	36
Current monitoring, railway version	CT515R/...V	✓

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

"..." list control circuit voltage to complete product references.

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



fig. 1. Wiring diagram

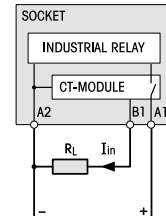
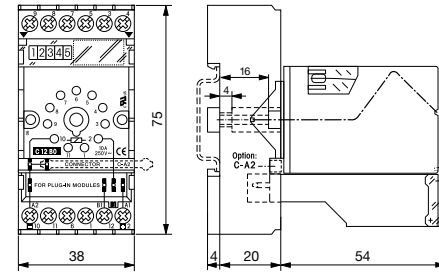


fig. 2. Dimensions (mm)



Standards and approvals

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

Approvals

CT524R

Voltage monitoring | 24 V DC

Power supply	
Nominal voltage	24 V DC
Operating voltage range	18 ... 30 V
Power consumption 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 railway version	-40 ... 70 °C
Dimensions	fig. 2
Weight	25 g
Protection degree	IP 20
Housing material	PC

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

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

"..." list control circuit voltage to complete product references.

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



fig. 1. Wiring diagram

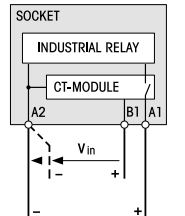
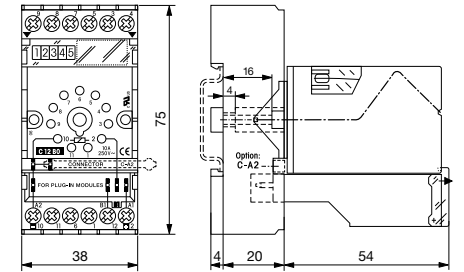


fig. 2. Dimensions (mm)

