RC-19A relay - Current monitoring

Datasheet

RC-19A is obsolete from January 1st, 2023

Features

- AC current monitoring relay
- Compact design
- 1 C/O contact
- Easy installation
- High continuous overcurrent possible
- Protection against short circuit and low impedance
- Also suitable for earth fault protection

Benefits

- Proven reliable
- Long term availability
- Easy to maintain
- Low life cycle cost
- No maintenance

Railway compliancy

- EN 50155 Electronic equipment used on rolling stock for railway applications
- IEC 60571 Electronic equipment used on railway vehicles
- IEC 60077 Electrical equipment for rolling stock in railway applications
- IEC 60947 Low voltage switch gear and control gear
- IEC 61373 Rolling stock equipment - Shock and vibration test
- EN 50121 Electromagnetic compatibility for railway applications
- NF F 16-101/102, EN 45545-2 Fire behaviour - Railway rolling stock
- IEC 60529 European standard describes the protection class (IP-code)
- NF F 62-002 On-off contact relays and fixed connections

Description

Current monitoring railway relay with one change-over contact. Suitable for AC currents. The input consists of a ring core saturation transformer: place the wire with current to monitor simply through the transformer. Ease of installation and high continuous overcurrent possible. Protection against short circuit and low impedance. The relay is also suitable for earthfault protection.

Adjusting the pull-in current for lower values by multiple threading through the transformer.

The construction of the relay and choice of materials makes the RC-19A relay suitable to withstand low and high temperatures, shock & vibrating and dry to very humid environments.

No external socket necessary, the relay can be mounted on any surface via 2 screws.

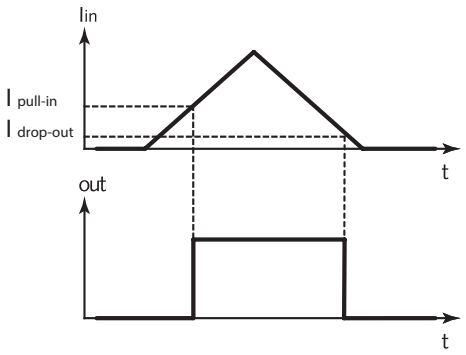
Application

These relay series are designed for demanding rolling stock applications. The RC-19A is used in applications for current monitoring or earth fault protection.

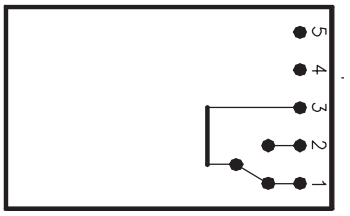
RC-19A relay
Technical specifications

Functional and connection diagrams

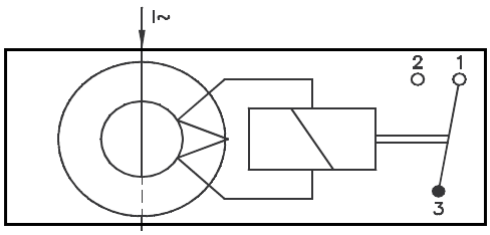
Timing diagram



Relay pin correspondence



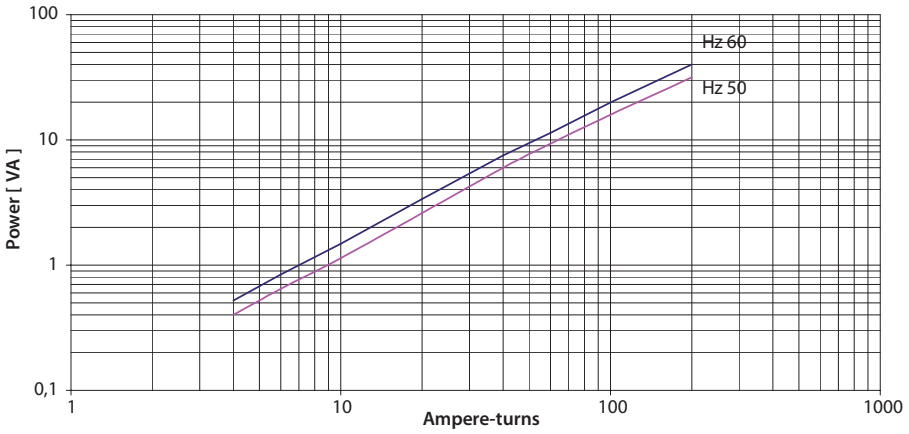
Connection diagram



RC-19A relay
Technical specifications

Coil characteristics

Pull-in time	3-15 ms
Release time	3-15 ms
Bounce time	≤ 1 ms
Power consumption	



Type	Inom (ampere-turns)	Ipull-in (ampere-turns)	Idrop-out (ampere-turns)
RC-19A 4.8	4.8	3.1 - 3.8	1.9 - 3.4
RC-19A 14	14	9.0 - 11.0	3.5 - 5.0
RC-19A 35	35	22.5 - 27.5	9.0 - 11.0

