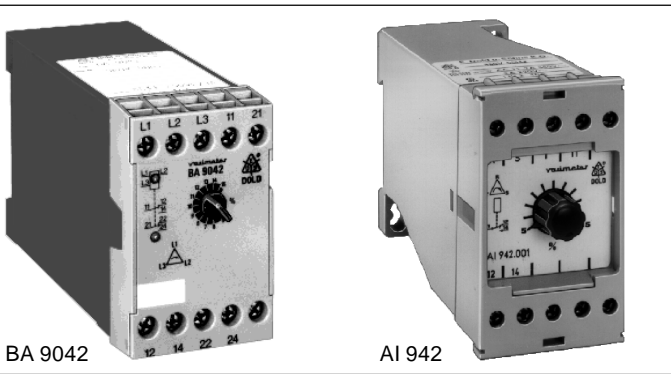


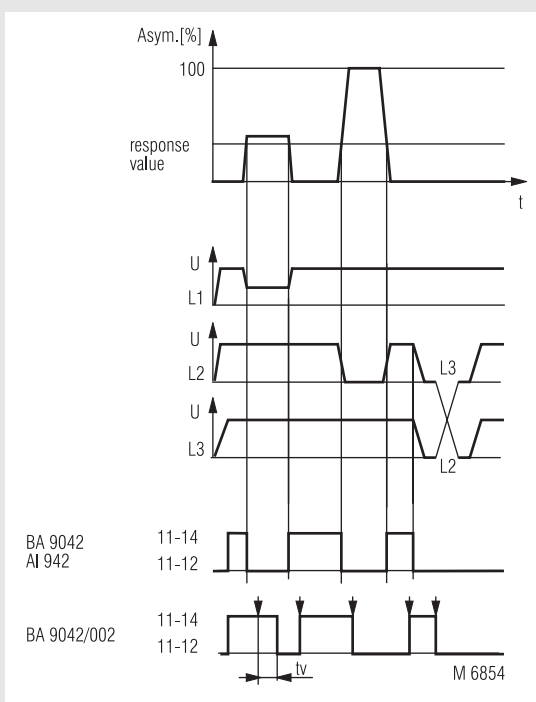
## Asymmetry relay BA 9042, AI 942 varimeter

0225073



- According to IEC 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.

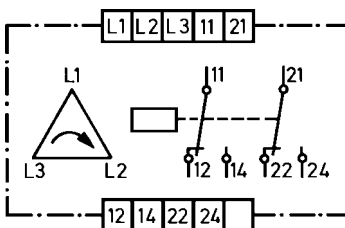
### Indicators

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

### Standard type

BA 9042	3 AC 400 V	50/60 Hz	
Article no.:	0040770		stock item
• Output:	2 changeover contacts		
• Nominal voltage $U_N$ :	3 AC 400 V		

### Variants

AI 942.../66:	with GL-approval
BA 9042/002:	with time delay $t_v = 0,5 \dots 10$ s on asymmetry detection

## Technical data

### Input

<b>Nominal voltage <math>U_N</math>:</b>	3 AC 230, 240, 400, 415, 440, 500 V
<b>Voltage range:</b>	0,8 ... 1,1 $U_N$
<b>Nominal consumption:</b>	≤ 3,8 VA
<b>Nominal frequency:</b>	50 / 60 Hz
<b>Frequency range:</b>	± 5 %

### Setting ranges

<b>Setting range:</b>	5 ... 15 % voltage asymmetry, settable
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### Hysteresis

BA 9042 :	> 0,98
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### 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

BA 9042: 2 changeover contacts

AI 942.001: 1 changeover contact

AI 942.002: 2 changeover contacts

**Release delay:** ≤ 150 ms

(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 11: 3 A / AC 230 V DIN VDE 0660 p. 200

**Electrical life** EN 60 947-5-1

to AC 15 at 3 A, AC 230 V

AI 942.001: ≥ 5 x 10<sup>5</sup> switching cycles

to AC 15 at 1 A, AC 230 V

BA 9042.12, AI 942.002: ≥ 2,5 x 10<sup>5</sup> switching cycles

**Short-circuit strength**

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

**Mechanical life:** > 30 x 10<sup>6</sup> switching cycles

### General data

**Operating mode:** Continuous operation

**Temperature range:** - 20 ... + 60°C

#### Clearance and creepage distances

overvoltage category /  
contamination level 4 kV / 2 DIN VDE 0110-1 (04.97)

#### EMC

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

HF irradiation: 10 V/m EN 61 000-4-3

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

Surge voltages: 1 kV EN 61 000-4-5

Interference suppression: Limit value class B EN 55 011

**Degree of protection:** Housing: IP 40 EN 60 529

Terminals: IP 20 EN 60 529

**Housing:** Thermoplastic with V0 behaviour according to UL subject 94

**Vibration resistance:** Amplitude 0,35 mm  
frequency 10 ... 55 Hz EN 60 068-2-6  
20 / 60 / 04 EN 60 068-1

**Climate resistance:**

**Terminal designation:** EN 50 005

**Wire connection:** 2 x 2,5 mm<sup>2</sup> solid or  
2 x 1,5 mm<sup>2</sup> stranded wire with sleeve  
DIN 46 228-1/-2/-3/-4

**Wire fixing:** Flat terminals with self-lifting  
clamping piece EN 60 999

**Mounting:** DIN rail EN 50 022

#### Weight

BA 9042: 310 g

AI 942: 300 g

## Ordering example

BA 9042 /002 3 AC 400 V 50/60 Hz

Nominal frequency  
Nominal voltage  
Variant  
Type

AI 942 .001 /66 3 AC 400 V 50 Hz

Nominal frequency  
Nominal voltage  
Variant  
Contacts  
Type

## Dimensions

Width x height x depth

BA 9042: 45 x 73 x 132 mm

AI 942: 45 x 77 x 127 mm

## Accessories

AI 942:

K 70-34: Cover