



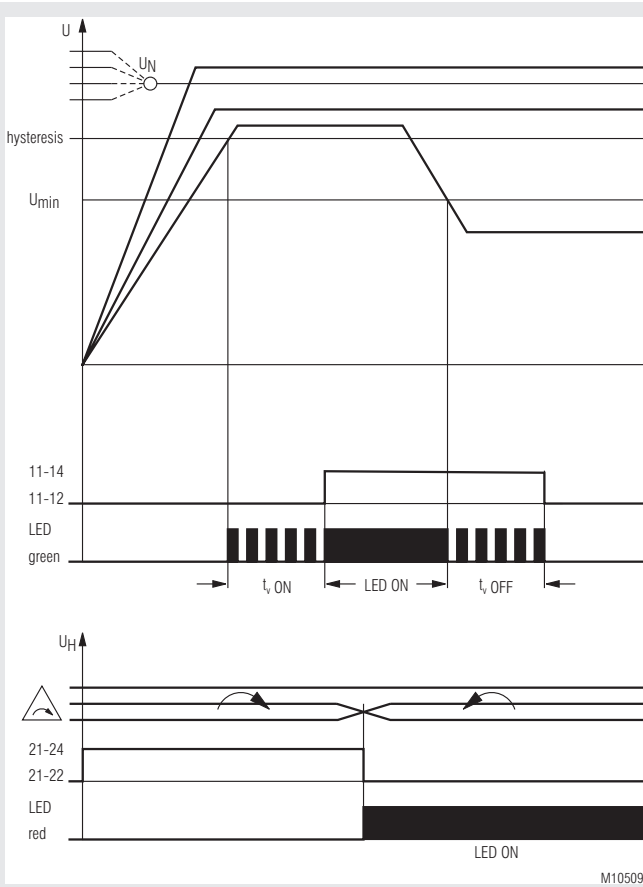
### Your Advantage

- Most effective adaption to the application by 2 separated time delay functions for response value and reset value
- Universal usage by selection of nominal voltage (4 steps)
- Always the right unit in stock

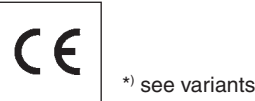
### Features

- According to IEC/EN 60255-1
- 3-phase voltage measurement for 3-phase 4wire systems
- Adjustable voltage AC 380, 400, 415, 440 V
- Phase sequence detection
- Adjustable response value for undervoltage and adjustable hysteresis
- Adjustable delay for undervoltage detection
- Without auxiliary voltage
- Width: 45 mm

### Function Diagram



### Approvals and Markings



### Applications

Monitoring of 3-phase networks for overvoltage, undervoltage and phase sequence. Protection of motors at phase failures or wrong phase sequence.

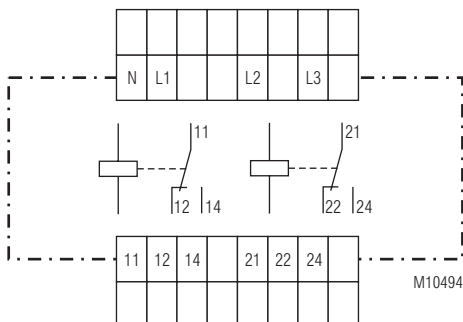
### Function

The phase monitor monitors the 3 phases in a network for undervoltage and phase sequence. The setting values are fixed. The device works de-energized without auxiliary supply voltage. If an error is detected, the corresponding LED lights up. At voltages below AC 85 V at L2 and L3 the device is switched off.

