VARIMETER
Phase Monitor
RK 9872

Translation of the original instructions

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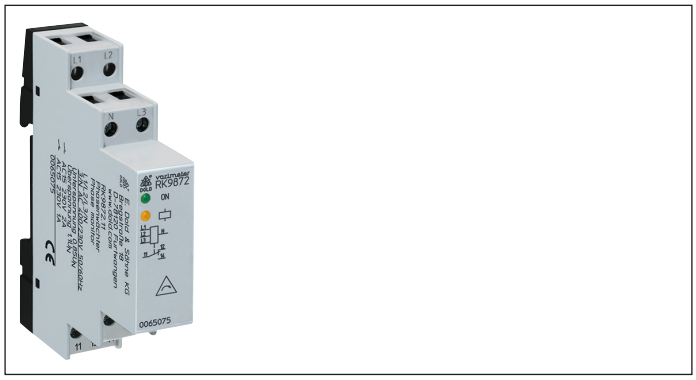

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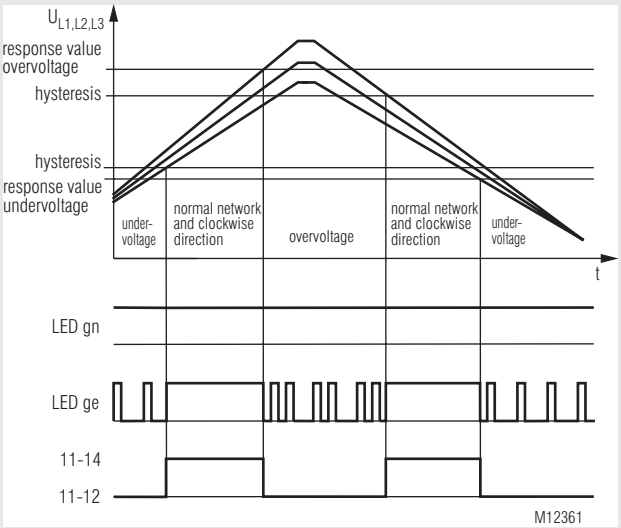
Product Description

The space saving phase monitor RK9872/800 from the Varimeter family monitors under- and overvoltage as well as phase sequence in 3-phase systems.
The response values are fixed. When connecting the measuring voltage to the inputs L1-L2-L3 and fault free system the relay switches on.
When the measuring voltage is connected the unit checks a clockwise phase sequence. If this is not the case the yellow LED flashes. The output relay will not energise. After detection of under- or overvoltage on one or more phases for more the 5 sec. the relay switches off. The relay stays off for at least 2 seconds. The phase monitor measures the arithmetic mean value of the 3 phases against neutral.

Function Diagramm



Your Advantages

- Reliability monitoring of 3- or 1-phase voltage systems on:
  - Undervoltage
  - Overvoltage
  - Phase sequence (at 3-phase voltage system)
- Fast fault location
- Preventive maintenance
- Space saving

Features

- According to IEC/EN 60255-1
- Detection of under-/overvoltage and phase sequence in 3-phase voltage systems
- Without separate auxiliary voltage
- LED-Indication for operation voltage and contact position
- De-energized on trip
- With fixed response value for undervoltage
- With fixed response value for overvoltage
- Width: 17,5 mm

Approvals and Markings

CE

Application

Monitoring of voltage systems on undervoltage, overvoltage and phase sequence, e. g. for applications with squirrel cage motors and -machines, cranes, elevator, escalator, pumps, aircondition.

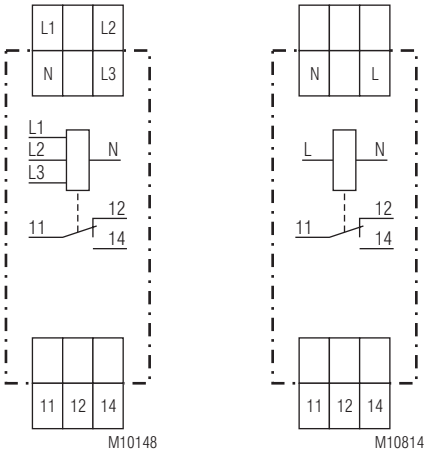
Indicators

Green LED:	On, when nominal voltage connected
Yellow LED:	On, when corresponding output relay is active
Yellow LED:	Flashes at failure with code: 1 x at undervoltage 2 x at overvoltage 3 x at phase reversal

Safety Notes

- Faults must only be removed when the relay is disconnected.
- The user has to make sure that the device and corresponding components are installed and wired according to the local rules and law (TUEV, VDE, Health and safety).
- Settings must only be changed by trained staff taking into account the safety regulations. Installation work must only be done when power is disconnected.
- If the connected system creates a reverse voltage above the undervoltage response value the failure cannot be detected.

