Voltage monitoring in 3-phase mains

G2PM690VSY20
Art. No. 2390517

Monitoring relays - GAMMA series
Multifunction
Monitoring of phase sequence and phase failure
Monitoring of asymmetry selectable
Supply voltage = measuring voltage
2 change-over contacts
Width 22.5mm
Industrial design

Read and understand these instructions before installing, operating or maintaining the equipment.

Danger!
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.

Technical data

1. Functions
Voltage monitoring in 3-phase mains with adjustable thresholds, adjustable tripping delay, monitoring of phase sequence and phase failure, monitoring of asymmetry with adjustable threshold and the following functions which are selected by means of rotary switch:

UNDER	Undervoltage monitoring
UNDER+SEQ	Undervoltage monitoring and monitoring of phase sequence
WIN	Monitoring of window between Min and Max
WIN+SEQ	Monitoring the window between Min and Max and monitoring of phase sequence

2. Time ranges

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

3. Indicators

LED ASYM (red) on:	indication of asymmetry failure
LED MIN/MAX (red) on:	indication of under-/overvoltage
LED MIN/MAX (red) flashes:	indication of tripping delay for under-/overvoltage
LED SEQ (red) on:	indication of phase sequence or phase failure
LED (yellow) on:	status indication output relay

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:

3~ 208V - 690V	terminals L1-L2-L3 = measuring voltage

Tolerance:

3~ 208V - 690V	3~ 177V - 794V
Rated frequency:	20 to 70Hz
Rated consumption:	2VA (1.2W)
Duration of operation:	100%
Reset time:	500ms
Drop-out voltage:	>20% of the supply voltage
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

6. Output circuit
2 potential free change-over contacts

Rated voltage:	250V a.c.
Max. switching voltage (a.c.):	400V a.c.
Switching capacity:	1250VA (5A / 250V a.c.) @ +55°C 150VA (5A / 30V d.c.) @ +55°C 75VA (2,5A / 30V d.c.) @ +70°C B300 @ +55°C C300 @ +70°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 (in accordance with IEC 60947-5-1)
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

7. Measuring circuit

Measured variable:	a.c. Sinus (20 to 70Hz)
Input:	
3~ 208V - 690V	terminals L1-L2-L3 (= supply voltage)
Overload capactiy:	
3~ 208V - 690V	3~ 794V
Input resistance:	-
Switching threshold	
Min:	-50% to +10% of U_N
Max:	-45% to +15% of U_N
Hysteresis:	approx. 2% of selected threshold
Asymmetry:	5 to 25%, OFF
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

8. Accuracy

Base accuracy:	≤3% (of maximum scale value)
Adjustment accuracy:	≤5% (of maximum scale value)
Repetition accuracy:	≤2%
Voltage influence:	-
Temperature influence:	≤0.05% / °C

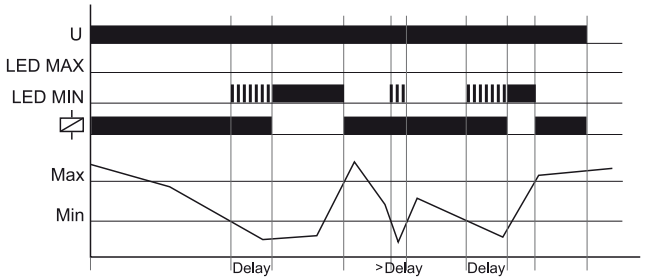
9. Ambient conditions

Ambient temperature:	-25 to +70°C @ C300 -25 to +55°C @ B300 (in accordance with IEC 60068-1)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	3 (in accordance with IEC 60664-1)
Vibration resistance:	10 to 55Hz 0.35mm (in accordance with IEC 60068-2-6)
Shock resistance:	15g 11ms (in accordance with IEC 60068-2-27)

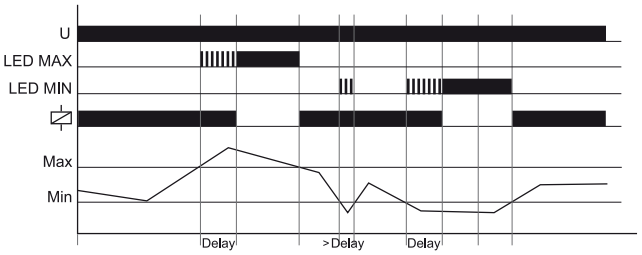
Functions

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. If a failure already exists when the device is activated, the output relays remain in off-position and the LED for the corresponding threshold is illuminated.

