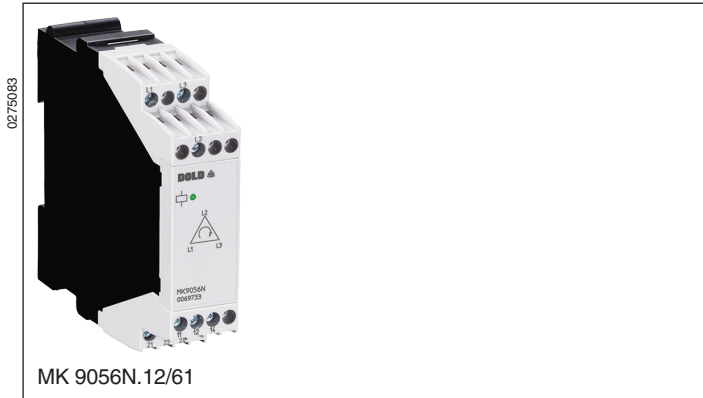


VARIMETER Phase Sequence Relay MK 9056N

Translation
of the original instructions



Your Advantage

- Correct sense of rotation of motors
- Simple wiring
- 2 Changeover contacts

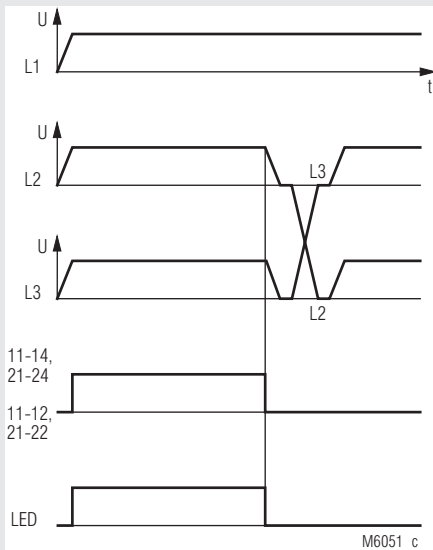
Features

- According to IEC/EN 60255-1
- Detection of wrong phase sequence
- LED indication of rotation
- 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.

Function Diagram



Approvals and Markings



¹⁾ see CCC-Data
²⁾ see variants

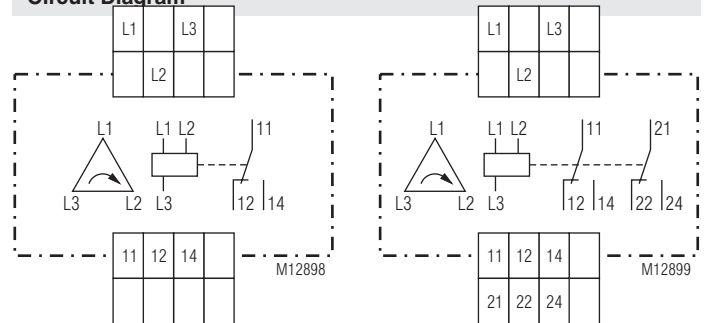
Indicators

Green LED: On, when corresponding output relay is active

Connection Terminals

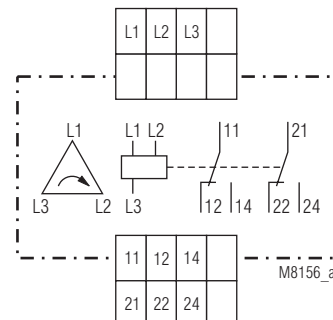
Terminal designation	Signal description
L1, L2, L3	Connection of the monitoring 3-phase system
11, 12, 14; 21, 22, 24	"incorrect phase sequence-signaling relays (changeover contacts)"

Circuit Diagram



MK 9056N.11/61

MK 9056N.12/61



MK 9056N.12

Technical Data

Input

Nom. voltage U_N (L1/L2/L3):	3 AC 42 ... 60 V, 100 ... 127 V 3 AC 220 ... 240, 380 ... 500 V
Voltage range:	0.85 ... 1.1 U_N
Nominal frequency of U_N:	50 / 60 Hz
Nominal consumption:	Approx. 2 W

Output

Contacts:

.11:	1 changeover contact
.12:	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

at 5 A, AC 230 V $\cos \varphi = 1$: 10^5 switch. cycles IEC/EN 60947-5-1

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

Temperature range:

