

POWER FACTOR AND PHASE ANGLE TRANSDUCER

TPF system Power Factor (COSθ)

TPA system Phase Angle

These transducers measure the power factor or phase angle between current and voltage of a single-phase or three-phase system with balanced loads. The output signals are isolated load-independent DC current or DC voltage.

FEATURES

- Accuracy 0.5% FS ±0.3°
- High immunity to external noise
- Wide selection of input and output range
- Quick and easy mounting

SPECIFICATION

Accuracy: 0.5% FS ±0.3°
Temp. coefficient: 100ppm at 23°C ±3°C
 (Option 60ppm at 23°C ±3°C)
Temp. range: -20 to 60 °C
 Operating 0~50°C
Humidity range: Up to 95% RH
Isolation: Input/output/power/case
Dielectric test: DIN-IEC 688. 2K Vrms 50/60 Hz,
 1 min. Between terminal to terminal.
 2.8K Vrms/1min. Between terminal
 to case.
Surge test: DIN-IEC 255-4, ANSI C37.
 90a/1974. 5KV (1.2 x 50µs)
Insulation resistance: 100MΩ or more, DC 500V
Housing material: Steel sheet
Mounting: Wall mounting
Power supply: AC 115/230V ±15%, 50/60 Hz, 3VA

INPUT

Measuring range: Power Factor:
 Lead (cap) 0.5 ~ 1 ~ Lag (ind) 0.5
 Phase Angle:
 Lead (cap) 60° ~ 0 ~ Lag (ind) 60°
Voltage: AC 30V ~ 600V
Current: AC 0 ~ 5A (0.3 ~ 7.5A)
Frequency: 50Hz or 60Hz ±3Hz
Burden: ≤0.1VA per voltage circuit
 ≤0.2VA per current circuit
Overload capacity: Voltage ... 600Vrms continuous
 1.25 x rated continuous
 2 x rated for 10 sec
 4 x rated for 5 sec
 Current ... 3 x rated continuous
 10 x rated for 10 sec
 50 x rated for 1 sec
 80 x rated for 0.5 sec



OUTPUT

Output variables: DC voltage or current
Ripple: <0.5% p-p max.
Response time: < 0.4 sec. or less
Zero adjustment: ±5% minimum
Span adjustment: ±10% minimum
DC current: 0~20mA (max.)

Output	Load resistance	$R = \frac{12V}{\text{Output current}}$ (R = load resistance)
4~20mA	≤ 600Ω	
0~20mA	≤ 600Ω	
0~10mA	≤ 1200Ω	
0~1mA	≤ 12KΩ	
-1~0~+1mA	≤ 12KΩ	
-10~0~+10mA	≤ 1200Ω	

DC voltage: 0~12V (max.)

Output	Load resistance	$R = \frac{\text{Output voltage}}{10mA}$ (R = load resistance)
0~10V	≥ 1000Ω	
0~5V	≥ 500Ω	
1~5V	≥ 500Ω	
0~1V	≥ 100Ω	
-1~0~+1V	≥ 100Ω	
-10~0~+10V	≥ 1000Ω	

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ORDERING INFORMATION

MODEL _____

TPF — —

TPA — —

TPF: Power Factor

TPA: Phase Angle

CONNECTION

12: 1 phase 2 wires

33: 3 phase 3 wires

34: 3 phase 4 wires

INPUT

1: AC 120V, 5A

2: AC 240V, 5A

Y: Option (600V, 10A max.)

INPUT FREQUENCY

1: 50 Hz ± 3 Hz

2: 60 Hz ± 3 Hz

DC OUTPUT

1: 4~12~20mA

2: -10~0~+10mA

3: -1~0~+1mA

A: 0~5~10V

B: -10~0~+10V

C: -5~0~+5V

D: 1~3~5V

Y: Option (± 20 mA, ± 12 V max.)

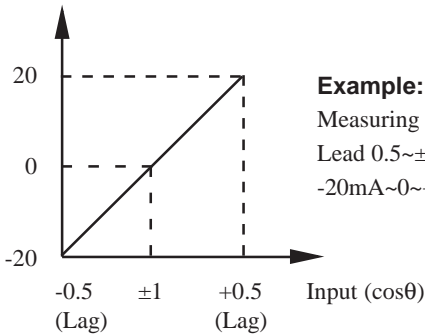
POWER SUPPLY

1: AC 115/230V $\pm 15\%$, 50/60 Hz

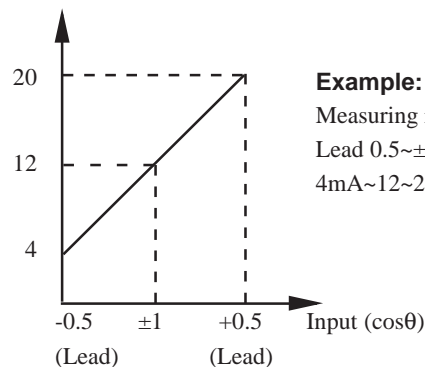
Y: Option

DC output characteristic

A: Output (mA)

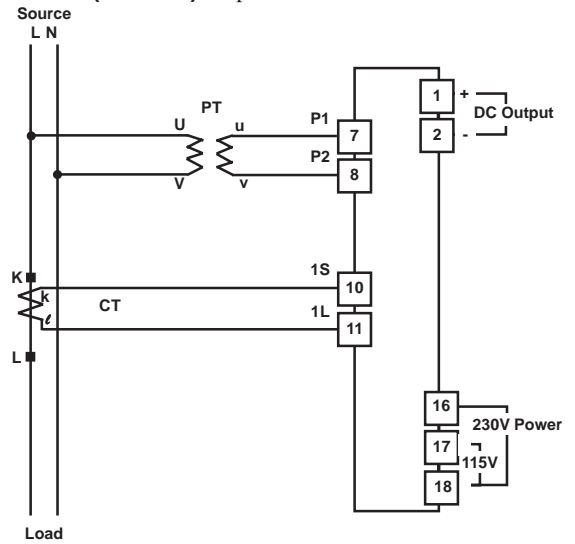


B: Output (mA)

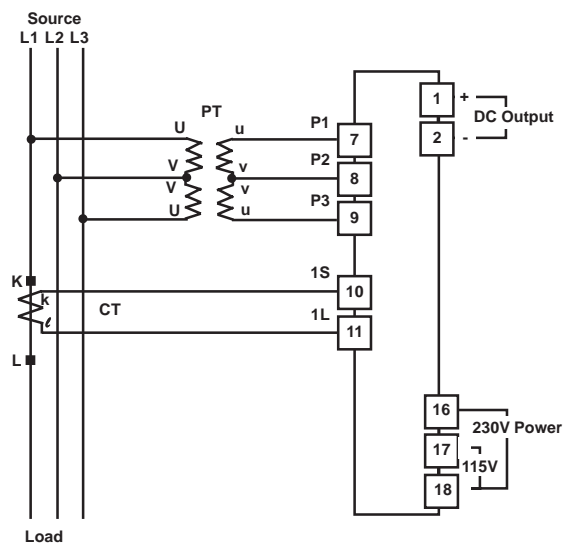


CONNECTION DIAGRAMS

TPF-12, TPA-12 (CASE B) 1 phase 2 wires



TPF-33, TPA-33 (CASE B) 3 phase 3 wires



TPF-34, TPA-34 (CASE B) 3 phase 4 wires