Circuit Diagram



3-phase 1-phase

Connection Terminals

Terminal designation	Signal description
L1	Phase voltage L1
L2	Phase voltage L2
L3	Phase voltage L3
L	Phase voltage L
N	Neutral
11, 12, 14	Changeover contact (output relay)

Technical Data

Input

Measuring voltage = supply voltage
Nominal voltage U_N: 3/N AC 400/230V
Max. overload: 1.15 U_N continuously
Nominal consumption: Approx. 6 VA
Nominal frequency: 50 / 60 Hz
Measuring frequency range: 45 ... 65 Hz

Response value*):	**3-phase**	**1-phase**	
	3N AC 400 / 230 V	AC 400 V	AC 110 V
Undervoltage:	195.5 V	360 V	99 V
Overvoltage:	253 V	440 V	121 V
Hysteresis:	2.5 %	1.5 %	2.0 %
Accuracy:	± 3%		
Repeat accuracy:	< 2%		
Temperature influence:	< 1%		

*) the response values are fixed and measured against N

Reaction time: ≤ 50 ms
Overvoltage category: III (according to IEC 60664-1)

Output

Contacts: 1 changeover contact
Thermal current I_{th}: 4 A
Switching capacity
To AC 15:
NO contacts: 2 A / AC 230 V IEC/EN 60947-5-1
NC contacts: 1 A / AC 230 V IEC/EN 60947-5-1
Electrical life
To AC 15 at 1 A, AC 230 V: 1 x 10^5 switch. cycl. IEC/EN 60947-5-1
Mechanical life: 1 x 10^6 switching cycles

Technical Data

General Data

Nominal operating mode: Continuous operation
Temperature range:
Operation: - 25 ... + 60°C
Storage: - 25 ... + 70°C
Clearance and creepage distance
Contact / measuring voltage
Rated impuls voltage /
pollution degree: 6 kV / 2 IEC 60664-1
EMC
Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61000-4-2
HF-HF irradiation
80 MHz ... 2.7 GHz: 10 V / m IEC/EN 61000-4-3
Fast transients: 2 kV IEC/EN 61000-4-4
Surge voltages
Between power sypply: 1 kV IEC/EN 61000-4-5
Between wire and ground: 2 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
Enclosure: IP 40 IEC/EN 60529
Terminals: IP 20 IEC/EN 60529
Housing: Thermoplastic with VO behaviour acc. to UL subject 94
Vibration resistance: Amplitude 0.35 mm, Frequency 10 ... 55 Hz IEC/EN 60068-2-6
Climate resistance: 25 / 060 /04 IEC/EN 60068-1
Terminal designation: EN 50005
Wire connection: DIN 46228-1/-2/-3/-4
Fixed screw terminals
Cross section: 0.34 ... 2.5 mm² (AWG 22 - 14) solid or
0.34 ... 2.5 mm² (AWG 22 - 14) stranded wire with and without ferrules
Stripping length: 7 mm
Fixing torque: 0.5 Nm EN 60999-1
Wire fixing: Captive slotted screw / M2.5
Mounting: DIN-rail IEC/EN 60715
Weight: Approx. 70 g

Dimensions

Width x height x depth: 17.5 x 90 x 66 mm

Standard Type

RK 9872.11 3/N AC 400/230 V 50 / 60 Hz
Article number:: 0065075
- Output: 1 changeover contact
- Nominal voltage U_N: 3/N AC 400/230 V
- Width: 17.5 mm

Variant

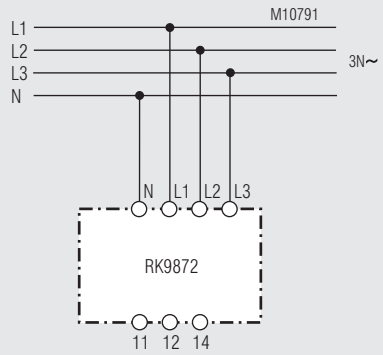
RK 9872.11/100: Undervoltage / overvoltage monitoring

Ordering example for variant

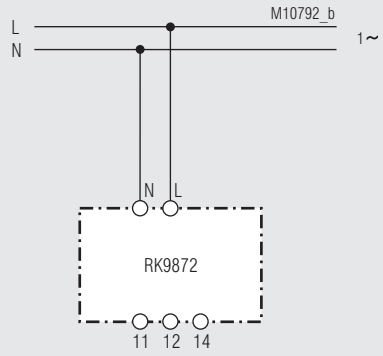
RK9872. 11 /1 0 0 3/N 400/230V 50/60Hz

- 50/60Hz — Nominal frequency
- 400/230V — Nominal voltage
  - 400 / 230 V
  - 400 V
  - 230 V
- 3/N — Voltage type:
  - 3/N 3-phase with Neutral
  - Single-phase
- 0 — 0 Standard
- 0 — 0 Without time delay
  1 With time delay 0.5 s
- 0 — 0 Function
  Undervoltage, Overvoltage, Phase sequence
  1 Function
  Undervoltage, Overvoltage
- 11 — Contacts
  .11 1 changeover contact
  .12 2 changeover contacts
- RK9872. — Type

Connection Examples



3-phase



1-phase