

VARIMETER Fuse Monitor RL 9075, RN 9075



Your Advantages

- Increasing the availability of plants by early detection of blown fuses, that may cause damage if undetected
- Fast detection of blown fuses also with disconnected load availability of your plant on request
- Reliable detection of blown fuses inspite of:
 - asymmetric mains
 - harmonic content

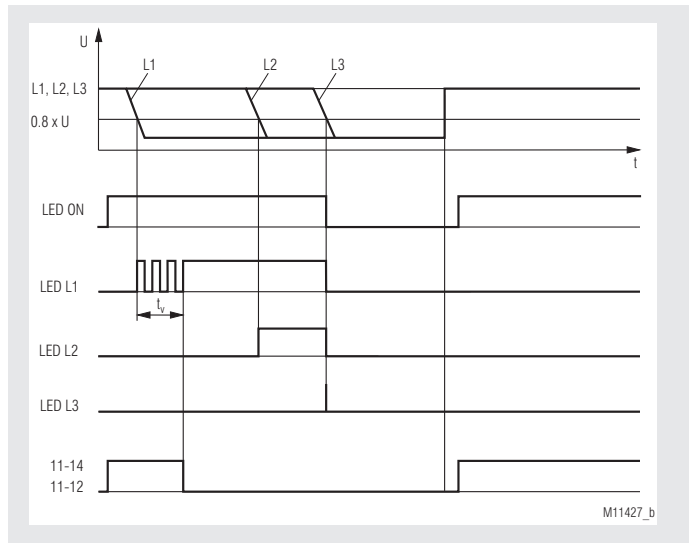
Features

- According to IEC/EN 60 255-1
- To monitor fuses in single and 3-phase AC voltage systems with neutral
- Adjustable operating voltages: 400 V / 230 V and 230 V / 130 V and 110 V / 64V
- Undervoltage detection below $0.8 \times U_B$
- Fast detection of a blown fuse
- No separate auxiliary necessary
- Output: 1 changeover contact
- De-energized on trip
- Adjustable switching delay
- Width:
 - RL 9075: 35 mm
 - RN 9075: 52.5 mm

Product Description

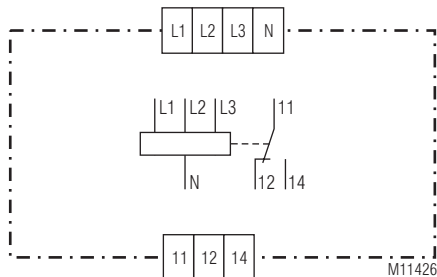
The fuse monitors RL 9075 and RN 9075 of the varimeter series monitor up to 3 fuses. The measurement is very simple and without extensive wiring, as no separate auxiliary supply is necessary. The fast detection of a defective fuse protects against expensive damages and the user has the benefit of high operational performance and availability of the plant.

Function Diagram

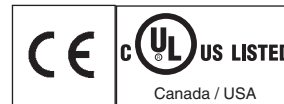


3-phase connetion to monitor 3 fuses

Circuit Diagram



Approvals and Markings



Application

Monitors the state of 1-3 fuses in single- or 3-phase voltage systems with neutral, e.g. for automatic disconnection and lockout in the case of a fuse failure.

Indication

- | | |
|-----------------------|--|
| green LED „ON“: | on, when supply connected |
| red LED „L1, L2, L3“: | shows that the voltage is dropped under $0.8 \times U_B$ after the fuse which indicates a blown fuse |

Connection Terminals

Terminal designation	Signal description
L1	Phase voltage L1
L2	Phase voltage L2
L3	Phase voltage L3
N	Neutral
11, 12, 14	Changeover contacts (outputrelays)

Function

When monitoring fuses in a 3-phase system all the phases are measured against N. The recognition of a blown fuse is done by monitoring the voltage at the fuse input terminals L1, L2 and L3. A voltage drop on one of these input terminals below $0.8 \times U_B$ is an indication for a blown fuse. In case an undervoltage condition on any of the three terminals has been recognized the LED of the corresponding terminal starts blinking red. After the switching delay time has expired, the LED switches on red continuously. At the same time the relay, which works in open circuit alarm mode, switches its state. After the terminal voltage exceeds the switching level again e.g. by replacing the blown fuse, the corresponding LED immediately turns off and at the same time the relay switches back into idle mode.

When monitoring fuses in a 1-phase system, up to 3 fuses can be connected to the same phase and being monitored.

If less than 3 fuses are monitored at 3- or single-phase monitoring, the unused terminals LX have to be bridged (see connection examples).

Via rotary switch the both operating ranges 400 V / 230 V or 230 V / 130 V at RN 9075 can be selected. At RL 9075 the operating voltage is fixed.

