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HIGH ACCURACY
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FAST DELIVERY
FRIENDLY APPLICATION SUPPORT

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TT SERIES

Transmitters can be configured using TT Configurator software without connecting to a power source.

LEOPARD TL SERIES

- Active, isolated analog output. (No need of external 24V to power output)
- Plug n’ Play. Order unit setup to your exact requirements.
- Dual 9A Form C relays with NO and NC connections available.
- 24 VDC Excitation to power 4-20 mA loops and selectable 5 or 10 VDC to power Strain gauge, and Pressure / Load cell.
- Auto sensing AC/DC power supply 85-265 VAC / 95-370 VDC or optional 18-36 VAC / 9-60 VDC.
- Remote programmer may be used as a remote display.

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<th>Maximum Range</th>
<th>Accuracy</th>
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<td>TTM-2S2MC</td>
<td>Dual same signal Inputs; Single 4-20mA output with math function &amp; Single RS-485 output</td>
<td></td>
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</tr>
<tr>
<td>TT-2D2MM</td>
<td>Dual Inputs; Dual 4-20mA output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TT-2D2MC</td>
<td>Dual Inputs; Single 4-20mA &amp; Single RS-485 output</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Accuracy is not guaranteed between 0 and 400°C (0 and 752°F) for type B, R and S.

Output signal : DC 4/0–20mA or DC 0–10V
Output resolution : 0.6μA.
Output response time : <200mS.
Communication : Modbus RS-485 RTU protocol, 4800–38400 bps
Power supply : 18–36 Vdc, internal protection against polarity inversion

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<td>TQH-33 &amp; TQH-34</td>
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<td>TQQH-33 &amp; TQQH-34</td>
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### CASE DIMENSIONS

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MODELS OFFERED

TA-1: 1 Phase, Average sensing Amps
TA-1T: 1 Phase, True rms sensing Amps

TA-3: 3 Phase, Average sensing Amps
TA-3T: 3 Phase, True rms sensing Amps

• True RMS sensing is recommended for input signals with distortion.
• Direct connect to the transducer for inputs ≤ 5A AC.
• Connect using a current Transformer (C.T.) for inputs greater than 5A AC.

FEATURES

• High accuracy ±0.2% of Rated Output (R.O.)
• Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
• High immunity to external noise.
• Quick and easy mounting to 35mm DIN Rail (DIN46277)
• Many input and output signal combinations

GENERAL SPECIFICATIONS

Accuracy........................................... ± 0.2% R.O. Standard for 10 to 100% of rated output
                                          ± 0.1% R.O. (Special Option)
Temp. coefficient.............................. ±100ppm/°C of span
                                          ≤60ppm/°C for ambient temperature of 25°C ±10°C
Temp. range..................................... Storage temperature range -20°C to 60°C (-4°F to 140°F)
                                          Operating temperature range 0°C to 50°C (32°F to 122°F)
Humidity range................................. Up to 95% RH non condensing
Isolation......................................... Between Input/Output/Power/Case
Dielectric test................................. DIN-IEC 688
                                          2K Vrms/1 min, Between terminal to terminal
                                          2.8K Vrms/1 min, Between terminal to case
Surge test...................................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
Insulation Resistance......................... Greater than 100 M Ω at 500V DC
Housing material.............................. ABS Resin(94V-0) or metal
Mounting........................................ Screw mount on metal case or Plastic case DIN Rail 35mm
Auxiliary Power............................... AC 115/230V ± 15%, 50/60Hz, 3VA
                                          DC 24V ± 20%(optional)
                                          125V DC ± 20%(optional)
**INPUT SPECIFICATIONS**

- **AC Input** ........................................... 0 to 5A AC, 0 to 1A AC or custom input
- **Frequency** ........................................... 45Hz to 65Hz or 400Hz
- **Burden** ............................................. ≤0.2VA
- **Response Sensitivity** .......................... ≤0.5% of measuring range to maximum input range
- **Input Overload Capacity** ....................... 3 times the rated input current continuously. 
  10 times the rated current for 10 seconds. 
  50 times the rated input current for 1 second. 
  80 times the rated input current for 0.5 second.

