

- ▶ Voltage measurement in 3-phase mains for 3- and 4-wire circuit
- ▶ Connection of neutral wire optional
- ▶ Monitoring of phase sequence and phase failure
- ▶ Monitoring of asymmetry
- ▶ Reinforced insulation of the measuring circuit
- ▶ Measured value transmitting via standard bus
- ▶ Modular monitoring system
- ▶ Width 22.5mm
- ▶ Industrial design



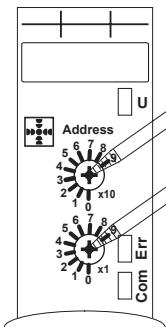
## Technical data

### 1. Functions

WatchDog pro module for voltage measurement in 3-phase mains for 3- and 4-wire circuit. Monitoring of phase sequence, phase failure and asymmetry.

### 2. Address adjustment

Address range: 1-99  
Deactivation (Off): address 0



Potentiometer 1:  
To adjust the **DECADES**

Potentiometer 2:  
To adjust the **UNITS**

e.g.: the address **43** will be adjusted as follows:

Potentiometer 1 on position **4**  
Potentiometer 2 on position **3**

### 3. Indicators

Green LED U ON: module is supplied via local interface  
Yellow LED Com ON / flashes: data exchange over standard bus is in progress  
Red LED Err ON: indication of failure

### 4. Mechanical design

Self-extinguishing plastic housing, IP rating IP20  
Mounted on DIN-rail TS 35 according to EN 50022  
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. Supply

Rated voltage: 24V DC from local interface  
Tolerance: -17.5% to +16.5%  
Rated consumption: 1W  
Rated current: 36mA  
Max. supply current: 50mA  
Ripple and noise: < 150mV<sub>PP</sub>  
Duty cycle: 100%  
Start-up time: 2.2s typ.  
Drop-out voltage: > 60% of supply voltage

### 6. Businterface

#### Standard bus:

Data link: RS485; yellow LED Com ON  
Interface parameter: 115.2kBd, 9 bits data  
Number of extension modules:  
Local interface: 24\* (width 22.5mm)

\* dependent on the max. permissible current through local interface of the Central Unit (CU)  
(additional extension is possible by the remote bus!)

### 7. Isolation

Fusing: max. 20A  
Overvoltage category: III (in accordance with IEC 60664-1)  
Rated surge voltage: 6kV between input circuit and local interface

### 8. Measuring circuit

Measured variable: AC Sinus (48 to 63Hz)

Measured ranges: Phase voltages: U<sub>1</sub>, U<sub>2</sub>, U<sub>3</sub>

Average phase-phase voltage: U<sub>d</sub>

Measuring input: 3(N) ~ 400/230V terminals N-L1-L2-L3

Overload capacity: 3(N) ~ 400/230V 3(N) ~ 600/364V

Input resistance: 3(N) ~ 400/230V 1MΩ

Asymmetry: 0% bis 100%

Phase sequence:

1 ... „clockwise rotation (123)“ or „no measuring circuit“  
0 ... „counter clockwise rotation (321)“ or „phase failure“

### 9. Accuracy

Base accuracy: ± 5% of measured range

Frequency response: -

Repetition accuracy: ≤ 2%

Voltage influence: ≤ 0.5%

Temperature influence: ≤ 0.1% / °C

### 10. Ambient conditions

Ambient temperature: -25 to +55°C (in accordance with IEC 68-1)  
-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)

Absolute humidity: 1g to 25g H<sub>2</sub>O/m<sup>3</sup>  
(in accordance with IEC 60721-3-3 class 3K3)

Pollution degree: 2 (in accordance with IEC 60664-1)

Vibration resistance: 10 to 55Hz 0.35mm  
(in accordance with IEC 68-2-6)

Shock resistance: 15g 11ms (in accordance with IEC 68-2-27)

## Operator accessibility of clamps and connectors

The table shows which terminals and connectors can be touched by the operator during normal operation.