Notes

During initialisation the fuse monitor recognises the mains frequency (50 Hz or 60 Hz).

For reliable detection of fuse failure with large inductive loads we recommend to have symmetric loads.

When using the fuse monitor with motor loads it could happen, due to feedback voltage, that the failed fuse is only detected after the motor is switched off.

Adjustable operating voltages via rotary switch:

Device	Function Lx/N	Voltages $0.8 \times Lx/N$
RN 9075	230 V	184 V
	130 V	104 V
RL 9075	-	51 V

Technical Data

Input

Operating voltage U_B :

RL 9075: 3/N AC 77 ... 121 V / 44 ... 70 V
1- or 3-phase without / with neutral

RN 9075: 3/N AC 138 ... 440 V / 78 ... 253 V
1- or 3-phase without / with neutral

Voltage rated operating U_o :

RL 9075: 3/N AC 90 ... 110 V / 52 ... 64 V
RN 9075: 3/N AC 162 ... 400 V / 92 ... 230 V

Voltage range:

RL 9075: 0.7 ... 1.1 U_B
RN 9075: 0.6 ... 1.1 U_B

Nominal frequency: 50 / 60 Hz

Frequency range: 45 ... 65 Hz

Nominal consumption: approx. 7 VA

Output

Contacts: 1 changeover contact

Contact material: AgNi

Switching voltage: AC 250 V

Thermal current I_{th} : 5 A

Switching capacity

to AC 15

NO contact: 3 A / AC 230 V IEC/EN 60 947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60 947-5-1

Electrical life

to AC 15 at 1 A, AC 230 V: typ. $\times 10^5$ switching cycles

short circuit strength IEC/EN 60 947-5-1

max. fuse rating: 5 A gL

Mechanical life: $> 30 \times 10^6$ switching cycles

Technical Data

Measuring circuit

Monitoring voltage

RL 9075: $Lx/N = 51 \text{ V } (0.8 \times 64 \text{ V})$
RN 9075: $Lx/N = 184 \text{ V } (0.8 \times 230 \text{ V}) +$
 $Lx/N = 104 \text{ V } (0.8 \times 130 \text{ V})$

Monitoring range:

RL 9075: 0.7 ... 1.1 U_B
RN 9075: 0.6 ... 1.1 U_B

Number of monitored fuse: 1 ... 3

Switching delay t_v : infinite adjustable
instantaneous, 2 ... 30 s

Repeat accuracy: $\pm 2 \%$

Temperature influence: $\pm 1 \%$

General Data

Operating mode: continuous operation

Temperature range

Operation: - 20 ... + 55 °C

Storage: - 25 ... + 60 °C

Relative air humidity: 93 % at 40 °C

Altitude: < 2,000 m

Clearance and creepage distances

Rated impuls voltage/
Pollution degree: 6 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61 000-4-2

HF irradiation

80 MHz ... 1 GHz: 12 V / m IEC/EN 61 000-4-3

1 GHz ... 2,7 GHz: 10 V / m IEC/EN 61 000-4-3

Fast transients: 2 kV IEC/EN 61 000-4-4

Surge

between

wires for power supply: 2 kV IEC/EN 61 000-4-5

between wire and ground: 4 kV IEC/EN 61 000-4-5

HF wire guided: 10 V IEC/EN 61 000-4-6

Interference suppression: Limit value class B EN 55 011

Degree of protection:

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

Enclosure: Thermoplastic with V0 behaviour

acc. to UL subject 94

Amplitude 0,35 mm

Class I IEC/EN 60 255-21

20 / 055 / 04 IEC/EN 60 068-1

EN 50 005

DIN 46 228-1/-2/-3/-4

Fixed screw terminals

Cross section: 0.2 ... 4 mm² (AWG 24 - 12) solid or

0.2 ... 2.5 mm² (AWG 24 - 12)

stranded wire with and without ferrules

Stripping length: 7 mm

Fixing torque: 0.6 Nm EN 60 999-1

Wire fixing: Captive slotted screw / M2.5

Fixed

High-voltage terminals

Cross section: 0.2 ... 6 mm² (AWG 24 - 10) massiv oder

0.2 ... 4 mm² (AWG 24 - 10)

stranded wire without ferrules

0.25 ... 4 mm² (AWG 24 - 10)

stranded wire with ferrules

Stripping length: 8 mm

Fixing torque: 0.7 Nm EN 60 999-1

Wire fixing: Captive slotted screw / M3

Mounting: DIN rail IEC/EN 60 715

Weight:

RL 9075: approx. 105 g

RN 9075: approx. 125 g

Dimensions

Width x height x depth:

RL 9075: 35 x 90 x 71 mm

RN 9075: 52.5 x 90 x 71 mm

UL-Data

ANSI/UL 60947-1, 5th Edition
ANSI/UL 60947-5-1, 3rd Edition

CAN/CSA-C22.2 No. 60947-1-13, 2nd Edition
CAN/CSA-C22.2 No. 60947-5-1-14, 1st Edition

Switching capacity: Pilot duty B300
5A 240Vac Resistive, G.P.
5A 30Vdc Resistive or G.P.
5A 250Vac G.P.

