Frequency monitoring for 50/60Hz power grids

G2FW400VL20
24-240V

Monitoring relays - GAMMA series
Window function
110V to 400V measuring voltage
Fault latch
Recognition of voltage breakdown
Supply voltage 24 to 240V a.c./d.c.
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
Frequency monitoring for 50/60Hz power grids with adjustable thresholds, timing for ON-Delay and tripping delay separately adjustable and the following functions which are selected by means of rotary switch:

Rated frequency 50Hz:
- WIN 50Hz — Monitoring the window between Min and Max
- WIN+LATCH 50Hz — Monitoring the window betwenn Min and Max with fault latch

Rated frequency 60Hz:
- WIN 60Hz — Monitoring the window between Min and Max
- WIN+LATCH 60Hz — Monitoring the window between Min and Max with fault latch

2. Time ranges

	Adjustment range	
ON-Delay:	0s	10s
Tripping delay (Delay):	0.1s	10s

3. Indicators

Green LED ON:	indication of supply voltage
Green LED flashes:	indication of ON-Delay
Red LED Max/Min ON/OFF:	indication of failure of the corresponding threshold
Red LED Max/Min flashes:	indication of tripping delay of the corresponding threshold
Red LED UFailure ON/OFF:	voltage failure
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:
- 24 to 240V a.c./d.c. — terminals A1-A2 (galvanically seperated)

Tolerance:
- 24 to 240V d.c. — -20% to +25%
- 24 to 240V a.c. — -15% to +10%

Rated frequency:
- 48 to 400Hz — 24 to 240V a.c.
- 16 to 48Hz — 48 to 240V a.c.

Rated consumption:	2VA (1W)
Duration of operation:	100%
Reset time:	500ms
Wave form for a.c.:	Sinus
Residual ripple for d.c.:	10%
Drop-out voltage:	>15% of the supply voltage
Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltge:	4kV

6. Output circuit
2 potential free change over contact

Rated voltage:	250V a.c.
Switching capacitiy:	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 resisitve 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:	frequency, 1-phase (terminals E-F)
Voltage range:	110V to 400V a.c. Sinus max. 300V a.c. to earth
Tolerance:	-15% to +15%
Input resistance:	1MΩ
Switching thresholds at F_N=50Hz:	
Max:	49, 49.5, 50, 50.5, 51, 52, 53, 55, 57.5, 60Hz
Min:	40, 42.5, 45, 47, 48, 49, 49.5, 50, 50.5, 51Hz
Switching thresholds at F_N=60Hz:	
Max:	59, 59.5, 60, 60.5, 61, 62, 63, 65, 67.5, 70Hz
Min:	50, 52.5, 55, 57, 58, 59, 59.5, 60, 60.5, 61Hz

The thresholds are adjustable by means of rotary switch (Max and Min).

Overvoltage category:	III (in accordance with IEC 60664-1)
Rated surge voltage:	4kV

Technical data

8. Accuracy

Base accuracy:	0.5% of F_N
Frequency accuracy:	-
Adjustment accuracy:	-
Repetition accuracy:	0.2% of F_N
Voltage influence:	-
Temperature influence:	≤0.01% / °C

9. Ambient conditions

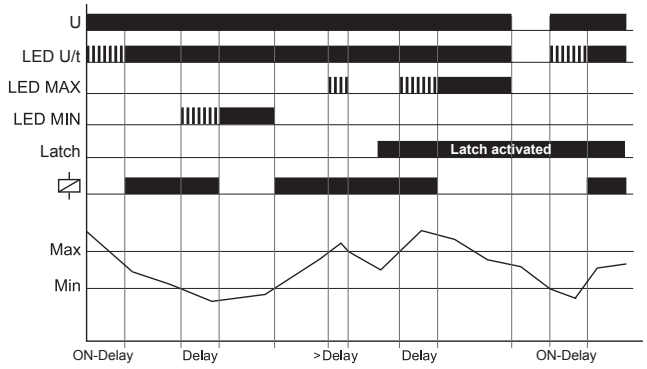
Ambient temperature:	-25 to +55°C (in accordance with IEC 60068-1) -25 to +40°C (in accordance with UL 508)
Storage temperature:	-25 to +70°C
Transport temperature:	-25 to +70°C
Relative humidity:	15% to 85% (in accordance with IEC 60721-3-3 class 3K3)
Pollution degree:	3 (in accordance with IEC 60664-1)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

