



Monitoring relays - GAMMA series

Multifunction

16.6 to 400Hz

Fault latch

Zoom voltage 24 to 240V AC/DC

2 change-over contacts

Width 22.5mm

Industrial design



## Technical data

### 1. Functions

AC/DC voltage monitoring in 1-phase mains with adjustable thresholds, timing for start-up suppression and tripping delay separately adjustable and the following functions (selectable by means of rotary switch)

OVER	Overvoltage monitoring
OVER+LATCH	Overvoltage monitoring with fault latch
UNDER	Undervoltage monitoring
UNDER+LATCH	Undervoltage monitoring with fault latch
WIN	Monitoring the window between Min and Max
WIN+LATCH	Monitoring the window between Min and Max with fault latch

### 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 2.5mm<sup>2</sup> with/without multicore cable end  
1 x 4mm<sup>2</sup> without multicore cable end  
2 x 0.5 to 1.5mm<sup>2</sup> with/without multicore cable end  
2 x 2.5mm<sup>2</sup> flexible without multicore cable end

### 5. Input circuit

Supply voltage:	24 to 240V AC/DC	terminals A1-A2 (galvanically separated)
Tolerance:	24 to 240V DC	-20% to +25%
	24 to 240V AC	-15% to +10%
Rated frequency:	24 to 240V AC	48 to 400Hz
	48 to 240V AC	16 to 48Hz
Rated consumption:		4.5VA (1W)
Duration of operation:		100%
Reset time:		500ms
Wave form for AC:		Sinus
Residual ripple for DC:		10%
Drop-out voltage:		>15% of the supply voltage
Overvoltage category:		III (in accordance with IEC 60661-1)
Rated surge voltage:		4kV

### 6. Output circuit

2 potential free change-over contacts	
Rated voltage:	250V AC
Switching capacity:	750VA (3A / 250V AC)
If the distance between the devices is less than 5mm!	
Switching capacity:	1250VA (5A / 250V AC)
If the distance between the devices is greater than 5mm!	
Fusing:	5A fast acting
Mechanical life:	20 x 10 <sup>6</sup> operations
Electrical life:	2 x 10 <sup>5</sup> 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

Fusing:	max. 20A (in accordance with UL 508)
Measured variable:	DC or AC Sinus (16.6 to 400Hz)
Input:	
30V AC/DC	terminals E-F1(+)
60V AC/DC	terminals E-F2(+)
300V AC/DC	terminals E-F3(+)
Overload capacity:	
30V AC/DC	100Veff
60V AC/DC	150Veff
300V AC/DC	440Veff
Input resistance:	
30V AC/DC	47kΩ
60V AC/DC	100kΩ
300V AC/DC	470kΩ
Switching threshold	
Max:	10% to 100% of U <sub>N</sub>
Min:	5% to 95% of U <sub>N</sub>
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

### 8. Accuracy

Base accuracy:	≤5% (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

### 9. Ambient conditions

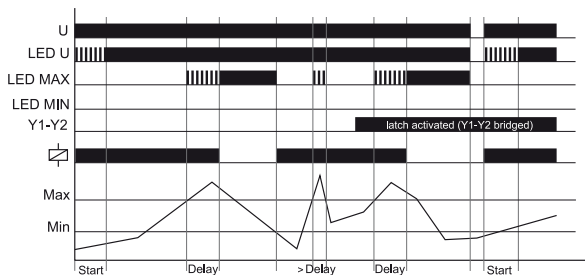
Ambient temperature:	-25 to +55°C
	(in accordance with IEC 60068-1)
	-25 to +40°C (in accordance with UL 508)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85%
	(in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	3 (in accordance with IEC 60664-1)
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

When the supply voltage U is applied, the output relays switch 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.

