

VARIMETER Phase Sequence Relay MK 9056N

Translation
of the original instructions



Your Advantage

- Correct sense of rotation of motors
- Simple wiring

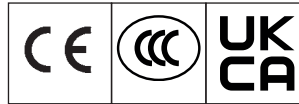
Features

- According to IEC/EN 60255-1
- Detection of wrong phase sequence
- LED indication of rotation
- 2 changeover contacts
- Wire connection: also 2 x 1.5 mm² stranded ferruled, or 2 x 2.5 mm² solid DIN 46228-1/-2/-3/-4
- As option with pluggable terminal blocks for easy exchange of devices
 - With screw terminals
 - Or with cage clamp terminals
- Width 22.5 mm

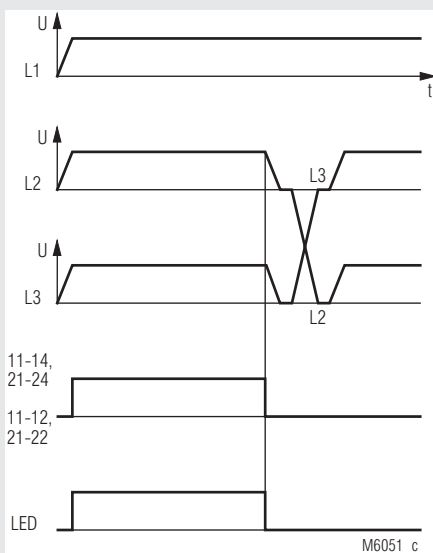
Product Description

The MK 9056N detect wrong phase sequence in 3-phase systems. To monitor phase failure it is more suitable to use an Asymmetry relay e.g. MK 9040N.

Approvals and Markings



Function Diagram



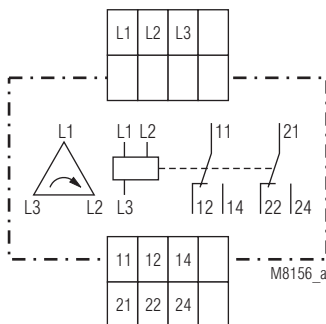
Indicators

Green LED: On, when corresponding output relay is active

Connection Terminals

Terminal designation	Signal description
L1, L2, L3	Connection of the monitoring 3-phase system
11, 12, 14; 21, 22, 24	"incorrect phase sequence-signaling relays (2 changeover contacts)"

Circuit Diagram



Technical Data

Input

Nominal voltage U_N:	3 AC 42 ... 60 V, 100 ... 127 V 3 AC 220 ... 240, 380 ... 500 V
Voltage range:	0.9 ... 1.1 U_N
Nominal frequency of U_N:	50 / 60 Hz
Nominal consumption:	Approx. 2 W

Output

Contact:	2 changeover contacts
Operate / release delay:	< 100 / 50 ms
Thermal current I_{th}:	Max. 5 A (see quadratic total current limit curve)

Switching capacity

To AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60947-5-1
To DC 13		
NO contact:	1 A / DC 24 V	IEC/EN 60947-5-1
NC contact:	1 A / DC 24 V	IEC/EN 60947-5-1

Electrical life

To AC 15 at 3 A, AC 230 V:	5 x 10 ⁵ switch. cycles	IEC/EN 60947-5-1
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Short circuit strength

Max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	> 20 x 10 ⁶ switching cycles	

General Data

Operating mode:	Continuous operation
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Temperature range:

Operation:	- 20 ... + 60 °C
Storage:	- 20 ... + 60 °C

Altitude:

	≤ 2000 m
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Clearance and creepage distances

Rated impulse voltage / pollution degree:	IEC 60664-1
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L1, L2, L3 to 11, 12, 14; 21, 22, 24:	6 kV / 2
11, 12, 14 to 21, 22, 24:	4 kV / 2

EMC

Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF irradiation 80 MHz ... 6 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:	2 kV	IEC/EN 61000-4-5
Between wire and ground:	4 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, frequency 10 ... 55 Hz,	IEC/EN 60068-2-6
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Climate resistance:	20 / 060 / 04	IEC/EN 60068-1
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Technical Data

Terminal designation:

EN 50005

Wire connection

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

Screw terminals

(integrated):

1 x 4 mm ² solid or
1 x 2.5 mm ² stranded ferruled or
2 x 1.5 mm ² stranded ferruled or
2 x 2.5 mm ² solid

Insulation of wires

or sleeve length:	8 mm
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Plug in with screw terminals

Max. cross section

for connection:	1 x 2.5 mm ² solid or 1 x 2.5 mm ² stranded ferruled
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Insulation of wires

or sleeve length:	8 mm
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Plug in with cage

clamp terminals

Max. cross section

for connection:	1 x 4 mm ² solid or 1 x 2.5 mm ² stranded ferruled
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Min. cross section

for connection:	0.5 mm ²
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Insulation of wires

or sleeve length:	12 ±0.5 mm
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Wire fixing:

