



- Voltage monitoring in 3- and 1-phase mains
- Multifunction
- TrueRMS voltage measurement
- Function window, undervoltage, asymmetry, sequence
- 1 change over contact
- Width 17.5 mm
- Installation design



Technical data

Description

Output circuit		
Contact arrangement		1 CO
Rated voltage	V AC	250/400
Switching current range AC1	A/V AC	8/250
DC1	A/V DC	8/24
Switching load range AC1	VA	2 000
Contact resistance	mΩ	≤ 100
Max. rated current	A	8
Input circuit		
Terminals	V	L1, L2, L3, N
Supply voltage U _n DC/ AC (50-60Hz) = measured voltage	V	3N~ 400/230
Tolerance		0,8...1,2U _n (11,5...276V)
Rated consumption AC	VA	≤ 2.5
DC	W	<2
Rated frequency	Hz	47...63
Rated surge voltage	V	1000
Insulation		
Insulation rated voltage	V AC	400
Rated surge voltage	V	4 000 1,2/50μs
Overvoltage category		III
Dielectric strength		
• Input – output	V AC	4 000
• Open contact		1 000
Measuring circuit		
Regulation range voltage min U _{min}	%	70...110% (161...253V)
Regulation range voltage max U _{max}	%	80...120% (184...276V)
Threshold voltage asymmetry U _{asym}	V	46
Hysteresis	%	5
Functions		MU, MW, MA, MS
Measurement accuracy	%	≤ 5
Setting accuracy	%	≤ 5
Repeatability	%	≤ 2
Temperature influence	%/°C	≤ 0,05
Sampling frequency of the input process	Hz	2930
resolution converters	bits	9
Time module data		
Setting range of time off and on delay (symmetrical)		10s
Timing adjustment		smooth 0,05...1,0 x time range
Setting accuracy	%	5
Repeatability	%	0,5
Reset time	ms	≤ 500
General data		
Electrical life AC1 at 1000 VA resistive load	cycles	≥ 1,5 x 10 ⁵
Mechanical life	cycles	≥ 1 x 10 ⁷
Dimensions (L x W x H) / Weight	mm / g	90 x 17,5 x 66 / 50g
Ambient temperature / storage temperature	°C	-40...+70 / -20...+55
IP rating		IP20
Relative humidity	%	85
Shock resistance	g	15
Vibration resistance	mm	0,35 10...55Hz
LED indicator		2 LED

The executive relay R is designed for applications in automation and control systems to control the voltage, asymmetry and phase sequence in three-phase AC networks or to control the AC/DC voltage in a one-phase networks. It is used to protect the receiver from voltage drop or rush beyond the set threshold. Use of an universal power supply powered from any input voltage (L1, L2, L3) allows correct operation of the measuring system in a wide range in the presence of voltage on one, whichever electric terminal. **True RMS** measurement is an innovative method for such products group and it provides the highest accuracy regardless of the AC input waveform, which may be important in case of voltage deviation from the ideal sine wave - due to a presence of nonlinear loads in the circuit. The **TrueRMS** method also allows the measurement of constant DC voltages. The relay has an adjustable off and on delay time in a range from 0.5s to 10s (symmetrical). Seven position switch allows selection of measurement undervoltage or window functions and supplements them with voltage asymmetry and phase sequence control. Relay status is indicated by two LEDs.

Mounting

Mounted on DIN-rail TS 35 according to EN 60715
 Mounting position: any
 IP rating IP20
 Tightening torque: max. 1 Nm
 Terminal capacity: 1 x 0.5 to 2.5 mm² with/without multicore cable end 1 x 4 mm² without multicore cable end 2 x 0.5 to 1.5 mm² with/without multicore cable end 2 x 2.5 mm² flexible without multicore cable end.

Danger!

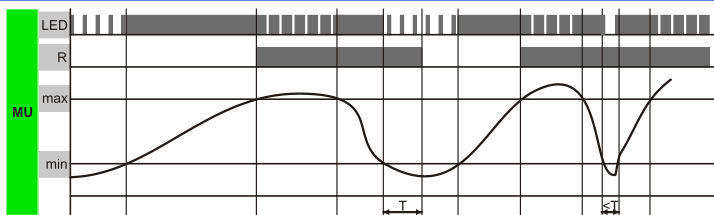


Read and understand these instructions before installing, operating or maintaining the equipment.
 Never carry out work on live parts! Danger of fatal injury! The product must not be used in case of obvious damage. To be installed by an authorized person.

