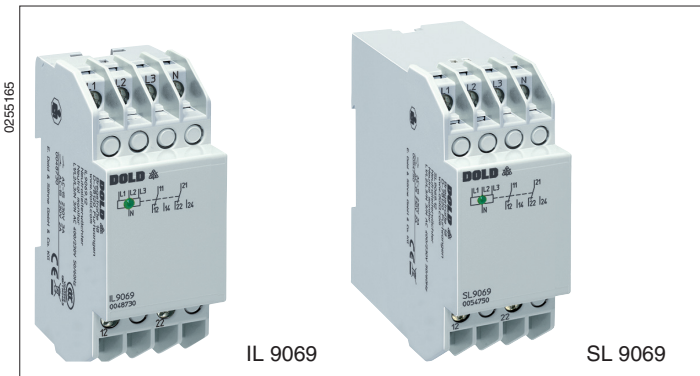


VARIMETER Neutral Monitor IL 9069, SL 9069

Translation
of the original instructions



Your Advantage

- Protects systems from damage caused by excessively high or low voltages with unbalanced loads.
- Preventive maintenance
- For better productivity

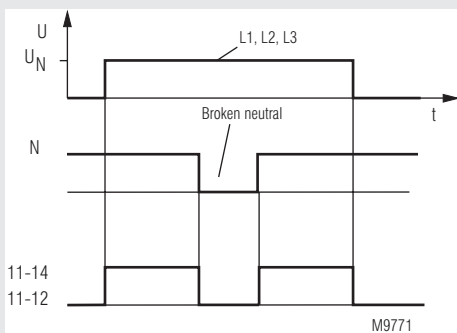
Features

- According to IEC/EN 60255-1
- Detection of
 - Missing neutral in the system
 - Broken neutral on IL/SL 9069
 - Neutral exchanged against phase
- Detection of phase failure also with disconnected load
- For 3-phase systems
- De-energized on trip
- LED indicator for operation/state of output contacts
- Single phase connection possible
- Without auxiliary voltage
- 2 changeover contacts
- Optionally with adjustable asymmetry detection and on delay
- Devices available in 2 enclosure version:
 - IL 9069: Depth 59 mm with terminals at the bottom for installations systems and industrial distribution systems according to DIN 43880
 - SL 9069: Depth 98 mm with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

Product Description

The IL/SL9069 neutral monitors in the VARIMETER series monitor the neutral conductor in electrical systems and three-phase networks. Monitoring is simple and does not require a great deal of wiring, as no auxiliary voltage is required. The detection of a missing neutral conductor, a phase or a reversal of the neutral conductor with a phase prevents costly damage and as a user you benefit from the operational safety and high availability of your system.

Function Diagram



Approval and Markings



* only for IL 9069

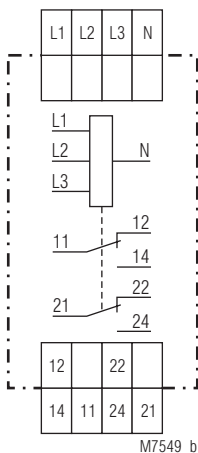
Application

Neutral monitoring in 3-phase systems

In 3-phase systems with neutral often also single phase loads are connected between phase and neutral. If the neutral is missing in a system like this, unsymmetric voltages occur, that could damage single phase consumers, if the voltage rises to high. Also consumers can stop to work if the phase-neutral voltage gets too low. The IL 9069 detects this problem and can switch off the system immediately.

To monitor mobile systems that are connected via plug connectors. On mobile systems that are connected by a very long cable, voltage drop can cause a significant asymmetry also during normal operation. For this case we recommend the variant IL/SL 9069.12/500 with an adjustable asymmetry setting (approx. 5 ...15%) and an additional response delay.