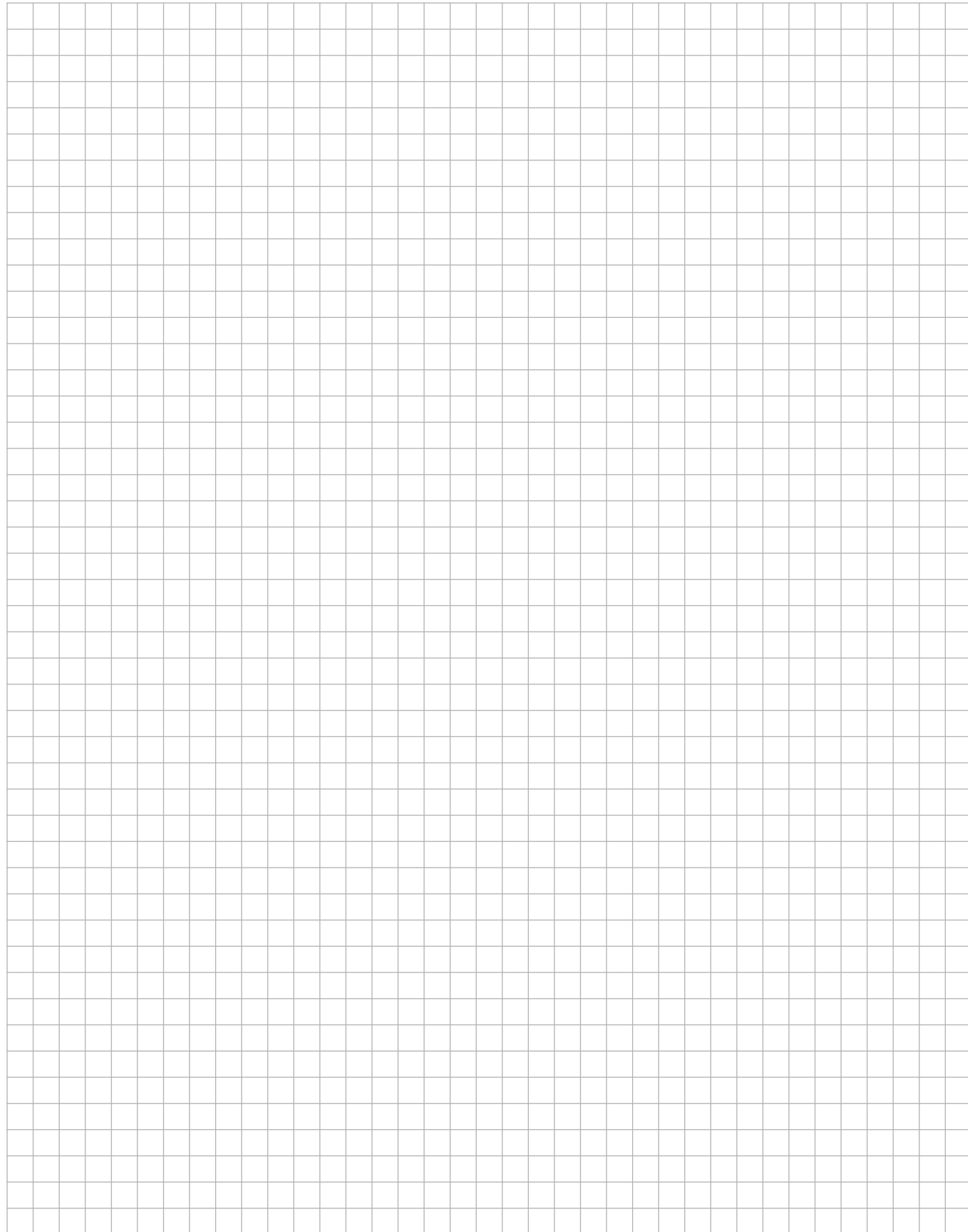


Standards and approvals











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

Approvals

Notes



4.0 Sockets

Application	Type	Pin	Page
Socket for 5-pin Relay			
Screw terminal	S10-GR		80
Push-in terminal	S10-PIR		81
Socket for 8-pin Relay			
Screw terminal	S12-GR		82
Push-in terminal	S12-PIR		83
Screw terminal	S7-GR		84
Push-in terminal	S7-PIR		85
Socket for 14-pin Relay			
Push-in terminal	S9-PIR		86
Screw terminal	S4-GR		87
Socket for 11-pin Relay and Time / Monitoring Module			
Screw terminal	S3-MR		88
Screw terminal	S3-M0R / S3-M1R		89

S12-GR

Socket for 8-pin Relays

General data	
Rated load	5 A / 250 V
Dielectric strength	
– All terminals / DIN rail	5 kV rms / 1 min
– Terminal / terminal	2.5 kV rms / 1 min
– Contact / coil terminal	5 kV rms / 1 min
Cross-section of connecting wire	
– Single-wire	4 mm ² / AWG 12, 2 x 2.5 mm ² / AWG 14
– Multi wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
Nominal screw torque	0.7 Nm
Screw dimensions	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

Included accessories	
Retaining clip, plastic	S10-C for R12 / R12x Relays

Optional accessories	
Retaining clip, plastic	S10-C / CP-17B (BAG 10 PCS) for R12 / R12x Relays
A2-Connector grey	B20-G (BAG 5 PCS)
A2-Connector red	B20-R (BAG 5 PCS)
A2-Connector blue	B20-A (BAG 5 PCS)
Bridge bar twofold grey	V10-G (BAG 5 PCS)
Bridge bar twofold red	V10-R (BAG 5 PCS)
Bridge bar twofold blue	V10-A (BAG 5 PCS)
Bridge bar fourfold grey	V40-G (BAG 5 PCS)
Bridge bar fourfold red	V40-R (BAG 5 PCS)
Bridge bar fourfold blue	V40-A (BAG 5 PCS)