Example:

- Type RC-19A 4.8 with the current wire through the relay ring (no windings):
  $I_{pull\text{-}in}$ is between 3.1-3.8 A. After activating the relay $I_{drop\text{-}out}$ is between 1.9-3.4 A

- Type RC-19A 4.8 with the current wire going through the relay ring 3 times (2 windings):
  $I_{pull\text{-}in}$ is between 1.0-1.3 A. After activating the relay $I_{drop\text{-}out}$ is between 0.6-1.1 A

Contact characteristics

Amount and type of contacts	1 C/O
Maximum make current	15 A
Maximum continuous current	6 A (AC1 ; IEC 60947)
Maximum switching voltage	300 VDC (then max. current = 300 mA) 250 VAC (then max. current = 2.6 A)
Minimum switching voltage	12 V
Minimum switching current	10 mA
Maximum contact resistance	15 mΩ
Maximum switching capacity	See graph page 5
Material	Ag +0.2 µm Au (gold flash is only for storage purposes)
Contact gap	0.3 mm
Contact force	> 20 cN

RC-19A relay
Technical specifications

Electrical characteristics

Dielectric strength	EN 50155 IEC 60255-5
Cont-coil	IEC 60077 3 kV, 50 Hz, 1 min

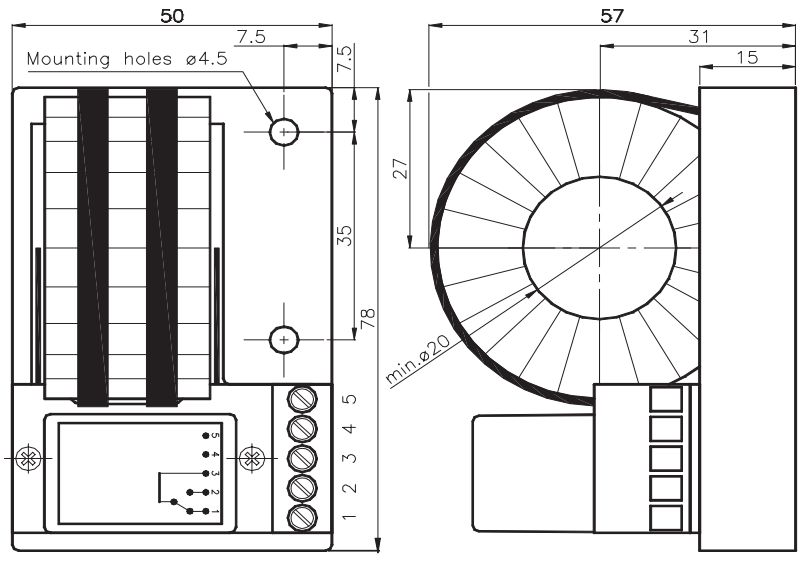
Mechanical characteristics

Mechanical life	10 x 10^6 operations
Maximum switching frequency	Mechanical 3600 ops/h Electrical 1200 ops/h
Weight	370 g