Under voltage monitoring (UNDER, UNDER+SEQ)
When the measured voltage (mean value of phase-to-phase voltages) 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 relays switch into off-position (yellow LED not illuminated). The output relays again switch into on-position (yellow LED illuminated), when the measured voltage exceeds the value adjusted at the MAX-regulator.

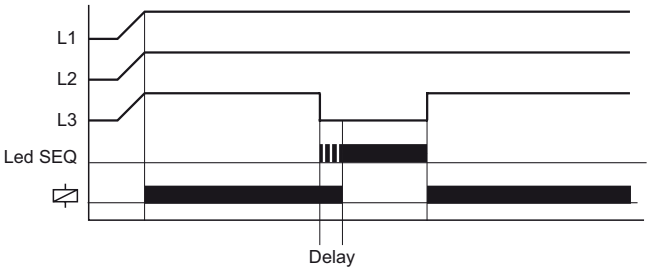


Window function (WIN, WIN+SEQ)
The output relays switch into on-position (yellow LED illuminated) when the measured voltage (mean value of phase-to-phase voltages) exceeds the value adjusted at the MIN-regulator. When the measured voltage exceeds the value adjusted at the MAX-regulator, the set interval of the tripping delay (DELAY) begins (red LED MAX flashes). After the interval has expired (red LED MAX illuminated), the output relays switch into off-position (yellow LED not illuminated). The output relays again switch 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 relays switch into off-position (yellow LED not illuminated).

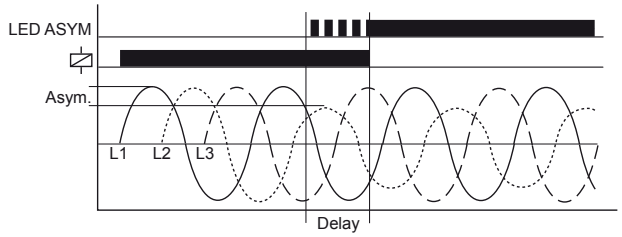


Phase sequence monitoring (SEQ)
Phase sequence monitoring is selectable for all functions.
If a change in phase sequence is detected (red LED SEQ illuminated), the output relays switch into off-position immediately (yellow LED not illuminated).

Phase failure monitoring (SEQ)
If one of the phase voltages fails, the set interval of the tripping delay (DELAY) begins (red LED SEQ flashes). After the interval has expired (red LED SEQ illuminated), the output relays switch into off-position (yellow LED not illuminated). Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection but can be monitored by using a proper value for the asymmetry.

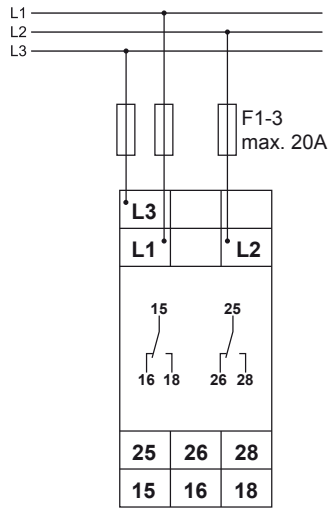


Asymmetry monitoring
If the asymmetry of the phase-to-phase voltages exceeds the value set at the ASYM-regulator, the set interval of the tripping delay (DELAY) begins (red LED ASYM flashes). After the interval has expired (red LED ASYM illuminated), the output relays switch into off-position (yellow LED not illuminated).

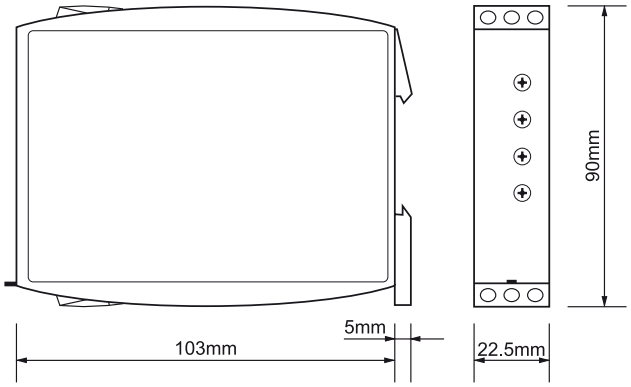


Connections

G2PM690VSY20, supply voltage 690V a.c.



Dimensions



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