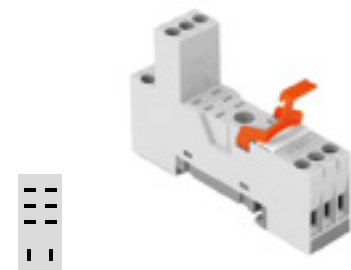
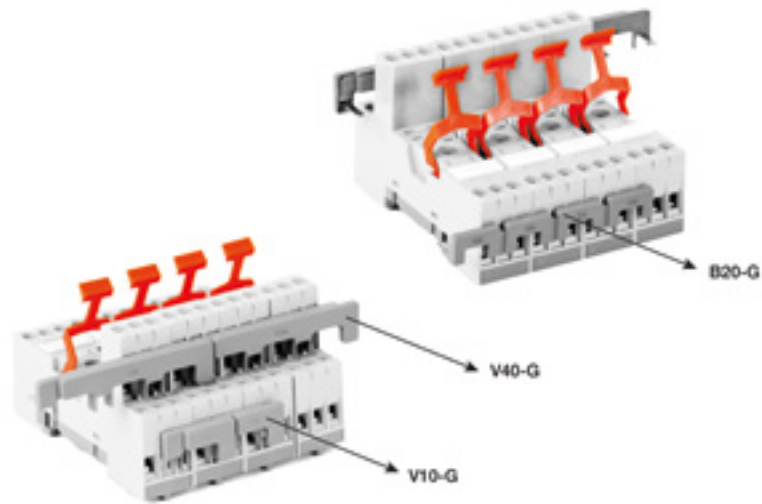


fig. 1. Wiring diagram

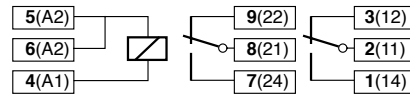
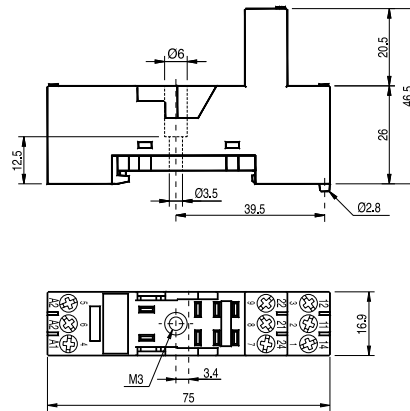


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S12-PIR

Railway Push-in Socket for 8-pin Relays

General data	
Rated load	5 A / 250 V
Dielectric strength	
– All terminals / DIN rail	4 kV rms / 1 min
– Terminal / terminal	4 kV rms / 1 min
– Contact / coil terminal	4 kV rms / 1 min
Cross-section of connecting wire	
– Single-wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
– Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
– Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715) or back panel mounting
Ambient temperature storage (no ice)	-40 ... 80 °C
Ambient temperature operation	-40 ... 70 °C
Weight	39 g
Housing material	PA

included accessories	
Retaining clip, plastic	S10-CPI for R12 / R12x Relays

Optional accessories	
Retaining clip, plastic	S10-CPI (BAG 10 PCS) for R12 / R12x Relays
Bridge bar	S7-BBPI (BAG 5 PCS)
Tools	Screw driver ISO 2380-1 Shape A, Crimping tool i.e. Knipex 97 53 04
Marking	Wago Smart Printer compatible label strip

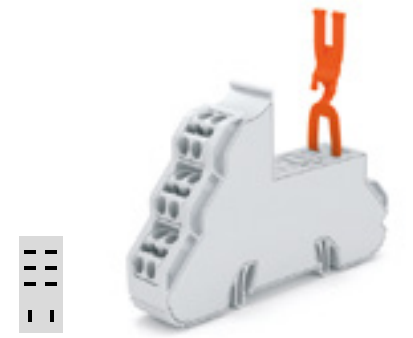


fig. 1. Wiring diagram

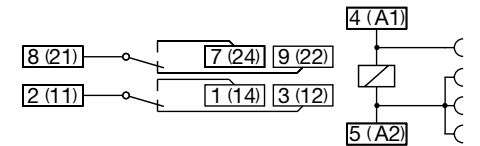
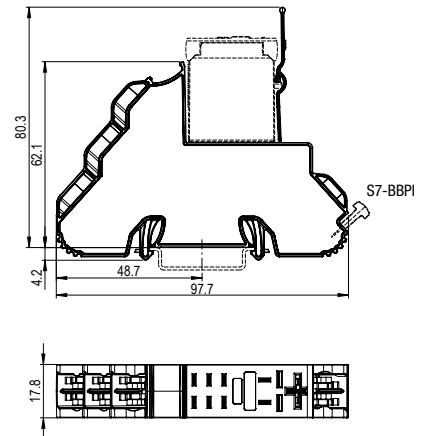


