



Monitoring relays - GAMMA series

Monitoring of phase sequence and phase failure

Detection of reverse voltage

Connection of neutral wire optional

Supply voltage = measuring voltage

2 change-over contacts

Width 22.5mm

Industrial design



## Technical data

### 1. Functions

Monitoring of phase sequence, phase failure and detection of return voltage (by means of evaluating the asymmetry)

### 2. Time ranges

|                            |                   |
|----------------------------|-------------------|
|                            | Adjustment range  |
| Start-up suppression time: | fixed, max. 500ms |
| Tripping delay:            | fixed, max. 350ms |

### 3. Indicators

|                    |                              |
|--------------------|------------------------------|
| Green LED ON:      | indication of supply voltage |
| 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(N)~ 115/66V      | terminals (N)-L1-L2-L3 (G2PF115VS02)<br>(= measuring voltage) |
| 3(N)~ 230/132V     | terminals (N)-L1-L2-L3 (G2PF230VS02)<br>(= measuring voltage) |
| 3(N)~ 400/230V     | terminals (N)-L1-L2-L3 (G2PF400VS02)<br>(= measuring voltage) |
| Tolerance:         |   |
| 3(N)~ 115/66V      | 3(N)~ 99 to 132V (G2PF115VS02)                                |
| 3(N)~ 230/132V     | 3(N)~ 198 to 264V (G2PF230VS02)                               |
| 3(N)~ 400/230V     | 3(N)~ 342 to 457V (G2PF400VS02)                               |
| Rated frequency:   | 48 to 63Hz  |
| Rated consumption: |   |
| 3(N)~ 115/66V      | 3VA (G2PF115VS02)   |
| 3(N)~ 230/132V     | 6VA (G2PF230VS02)   |
| 3(N)~ 400/230V     | 9VA (G2PF400VS02)   |

|                         |                                      |
|-------------------------|--------------------------------------|
| Duration of operation:  | 100%                                 |
| Reset time:             | <100ms                               |
| Residual ripple for DC: | -                                    |
| Drop-out voltage:       | >20% of the supply voltage           |
| Overvoltage category:   | III (in accordance with IEC 60664-1) |
| Rated surge voltage:    | 4kV                                  |

### 6. Output circuit

2 potential free change-over contacts  
 Rated voltage: 250V AC  
 Switching capacity (distance <5mm): 750VA (3A / 250V AC)  
 Switching capacity (distance >5mm): 1250VA (5A / 250V AC)  
 Fusing: 5A fast acting

|                       |  |
|-----------------------|--|
| Mechanical life:      | 20 x 10 <sup>6</sup> operations  |
| Electrical life:      | 2 x 10 <sup>5</sup> operations<br>at 1000VA resistive load   |
| Switching frequency:  | max. 60/min at 100VA resistive load<br>max. 6/min at 1000VA resistive load<br>(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: | AC Sinus, 48 to 63Hz                                       |
| Input:             |  |
| 3(N)~ 115/66V      | terminals (N)-L1-L2-L3 (G2PF115VS02)<br>(= supply voltage) |
| 3(N)~ 230/132V     | terminals (N)-L1-L2-L3 (G2PF230VS02)<br>(= supply voltage) |
| 3(N)~ 400/230V     | terminals (N)-L1-L2-L3 (G2PF400VS02)<br>(= supply voltage) |
| Overload capacity: |  |
| 3(N)~ 115/66V      | 3(N)~ 132/76V (G2PF115VS02)                                |
| 3(N)~ 230/132V     | 3(N)~ 264/152V (G2PF230VS02)                               |
| 3(N)~ 400/230V     | 3(N)~ 457/264V (G2PF400VS02)                               |
| Input resistance:  |  |
| 3(N)~ 115/66V      | 5kΩ (G2PF115VS02)  |
| 3(N)~ 230/132V     | 10kΩ (G2PF230VS02)   |
| 3(N)~ 400/230V     | 15kΩ (G2PF400VS02)   |

|                       |                                |
|-----------------------|--------------------------------|
| Asymmetry:            | fixed, typ. 30%                |
| Overvoltage category: | III (according to IEC 60664-1) |
| Rated surge voltage:  | 4kV                            |

### 8. Accuracy

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

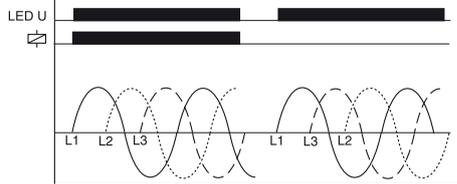
### 9. Ambient conditions

|                        |   |
|------------------------|---|
| Ambient temperature:   | -25 to +55°C (in accordance with IEC 60068-1)<br>-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%<br>(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<br>(in accordance with IEC 60068-2-6)                                   |
| Shock resistance:      | 15g 11ms (in accordance with IEC 60068-2-27)  |

## Functions

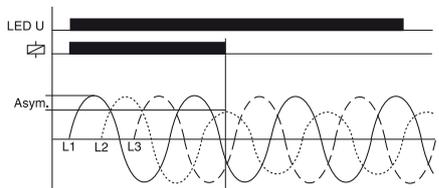
### Phase sequence monitoring

When all the phases are connected in the correct sequence and the measured asymmetry is less than the fixed value, the output relays switch into on-position (yellow LED illuminated). When the phase sequence changes, the output relays switch into off-position (yellow LED not illuminated).



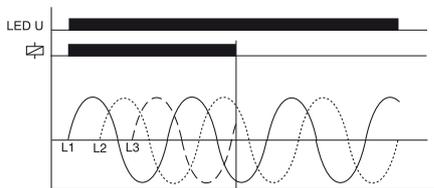
### Detection of reverse voltage (by means of evaluation of asymmetry)

The output relays switch into off-position (yellow LED not illuminated) when the asymmetry between the phase voltages exceeds the fixed value of the asymmetry. An asymmetry caused by the reverse voltage of a consumer (e.g. a motor which continues to run on two phases only) does not effect the disconnection.

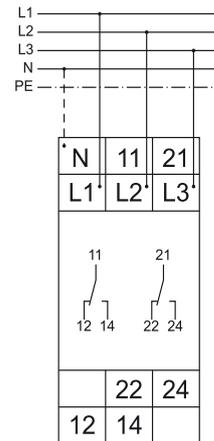


### Phase failure monitoring

When one of the three phases fails, the output relays switch into off-position (yellow LED not illuminated).



## Connections



## Dimensions

