

Measuring transducers

G 400 for phase angle
PF 400 for cos φ proportional

The G 400 measures the angle between sine wave formed current and voltage.

The output signal is proportional to the angle in degrees.

There are two models, one for single-phase and one for 3-phase systems.

The PF 400 for cos φ measures the angle between sine wave formed current and voltage. The output signal is proportional to cos phi. There are two models, one for single-phase and one for three-phase systems.

The transducers in plastic cases are mounted directly on profiled bar 35 EN 500022. Connection to selfopening clamps for 6 mm² wires.

Transducers for mounting in 19" racks can be delivered in different application types (see special leaflet). The rack modules are 8 TE wide and in a 19" rack is place for 10 modules.

The transducers are manufactured according to IEC 688.

Order facts:

	Enclosed for mounting on profiled bar 35 EN 50022		19" rack module (width 8 TE)	
	Angle deg	cos φ	Angle deg	cos φ
	Type	Type	Type	Type
Single phase	G 400-15x	PF 400-15x	G 400R-15x	PF 400R-15x
Three phase	G 400-35x	PF 400-35x	G 400R-35x	PF 400R-35x
Replace x with last digit for output according to table below				
Output	External resistance load		Last digit x	
0-5 or ± 5 mA	0-3000 Ω		1	
0-10 or ± 10 mA	0-1500 Ω		2	
0-20 or ± 20 mA	0- 750 Ω		3	
4-20 mA	0- 750 Ω		4	
0-10 or ± 10 V	> 700 Ω		5	

Order form:

Measuring transducer for cos φ, three phase

Type **PF 400-354**
 Connection 110 V, 5A, 50 Hz
 Range cap. 0,5-1-0,5 ind.
 Output 4 - 12 - 20 mA
 Power supply 230 VAC
 Case for DIN-rail

Technical data

Input
 Voltage any value between 10 and 500V (rack version max 300 V)
 Consumption (burden) < U_{in} × 2 mA, VA
 Current any value between 0,5 and 7,5 A
 Consumption approx. 0,2 VA
 Frequency 50 or 60 Hz
 Measuring ranges min 60 deg., max 360 deg.
 Common measuring ranges cap 0,5-1-0,5 ind
 cap 0,9-1-0,9 ind

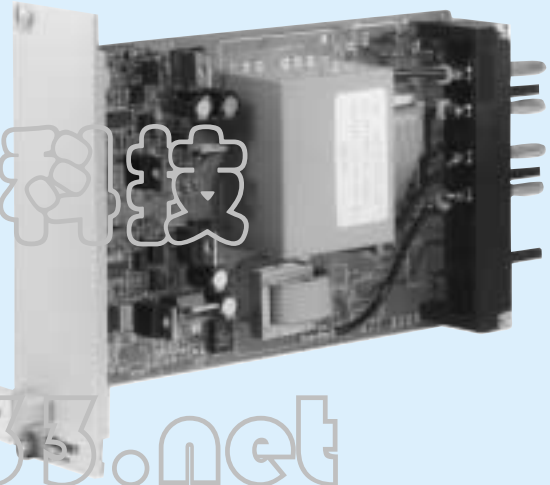
Output

Current output signal min 0-1 mA, max 0-20 mA
 Range 0...5/10/20 mA, 4-20 mA
 Load max 15 V
 Current limitation < 30 mA
 Voltage: 0-10 V
 Burden > 700 Ω
 Ripple < 1% p.p.

PF400-FA



PF400-FB



General data

Accuracy class 0,5 according to IEC 688
 0,2 on request
 Linearity error < 0,1%
 Response time 2 periods
 Temperature influence < 0,1% / 10°C
 Temperature range -25...+60°C operation
 -40...+70°C storage
 Test voltage 5,6 kV, 50 Hz, 1 min (rack version 3,7 kV)
 Power supply 24, 110, 230 VAC ± 15%, 47-70 Hz, ca 2 VA
 24-130 VDC ± 20%, ca 2,5 W
 Weight 0,5 kg

Options on request

Standards

General standards for measuring transducers EN 60688, IEC 688
 EMC emission EN 50081-2
 immunity EN 50082-2 *
 Safety EN 61010-1, IEC 1010-1
 Inputs overvoltage cat III
 Outputs overvoltage cat II
 Pollution degree 2

*) At certain frequencies can minor deviations from class accuracy occur during the disturbance

Design

The two input quantities voltage and current are transformed in the input transformer to a level adapted to the internal electronics and give at the same time galvanic separation.

