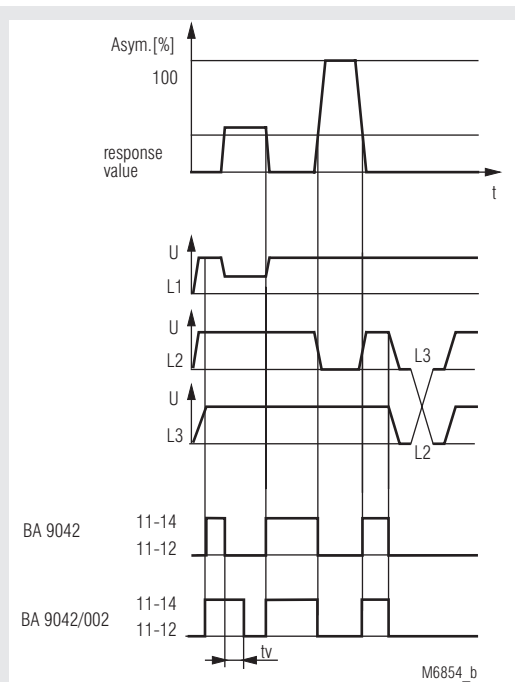


- According to IEC/EN 60255-1
- For nominal voltage from 3 AC 100 V to 500 V
- Detection of
 - voltage asymmetry
 - wrong phase sequence
 - phase failure
- Detection of feedback voltage
- Closed circuit operation
- LED indicators for operation and state of contacts
- Optionally with adjustable time delay
- Width 45 mm

Function Diagram



Approvals and Markings



Applications

Monitoring three-phase mains for voltage asymmetry, phase failure or incorrect phase sequence.

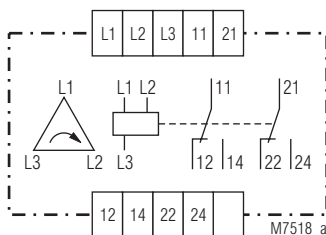
Function

The device responds to unsymmetric voltage changes, which can occur because of unbalanced load or phase failure (blown fuse). An asymmetry relay detects only the voltage difference between 2 phases and does not react on symmetric undervoltage.

Indicators

Red LED: On, when supply voltage connected
Green LED: On, when output relay energized

Circuit Diagrams



Notes

On ambient temperature > 20 °C overvoltage together with max. thermal current is not allowed. In industrial voltage systems with high harmonic content (content > 2 %) measuring faults can occur. Harmonics in industrial systems are caused by thyristor controls, emergency power supplies, reactive current compensators, etc.

Connection Terminals

| Terminal designation | Signal description |
|----------------------|---------------------------------------|
| L1, L2, L3 | Connection phase voltage (L1, L2, L3) |
| 11, 12, 14 | Indicator relay (1. C/O contact) |
| 21, 22, 24 | Indicator relay (2. C/O contact) |

Technical Data

Input

| | |
|--|---|
| Nominal voltage U_N: | 3 AC 100, 110, 127, 220, 240, 380, 400, 415, 440, 460, 480, 500 V |
| Voltage range: | 0.8 ... 1.1 U_N |
| Nominal consumption: | ≤ 3.8 VA |
| Nominal frequency: | 50 / 60 Hz |
| Frequency range: | ± 5 % |

Setting ranges

| | |
|--------------------------------------|--|
| Setting range: | 5 ... 15 % voltage asymmetry, settable |
| Hysteresis: | > 0.98 |
| Voltage feedback recognition: | up to 100 % - setting value, e.g. when setting value = 5 % asymmetry, 100 % - 5 % = 95 % Recognition of voltage feedback up to 95 % |

Output

| | |
|--|---|
| Contacts: | 2 changeover contacts |
| Release delay: (at phase failure or asymmetry) | ≤ 150 ms If the voltage system becomes again symmetric before 150 ms the contacts may switch |
| Operate delay: (delay of the contacts when switching on) | ≤ 500 ms |
| Thermal current I_{th}: | 6 A |
| Switching capacity to AC 15 | |
| NO contact: | 2 A / AC 230 V IEC/EN 60947-5-1 |
| NC contact: | 1 A / AC 230 V IEC/EN 60947-5-1 |
| to DC 13: | 1 A / DC 24 V IEC/EN 60947-5-1 |
| Electrical life at 1 A, AC 230 V, $\cos \varphi = 1$: | ≥ 2.5 x 10 ⁶ 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: | - 20 ... + 60 °C |
| Altitude: | < 2000 m |
| Clearance and creepage distances | |
| Rated impulse voltage / pollution degree | 4 kV / 2 IEC 60664-1 |
| Overvoltage category: | III *)) up to 3 AC 480 V |
| 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: | 2 kV IEC/EN 61000-4-4 |
| Surge voltages between | |
| wire for powers 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 subject 94 |
| Vibration resistance: | Amplitude 0.35 mm IEC/EN 60068-2-6 frequency 10 ... 55 Hz |
| Climate resistance: | 20 / 060 / 04 IEC/EN 60068-1 |
| Terminal designation: | EN 50005 |

Technical Data

| | |
|---------------------------------------|---|
| Wire connection: | 2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46228-1/-2/-3/-4 |
| Insulation of wires or sleeve length: | 8 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: | 310 g |

Dimensions

| | |
|--------------------------------|------------------|
| Width x height x depth: | 45 x 73 x 132 mm |
|--------------------------------|------------------|

Standard Type

| | |
|---------------------------|-----------------------|
| BA 9042 3 AC 400 V 50 Hz | |
| Article number: | 0040770 |
| • Output: | 2 changeover contacts |
| • Nominal voltage U_N : | 3 AC 400 V |
| • Width: | 45 mm |

Variant

| | |
|--------------|---|
| BA 9042/002: | With time delay $t_v = 0.5 ... 10$ s on asymmetry detection |
|--------------|---|

Ordering example for variant

