

## VARIMETER Voltage Relay RL 9854, RN 9854

Translation  
of the original instructions



0273496

### Your Advantages

- Preventive maintenance
- For better productivity
- High repeat accuracy
- Wide measuring voltage range
- Easy setting

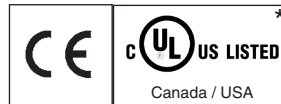
### Features

- According to IEC/EN 60255-1
- For monitoring AC single phase with 50 /60 Hz
- Detection of
  - Overvoltage
  - Undervoltage
  - Voltage range excess in single-phase AC voltage systems
- No separate auxiliary necessary
- Output: changeover contact
- De-Energized on trip
- Adjustable switching voltage
- Adjustable hysteresis for reset
- Adjustable switching delay
- Fast fault detection
- RL 9854: Width 35 mm
- RN 9854: Width 52.5 mm

### Product Description

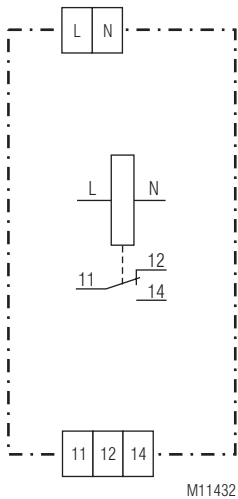
The measuring relays RL 9854 and RN 9854 of the VARIMETER series monitors overvoltage, undervoltage and voltage range in single-phase systems. The measurement is very simple and without extensive wiring as there is no auxiliary power supply necessary. The monitoring functions are easily selectable using a single turn switch without complex menu structure. The early detection of up-coming break downs and preventive maintenance avoid expensive damages. As user you profit from the reliability and availability of your plant.

### Approvals and Markings



\*) RL 9854 only

### Circuit Diagram



### Application

- Monitoring of voltage systems to detect over- and undervoltage
- Switch over to emergency supply after fault detection

### Function

When monitoring overvoltage, undervoltage and voltage range, the exceeding of the setting values above or below the thresholds is indicated by flashing of the voltage indicating LED. After the time delay the voltage indicating is continuously on and the relay de-energises. If the voltage returns to normal value, the LED goes immediately off and the output relay energises.

The output relay is de-energized on trip.

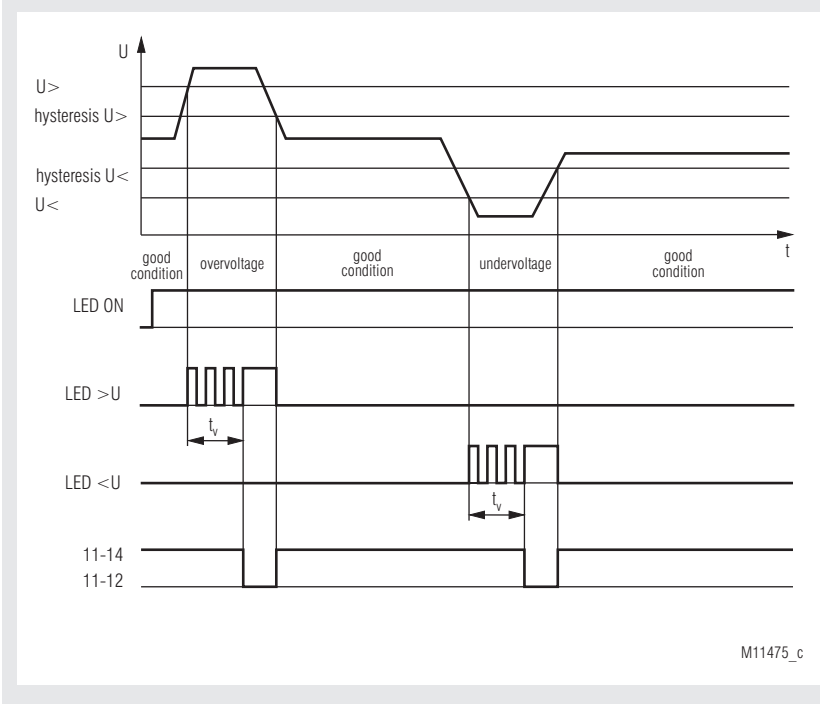
In the voltage range monitoring mode the nominal voltage range  $U \pm \Delta U$  is adjustable. An alarm is evoked in case the voltage leaves this monitoring range. The hysteresis for switching back into good condition is half the value set by the potentiometer  $\Delta U$ .

