a.c./d.c. voltage monitoring in 1-phase mains

G2UM300VL10

Monitoring relays - GAMMA series

Multifunction

16.6 to 400Hz

Fault latch

Supply voltage selectable via power modules

1 change-over contact

Width 22.5mm

Industrial design

Technical data

1. Functions
a.c./d.c. voltage monitoring in 1-phase mains with adjustable thresholds, timing for start-up suppression and tripping delay separately adjustable, fault latch and the following functions (selectable by means of rotary switch)

OVER	Overvoltage monitoring
UNDER	Undervoltage monitoring
WIN	Monitoring the window between Min and Max

2. Time ranges

	Adjustment range	
Start-up suppression time:	0s	10s
Tripping delay:	0.1s	10s

3. Indicators

Green LED ON:	indication of supply voltage
Green LED flashes:	indication of start-up suppression time
Yellow LED ON/OFF:	indication of relay output
Red LED ON/OFF:	indication of failure of the corresponding threshold
Red LED flashes:	indication of tripping delay of the corresponding threshold

4. Mechanical design
Self-extinguishing plastic housing, IP rating IP40
Mounted on DIN-Rail TS 35 according to EN 60715
Mounting position: any. Shockproof terminal connection according to VBG 4 (PZ1 required), IP rating IP20. Tightening torque: max. 1Nm
Terminal capacity:
- 1 x 0.5 to 2.5mm² with/without multicore cable end
- 1 x 4mm² without multicore cable end
- 2 x 0.5 to 1.5mm² with/without multicore cable end
- 2 x 2.5mm² flexible without multicore cable end

5. Input circuit

Supply voltage:	
12 to 400V a.c.	terminals A1-A2 (galvanically separated) selectable via power modules TR2
Tolerance:	according to specification of power module
Rated frequency:	according to specification of power module
Rated consumption:	2VA (1.5W)
Duration of operation:	100%
Reset time:	500ms
Residual ripple for d.c.:	-
Drop-out voltage:	>30% of the supply voltage
Overvoltage category:	III (according to IEC 60664-1)
Rated surge voltage:	4kV

6. Output circuit
1 potential free change-over contact

Rated voltage:	250V a.c.
Switching capacity (distance <5mm):	750VA (3A / 250V a.c.)
Switching capacity (distance >5mm):	1250VA (5A / 250V a.c.)
Fusing:	5A fast acting
Mechanical life:	20 x 10^6 operations
Electrical life:	2 x 10^5 operations at 1000VA resistive load
Switching frequency:	max. 60/min at 100VA resistive load max. 6/min at 1000VA resistive load (according to IEC 947-5-1)
Overvoltage category:	III (according to IEC 60664-1)
Rated surge voltage:	4kV

7. Measuring circuit

Fusing:	max. 20A (according to UL 508)
Measured variable:	d.c. or a.c. Sinus (16.6 to 400Hz)
Input:	
30V a.c./d.c.	terminals E-F1(+)
60V a.c./d.c.	terminals E-F2(+)
300V a.c./d.c.	terminals E-F3(+)
Overload capacity:	
30V a.c./d.c.	$100V_{eff}$
60V a.c./d.c.	$150V_{eff}$
300V a.c./d.c.	$440V_{eff}$
Input resistance:	
30V a.c./d.c.	47kΩ
60V a.c./d.c.	100kΩ
300V a.c./d.c.	470kΩ
Switching threshold	
Max:	10% to 100% of U_N
Min:	5% to 95% of U_N
Overvoltage category:	III (according to IEC 60664-1)
Rated surge voltage:	4kV

8. Control contact Y (equipotential with measuring circuit)

Function:	fault latch (Y1-Y2 bridged)
Loadable:	No
Line length Y1-Y2:	max. 10m (twisted pair)
Control pulse length:	-
Reset:	normally closed contact in the input circuit

9. Accuracy

Base accuracy:	≤3% (of maximum scale value)
Frequency response:	-10% to +5% (at 16.6 to 400Hz)
Adjustment accuracy:	≤5% (of maximum scale value)
Repetition accuracy:	≤2%
Voltage influence:	-
Temperature influence:	≤0.05% / °C

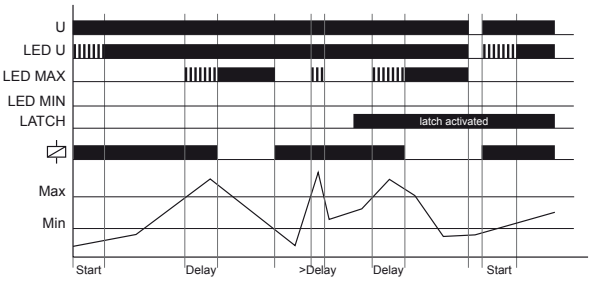
10. Ambient conditions

Ambient temperature:	-25 to +55°C (according to IEC 68-1) -25 to +40°C (according to UL 508)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (according to IEC 721-3-3 class 3K3)
Pollution degree:	3 (according to IEC 60664-1)
Vibration resistance:	10 to 55Hz 0.35mm (according to IEC 68-2-6)
Shock resistance:	15g 11ms (according to IEC 68-2-27)

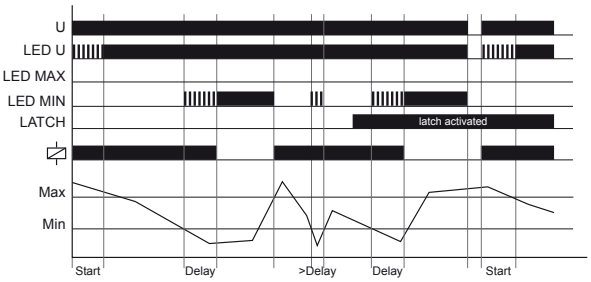
Functions

When the supply voltage U is applied, the output relay switches into on-position (yellow LED illuminated) and the set interval of the start-up suppression (START) begins (green LED U flashes). Changes of the measured voltage during this period do not affect the state of the output relay. After the interval has expired the green LED is illuminated steadily. For all the functions the LEDs MIN and MAX are flashing alternating, when the minimum value for the measured voltage was chosen to be greater than the maximum value.