Operation: - 20 ... + 60 °C

Storage: - 20 ... + 60 °C

Altitude: ≤ 2000 m

Clearance and creepage distances

Rated impulse voltage / pollution degree: IEC 60664-1

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
20 / 060 / 04 IEC/EN 60068-1
EN 50005

Climate resistance:

Terminal designation:

Technical Data

Wire connection

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

Screw terminals

(integrated):

1 x 4 mm² solid or
1 x 2.5 mm² stranded ferruled or
2 x 1.5 mm² stranded ferruled or
2 x 2.5 mm² solid

Insulation of wires

or sleeve length: 8 mm

Plug in with screw terminals

Max. cross section

for connection:

1 x 2.5 mm² solid or
1 x 2.5 mm² stranded ferruled

Insulation of wires

or sleeve length: 8 mm

Plug in with cage

clamp terminals

Max. cross section

for connection:

1 x 4 mm² solid or
1 x 2.5 mm² stranded ferruled

Min. cross section

for connection:

0.5 mm²

Insulation of wires

or sleeve length: 12 ±0.5 mm

Wire fixing:

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

Fixing torque:

Mounting: DIN rail IEC/EN 60715

Weight:

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

Variants:

All versions except MK 9056N. __ / 61

Switching capacity

to AC 15

NO contact: 1.5 A / AC 230 V IEC/EN 60947-5-1



Technical data that is not stated in the CCC-Data, can be found in the technical data section.

UL-Data

Switching capacity:

.11: 250Vac, 2A Pilot duty

0.5hp 250Vac

5A, 250 Vac General Purpose

.12: B300, R300 Pilot duty

0.5hp 240Vac

5A, 250 Vac General Purpose

Wire connection:

Screw terminals fixed:

AWG 20 - 12 Sol/Str Torque 0.8 Nm

Plug in screw:

AWG 20 - 14 Sol Torque 0.8 Nm

AWG 20 - 16 Str Torque 0.8 Nm

Plug in cage clamp:

AWG 20 - 12 Sol/Str



Technical data that is not stated in the UL-Data, can be found in the technical data section.

Standard Types

MK 9056N.12/61 3 AC 380 ... 500 V 50 / 60 Hz

Article number: 0069733

• Output: 2 changeover contacts

• Nominal voltage U_N : 3 AC 380 ... 500 V

• Width: 22.5 mm

Variant

Ordering Example for Variant

MK 9056N.12 /61 3 AC 380 ... 500 V 50 / 60 Hz

Nominal frequency

Nominal voltage

With UL approval

Type of terminals

without indication:

Terminal blocks fixed
with screw terminals

PC (plug in cageclamp):

Pluggable terminal blocks
with cage clamp terminals

PS (plug in screw):

Pluggable terminal blocks
with screw terminals

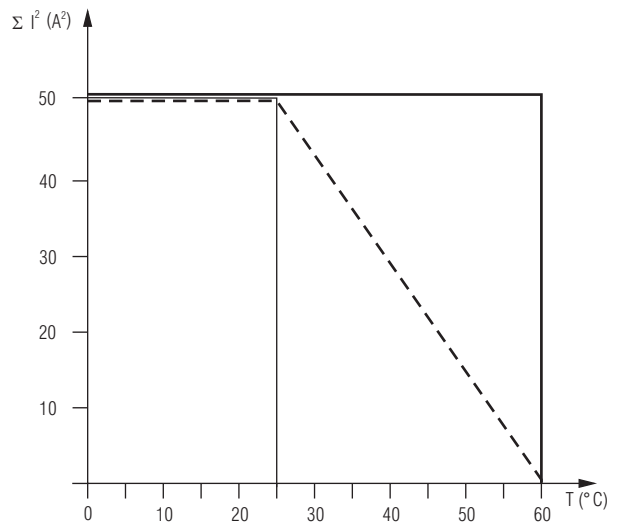
Contacts

.11 = 1 changeover contact

.12 = 2 changeover contacts

Type

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.

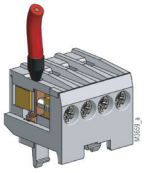
Max. current at 60°C over

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

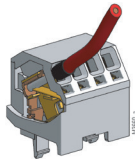
$$\Sigma I^2 = I_1^2 + I_2^2$$

I_1, I_2 - Current in contact paths

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.

