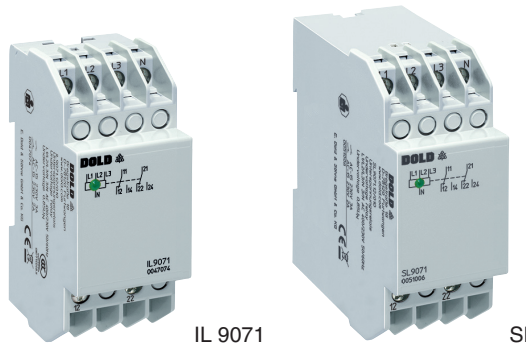
VARIMETER
Undervoltage Relay
IL 9071, SL 9071

Translation of the original instructions

0222092



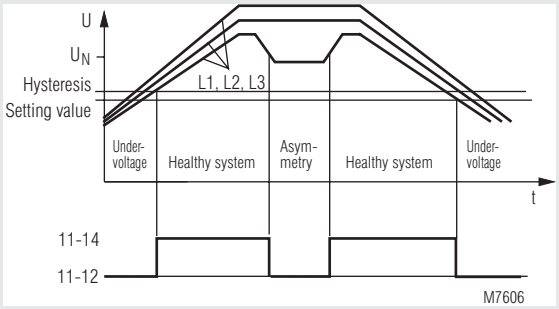
Product Description

The undervoltage relays IL 9071 and SL 9071 of the VARIMETER series monitor undervoltage, phase failure, asymmetry and missing neutral conductor in three-phase or single-phase networks. The measurement is very simple and without extensive wiring, as no separate auxiliary supply is necessary. 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.

Your advantages
- Preventive maintenance
- For better productivity

Features
- According to IEC/EN 60255-1
- Identification of
  - Undervoltage
  - Phase failure
  - Asymmetry also with reverse voltage
  - Missing neutral in the system
  - Broken neutral on IL/SL 9071
  - Neutral exchanged against phase in three-phase systems
- Single phase connection possible
- Without separate auxiliary voltage
- Fixed setting value (variable as an option)
- De-energized on trip
- LED indicator
- Independant of phase sequence
- 2 changeover contacts
- Acc. to DIN VDE 0100-710 (for rooms used for medical purposes) as option
- Devices available in 2 enclosure version:
  IL 9071: Depth 61 mm with terminals at the bottom for installations systems and industrial distribution systems acc. to DIN 43880
  SL 9071: Depth 98 mm with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

Function Diagram



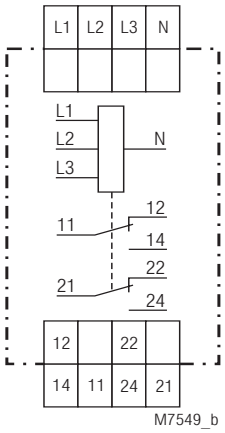
Additional Information about this topic

- Datasheet undervoltage relay IK/IL 9171

Approvals and Markings

*) Only IL 9071

Circuit Diagram



IL 9071.12, SL 9071.12

Connection Terminals

Terminal designation	Signal description
L1, L2, L3	Phase voltages L1, L2, L3
N	Neutral
11, 12, 14 21, 22, 24	Changeover contact (outputrelays)

Applications

Monitoring of three-phase voltage systems to identify undervoltage, asymmetry or phase failure and switching-on of safety lighting in accordance with DIN VDE 0108.

Neutral monitoring in 3-phase systems. In 3-phase systems with neutral often also single phase load 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 too high. Also consumers can stop to work if the phase-neutral voltage gets too low. The IL 9071 detects this problem and can switch of the system immediately.

Indicators

Green LED:	On, when the mains system is working properly (contact 11-14 and 21-24 closed)

Notes

For single phase operation the terminals L1, L2 and L3 have to be bridged

Technical Data

Input

Nominal voltage U_N:		
Single-phase connection:	AC 100 V, 115 V, 220 V, 230 V, AC 400 V, 415 V, 440 V, 500V	
3-phase without Neutral connection:	3AC 100 V, 115 V, 220 V, 230 V, 3AC 400 V, 415 V, 440 V, 500 V	
3-phasig with Neutral connection:	3/N AC 100 V / 58 V; 3/N AC 110 V / 64 V; 3/N AC 200 V / 115 V; 3/N AC 220 V / 127 V; 3/N AC 230 V / 133 V; 3/N AC 400 V / 230 V; 3/N AC 415 V / 240 V; 3/N AC 440V / 254 V; 3/N AC 500 V / 290 V	
Overload:	AC 440 V on all measuring inputs, for at least 1 h	
Voltage range:	0.7 ... 1.1 U_N	
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

Setting Ranges

Setting value U_{off}	
IL 9071/010, SL 9071/010:	0.7 U_N or 0.85 U_N(hysteresis approx. 4 %)
IL 9071/117, SL 9071/117:	0.7 ... 0.95 U_N (hysteresis approx. 4 %)
Asymmetry identification IL 9071/117, IL 9071/010, SL 9071/117, SL 9071/010:	Approx. 5 ... 10 % phase asymmetry

Technical Data

Output

Contacts		
IL 9071.12, SL 9071.12:	2 changeover contacts	
Contact material:	AgNi	
Switching voltage:	AC 250 V	
Thermal current I_{th}:	4 A	
Switching capacity		IEC/EN 60947-5-1
AC 15		
NO contact:	3 A / AC 230 V	
NC contact:	2 A / AC 230 V	
Electrical life		IEC/EN 60947-5-1
AC 15 at 1 A, AC 230 V:	5 x 10^5 switching cycles	
Short circuit strength		
max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	30 x 10^6 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range:		
Operation:	- 20 ... + 60 °C	
Storage:	- 25 ... + 60 °C	
Relative air humidity:	93 % at 40 °C	
Altitude:	≤ 2000 m	
Clearance and creepage distances		
Rated rated impulse voltage voltage / pollution degree		
Measuring Circuit to contacts:	6 kV / 2	IEC 60664-1
Contact to contacts:	4 kV / 2	IEC 60664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF irradiation		
80 MHz ... 1 GHz:	20 V / m	IEC/EN 61000-4-3
1 GHz ... 2.5 GHz:	20 V / m	IEC/EN 61000-4-3
2.5 GHz ... 6 GHz:	20 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
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:	20 / 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	
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 9071/010:	122 g	
SL 9071/010:	168 g	

Dimensions

Width x height x depth	
IL 9071:	35 x 90 x 61 mm
SL 9071:	35 x 90 x 98 mm

Standard Types

IL 9071.12/010 3/N AC 400 / 230 V 0.85 U_N
Article number: 0047074
SL 9071.12/010 3/N AC 400 / 230 V 0.85 U_N
Article number: 0051006

- With asymmetry detection
- 2 changeover contacts
- Nominal voltage U_N: AC 230 / 3 AC 400 V
- Setting value: 0.85 U_N
- Width: 35 mm

Variants

IL 9071/117, SL 9071/117: According to DIN VDE 0100-710, rooms used for medical purposes, variable setting value

Ordering example for variants