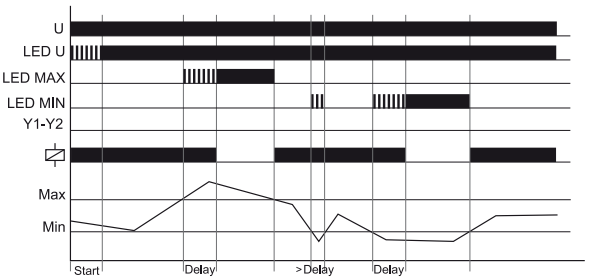
Overvoltage monitoring (OVER)
When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relay switches into off-position (yellow LED not illuminated). The output relay again switches into on-position (yellow LED illuminated), when the measured voltage falls below the value adjusted at the MIN-regulator (red LED MAX not illuminated). If the fault latch is activated (bridge Y1-Y2) and the measured voltage remains above the MAX-value longer than the set interval of the tripping delay, the output relay remains in the off-position even if the measured voltage falls below the value adjusted at the MIN-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relay switches into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



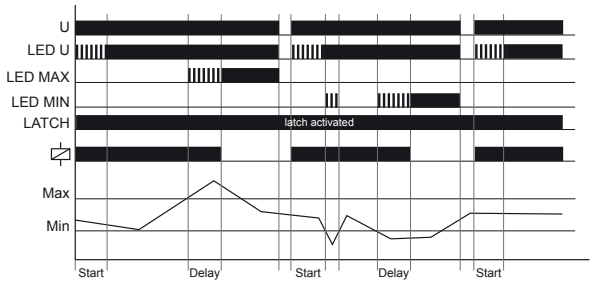
Undervoltage monitoring (UNDER)
When the measured voltage falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relay switches into off-position (yellow LED not illuminated). The output relay again switches into on-position (yellow LED illuminated), when the measured voltage exceeds the value adjusted at the MAX-regulator. If the fault latch is activated (bridge Y1-Y2) and the measured voltage remains below the MIN-value longer than the set interval of the tripping delay, the output relay remains in the off-position even if the measured voltage exceeds the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relay switches into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



Window function (WIN)
The output relay switches into on-position (yellow LED illuminated) when the measured voltage exceeds the value adjusted at the MIN-regulator. When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relay switches into off-position (yellow LED not illuminated). The output relay again switches into on-position (yellow LED illuminated) when the measured voltage falls below the value adjusted at the MAX-regulator (red LED MAX not illuminated). When the measured voltage falls below the value adjusted at the MIN-regulator, the set interval of the tripping delay (DELAY) begins again (red LED MIN flashes). After the interval has expired (red LED MIN illuminated), the output relay switches into off-position (yellow LED not illuminated).

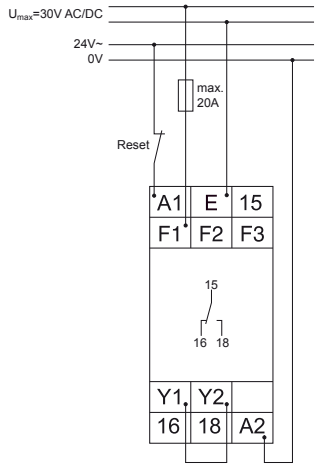


If the fault latch is activated (bridge Y1-Y2) and the measured voltage remains below the MIN-value longer than the set interval of the tripping delay, the output relay remains in the off-position even if the measured voltage exceeds the value adjusted at the MIN-regulator. If the measured voltage remains above the MAX-value longer than the set interval of the tripping delay, the output relay remains in the off-position even if the measured voltage falls below the value adjusted at the MAX-regulator. After resetting the failure (interrupting and re-applying the supply voltage), the output relay switches into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).

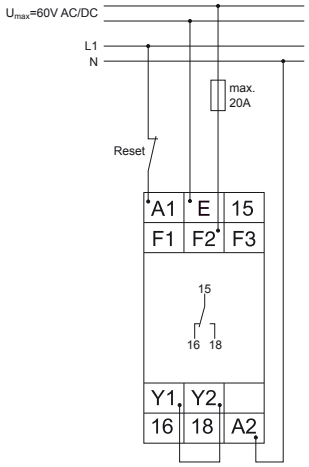


Connections

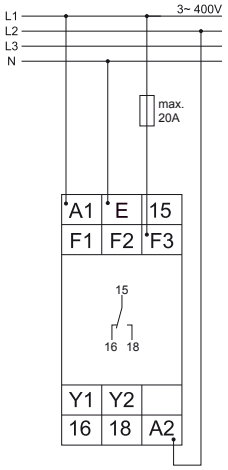
Range 30V with power modul 24V a.c. with fault latch



Range 60V with power modul 230V a.c. with fault latch



Range 300V with power modul 400V a.c. without fault latch



Dimensions