### Indicators

- Green LED  $U_N$  : On, when operating voltage connected between L2 and L3 ( $U > AC85V$ )
- Green LED  $U <$  : On, when outputrelay active 11/14 (Voltage in good state) flashes at time delay of  $t_{ON}$  and  $t_{OFF}$
- Red LED: On, when incorrect phase sequence

### Circuit Diagrams



### Connection Terminals

Terminal designation	Signal description
L1, L2, L3, N	Connection phase voltage
11, 12, 14	Indicator relay for under voltage
21, 22, 24	Indicator relay for phase sequence

## Technical Data

### Measuring Input

<b>4 measuring ranges via potentiometer selectable:</b>	3 AC 380, 400, 415, 440 V with neutral connection
<b>Max. overload</b>	
max. permissible voltage:	3 AC 500 V
<b>Frequency:</b>	50 / 60 Hz
<b>Adjustable response value:</b>	0.75 ... 0.95 $U_N$
<b>Adjustable hysteresis:</b>	5 ... 80 % of difference between nominal voltage and response value

### Time delay

At undervoltage detection $t_{v,off}$ :	Continuously variable 0 ... 10 s
At return of voltage $t_{v,on}$ :	Continuously variable 0 ... 10 s

### Output

<b>Contacts:</b>	2 changeover contacts
<b>Thermal current <math>I_{th}</math>:</b>	2 x 4 A
<b>Switching capacity</b>	
<b>At AC 15:</b>	
NO contact:	3 A / AC 230 V IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60947-5-1
At DC 13:	1 A / DC 24 V IEC/EN 60947-5-1
<b>Electrical life</b>	
At 3 A, AC 230 V $\cos \varphi = 1$ :	2 x $10^5$ switching cycles
<b>Perm. switching frequency:</b>	1800 / h
<b>Short circuit strength</b>	
<b>max. fuse rating:</b>	4 A gG / gL IEC/EN 60947-5-1
<b>Mechanical life:</b>	30 x $10^6$ switching cycles

### General Data

<b>Nominal operating mode:</b>	Continuous operation
<b>Temperature range</b>	
Operation:	- 25 ... + 60°C
Storage:	- 25 ... + 60°C
<b>Altitude:</b>	< 2000 m
<b>Clearance and creepage distance</b>	
Rated impulse voltage / pollution degree	
Inputs L1, L2, L3 to all others: contacts 11/12/14, 21/22/24, to each other:	6 kV / 2 IEC/EN 60664-1
Overvoltage category:	III IEC/EN 60664-1
<b>EMC</b>	
Electrostatic discharge (ESD):	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 voltage	
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 class value A*)

\*) The device is designed for the usage under industrial conditions (Class A, EN 55011). When connected to a low voltage public system (Class B, EN 55011) radio interference can be generated. To avoid this, appropriate measures have to be taken.

### Degree of protection

<b>Enclosure:</b>	IP 40	DIN EN 60529
<b>Terminals:</b>	IP 20	DIN EN 60529
<b>Housing:</b>	Thermoplastic with VO behaviour acc. to UL Subject 94	
<b>Vibration resistance:</b>	Amplitude 0.35 mm, frequency 10 ... 55 Hz	
<b>Climate resistance:</b>	20 / 060 / 04	EN 60068-1

## Technical Data

<b>Wire connection:</b>	1 x 4 mm <sup>2</sup> Solid or 2 x 1.5 solid or 1 x 2.5 mm <sup>2</sup> stranded wire with sleeve or 2 x 1.5 mm <sup>2</sup> stranded wire with sleeve DIN 46228-1/-2/-3/-4
<b>Wire fixing:</b>	Plus-minus terminal screws M3,5 box terminals with wire protection
<b>Mounting:</b>	DIN rail EN 60715
<b>Weight:</b>	216 g

### Dimensions

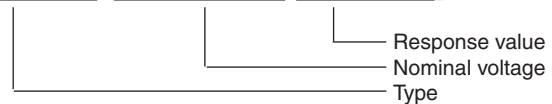
<b>Width x height x depth:</b>	45 x 90 x 98 mm
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### Standard Type

MH 9352.12/003	3 AC 380 ... 440 V	50/60 Hz
Article number:	0062802	
• Adjustable nominal voltage:	3 AC 380, 400, 415, 440 V	
• Response value:	0.75 ... 0.95 $U_N$	
• Phase sequence detection		
• Output:	2 changeover contacts	
• Width:	45 mm	

### Ordering Example

MH 9352.12/003 3 AC 380 ... 440 V 0.75 ... 0.95  $U_N$



### Application Example