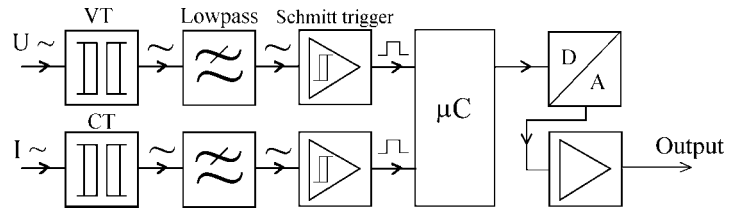
The noise on the input signals is filtered away in the phase true lowpass filter.

In the following zero cross detector (Schmitt trigger) is the input sine wave converted to a square wave.

The micro processor calculates the exact time difference T_1 between the two input signals. Out of the relation T_1/T is either the phase angle (G) or the cosine (PF) between voltage and current calculated.

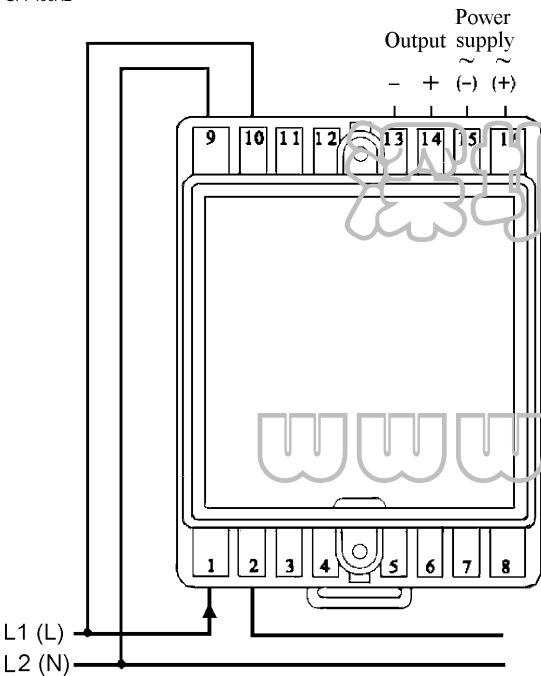
The AC power supply comes from a transformer that gives a galvanic separation. Those parts that need separate power get it via a rectifying stage. The DC power comes from a switched unit that gives galvanic separation and covers the span from 24 to 130 VDC.

GPF400BB

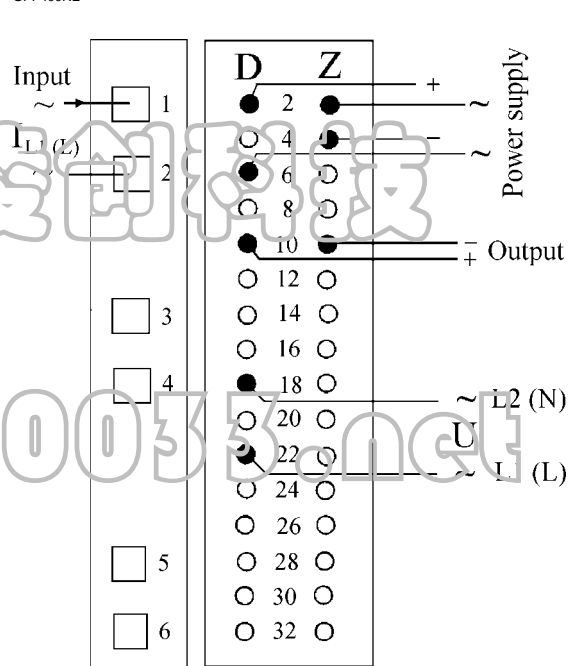


Connecting diagrams

G/PF 400
GPF400AE

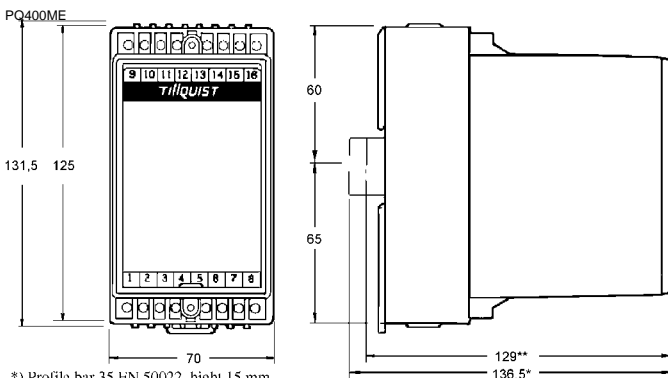


G/PF 400R
GPF400RE



Dimensions (mm)

G/PF 400



*) Profile bar 35 H/N 50022, height 15 mm
**) Profile bar 35 EN 50022, height 7,5 mm

G/PF 400R