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S7-GR

Socket for 8-pin Relays

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 mm ² / AWG 12, 2 x 2.5 mm ² / AWG 14
– Multi wire	0.34 mm ² / AWG 22 ... 2.5 mm ² / AWG 14
Nominal screw torque	0.7 Nm
Screw dimensions	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 for R7 / R7x Relays

Optional accessories	
Retaining clip, plastic	S9-C (BAG 10 PCS) for R7 / R7x Relays
A2-Connector	S7-BB (BAG 20 PCS)
Panel adapter	S9-G (BAG 10 PCS)

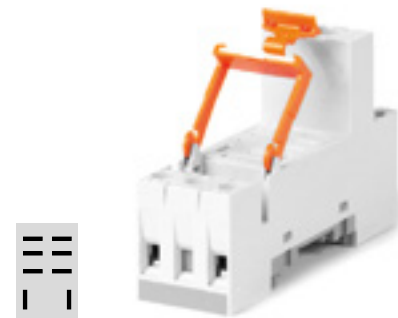


fig. 1. Wiring diagram

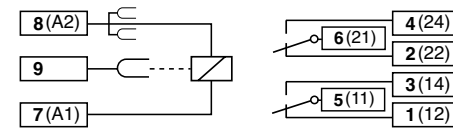
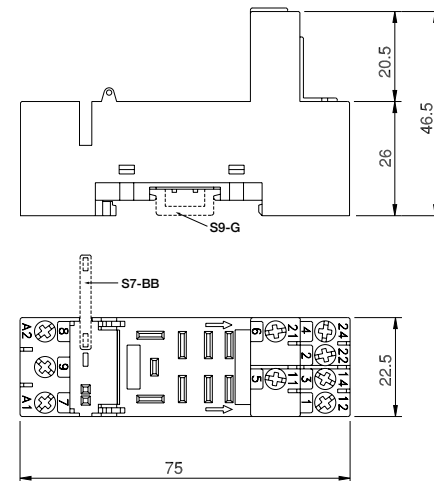


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S7-PIR

Railway Push-in Socket for 8-pin Relays

General data	
Rated load	10 A, 16 A for 1 pole / 250 V
Dielectric strength	
– All terminals / DIN rail	4 kV rms / 1 min
– Terminal / terminal	4 kV rms / 1 min
– Contact / coil terminal	4 kV rms / 1 min
Cross-section of connecting wire	
– Single-wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
– Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
– Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715) or back panel mounting
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, plastic	S7-CPI for R7 / R7x Relays

Optional accessories	
Retaining clip, plastic	S7-CPI (BAG 10 PCS) for R7 / R7x Relays
Bridge bar	S7-BBPI (BAG 5 PCS)
Tools	Screw driver ISO 2380-1 Shape A, Crimping tool i.e. Knipex 97 53 04 Wago Smart Printer compatible label strip
Marking	



fig. 1. Wiring diagram

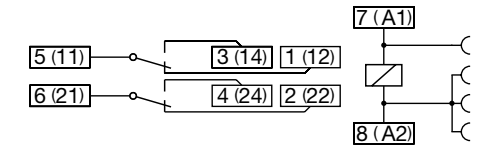
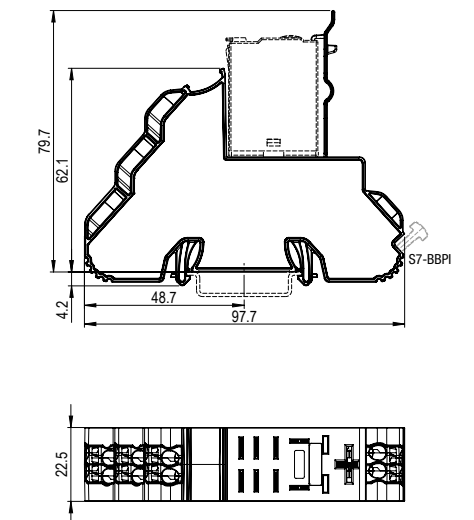