**OUTPUT SPECIFICATIONS**

- **Output Variables** ............................... DC mA or DC Volts
- **Ripple** .............................................. < 0.5% of rated output. Peak to Peak (maximum)
- **Response Time** ................................. < 400 milliseconds to go from 0 to 99% of output
- **Zero Adjustment** .............................. ± 5% of rated output (minimum)
- **Span Adjustment** ............................... ± 10% of rated output (minimum)
- **Load Resistance** ............................... 10K Ω maximum for 0 to 1mA output 
  500 Ω maximum for 4 to 20mA output 
  500 Ω minimum for 0 to 10V output

**CONNECTION DIAGRAM**

[Diagram showing the connection of the AC current transducers TA-1/TA-1T and TA-3/TA-3T]
MODELS OFFERED

TV-1: 1 Phase, Average sensing
TV-1T: 1 Phase, True rms sensing

TV-3: 3 Phase, Average sensing
TV-3T: 3 Phase, True rms sensing

- True RMS sensing is recommended for input signals with distortion.
- Direct connect to the transducer for inputs ≤ 600V AC.
- Connect using a Potential Transformer (P.T.) for inputs > 600V AC.

FEATURES

- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277)
- Many input and output signal combinations

GENERAL SPECIFICATIONS

Accuracy............................ ± 0.2% R.O. Standard for 10 to 100% of rated output
                                  ± 0.1% R.O. (Special Option)
Temp. coefficient.................. ≤100ppm/°C of span
                                  ≤60ppm/°C for ambient temperature of 25°C ±10°C
Temp. range........................ Storage temperature range -20°C to 60°C (-4°F to 140°F)
                                  Operating temperature range 0°C to 50°C (32°F to 122°F)
Humidity range .................... Up to 95% RH non condensing
Isolation............................ Between Input/Output/Power/Case
Dielectric test.................... DIN-IEC 688
                                  2K Vrms/1 min, Between terminal to terminal
                                  2.8K Vrms/1 min, Between terminal to case
Surge test.......................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
Insulation Resistance .......... Greater than 100 MΩ at 500V DC
Housing material ................. ABS Resin(94V-0) or metal
Mounting............................ Screw mount on metal case or Plastic case DIN Rail 35mm
Auxiliary Power.................... AC 115/230V ± 15%, 50/60Hz, 3VA
                                  DC 24V ± 20%(optional)
                                  125V DC ± 20%(optional)
**INPUT SPECIFICATIONS**

- **AC Input**: 0 to 150V AC, 0 to 300V AC, 0 to 600V AC or custom input
- **Frequency**: 45Hz to 65Hz or 400Hz
- **Burden**: \( \leq 0.1VA \)
- **Response Sensitivity**: \( \leq 0.5\% \) of measuring range to maximum input range
- **Input Overload Capacity**: 1.25 times the rated input voltage continuously.
  - 2 times the rated voltage for 10 seconds.
  - 4 times the rated input voltage for 5 seconds.
  - Or 600V AC rms continuous (absolute maximum)

**OUTPUT SPECIFICATIONS**

- **Output Variables**: DC mA or DC Volts
- **Ripple**: \(< 0.5\%\) of rated output. Peak to Peak (maximum)
- **Response Time**: \(< 400\) milliseconds to go from 0 to 99\% of output
- **Zero Adjustment**: \(\pm 5\%\) of rated output minimum
- **Span Adjustment**: \(\pm 10\%\) of rated output minimum
- **Load Resistance**: 10K \(\Omega\) maximum for 0 to 1mA output
  - 500 \(\Omega\) maximum for 4 to 20mA output
  - 500 \(\Omega\) minimum for 0 to 10V output

**CONNECTION DIAGRAM**

TV-1/TV-1T

Three Phase 3 wire

Three Phase 4 wire
MODELS OFFERED

**TW-12:** Single Phase, 2 Wire – 1 Element

**TW-13:** Single Phase, 3 Wire – 2 Element

**TW-33:** 3 Phase, 3 Wire – 2 Element

**TW-34:** 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the active power Watts for balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC Volts, representing the measured value of the active power Watts.

