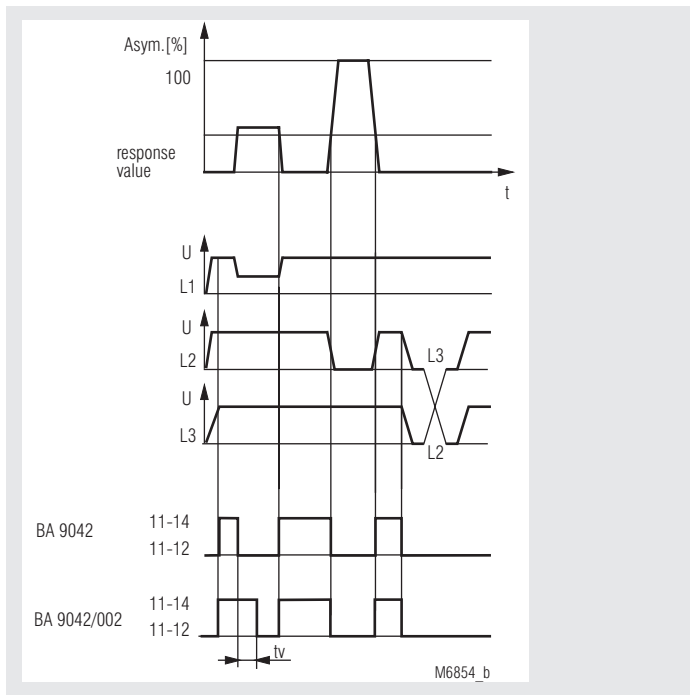


## VARIMETER Asymmetry Relay BA 9042



- According to IEC 255, EN 60 255-1
- 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.

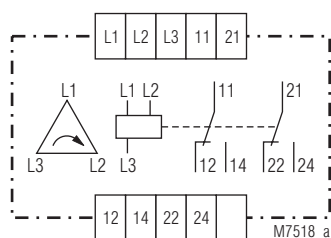
### Function

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



### Connection Terminals

Terminal designation	Signal designation
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)

### 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.

## Technical Data

### Input

<b>Nominal voltage <math>U_N</math>:</b>	3 AC 100, 110, 127, 220, 240, 380, 400, 415, 440, 460, 480, 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
<b>Hysteresis:</b>	> 0.98
<b>Voltage feedback recognition:</b>	up to 100 % - setting value, e.g. when setting value = 5 % asymmetry, 100 % - 5 % = 95 % Recognition of voltage feedback up to 95 %

### Output

<b>Contacts:</b>	2 changeover contacts
<b>Release delay:</b> (at phase failure or asymmetry)	≤ 150 ms  If the voltage system becomes again symmetric before 150 ms the contacts may switch
<b>Operate delay:</b> (delay of the contacts when switching on)	≤ 500 ms
<b>Thermal current <math>I_{th}</math>:</b>	6 A
<b>Switching capacity</b> to AC 15	
NO contact:	2 A / AC 230 V IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60 947-5-1
to DC 13:	1 A / DC 24 V IEC/EN 60 947-5-1
<b>Electrical life</b> to AC 15 at 1 A, AC 230 V:	≥ 2.5 x 10 <sup>6</sup> switch. cycl. IEC/EN 60 947-5-1
<b>Short-circuit strength</b> <b>max. fuse rating:</b>	4 A gG / gL IEC/EN 60 947-5-1
<b>Mechanical life:</b>	> 30 x 10 <sup>6</sup> switching cycles

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range</b>	
Operation:	- 20 ... + 60 °C
Storage:	- 20 ... + 60 °C
<b>Altitude:</b>	< 2.000 m
<b>Clearance and creepage distances</b>	
rated impulse voltage / pollution degree	4 kV / 2 IEC 60 664-1
<b>EMC</b>	
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:	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
HF wire guided:	10 V IEC/EN 61 000-4-6
Interference suppression:	Limit value class B EN 55 011
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz
<b>Climate resistance:</b>	20 / 060 / 04 IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005

## Technical Data

<b>Wire connection:</b>	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
Insulation of wires or sleeve length:	8 mm
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
<b>Fixing torque:</b>	0.8 Nm
<b>Mounting:</b>	DIN rail IEC/EN 60 715
<b>Weight:</b>	310 g

### Dimensions

<b>Width x height x depth:</b>	45 x 73 x 132 mm
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### 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
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### Ordering example for variant