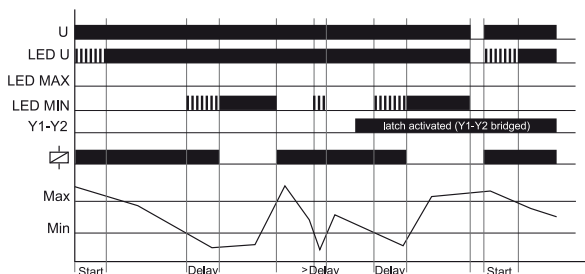
### Overvoltage monitoring (OVER, OVER+LATCH)

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 MIN-regulator (red LED MAX not illuminated). If the fault latch is activated (OVER+LATCH) and the measured voltage remains above the MAX-value longer than the set interval of the tripping delay, the output relays remain 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 relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).



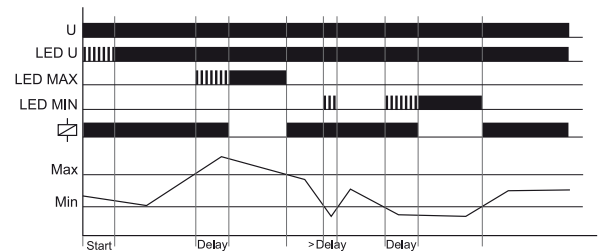
### Undervoltage monitoring (UNDER, UNDER+LATCH)

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 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. If the fault latch is activated (UNDER+LATCH) and the measured voltage remains below the MIN-value longer than the set interval of the tripping delay, the output relays remain 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 relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).

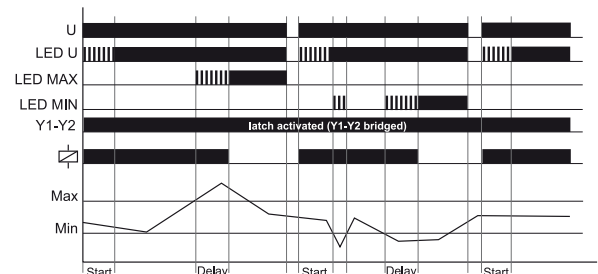


### Window function (WIN, WIN+LATCH)

The output relays switch 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 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).

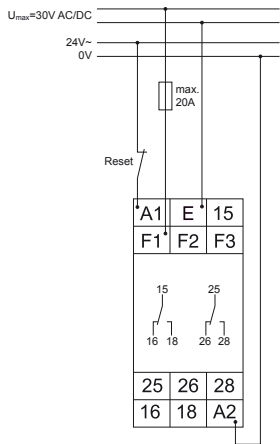


If the fault latch is activated (WIN+LATCH) and the measured voltage remains below the MIN-value longer than the set interval of the tripping delay, the output relays remain in the off-position even if the measured voltage exceeds the value adjusted at the MIN-regulator. If the measured voltage remains above the MAX-value longer than the set interval of the tripping delay, the output relays remain 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 relays switch into on-position and a new measuring cycle begins with the set interval of the start-up suppression (START).

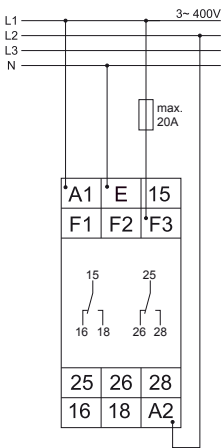


Connections

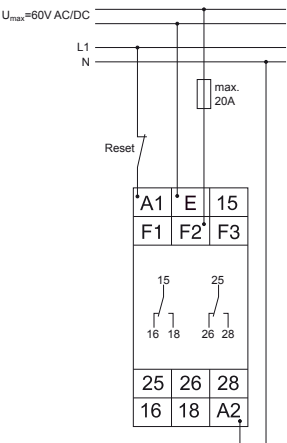
Range 30V, supply voltage 24V AC/DC and fault latch



Range 300V, supply voltage 24V AC/DC and fault latch



Range 60V, supply voltage 230V AC and fault latch



Dimensions

