

Undervoltage / Phase Sequence Monitoring for AC Networks

Characteristics

- Voltage monitoring for 3-phase networks
- Two setting ranges for response and release value
- Adjustable relay delay from 0-10s
- For networks with or without neutral conductor
- With optional phase sequence monitoring and signalling

Description

The **M170** is used for undervoltage and phase sequence monitoring in 3-phase networks.

Potentiometer U_{ON} is used for adjusting relay response value with rising voltage in the range from 0.8 up to 1.2 of the rated voltage.

At Potentiometer U_{HYS} the release value of the relay is adjusted for falling voltage.

A third Potentiometer allows the setting of a time delay from 0 up to 10s.

Available is a 3-wire version for systems without neutral, and a 4-wire version for systems with neutral conductor.

The measuring inputs L3-N of the 4-wire version and L1-L3 of the 3-wire version are used to supply the internal circuits of the **M170**.

Further versions with additional phase sequence monitoring are available.

Two LEDs in the front of the relay provide a visual display of the mains voltage applied and show the output relay energised.

The relay works on the closed circuit principle.



Mode of Operation

The 3 phases of the AC network are monitored against the artificially formed star point or against the neutral conductor.

The output relay only engages if all 3 phase voltages have exceeded the preset response value " U_{ON} ".

The release value can be adjusted with the potentiometer " U_{HYS} " in the range of 75 and 95% of the response voltage.

Should 1,2 or all 3 phase voltages fall below the pre-set release value " U_{HYS} ", the output relay de-energises.

Re-energization occurs only if all 3 phase voltages have exceeded the response value as described before.

With the potentiometer "t", the de-energising of the relay caused by undervoltage can be delayed. If all phase voltages exceed the response value during the delay period, the lapse of time is reset again and the relay remains energised.

Effects of short undervoltage periods may be suppressed by this function.

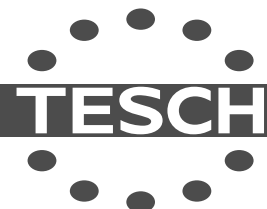
The phase sequence monitoring function requires in addition to the sufficient voltage the correct rotation direction of the 3 phases to energise the relay.

The wrong phase sequence prevents the energising of the relay and is signalled by blinking of the yellow "PWR" LED.

Models and Ordering Data

Contacts	2 CO Contacts
Type M170 / 400 V _{AC}	Order-No.
4-wire	072 00107
4-wire + Phase Sequence	072 00297
3-wire	072 00292
3-wire + Phase Sequence	072 00298

60Hz version on request

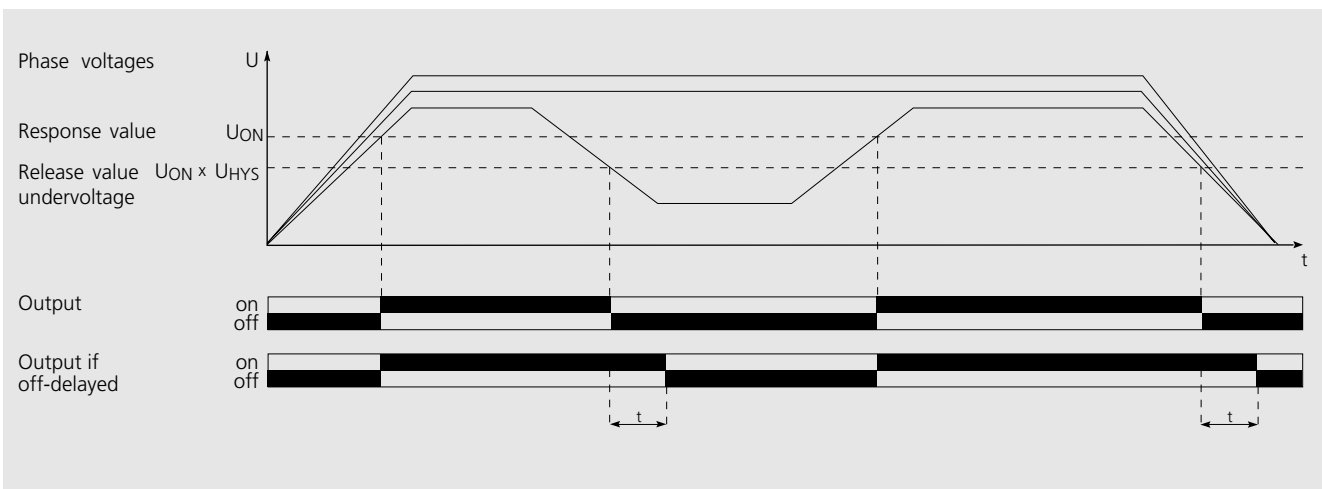


Technical Data

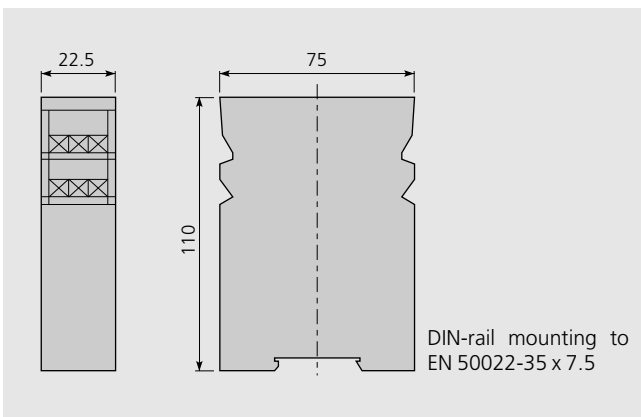
Rated voltage	400 V _{AC}
Voltage range	0.55 to 1.2 x rated voltage
Frequency range	50Hz (60Hz version on request)
Power consumption	Approx. 1 VA
Mechanical lifetime	10 ⁷ switching cycles
Measuring accuracy	± 2%
Timing accuracy	< ± 0.5% under const. conditions
Response time	< 250 ms
Temperature influence	< 0.01% / K
Ambient temperature	-5 °C to +60 °C, no condens.
Rated insulation voltage	250 V
Weight	Approx. 100 g

Creep and air paths	Group III per VDE 0110 Pollution level 2
Test voltage	2000 V per VDE 0435
Protection class	Terminals: IP 20, Enclosure: IP 40 per DIN VDE 0470-1 (11/92)
Connecting terminals	Screw type with protective cover
Conductor size	2.5 mm ² fine stranded wire, max: 7.0 mm stripped
Relay contacts rating	AC15 250V 4A, DC13 30V 3A
Adjusting ranges:	
Response value (U _{ON})	0.8....1.2 x rated voltage
Release value (U _{HYS})	0.75.... 0.95 x U _{ON}

Function Diagram



Dimensional Diagram



Circuit Diagram

