



- Monitoring relays - GAMMA series
- Undervoltage monitoring
- Monitoring of phase sequence and phase failure
- 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

Undervoltage monitoring in 3-phase mains, monitoring of phase sequence and phase failure.

UNDER Undervoltage monitoring

### 2. Time ranges

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

### 3. Indicators

Green LED U ON:	indication of supply voltage
Red LED MIN ON:	indication of failure - undervoltage
Red LED MIN flashes:	indication of tripping delay
Red LED SEQ ON:	indication of failure - phase sequence
Yellow LED ON/OFF:	indication of relay output

### 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:	3~ 208V - 690V	terminals L1-L2-L3 = measuring voltage
Tolerance:	3~ 208V - 690V	3~ 177V - 794V
Rated frequency:	48 to 63Hz	
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 (AC): 400V a.c.

Switching capacity:	750VA (3A / 250V a.c.)
If the distance between the devices is less than 5mm!	
Switching capacity:	1250VA (5A / 250V a.c.)
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
Overvoltage category:	III (in accordance with IEC 60947-5-1)
Rated surge voltage:	4kV

### 7. Measuring circuit

Measured variable:	a.c. Sinus (48 to 63Hz)
Input:	3~ 208V - 690V
Overload capacity:	3~ 208V - 690V
Input resistance:	-
Switching threshold	
Min:	180V to 690V
Hysteresis:	approx. 2% of the adjustment value
Asymmetry:	fix, 25%
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	6kV

### 8. Accuracy

Base accuracy:	≤3% (of maximum scale value)
Frequency response:	-
Adjustment accuracy:	≤5% (of maximum scale value)
Repetition accuracy:	≤2%
Voltage influence:	-
Temperature influence:	≤0.07% / °C

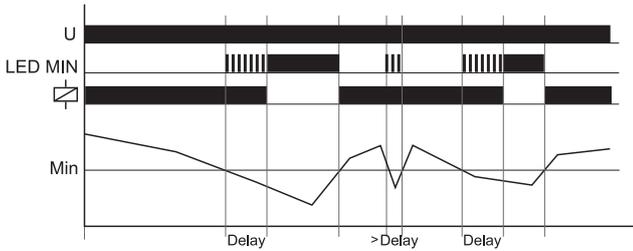
### 9. Ambient conditions

Ambient temperature:	-25 to +55°C (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

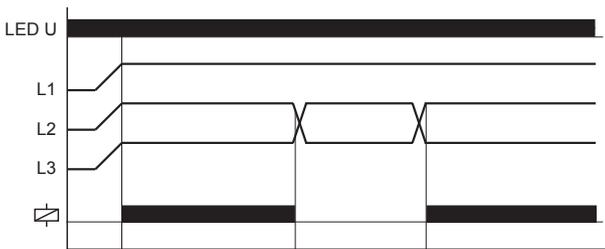
### Under voltage monitoring (UNDER, UNDER+SEQ)

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 switches into off-position (yellow LED not illuminated). The output relays switches into on-position again (yellow LED illuminated), when the measured voltage exceeds the value adjusted at the MIN-regulator. The adjustable undervoltage threshold or the fixed asymmetry allow the detection of phase loss despite of reverse voltage.

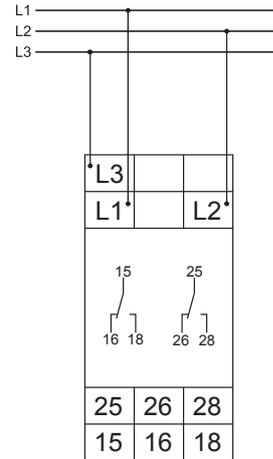


### Phase sequence monitoring (SEQ)

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



## Connections



## Dimensions

