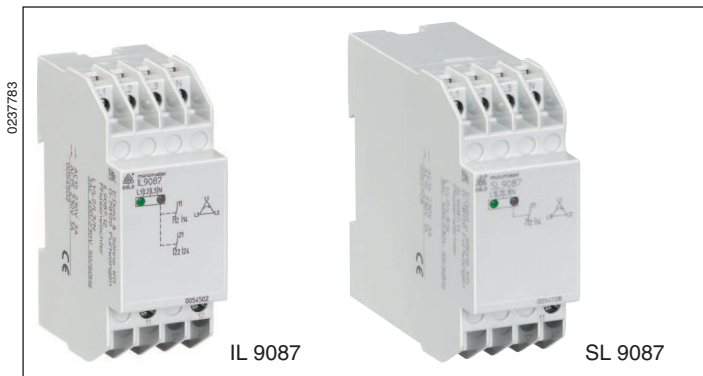


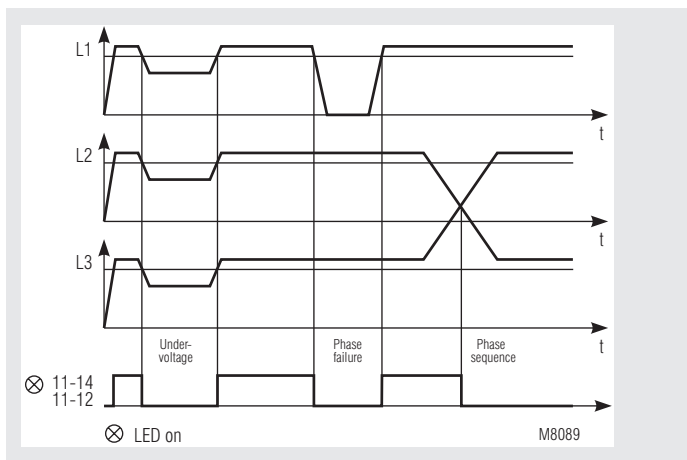
VARIMETER PRO Phase Monitor IL 9087, SL 9087



0237783

- According to IEC/EN 60 255-1
- 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 43 880
 - 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



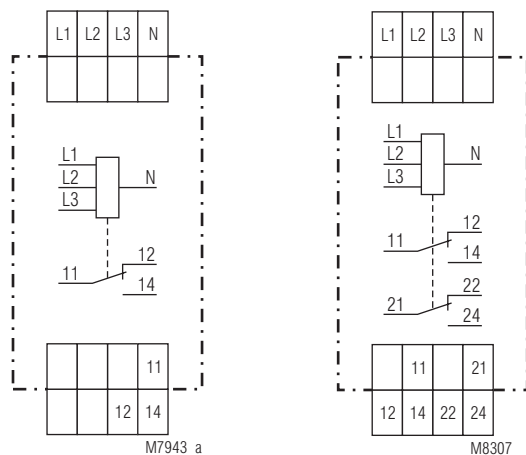
Applications

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 designation |
|------------------------|----------------------------|
| 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 60 947-5-1 |
| NC contact: | 1 A / AC 230 V IEC/EN 60 947-5-1 |
| Electrical life: | IEC/EN 60 947-5-1 |
| 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: | < 2.000 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 60 664-1 |
| EMC | | |
| Electrostatic discharge: | 8 kV (air) | IEC/EN 61 000-4-2 |
| HF-irradiation | | |
| 80 MHz ... 2.7 GHz: | 10 V/m | IEC/EN 61 000-4-3 |
| Fast transients: | 4 kV | IEC/EN 61 000-4-4 |
| Surge voltages between | | |
| wires for power supply: | 1 kV | IEC/EN 61 000-4-5 |
| between wire and ground: | 2 kV | IEC/EN 61 000-4-5 |
| HF wire guided: | 10 V | IEC/EN 61 000-4-6 |
| Interference suppression: | Limit value class B | EN 55 011 |
| Degree of protection: | | |
| Housing: | IP 40 | IEC/EN 60 529 |
| Terminals: | IP 20 | IEC/EN 60 529 |
| Housing: | Thermoplastic with V0 behaviour according to UL Subj. 94 | |
| Vibration resistance: | Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6 | |
| Climate resistance: | 20 / 060 / 04 | IEC/EN 60 068-1 |
| Wire connection max. cross section: | 2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46 228-1/-2/-3/-4 | |
| Stripping length: | 10 mm | |
| Fixing torque: | 0,8 Nm | |

Technical Data

| | | |
|------------------|----------|---------------|
| Mounting: | DIN-rail | IEC/EN 60 715 |
| 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 61 373 |
| 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