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S9-PIR

Railway Push-in Socket for 14-pin Relays

General data	
Rated load	6 A / 250 V
Dielectric strength	
- All terminals / DIN rail	4 kV rms / 1 min
- Terminal / terminal	4 kV rms / 1 min
- Contact / coil terminal	4 kV rms / 1 min
Cross-section of connecting wire	
- Single-wire	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (un-crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 2.5 mm ² / AWG 14
- Multi wire (crimped)	2 x 0.34 mm ² / AWG 22 ... 2 x 1.5 mm ² / AWG 16
Mounting	TH35 (EN 60715) or back panel mounting
Ambient temperature storage (no ice)	-40 ... 80 °C
Ambient temperature operation	-40 ... 70 °C
Weight	62 g
Housing material	PA

Included accessories	
Retaining clip, plastic	S7-CPI for R9 / R9x Relays

Optional accessories	
Retaining clip, plastic	S7-CPI (BAG 10 PCS) for R9 / R9x Relays
Bridge bar	S7-BBPI (BAG 5 PCS)
Tools	Screw driver ISO 2380-1 Shape A, Crimping tool i.e. Knipex 97 53 04
Marking	Wago Smart Printer compatible label strip

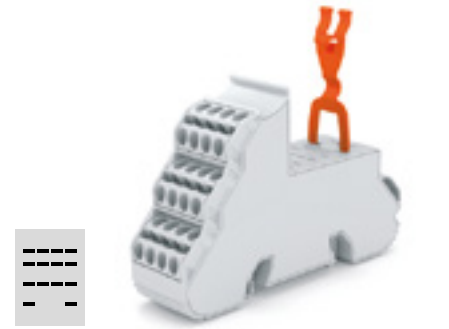


fig. 1. Wiring diagram

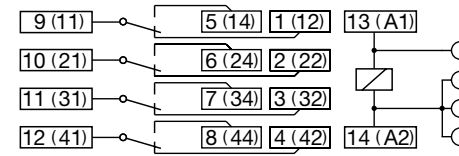
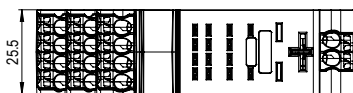
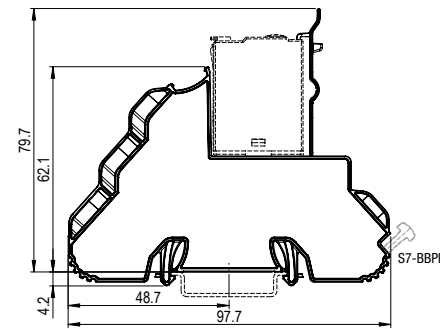


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S4-GR

Socket for 14-pin C4 Relays

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 mm ² / AWG 16 or 2 x 1.5 mm ² / AWG 16
- Multi wire	0.34 mm ² / AWG 22 ... 1 mm ² / AWG 18
Nominal screw torque	1 Nm
Screw dimensions	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

