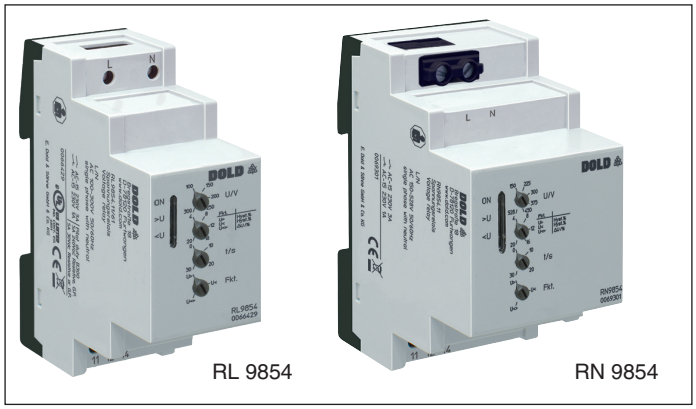
VARIMETER
Voltage Relay
RL 9854, RN 9854

Translation of the original instructions

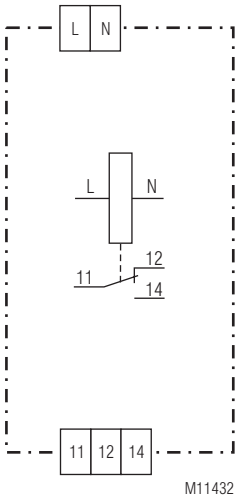
0273496



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.

Circuit Diagram



Connection Terminals

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

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

Approvals and Markings

CE
c UL US LISTED *)
Canada / USA

*) RL 9854 only

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.

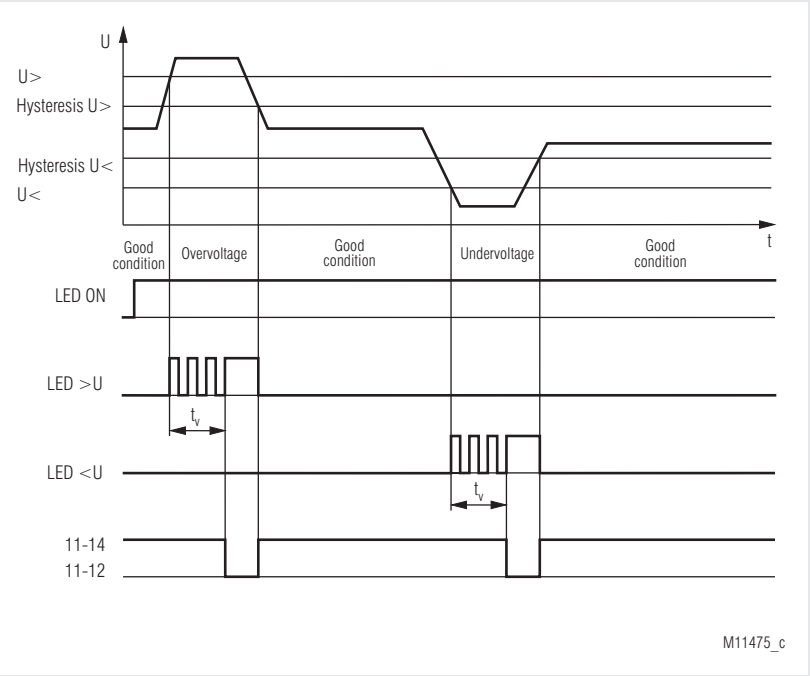
The output relay is de-energized on trip.

In the voltage range monitoring mode the nominal voltage range U ± △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 △U.

