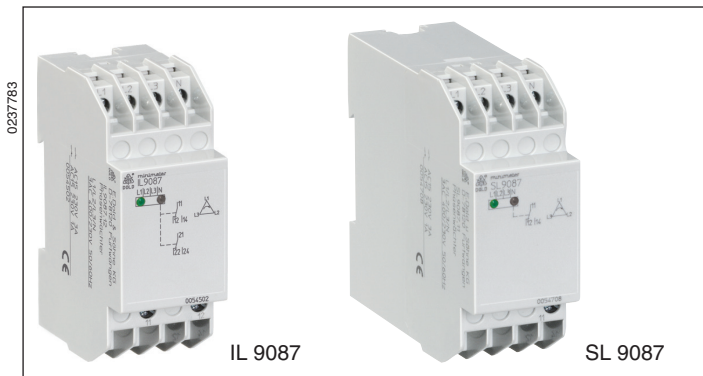


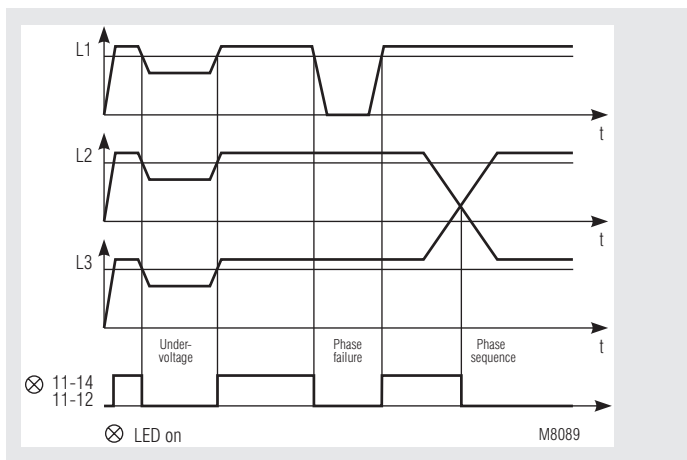
VARIMETER PRO Phase Monitor IL 9087, SL 9087

Translation
of the original instructions



- According to IEC/EN 60255-1
- Monitoring of phase failure
 - Undervoltage 3-phase 3 or 4 wire
 - Phase failure
 - Phase sequence
 - Loss of neutral
 - Phase asymmetry
- Without auxiliary supply
- De-energized on trip
- LED indication
 - Supply voltage
 - Phase failure
- 1 or 2 changeover contacts
- Devices available in 2 enclosure versions:
 - IL 9087: Depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43880
 - SL 9087: Depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

Function Diagram



Voltage

Approvals and Markings



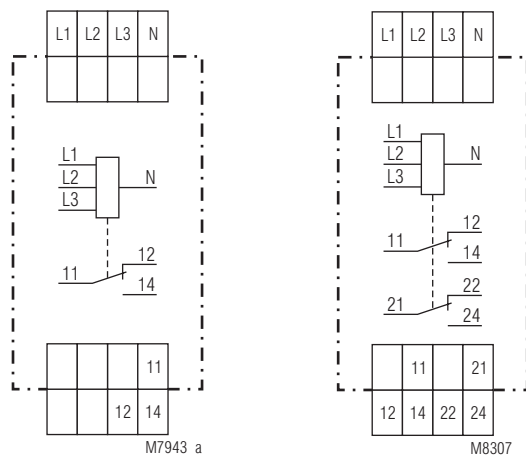
Applications

Monitoring of 3-phase systems with motors, e. g. for elevators.

Function

On a healthy voltage system both LEDs are on. If a voltage failure occurs the contact 11-14, 21-24 opens. In 3-phase voltage systems with unbalanced load the unit can also detect the loss of neutral on the input line of the system. If a neutral is not used the N-terminal remains unconnected.

Circuit Diagrams



IL 9087.11,
SL 9087.11

IL 9087.12,
SL 9087.12

Indicators

Left green LED: On when voltage connected
Right green LED: On when measuring voltage correct

Connection Terminals

Terminal designation	Signal description
L1, L2, L3, N	Measuring- or supply input
11, 12, 14; 21, 22, 24	Changeover contacts

Technical Data

Input

Nominal voltage U_N:	3 / N AC 400 / 230 V (other voltages on request)
Voltage range:	0.8 ... 1.1 U_N
Nominal frequency:	50 / 60 Hz
Frequency range:	45 ... 65 Hz
Undervoltage detection:	Approx. $0.7 \pm 0.15 \times U_N$
Asymmetry detection:	Approx. 20° phase asymmetry
Hysteresis:	$\leq 6\% \times U_N$
Response delay:	100 ... 300 ms
Operate delay:	15 ... 30 ms ($0V \Rightarrow U_N$)

Output

Contacts	
IL/SL 9087.11:	1 changeover contact
IL/SL 9087.12:	2 changeover contacts
Contact material:	AgNi 0.15 + 0.3 μm AU
Thermal current I_{th}:	2 x 4 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:	IEC/EN 60947-5-1
To AC 15 at 1 A, AC 230 V:	6 x 10 ⁵ switching cycles
Switching voltage:	Min. 10 V ; max. DC 120 V / AC 250 V
Switching current:	Min. 0.1 A ; max. 5 A
Switching capacity:	Min. 1 W, 1 VA; max. 120 W, 1250 VA
Short circuit strength	
Max. fuse rating:	4 A gG / gL IEC/EN 60947-5-1
Mechanical life:	> 10 ⁸ switching cycles

General Data

Operating mode:	Continuous operation
Temperature range	
Operation:	- 20 ... + 60 °C
Storage:	- 25 ... + 60 °C
Altitude:	< 2000 m
Input current	
L1:	Approx. 7 mA
L2:	Approx. 7 mA
L3:	Approx. 1.5 mA
Nominal consumption:	Approx. 3.5 VA
Clearance and creepage distances	
Rated impulse voltage / pollution degree	
Input/Output:	4 kV / 2 IEC 60664-1
EMC	
Electrostatic discharge:	8 kV (air) IEC/EN 61000-4-2
HF-irradiation	
80 MHz ... 2.7 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:	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:	
Housing:	IP 40 IEC/EN 60529
Terminals:	IP 20 IEC/EN 60529
Housing:	Thermoplastic with V0 behaviour according to UL Subj. 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
Wire connection	
Max. cross section:	2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46228-1/-2/-3/-4
Stripping length:	10 mm
Fixing torque:	0,8 Nm

Technical Data

Mounting:	DIN-rail	IEC/EN 60715
Weight		
IL 9087:	185 g	
SL 9087:	230 g	

Dimensions

Width x height x depth	
IL 9087:	35 x 90 x 59 mm
SL 9087:	35 x 90 x 98 mm

Classification to DIN EN 50155 for SL 9087

Vibration and shock resistance:	Category 1, Class B	IEC/EN 61373
Protective coating of the PCB:	No	

Standard Types

IL 9087.12	3 AC 400 V and 3 / N AC 400 / 230 V
Article number:	0054502
• Output:	2 changeover contacts
• Nominal voltage U_N :	3 AC 400 V and 3 / N AC 400 / 230 V
• Width:	35 mm
SL 9087.12	3 AC 400 V and 3 / N AC 400 / 230 V
Article number:	
• Output:	2 changeover contacts
• Nominal voltage U_N :	3 AC 400 V and 3 / N AC 400 / 230 V
• Width:	35 mm

Ordering Example

IL 9087	.11	3/N AC 400 / 230 V	50 / 60 Hz	
				Nominal frequency
				Measuring voltage
				Contacts
				Type

Connection Examples

