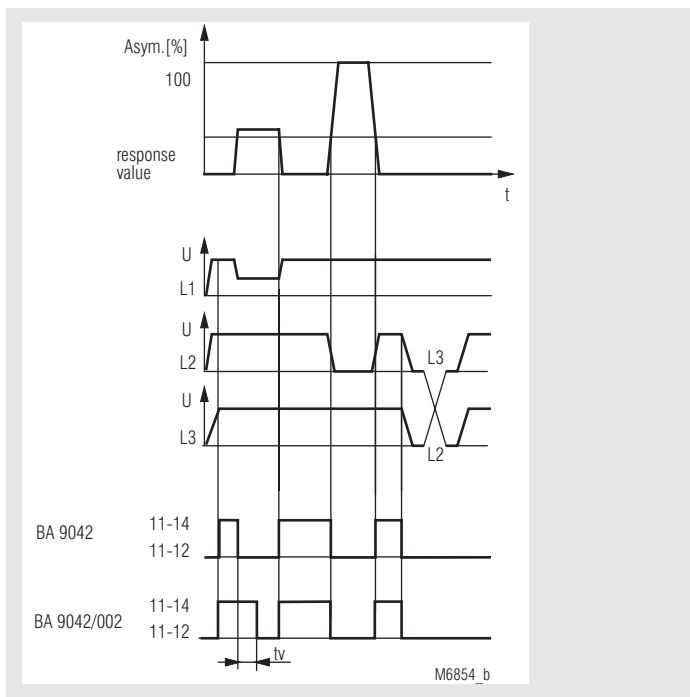


VARIMETER Asymmetry Relay BA 9042



- 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.

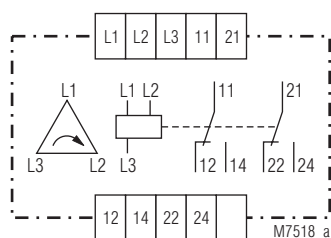
Function

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



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.

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)

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 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
Electrical life to AC 15 at 1 A, AC 230 V:	≥ 2.5 x 10 ⁶ switch. cycl. IEC/EN 60 947-5-1
Short-circuit strength max. fuse rating:	4 A gG / gL IEC/EN 60 947-5-1
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:	< 2.000 m
Clearance and creepage distances	
rated impulse voltage / pollution degree	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:	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
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

Technical Data

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

Dimensions

Width x height x depth:	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

