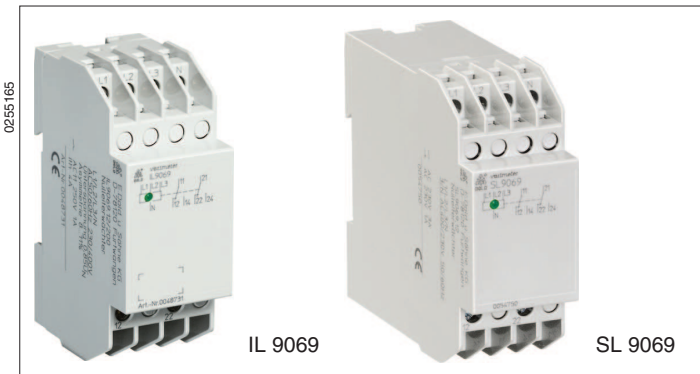
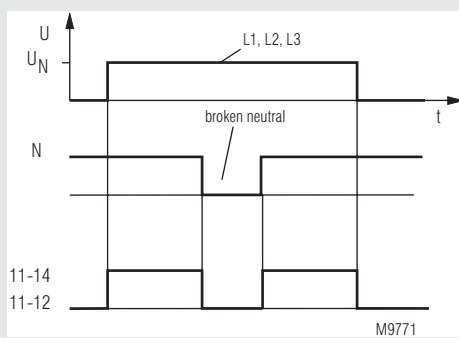


## VARIMETER Neutral Monitor IL 9069, SL 9069

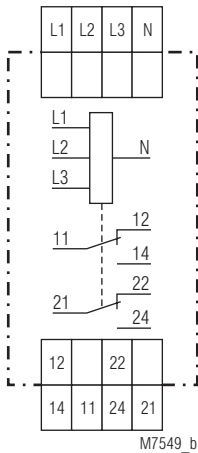


- According to IEC/EN 60 255-1
- Detection of
  - missing neutral in the system
  - broken neutral on IL/SL 9069
  - neutral exchanged against phase
- Detection of phase failure also with disconnected load
- For 3-phase systems
- De-energized on trip
- LED indicator for operation/state of output contacts
- 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 43 880
  - SL 9069: depth 98 mm with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

### Function Diagram



### Circuit Diagram



IL 9069.12, SL 9069.12

### 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.

### 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

<b>Nominal voltage <math>U_N</math>:</b>	3/N AC 400 / 230 V
<b>Max. overload:</b>	AC 440 V on all measuring inputs
<b>Voltage range:</b>	0.7 ... 1.1 $U_N$
<b>Permissible asymmetry of the phase</b>	
IL/SL 9069.12:	max. 5 %
IL/SL 9069.12/500:	adjustable approx. 5 ... 15 %
<b>Nominal consumption</b>	approx. 6 VA (L3-N)
<b>Nominal frequency:</b>	50 / 60 Hz
<b>Frequency range:</b>	45 ... 65 Hz
<b>Input current at <math>U_N</math>:</b>	L1-N, L2-N: approx. 1.5 mA L3-N: approx. 25 mA
<b>On delay</b>	
IL/SL 9069.12:	approx. 100 ms
IL/SL 9069.12/500:	approx. 0.1 ... 20 s, adjustable

### Output

<b>Contact</b>	
IL 9069.12, SL 9069.12:	2 changeover contacts
<b>Thermal current <math>I_{th}</math>:</b>	4 A
<b>Switching capacity</b>	
according to AC 15:	3 A / AC 230 V IEC/EN 60 947-5-1
according to DC 13:	2 A / DC 24 V IEC/EN 60 947-5-1
<b>Electrical life</b>	
to AC 15 at 1 A, AC 230 V:	$\geq 5 \times 10^5$ switch. cycl. IEC/EN 60 947-5-1
<b>Short circuit strength</b>	
<b>max. fuse:</b>	4 A gL IEC/EN 60 947-5-1
<b>Mechanical life:</b>	$\geq 30 \times 10^6$ switch. cycles

## General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range:</b>	-20 ... + 60°C
<b>Clearance and creepage distances</b>	
rated rated impulse voltage / pollution degree:	4 kV / 2 IEC 60 664-1
<b>EMC</b>	
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF irradiation:	10 V / m IEC/EN 61 000-4-3
Fast transients:	2 kV IEC/EN 61 000-4-4
Surge voltages	
between	
wires for power supply:	2 kV IEC/EN 61 000-4-5
between wire and ground:	2 kV IEC/EN 61 000-4-5
Interference suppression:	Limit value class B EN 55 011
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm, frequency 10 ... 55 Hz, IEC/EN 60 068-2-6
<b>Climate resistance:</b>	20 / 060 / 04 IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005
<b>Wire connection:</b>	2 x 2.5 mm <sup>2</sup> solid or 2 x 1.5 mm <sup>2</sup> stranded ferruled DIN 46 228-1/-2/-3/-4
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
<b>Fixing torque:</b>	0.8 Nm
<b>Mounting:</b>	DIN rail IEC/EN 60 715
<b>Weight</b>	
IL 9069:	110 g
SL 9069:	137 g

## Dimensions

<b>Width x height x depth</b>	
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
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## Order example for variant

IL 9069 .12 / _ _ _ 3/N AC 400 / 230 V 50 / 60 Hz	
	Nominal frequency
	Nominal voltage
	Variant, if required
	Contacts
	Type