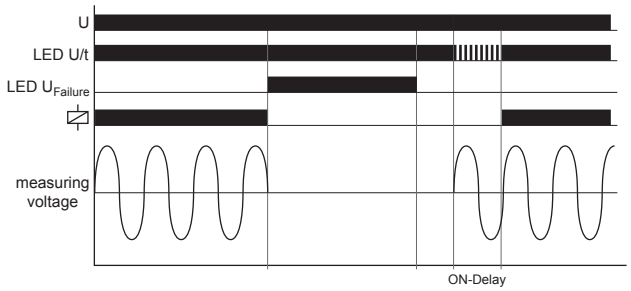
Window function (WIN, WIN+LATCH)
When the supply voltage U is applied, the set interval of the tripping delay (ON-Delay) begins. During this period and independent of the measured value the output relay R remains into off-position.
The output relay R switches into on-position after the set interval of the tripping delay (ON-Delay) has expired and if the frequency is within the adjusted window. As soon as the frequency leaves the accepted value, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

WIN
The output relay R switches into on-position again after the frequency re enters the accepted value and the tripping delay (ON-Delay) has expired.

WIN+LATCH
The output relay R switches only into on-position again by interrupting and re-applying the supply voltage, provided that the measured frequency is within the adjusted window after the interval of the tripping delay (ON-Delay) has expired.

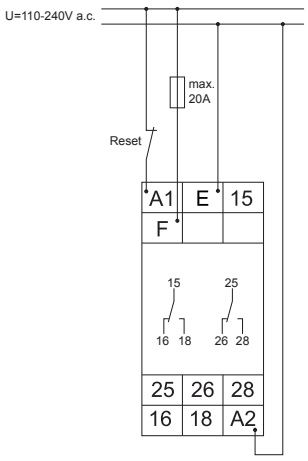


Recognition of missing measuring voltage
If the measuring voltage is missing (red LED UFailure illuminated) the output relay switches into off-position. When the measured voltage and frequency stays within the set limits for more than the ON-Delay the output relay energises.
If the fault latch is activated (WIN+LATCH) a detected frequency fault will not be reset by interrupting and re-applying the measuring voltage.

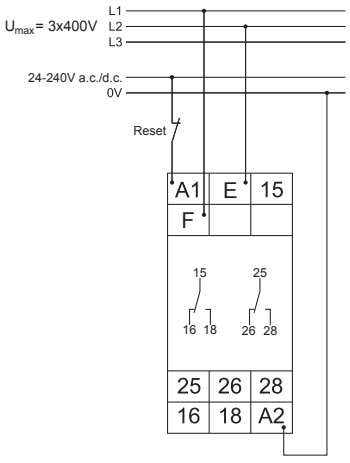


Connections

G2FW400VL20: supply voltage = measuring voltage
fault latch activated

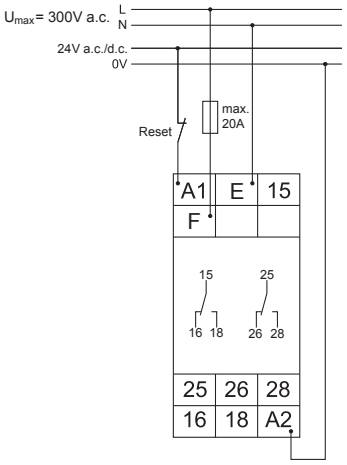


G2FW400VL20: measuring voltage = 400V a.c. (phase-phase);
supply voltage = 24-240V a.c./d.c.
fault latch activated

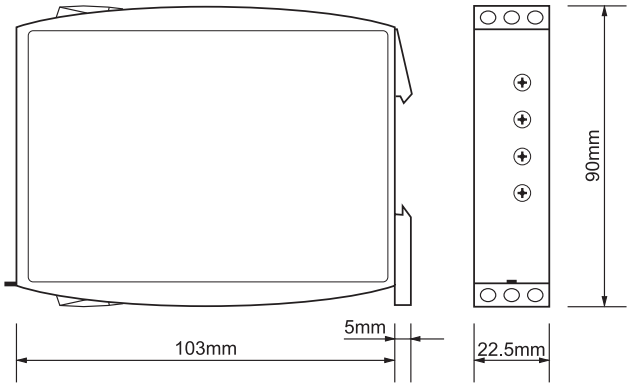


Connections

G2FW400VL20: measuring voltage = 300V a.c.;
supply voltage 24V a.c./d.c.
fault latch activated



Dimensions



TELE Haase Steuergeräte Ges.m.b.H.
Vorarlberger Allee 38
A-1230 Wien

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Subject to alterations and errors

Technik Braucht Kontrolle