Wire connection: 60°C / 75°C copper conductors only
RL 9075: AWG 24 - 12 Sol/Str Torque 0.6 Nm
RN 9075
for terminals 11, 12, 14: AWG 24 - 12 Sol/Str Torque 0.6 Nm
for terminals L1, L2, L3, N: AWG 30 - 10 Sol/Str Torque 0.7 Nm



Technical data that is not stated in the UL-Data, can be found in the technical data section

Standard Types

RL 9075.11/61 3/N AC 110 V / 64 V 0 ... 30 s

- Article number: 0066880
- Output: 1 changeover contact
 - Operating voltage: 3/N AC 110 V / 64 V
 - Switching delay: 0 ... 30 s
 - Width: 35 mm

RN 9075.11/61 3/N AC 230 V / 130 V + 3/N AC 400 V / 230 V 0 ... 30 s

- Article number: 0066928
- Output: 1 changeover contact
 - Operating voltage: 3/N AC 230 V / 130 V + 3/N AC 400 V / 230 V
 - Switching delay: 0 ... 30 s
 - Width: 52,5 mm

Ordering Examples

R_ 9075 .11 /00 /61 3/N AC 110 V / 64 V 0 ... 30 s

Switching delay

Operating voltage

RL 9075:

3/N AC 110 V / 64 V

RN 9075:

3/N AC 230 V / 130 V+

3/N AC 400 V / 230 V

UL approval

Operation mode/Outputs

0: De-Energized on trip

1: Energized on trip

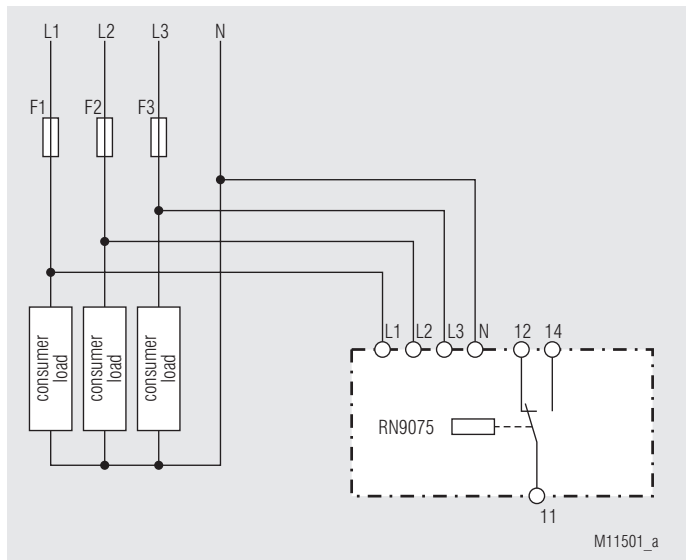
Contacts

Type

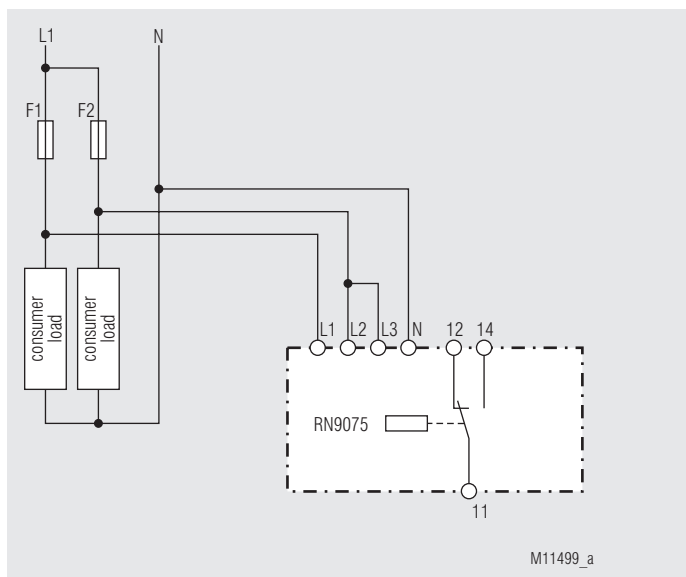
L: 35 mm Width

N: 52.5 mm Width

Connection Examples



3-phase connection to monitor 3 fuses



1-phase connection to monitor 2 fuses