### Connection Terminals

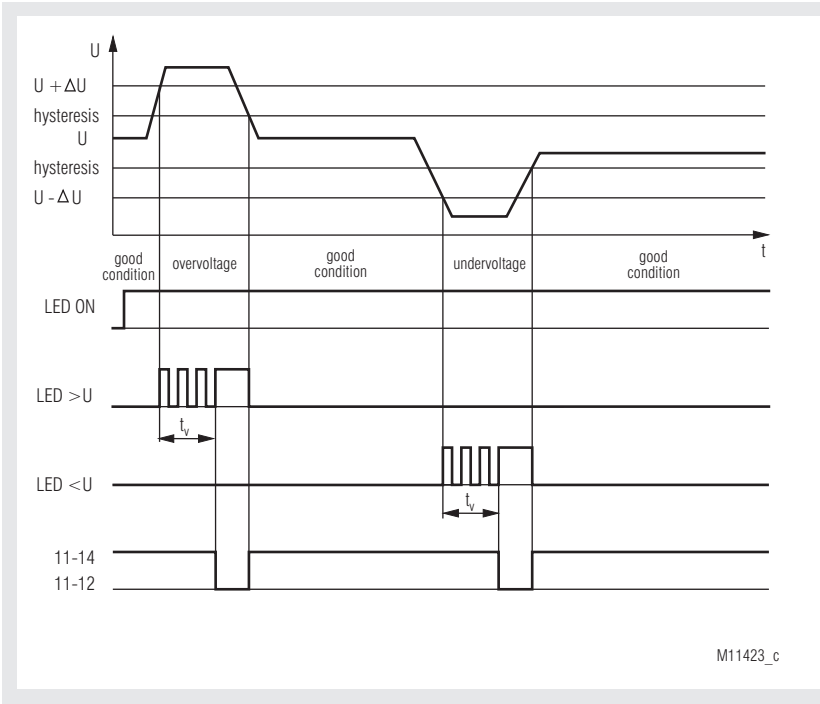
Terminal designation	Signal description
L	Phase voltage
N	Neutral
11, 12, 14	Changeover contact (outputrelays)

### Indicator

Green LED „ON“:	On, when supply connected
Red LED „>U“:	On, when overvoltage
Red LED „<U“:	On, when undervoltage



Monitoring function: Overvoltage / undervoltage; rotary switch: „U>“ / „U<“



Monitoring function: Voltage range; rotary switch: „U<>“

**Notes**

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

The following monitoring functions are selectable using the 3-step function switch:

Function select	Monitoring function
U>	Overvoltage
U<	Undervoltage
U<>	Voltage range

**Technical Data****Input****Operating voltage  $U_B$ :**

RL 9854: AC 100 ... 300 V, AC 45 ... 135 V  
single-phase with neutral

RN 9854: AC 150 ... 528 V  
single-phase with neutral

**Voltage rated operating  $U_e$ :**

RL 9854: AC 118 ... 273 V, AC 53 ... 123 V

RN 9854: AC 176 ... 480 V

**Nominal frequency:**

50 / 60 Hz

**Frequency range:**

45 ... 65 Hz

**Nominal consumption:**

Approx. 7 VA

**Output****Contact:**

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 60947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60947-5-1

**Electrical life**

To AC 15 at 1 A, AC 230 V: Typ.  $3 \times 10^5$  switching cycles

**Short circuit strength** IEC/EN 60947-5-1

Max. fuse rating: 5 A gG / gL

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

**Measuring circuit****Measuring voltage:**

Infinite adjustable

RL 9854: AC 100 ... 300 V, AC 45 ... 135 V

RN 9854: AC 150 ... 528 V

**Hysteresis:** Infinite adjustable 4 ... 20 %

**Switching delay  $t_v$ :** Infinite adjustable

instantaneous, 2 ... 30 s

**Release delay:** 10 s

**Repeat accuracy:**  $\pm 2$  %

**Temperature influence:**  $\pm 1$  %

**Attention:**

The combination of adjusted switching voltage  $U$  and hysteresis  $\Delta U$  must be within the measuring range.