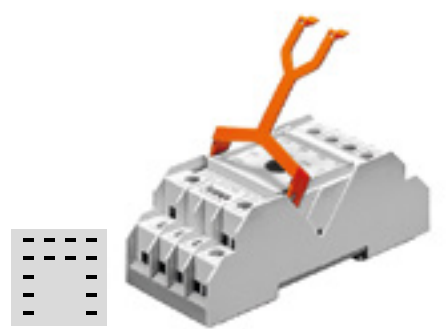


fig. 1. Wiring diagram

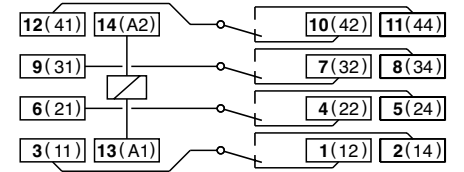
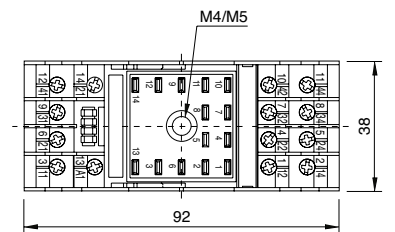
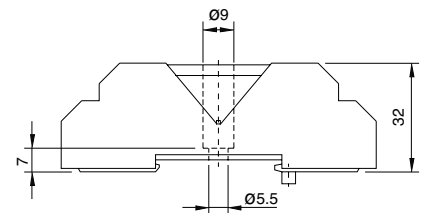


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S3-MR

Socket for 11-pin Relays and Time / Monitoring Module

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 mm ² / AWG 10, 2 x 1.5 mm ² / AWG 16
– Multi wire	1 x 4 mm ² / AWG 12, 2 x 1.5 mm ² / AWG 16
Nominal screw torque	0.7 Nm
Screw dimensions	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) for C3 / C3x Relays
Coding ring	HF-33 (BAG 10 PCS) for Time Cube CTx
A2-Connector	S3-BC (BAG 5 PCS) for C3 / C3x Relays
Freewheeling diode module	C-A2 (BAG 5 PCS), C-A2 (BAG 50 PCS)
RC-Suppressor module	RD1/DC12-220V RC1/UC110-240V



fig. 1. Wiring diagram

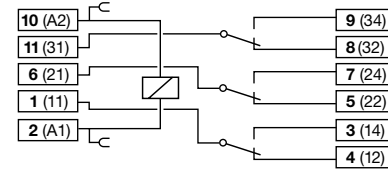
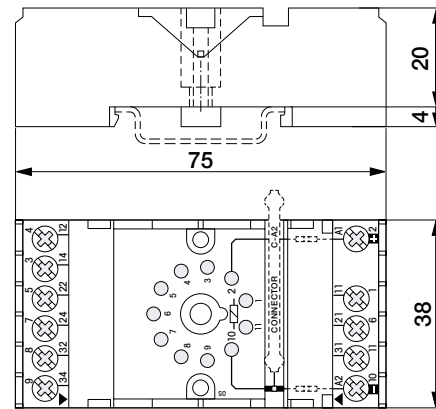


fig. 2. Dimensions (mm)



Technical approvals, conformities

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



S3-M0R / S3-M1R

Socket for 11-pin Relays and Time / Monitoring Module

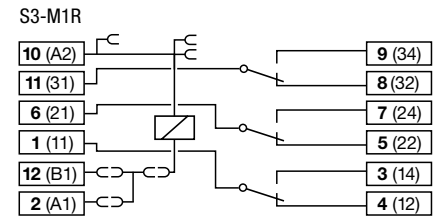
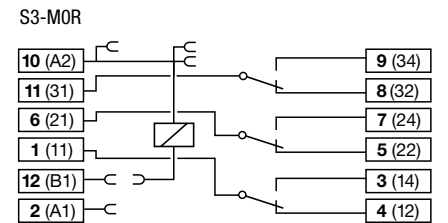
General data	
Rated load	10 A / 250 V
Dielectric strength	
– All terminals / DIN rail	2.5 kV rms / 1 min
– Terminal / terminal	2.5 kV rms / 1 min
Cross-section of connecting wire	
– Single-wire	1 x 6 mm ² / AWG 10, 2 x 1.5 mm ² / AWG 16
– Multi wire	1 x 4 mm ² / AWG 12, 2 x 1.5 mm ² / AWG 16
Nominal screw torque	0.7 Nm
Screw dimensions	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) for C3 / C3x Relays
Coding ring	HF-33 (BAG 10 PCS) for Time Cube CTx
A2-Connector	S3-BC (BAG 5 PCS) for C3 / C3x Relays
Freewheeling diode module	C-A2 (BAG 5 PCS), C-A2 (BAG 50 PCS)
RC-Suppressor module	RD1/DC12-220V RC1/UC110-240V