Circuit Diagram



IL 9069.12, SL 9069.12

Connection Terminals

Terminal designation	Signal description
L1, L2, L3,	Voltage supply / Measuring inputs
N	Neutral
11, 12, 14 21, 22, 24	Changeover contacts (output relay)

Function

All 3 phase voltages are measured between phase input L1, L2, L3 and the neutral N. If all 3 phases and the neutral are connected correctly and the asymmetry in good state, the green LED is on and the output relay is energized. If the neutral or one phase is missing or the neutral is exchanged with a phase or the asymmetry exceeds the setting value, the output relay de-energises immediately or after the adjusted time delay (with IL/SL 9069.12/500) and the green LED goes off. The time delay on IL/SL 9069.12/500 is only active when the voltage on terminals L3-N is at least $0,7 U_N$ as the unit is supplied from these terminals.

Indication

LED green: On, when output relay activated (contact 11-14 and 21-24 are closed)

Technical Data

Input

Nominal voltage U_N : 3/N AC 400 / 230 V
Max. overload: AC 440 V on all measuring inputs
Voltage range: 0.7 ... 1.1 U_N
Permissible asymmetry of the phase
IL/SL 9069.12: Max. 5 %
IL/SL 9069.12/500: Adjustable approx. 5 ... 15 %
Nominal consumption Approx. 6 VA (L3-N)
Nominal frequency: 50 / 60 Hz
Frequency range: 45 ... 65 Hz
Input current at U_N : L1-N, L2-N: Approx. 1.5 mA
L3-N: Approx. 25 mA

On delay

IL/SL 9069.12: Approx. 100 ms
IL/SL 9069.12/500: Approx. 0.1 ... 20 s, adjustable

Output

Contact

IL 9069.12, SL 9069.12: 2 changeover contacts
Contact material: AgNi 90/10
Measured nominal voltage: AC 250 V
Thermal current I_{th} : 4 A
Switching capacity
To AC 15: 3 A / AC 230 V IEC/EN 60947-5-1
To DC 13: 2 A / DC 24 V IEC/EN 60947-5-1

Electrical life

To AC 15 at 1 A, AC 230 V: $\geq 5 \times 10^5$ switch. cycl. IEC/EN 60947-5-1

Short circuit strength

max. fuse: 4 A gG / gL IEC/EN 60947-5-1

Mechanical life:

$\geq 30 \times 10^6$ switch. cycles

General Data

Operating mode: Continuous operation

Temperature range

Operation: - 25 ... + 60°C

Storage: - 25 ... + 80°C

Relative air humidity: 93 % at 40°C

Altitude: ≤ 2000 m

Clearance and creepage distances

Rated impulse voltage / pollution degree: 4 kV / 2 IEC 60664-1

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61000-4-2

HF irradiation

80 MHz ... 1 GHz: 10 V / m IEC/EN 61000-4-3

1 GHz ... 2.5 GHz: 10 V / m IEC/EN 61000-4-3

2.5 GHz ... 6 GHz: 10 V / m IEC/EN 61000-4-3

Fast transients: 4 kV IEC/EN 61000-4-4

Surge voltages

Between

wires for power supply: 2 kV IEC/EN 61000-4-5

Between wire and ground: 2 kV IEC/EN 61000-4-5

Interference suppression: Limit value class B EN 55011

Technical Data

Degree of protection

Housing: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Housing: Thermoplastic with V0 behaviour according 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: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled
DIN 46228-1/-2/-3/-4

Stripping length: 10 mm

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60999-1

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60715

Weight

IL 9069: 110 g

SL 9069: 137 g

Dimensions

Width x height x depth

IL 9069: 35 x 90 x 59 mm

SL 9069: 35 x 90 x 98 mm

Standard Type

IL 9069.12, 3/N AC 400 / 230 V, 50 / 60 Hz

Article number: 0048730

• Output: 2 changeover contacts

• Nominal voltage U_N : 3/N AC 400 / 230 V

• Width: 35 mm

SL 9069.12, 3/N AC 400 / 230 V, 50 / 60 Hz

Article number: 0054750

• Output: 2 changeover contacts

• Nominal voltage U_N : 3/N AC 400 / 230 V

• Width: 35 mm

Variant

IL/SL 9069.12/500: With adjustable asymmetry detection and adjustable on delay

Order example for variant

IL 9069 .12 / _ _ _ 3/N AC 400 / 230 V 50 / 60 Hz

