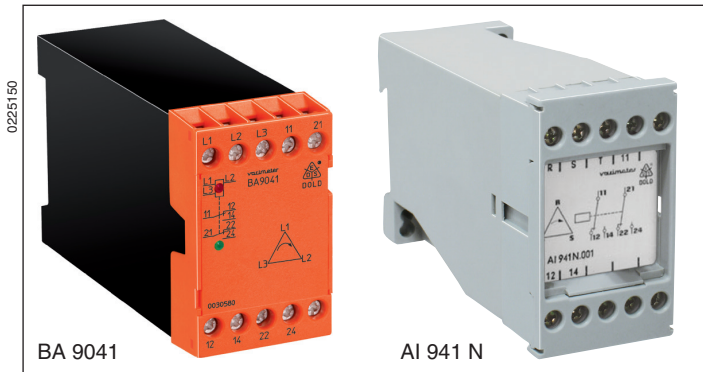
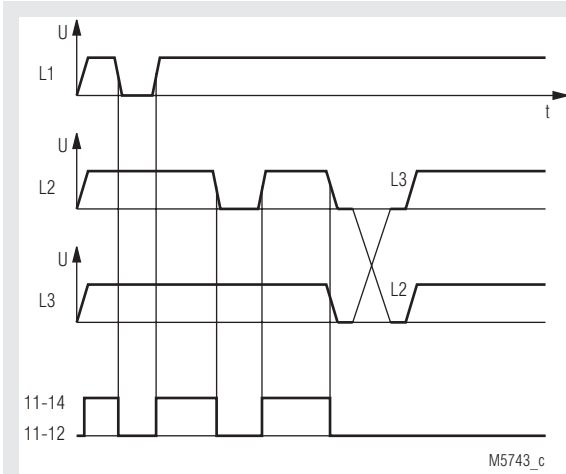


VARIMETER Phase Sequence Relay BA 9041, AI 941 N



- According to IEC/EN 60 255-1
- Detection of wrong phase sequence
- 1 or 2 changeover contacts
- Width 45 mm

Function Diagram



Approvals and Markings



Applications

Monitoring three-phase mains for incorrect phase sequence

Function

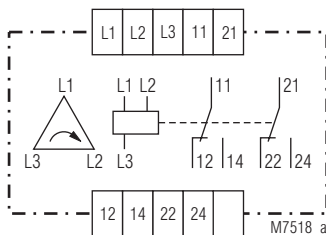
The phase sequence relays BA 9041 and AI 941N monitor the right order of the phases in a 3-phase system. When all 3 phases are connected to the device and the phase sequence is correct the output contacts are activated, 11-14 and 21-24 close and a green LED comes on.

When the voltage in one phase drops below 60 % of the nominal voltage the relay is de-energized. If a load feeds back a voltage that is higher than 60 % U_N the fault is not detected. To avoid this problem an asymmetry relay BA 9040 should be used.

In systems with commutation peaks (thyristor controlled drives) the device can falsely detect a phase failure.

In this case it is helpful to know as much as possible about the actual conditions in the system.

Circuit Diagram



BA 9041, AI 941 N.002

Connection Terminals

Terminal designation	Signal description
L1, L2, L3	Connection of the monitoring 3-phase system
11, 12, 14	1. changeover contact
21, 22, 24	2. changeover contact

Technical Data

Input

Nominal voltage U_N:	3 AC 190, 220, 230, 240, 380, 400, 415, 440, 500 V
Voltage range:	0.8 ... 1.1 U_N
Nominal frequency of U_N:	50 Hz (60 Hz on request)
Frequency range:	$\pm 5\%$
Nominal consumption:	< 3.5 VA

Output

Contacts

AI 941 N.001:	1 changeover contact
AI 941 N.002, BA 9041:	2 changeover contacts
Operate-/release delay:	< 100 / < 50 ms
Thermal current I_{th}:	5 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
Electrical life to AC 15 at 3 A, AC 230 V:	2.5 x 10 ⁵ switching cycles 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
Overvoltage category:	III up to 3 AC 480 V
Overvoltage category:	II for 3 AC 500 V
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	
wires for power 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
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
Stripping length:	10 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:	
BA 9041:	310 g
AI 941 N:	300 g

Dimensions

Width x height x depth

BA 9041:	45 x 73,2 x 119,8 mm
AI 941 N:	45 x 77 x 115 mm

Standard Type

BA 9041 AC 400 V 50 Hz	
Article number:	0041732
• Output:	2 changeover contacts
• Nominal voltage U_N :	AC 400 V
• Width:	45 mm

Variant

AI 941 N. ___ /03:	Nominal frequency 50 ... 60 Hz, phase failure cannot be detected with this unit
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Ordering example for variants