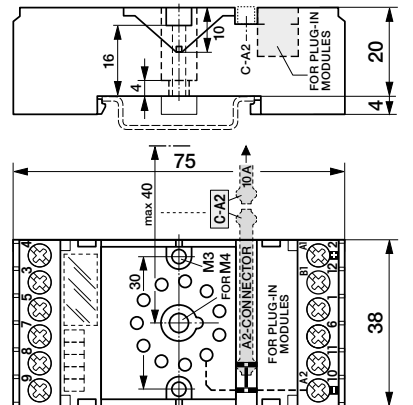


fig. 1. Wiring diagram



Bridge Connector SC-3 included

fig. 2. Dimensions (mm)

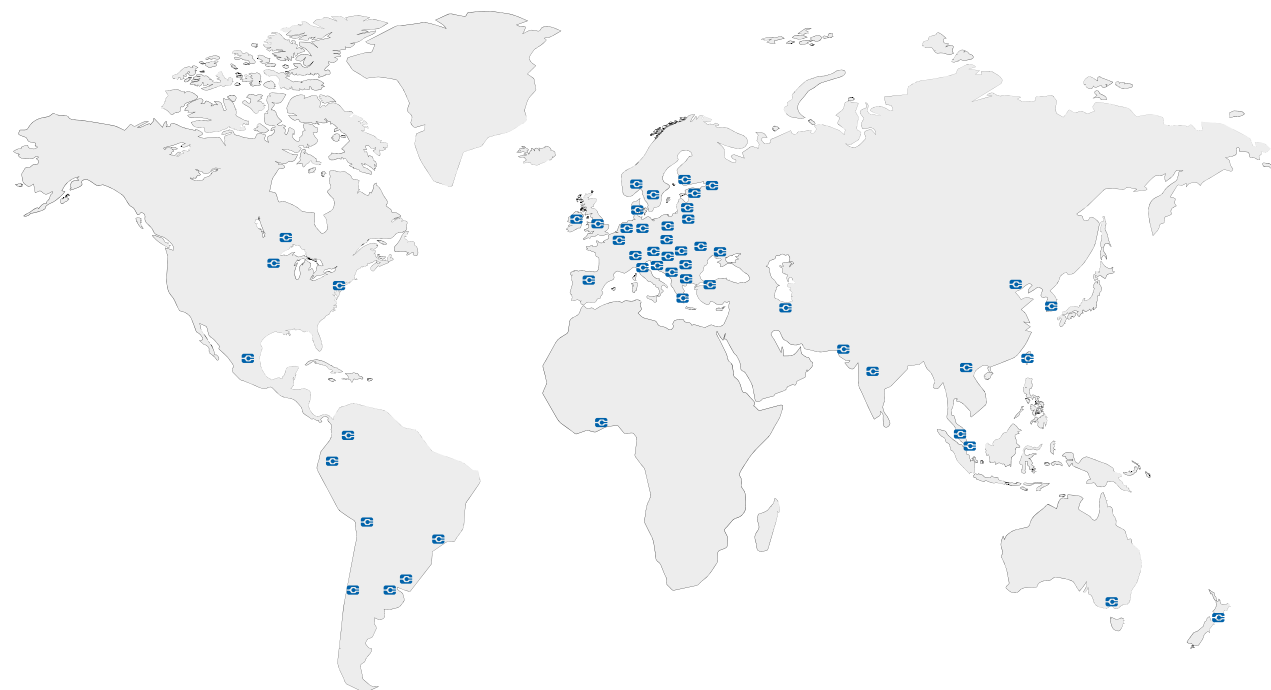


Technical approvals, conformities

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



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WORLD OF RELAYS

ComatReleco AG

Bernstrasse 4 | 3076 Worb | Switzerland

Tel. +41 31 838 55 77

Fax +41 31 838 55 99

info@comatreleco.com | comatreleco.com

support@comatreleco.com | WorldofRelays.com