

Asymmetry relay BA 9042, AI 942 varimeter

0225073

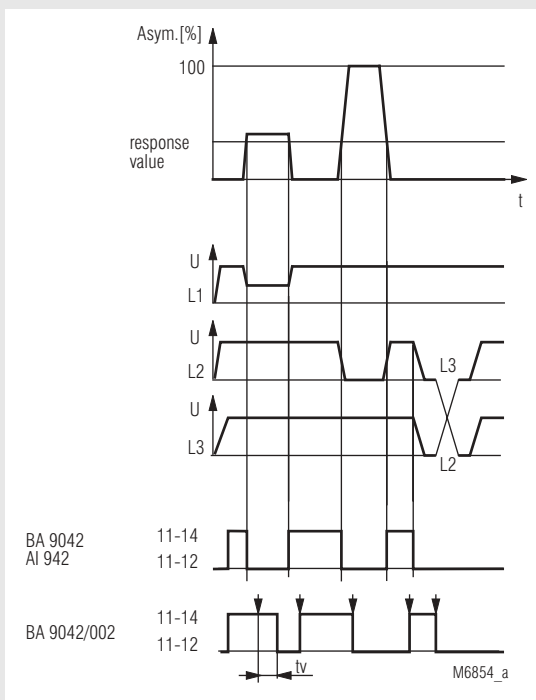


BA 9042

AI 942

- According to IEC 255, EN 60 255, VDE 0435 part 303
- For nominal voltage from 3 AC 230 V to 500 V
- Detection of
 - voltage asymmetry
 - wrong phase sequence
 - phase failure
- Detection of feedback voltage
- BA 9042 optionally with adjustable time delay
- Closed circuit operation
- BA 9042 LED indicators for operation and state of contacts
- Width 45 mm

Function diagram



Approvals and marking



Application

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.

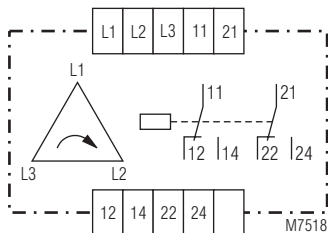
Indicators

| | |
|------------|-----------------------------------|
| BA 9042 | |
| red LED: | on, when supply voltage connected |
| green LED: | on, when output relay energized |

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. Normally the harmonic content of a voltage system is unknown. We recommend therefore to test a sample in the actual circuit which we can provide with the right to return. If problems occur during the test we are able to offer other solutions.

Circuit diagram



BA 9042 / AI 942

Technical data

Input

| | |
|--|-------------------------------------|
| Nominal voltage U_N: | 3 AC 230, 240, 400, 415, 440, 500 V |
| Voltage range: | 0,8 ... 1,1 U_N |
| Nominal consumption: | ≤ 3,8 VA |
| Nominal frequency: | 50 or 60 Hz |
| Frequency range: | ± 5 % |

Setting ranges

| | |
|-----------------------|--|
| Setting range: | 5 ... 15 % voltage asymmetry, settable |
|-----------------------|--|

Hysteresis

| | |
|-----------|--------|
| BA 9042 : | > 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 %

Technical data

Output

Contacts

| | |
|-------------|-----------------------|
| BA 9042: | 2 changeover contacts |
| AI 942.001: | 1 changeover contact |
| AI 942.002: | 2 changeover contacts |

Release delay:

(at phase failure or asymmetry)

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: 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

to AC 15 at 3 A, AC 230 V IEC/EN 60 947-5-1

AI 942.001: ≥ 5 x 10⁵ switching cycles

to AC 15 at 1 A, AC 230 V IEC/EN 60 947-5-1

BA 9042.12, AI 942.002: ≥ 2,5 x 10⁵ switching cycles

Short-circuit strength

max. fuse rating: 4 AgL IEC/EN 60 947-5-1

Mechanical life: > 30 x 10⁶ switching cycles

General data

Operating mode: Continuous operation

Temperature range: - 20 ... + 60°C

Clearance and creepage distances

overvoltage category / contamination level 4 kV / 2 IEC 60 664-1

EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

Fast transients: 2 kV IEC/EN 61 000-4-4

Surge voltages between

wire for powers supply: 1 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

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 subject 94

Vibration resistance: Amplitude 0,35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz

Climate resistance: 20 / 060 / 04 IEC/EN 60 068-1

Terminal designation: EN 50 005

Wire connection: 2 x 2,5 mm² solid or 2 x 1,5 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/-4

Wire fixing: Flat terminals with self-lifting clamping piece IEC/EN 60 999-1

Mounting: DIN rail IEC/EN 60 715

Weight

BA 9042: 310 g

AI 942: 300 g

Dimensions

Width x height x depth

BA 9042: 45 x 73 x 132 mm

AI 942: 45 x 77 x 127 mm

Standard type

BA 9042 3 AC 400 V 50 Hz

Article no.: 0040770 stock item

• Output: 2 changeover contacts

• Nominal voltage U_N : 3 AC 400 V

• Width: 45 mm

Variant

BA 9042/002: with time delay $t_v = 0,5 \dots 10$ s on asymmetry detection

Ordering example for Variant

BA 9042 /002 3 AC 400 V 50 Hz

Nominal frequency
Nominal voltage
Variant, if required
Type

AI 942 .001 3 AC 400 V 50 Hz

Nominal frequency
Nominal voltage
Contacts
Type

Accessories

AI 942:

K 70-34: Cover