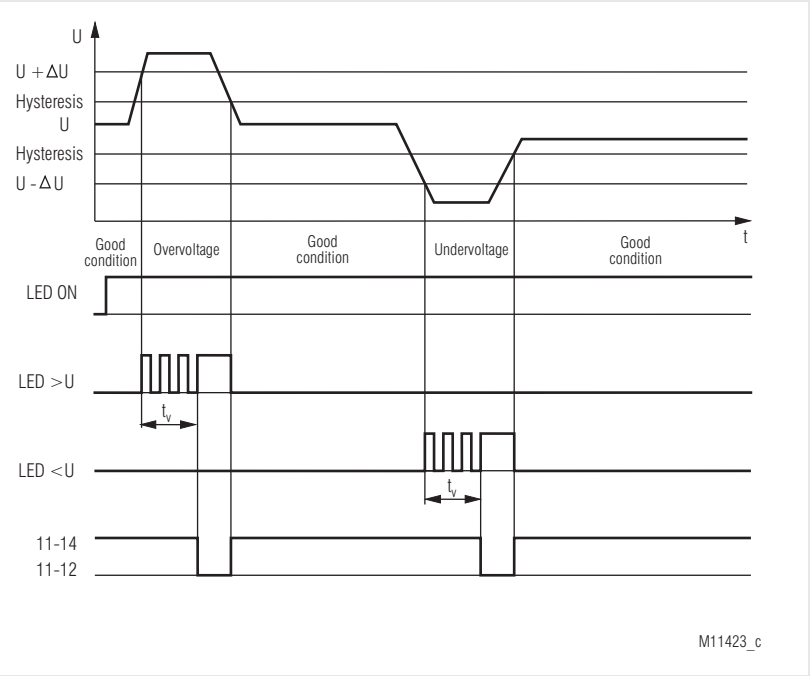
Indicator

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

Function Diagrams



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 x 10^5 switching cyles
Short circuit strength IEC/EN 60947-5-1
Max. fuse rating: 5 A gG / gL
Mechanical life: > 30 x 10^6 switching cyles

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 instantaneuos, 2 … 30 s
Repeat accuracy: ± 2 %
Temperature influence: ± 1 %
Attention:
The combination of adjusted switching voltage U and hysteresis △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: ≤ 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
Vibration resistance: Amplitude 0.35 mm
Class I IEC/EN 60255-21
Climate resistance: 20 / 055 / 04 IEC/EN 60068-1
Terminal designation: EN 50005
Wire connection: DIN 46228-1/-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
Wire fixing: Captive slotted screw / M3
Fixing torque: 0.5 Nm EN 60999-1
Fixed
High-voltage terminals
Cross section: 0.2 ... 6 mm² (AWG 24 - 10) solid or
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: 0.5 ... 0.6 Nm EN 60999-1
Wire fixing: Captive slotted screw / M3
Mounting: DIN rail IEC/EN 60715
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, 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
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

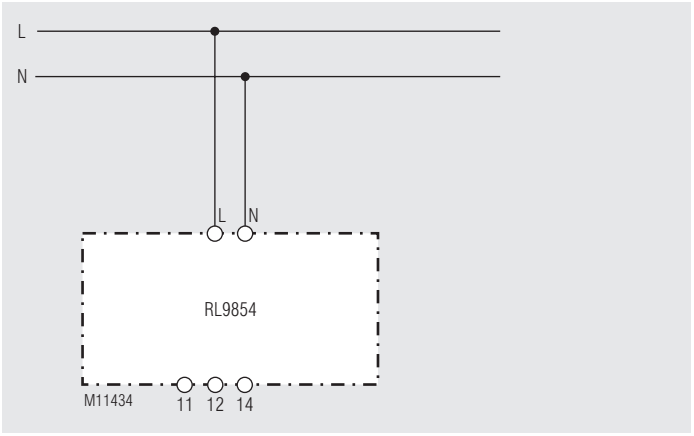
RN 9854.11 AC 150 ... 528 V 4 ... 20 % 0 ... 30 s
Article number: 0069301
- Output: 1 changeover contact
- Measuring voltage: AC 150 ... 528 V
- Hysteresis: 4 ... 20 %
- Switching delay: 0 ... 30 s
- Width: 52.5 mm

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