**Technical Data****General Data****Operating mode:**

Continuous operation

**Temperature range**

Operation: - 20 ... + 55 °C

Storage: - 25 ... + 60 °C

Relative air humidity: 93 % at 40 °C

**Altitude:**  $\leq 2000$  m

**Clearance and creepage distances**

Rated impuls voltage/

Pollution degree: 6 kV / 2

IEC 60664-1

**EMC**

Electrostatic discharge (ESD): 8 kV (air)

IEC/EN 61000-4-2

HF irradiation

80 MHz ... 1 GHz: 12 V / m

IEC/EN 61000-4-3

1 GHz ... 2,7 GHz: 10 V / m

IEC/EN 61000-4-3

Fast transients: 2 kV

IEC/EN 61000-4-4

Surge

Between

wires for power supply: 2 kV

IEC/EN 61000-4-5

Between wire and ground: 4 kV

IEC/EN 61000-4-5

HF wire guided: 10 V

IEC/EN 61000-4-6

Interference suppression:

Limit value class B

EN 55011

**Degree of protection:**

Housing: IP 40

IEC/EN 60529

Terminals: IP 20

IEC/EN 60529

**Enclosure:**

Thermoplastic with V0 behaviour

acc. to UL subject 94

Amplitude 0.35 mm

Class I

IEC/EN 60255-21

20 / 055 / 04

IEC/EN 60068-1

EN 50005

DIN 46228-1/-2/-3/-4

**Vibration resistance:****Climate resistance:****Terminal designation:****Wire connection:****Fixed screw terminals**

Cross section:

0.2 ... 4 mm<sup>2</sup> (AWG 24 - 12) solid or

0.2 ... 2.5 mm<sup>2</sup> (AWG 24 - 12)

stranded wire with and without ferrules

7 mm

Stripping length:

**Wire fixing:****Fixing torque:****Fixed****High-voltage terminals**

Cross section:

0.2 ... 6 mm<sup>2</sup> (AWG 24 - 10) solid or

0.2 ... 4 mm<sup>2</sup> (AWG 24 - 10)

stranded wire without ferrules

0.25 ... 4 mm<sup>2</sup> (AWG 24 - 10)

stranded wire with ferrules

8 mm

Stripping length:

Fixing torque:

Wire fixing:

**Mounting:**

**Weight**

RL 9854:

Approx. 105 g

RN 9854:

Approx. 125 g

**Dimensions****Width x height x depth:**

RL 9854:

35 x 90 x 71 mm

RN 9854:

52,5 x 90 x 71 mm

## UL-Data

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

CAN/CSA-C22.2 No. 60947-1-13, 2<sup>nd</sup> Edition  
CAN/CSA-C22.2 No. 60947-5-1-14, 1<sup>st</sup> 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  
AWG 24 - 12 Sol/Str Torque 0.5 Nm



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

## Standard Type

RL 9854.11/61 AC 100 ... 300 V 4 ... 20 % 0 ... 30 s

Article number: 0066429  
• Output: 1 changeover contact  
• Measuring voltage: AC 100 ... 300 V  
• Hysteresis: 4 ... 20 %  
• Switching delay: 0 ... 30 s  
• Width: 35 mm

RN 9854.11 AC 150 ... 528 V 4 ... 20 % 0 ... 30 s

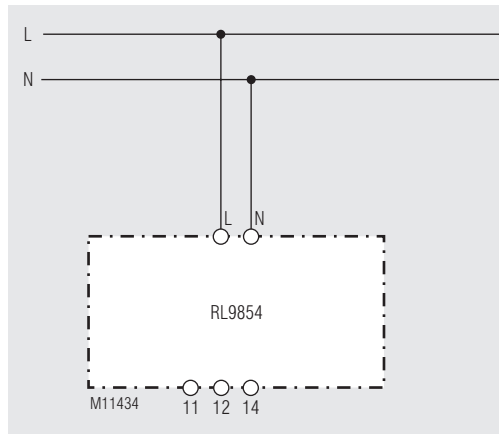
Article number: 0069301  
• Output: 1 changeover contact  
• Measuring voltage: AC 150 ... 528 V  
• Hysteresis: 4 ... 20 %  
• Switching delay: 0 ... 30 s  
• Width: 52.5 mm

## Ordering Example

RL 9854 .11 /00 /61 AC 100 ... 300 V 4 ... 20 % 0 ... 30 s

Switching delay  
Hysteresis  
Operating voltage  
AC 100 ... 300 V  
AC 45 ... 135 V  
UL approval  
Operation mode/Outputs  
0: De-Energized on trip  
1: Energized on trip  
Contacts  
Type

## Connection Example



Single-phase connection