Plus-minus terminal screws M 3.5
box terminals with wire protection or
cage clamp terminals

	0.8 Nm
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Fixing torque:

Mounting:

Weight:

DIN rail IEC/EN 60715

Approx. 140 g

Dimensions

Width x height x depth:

MK 9056N:	22.5 x 90 x 97 mm
MK 9056N PC:	22.5 x 111 x 97 mm
MK 9056N PS:	22.5 x 104 x 97 mm

CCC-Data

Auxiliary voltage U_N :

3 AC 42-60 V, 3 AC 100-127V, 3 AC 220-240 V
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Switching capacity

To AC 15

NO contact:	1,5 A / AC 230 V	IEC/EN 60947-5-1
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Technical data that is not stated in the CCC-Data, can be found in the technical data section.

Standard Types

MK 9056N.12 AC 380 ... 500 V 50 / 60 Hz

Article number: 0054183

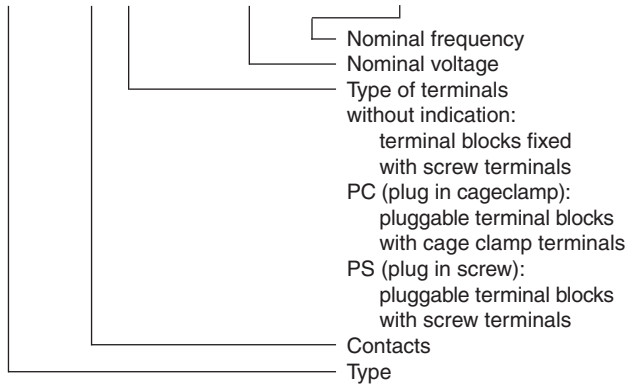
• Output: 2 changeover contacts

• Nominal voltage U_N : AC 380 ... 500 V

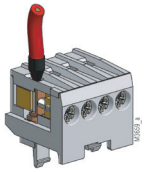
• Width: 22.5 mm

Ordering Example

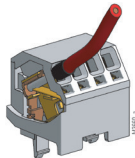
MK 9056N. 12 _ _ / 3 AC 380 ... 500 V 50 / 60 Hz



Options with Pluggable Terminal Blocks



Screw terminal
(PS/plugin screw)

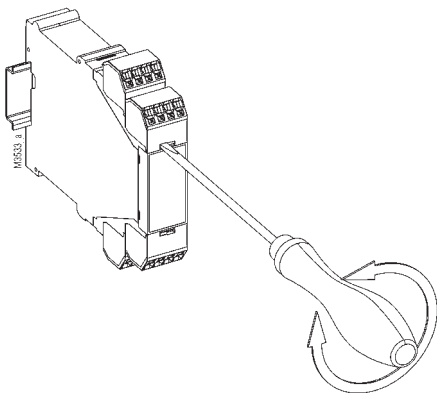


Cage clamp
(PC/plugin cage clamp)

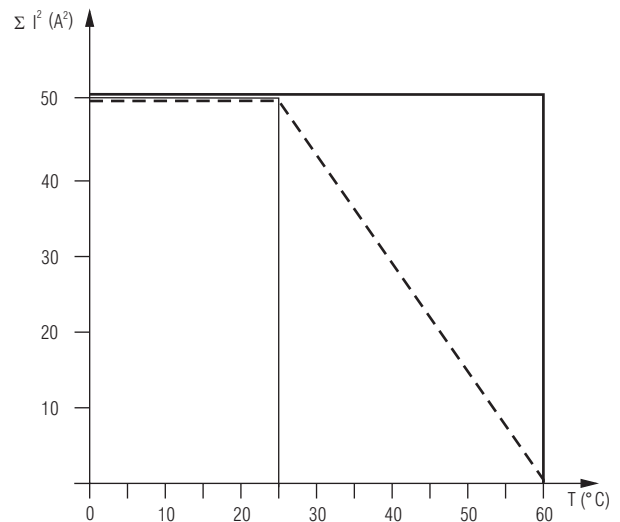
Notes

Removing the terminal blocks with cage clamp terminals

1. The unit has to be disconnected.
2. Insert a screwdriver in the side recess of the front plate.
3. Turn the screwdriver to the right and left.
4. Please note that the terminal blocks have to be mounted on the belonging plug in terminations.



Characteristics



M12559_a

Device mounted on distance with air circulation.

Max. current at 60°C over

2 contact paths = $5A \hat{=} 2 \times 5^2 A^2 = 50A^2$

Device mounted without distance heated by

devices with same load.

Max. current at 60°C over

2 contact paths = $0,5A \hat{=} 2 \times 0,5^2 A^2 = 0,5A^2$

$$\Sigma I^2 = I_1^2 + I_2^2$$

I_1, I_2 - Current in contact paths

Quadratic total current limit curve

