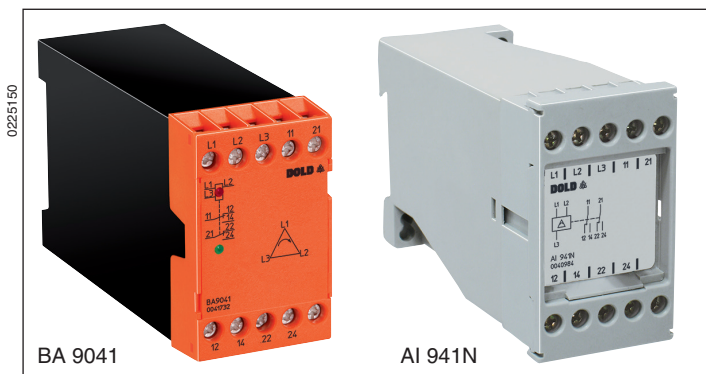


VARIMETER Phase Sequence Relay BA 9041, AI 941N

Translation
of the original instructions



- According to IEC/EN 60255-1
- Detection of wrong phase sequence
- 1 or 2 changeover contacts
- Width 45 mm

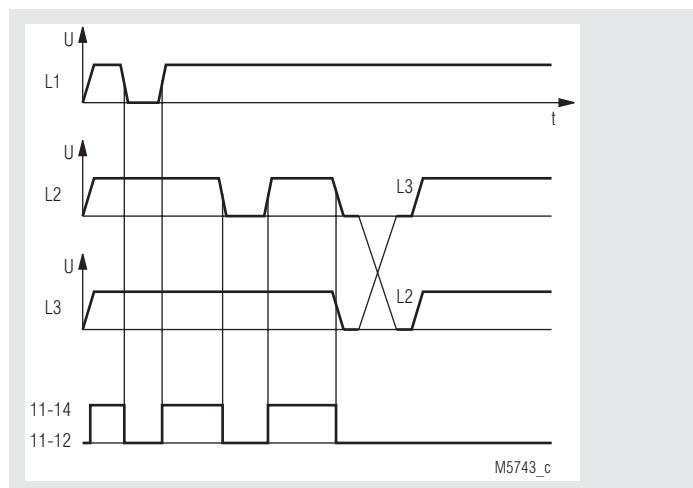
Product Description

The phase sequence relays BA 9041 and AI 941N monitor the right order of the phases in a 3-phase system.

Approvals and Markings



Function Diagram



Applications

Monitoring three-phase mains for incorrect phase sequence

Function

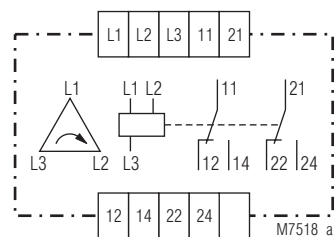
When all 3 phases are connected to the device and the phase sequence is correct the output contacts are activated, 11-14 and 21-24 close and a green LED comes on.

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 (e. g. 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 941N.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

BA 9043: 3 AC 220, 380, 400, 415, 440, 500 V
AI 941N: 3 AC 380, 400, 500 V

Voltage range: 0.8 ... 1.1 U_N

Nominal frequency of U_N :

BA 9043: 50 Hz (60 Hz on request)
AI 941N: 50 Hz

Frequency range: $\pm 5\%$

Nominal consumption: < 3.5 VA

Output

Contacts

BA 9041, AI 941N.002: 2 changeover contacts

AI 941N.001: 1 changeover contact

Operate-/release delay: < 100 / < 50 ms

Thermal current I_{th} : 5 A

Switching capacity

To AC 15

BA 9041, AI 941N.002:

NO contact: 2 A / AC 230 V IEC/EN 60947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60947-5-1

AI 941N.001

NO contact: 3 A / AC 230 V IEC/EN 60947-5-1

NC contact: 3 A / AC 230 V IEC/EN 60947-5-1

Electrical life IEC/EN 60947-5-1

To AC 15 at 3 A, AC 230 V: 2.5×10^5 switching cycles

Short-circuit strength

max. fuse rating: 4 A gG / gL IEC/EN 60947-5-1

Mechanical life: 30×10^6 switching cycles

General Data

Operating mode: Continuous operation

Temperature range:

Operation: -20 ... +60 °C

Storage: -20 ... +60 °C

Altitude: ≤ 2000 m

Clearance and creepage distances

Rated impulse voltage / pollution degree: 4 kV / 2 IEC 60664-1

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 61000-4-2

HF irradiation

80 MHz ... 2,7 GHz: 10 V/m IEC/EN 61000-4-3

Fast transients: 2 kV IEC/EN 61000-4-4

Surge voltages

Between

wires for power supply: 1 kV IEC/EN 61000-4-5

Between wire and ground: 2 kV IEC/EN 61000-4-5

HF-wire guided: 10 V IEC/EN 61000-4-6

Interference suppression: Limit value class B EN 55011

Degree of protection:

Housing: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Housing: Thermoplastic with V0 behaviour

according to UL subject 94

Vibration resistance: Amplitude 0.35 mm, IEC/EN 60068-2-6

frequency 10 ... 55 Hz

Climate resistance: 20 / 060 / 04 IEC/EN 60068-1

Terminal designation: EN 50005

Wire connection: 2 x 2.5 mm² solid or

2 x 1.5 mm² stranded wire with sleeve

DIN 46228-1/-2/-3/-4

Stripping length: 10 mm

Wire fixing: Flat terminals with self-lifting

clamping piece IEC/EN 60999-1

Fixing torque: 0.8 Nm

Mounting: DIN rail IEC/EN 60715

Weight:

BA 9041: 310 g

AI 941N: 300 g

Dimensions

Width x height x depth

BA 9041: 45 x 73,2 x 119,8 mm

AI 941N: 45 x 77 x 115 mm

Standard Type

BA 9041 AC 400 V 50 Hz

Article number: 0041732

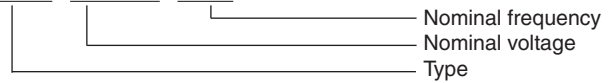
• Output: 2 changeover contacts

• Nominal voltage U_N : AC 400 V

• Width: 45 mm

Ordering examples

BA 9041 AC 400 V 50 Hz



AI 941N .001 AC 400 V 50 Hz