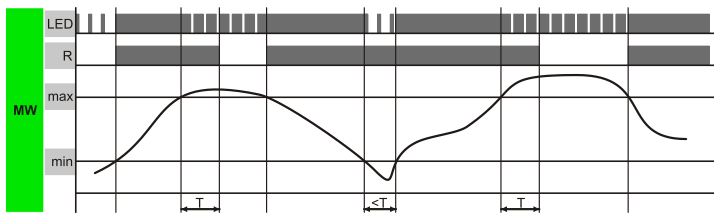
Ordering information

MMR17-V3B-M230-108

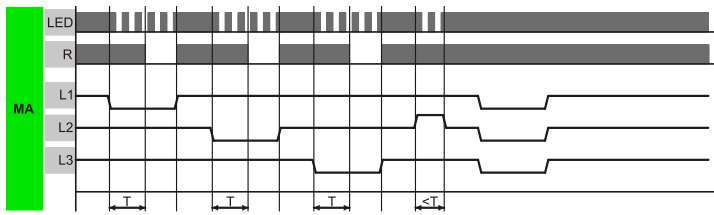
Functions



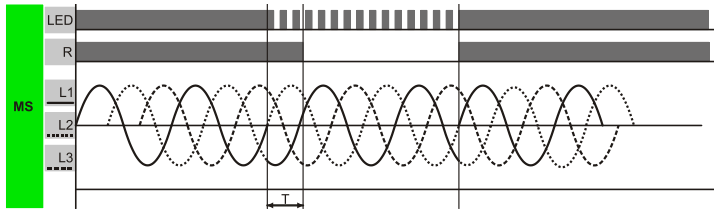
MU (undervoltage) – The output relay R switches into on-position again after the measured voltage exceed the Max-value.



MW (window) – The output relay R switches into on-position again after the measured voltage reenters the acceptance region



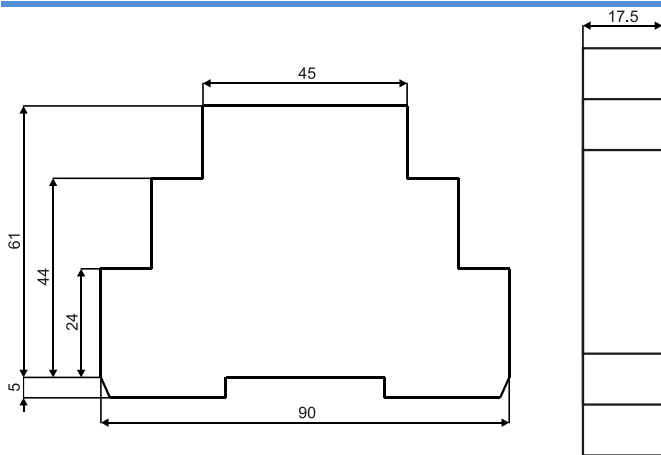
Functions - MA (asymmetry) – Asymmetry monitoring
As soon as the asymmetry exceeds the value at the U_{as} - regulator, the set interval of the tripping delay (DELAY) begins. After the interval has expired the output relay R switches into off-position (yellow LED not illuminated).



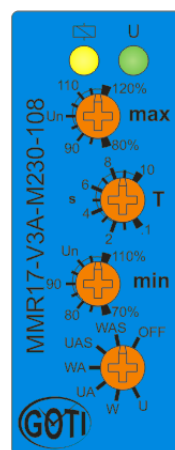
Function - MS (sequence) – Phase sequence monitoring
When all the phases are connected in the correct sequence and the measured asymmetry is less than the set value, the output relay switches into on-position (yellow LED illuminated). When the phase sequence changes, the output relay switches into off-position (yellow LED not illuminated).

The actual voltage measurement method- **TrueRMS** provides the highest accuracy regardless of the AC input waveform, which may be important in case of voltage deviation from the ideal sine wave- due to a presence of nonlinear loads in the circuit. The TrueRMS method also allows the measurement of constant DC voltages.

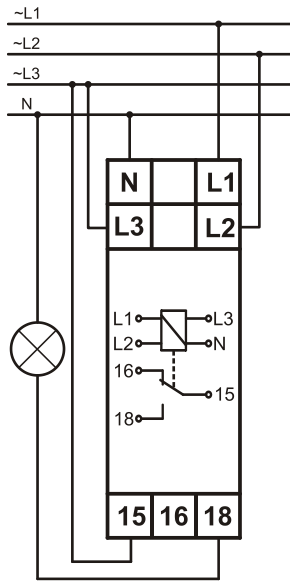
Dimensions



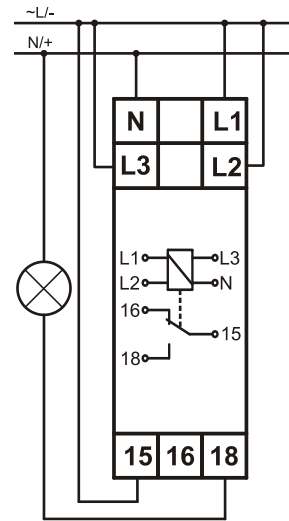
Front panel view



Connections diagrams



Monitoring of three-phase AC voltage



Monitoring of single-phase voltage AC

Functions which are selected by the means of rotary switch

- U** – function MU (*undervoltage*)

- W** – function MW (*window*)

- UA** – functions MU + MA (*undervoltage + asymmetry*)

- WA** – functions MW + MA (*window + asymmetry*)

- UAS** – functions MU + MA + MS (*undervoltage + asymmetry + sequence*)

- WAS** – functions MW + MA + MS (*window + asymmetry + sequence*)

LED indicator

Yellow LED Indication of relay R output.

Indicates the system status monitor.

The flashing green LED to fill out short pulses of about 10% of the mean value of the input voltage drop below the lower threshold U_{min} .

Green LED

Slow flashing green LED pulses to fill out about 90% mean increase in input voltage above the upper threshold U_{max} .

Flashing green LED pulses to fill out about 50% means three possible states:

- incorrect phase rotation direction,
- exceeded the threshold asymmetry U_{asym} ,
- U_{max} upper voltage threshold is set below the lower limit U_{min} .



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