Environmental characteristics

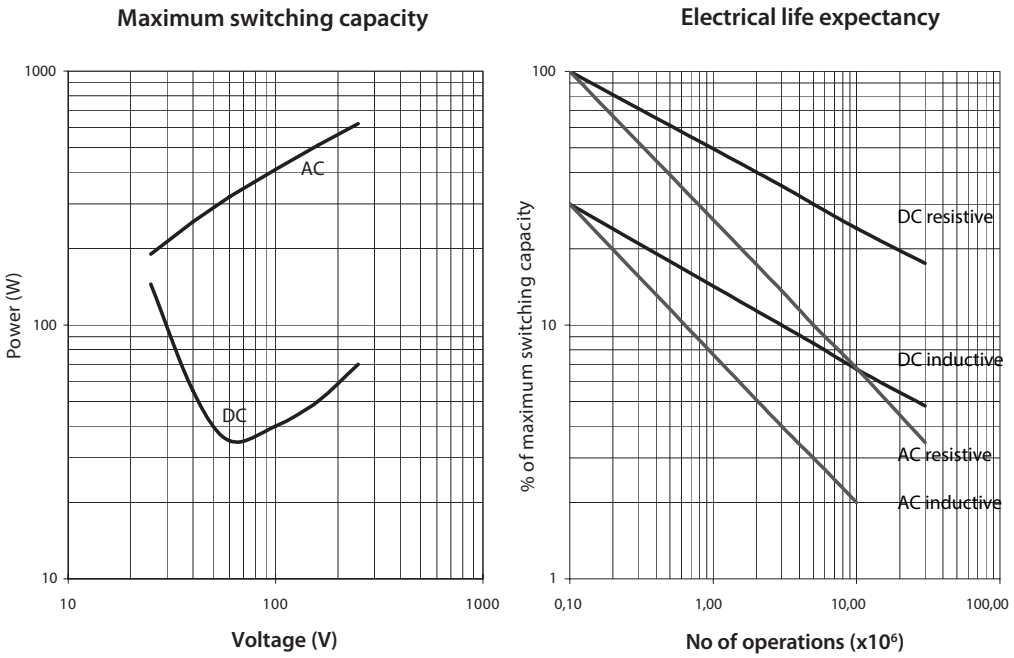
Environmental	EN 50125-1 and IEC 60077-1
Vibration	IEC 61373, Category I, Class B, Body mounted
Shock	IEC 61373, Category I, Class B, Body mounted
Operating temperature	-25 °C...+70 °C
Humidity	90%, temporary permitted condensation
Damp heat	IEC 60068-2-30, Test method Db variant 1
Protection	IEC 60529, IP40 (relay), IP20 (contacts)
Fire & smoke	NF F 16-101, NF F16-102, EN 45545-2

Dimensions (mm)



RC-19A relay
Technical specifications

Switching capacity and contact life



Step 1: Determine switching voltage out of the application.

Step 2: Select the maximum switching capacity (in Watt) at this voltage in graph 'Maximum switching capacity'.

Step 3: Calculate the actual switched load (in Watt) out of the application.

Step 4: Calculate the % of maximum switching capacity: $\frac{\text{Actual load}}{\text{Max switching capacity}}$

Step 5: Pick the life at this load out of the graph 'Electrical life expectancy'.

RC-19A relay
Instructions

Installation, operation & inspection

Installation

Before installation or working on the relay: disconnect the power supply first! Install relay and and connect wiring according to the terminal identification. Relays can be mounted tightly together to save space.

Warning!

- Never use silicon in the proximity of the relays.
- Do not use the relay in the presense of flammable gas as the arc generated from switching could cause ignition.

Operation

After installation always apply the rated current to the product to check correct operation.

Before actual use of relays, it is advised to switch the load several times with the contacts. The contacts will both be electrically and mechanically cleaned due to the positive wiping action. Sometimes a contact can build up increased contact resistance (≤ 15 mΩ when new). When using silver contacts one can clean the contact by switching a contact load a few times using >24 VDC & ~2 A. Increased contact resistance is not always problematic, as it depends on circuit conditions. In general a contact resistance of 1 Ω is no problem, consult Mors Smitt for more information.

Condensation in the relay is possible when the coil is energised (warm) and the outside, environmental temperature is cold. This is a normal phenomenon and will not affect the function of the relay. Materials in the relay have no hygroscopic properties.

Inspection

Correct operation of the relay can easily be checked as the transparent cover provides good visibility of the moving contacts. If the relay does not seem to operate correctly, check for presence of the appropriate coil voltage and polarity using a suitable multimeter. If coil voltage is present, but the relay does not operate, a short circuit of the suppression diode is possible (This may be due to the coil connection having been reversed).

If the relay doesn't work after inspection, replace the relay unit with a similar model. Do not attempt to open the relay cover or try to repair. Contacts are calibrated and in balance, touching can affect proper operation. Also resoldering may affect correct operation. Since 2009 relays have tamper proof seals fitted and once broken, warranty is void.

Most relay defects are caused by installation faults such as overvoltage, spikes/transients, high/short current far exceeding the relay specifications. When returning the relays for investigation, please provide all information on the RMA form. Send defective relays back to the manufacturer for repair or replacement. Normal wear and tear or external causes are excluded from warranty.

RC-19A relay
Ordering scheme

Configuration:

RC-19A	4.8

1. Relay model 2. AC current

This example represents a **RC-19A 4.8**
Description: RC-19A relay, I_{nom}: 4.8 AAC

1. Relay model

RC-19A

2. AC current

4.8	4.8 ampere-turns
14	14 ampere-turns
35	35 ampere-turns

Mors Smitt
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SERVING SAFETY

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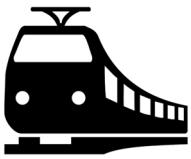

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