Voltage monitoring in 3-phase mains

G2PF...S02

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 2.5mm² 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(N)~ 115/66V	terminals (N)-L1-L2-L3 (G2PF115VS02) (= measuring voltage)
3(N)~ 230/132V	terminals (N)-L1-L2-L3 (G2PF230VS02) (= measuring voltage)
3(N)~ 400/230V	terminals (N)-L1-L2-L3 (G2PF400VS02) (= 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 d.c.:	-
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 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 10^6 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, 48 to 63Hz
Input:	
3(N)~ 115/66V	terminals (N)-L1-L2-L3 (G2PF115VS02) (= supply voltage)
3(N)~ 230/132V	terminals (N)-L1-L2-L3 (G2PF230VS02) (= supply voltage)
3(N)~ 400/230V	terminals (N)-L1-L2-L3 (G2PF400VS02) (= 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 (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

8. Accuracy

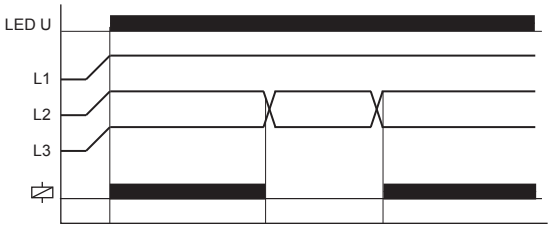
Base accuracy:	-
Frequency response:	-
Adjustment accuracy:	-
Repetition accuracy:	-
Voltage influence:	-
Temperature influence:	-

9. Ambient conditions

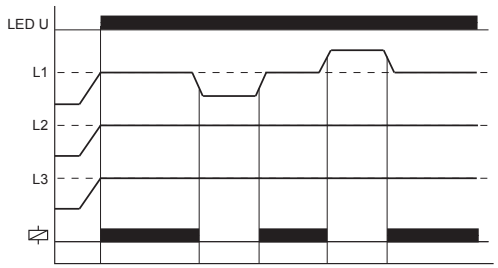
Ambient temperature:	-25 to +55°C (in accordance with IEC 60068-1) -25 to +40°C (in accordance with UL 508)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	3 (in accordance with IEC 60664-1)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

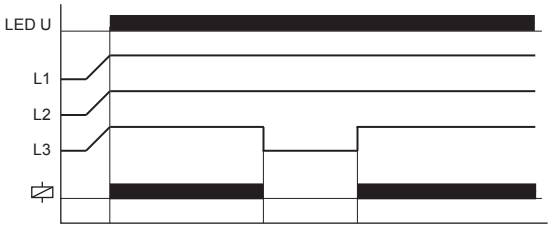
Phase sequence monitoring
When all the phases are connected in the correct sequence and the measured asymmetry is less than the fixed value, the output relays switch into on-position (yellow LED illuminated). When the phase sequence changes, the output relays switch into off-position (yellow LED not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



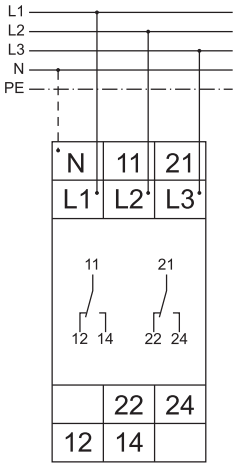
Detection of reverse voltage (by means of evaluation of asymmetry)
The output relays switch into off-position (yellow LED not illuminated) when the asymmetry between the phase voltages exceeds the fixed value of the asymmetry. An asymmetry caused by the reverse voltage of a consumer (e.g. a motor which 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