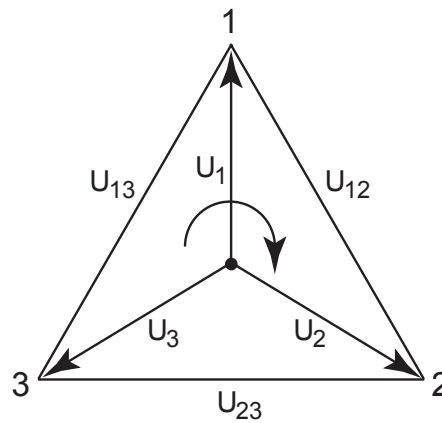
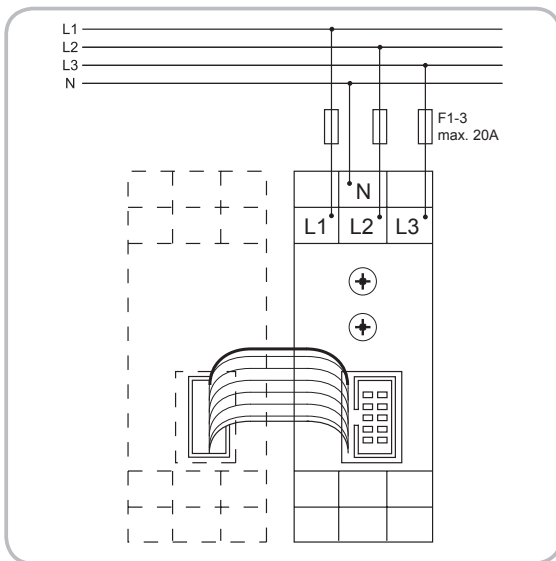
Nr.	Type	Terminal	Touchable
1	AI	Communication interface for local input-/output-extension device	YES
2	Ar	Communication interface for remote input-/output unit	YES
3	Be	Open communication interface, open to external devices as well	YES
4	Bi	Internal communication interface for peripheral modules	NO
5	C	Interface for digital and analog input signals	NO
6	D	Interface for digital and analog output signals	NO
7	E	Serial or parallel communication interface for data communication with external devices	YES
8	F	Terminal for line power supply	NO
9	H	Functional Earth terminal	YES
10	J	Input-/output interface for power supply of sensors and actuators	NO
11	K	Interface for auxiliary supply output and auxiliary supply input	NO

3-phase voltage measurement: G2PI1 400V - Definition of circuits:

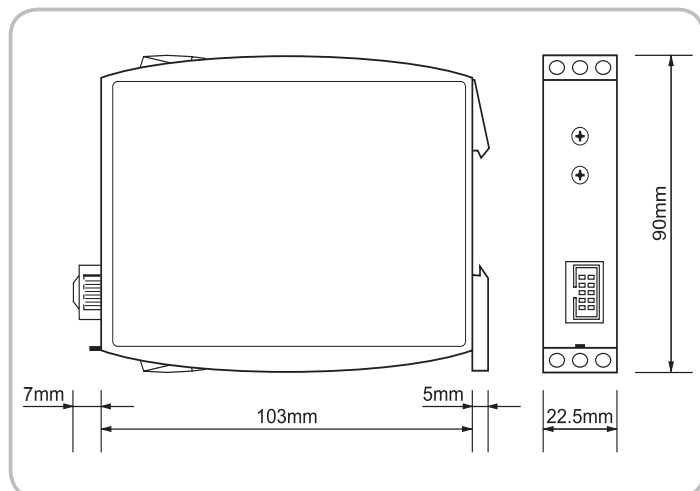
Name	Type	Nr.	Terminals related to the Circuit
Voltage inputs	C	5	N, L1, L2, L3
Local interface	AI	1	L1 Box header; L1 plug connector with ribbon cable

## Connections

G2PI1 400V



## Dimensions



## Ordering information

Type	Address range	LEDs	Part Nr. (PQ 1)
G2PI1 400V	1 to 99	U, Err, Com	2500350