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations

GENERAL SPECIFICATIONS

**Accuracy** ........................................... ± 0.2% R.O. Standard for 10 to 100% of rated output

± 0.1% R.O. (Special Option)

**Temp. coefficient** .............................. ≤100ppm/°C of span

≤60ppm/°C for ambient temperature of 25°C ±10°C

**Temp. range** ................................ Storage temperature range -20°C to 60°C (-4°F to 140°F)

Operating temperature range 0°C to 50°C (32°F to 122°F)

**Humidity range** ............................... Up to 95% RH non condensing

**Isolation** .......................................... Between Input/Output/Power/Case

**Dielectric test** ................................. DIN-IEC 688

2K Vrms/1 min, Between terminal to terminal

2.8K Vrms/1 min, Between terminal to case

**Surge test** .......................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)

**Insulation Resistance** ........ Greater than 100 M Ω at 500V DC

**Housing material** ............................ ABS Resin(94V-0) or metal

**Mounting** ........................................ Screw mount on metal case or Plastic case DIN Rail 35mm

**Auxiliary Power** .......................... AC 115/230V ± 15%, 50/60Hz, 3VA

DC 24V ± 20%(optional)

125V DC ± 20%(optional)
INPUT SPECIFICATIONS

AC Input: 120V/5A AC, 240V/5A AC for 1ø/2 wire, 240V/120V, 5A AC for 1ø/3 Wire
120V/5A AC, 240V/5A AC for 3ø/3 Wire & 3ø / 4 Wire
Custom input (600V max /10A AC max)

Frequency: 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz

Burden: ≤0.2VA per current circuit, ≤0.1VA per voltage circuit.

Response Sensitivity: ≤0.5% of measuring range to maximum input range

Input Voltage: 600V AC rms continuous (absolute maximum)

Output Variables: DC mA or DC Volts

Ripple: < 0.5% of rated output. Peak to Peak (maximum)

Response Time: < 400 milliseconds to go from 0 to 99% of output

Zero Adjustment: ± 5% of rated output (minimum)

Span Adjustment: ± 10% of rated output (minimum)

Load Resistance: 10 kΩ maximum for 0 to 1mA output

Maximum Input range value = (CT Ratio) X (PT Ratio) X (Nominal Watts)

If CT = 200A:5A PT is 3300V:110V Nominal Watts = 500
then CT Ratio = 40 then PT Ratio = 30 and Maximum input range value = 40 x 30 x 500 = 600KW

OUTPUT SPECIFICATIONS

Output Variables: DC mA or DC Volts

Ripple: < 0.5% of rated output. Peak to Peak (maximum)

Response Time: < 400 milliseconds to go from 0 to 99% of output

Zero Adjustment: ± 5% of rated output (minimum)

Span Adjustment: ± 10% of rated output (minimum)

Load Resistance: 10 kΩ maximum for 0 to 1mA output

500 Ω maximum for 4 to 20mA output

500 Ω minimum for 0 to 10V output

CONNECTION DIAGRAM

Output Signal: 0 to 1 mA DC, 4 to 20 mA DC, 0 to 10 V DC

Auxiliary Power: 115/230V AC ± 15%, 125V DC ± 15%, 12V DC ± 15%

Accuracy: ± 0.2%, ± 0.1%

Base Model: Case

TW-12: 1 Phase, 1P/2W, 1E, Watts
SW1: 120V/5A AC

TW-13: 1 Phase, 1P/3W, 2E, Watts
SW2: 240V/5A AC

TW-33: 3 Phase, 3P/3W, 2E, Watts
SWY: Custom Input, MAX 10A

TW-34: 3 Phase, 3P/4W, 3E, Watts
SWY: Custom Output, MAX 10A
Since 1976

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MODELS OFFERED

TQ-12: Single Phase, 2 Wire – 1 Element
TQ-13: Single Phase, 3 Wire – 2 Element
TQ-33: 3 Phase, 3 Wire – 2 Element
TQ-34: 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the active power Watts for balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC Volts, representing the measured value of the active power Watts.

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations

GENERAL SPECIFICATIONS

Accuracy .................................. ± 0.2% R.O. Standard for 10 to 100% of rated output
                                          ± 0.1% R.O. (Special Option)
Temp. coefficient .......................... ≤100ppm/°C of span
                                          ≤60ppm/°C for ambient temperature of 25°C ±10°C
Temp. range .................................. Storage temperature range -20°C to 60°C (-4°F to 140°F)
                                          Operating temperature range 0°C to 50°C (32°F to 122°F)
Humidity range ............................. Up to 95% RH non condensing
Isolation .................................. Between Input/Output/Power/Case
Dielectric test ............................. DIN-IEC 688
                                          2K Vrms/1 min, Between terminal to terminal
                                          2.8K Vrms/1 min, Between terminal to case
Surge test ................................. DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
Insulation Resistance .................. Greater than 100 M Ω at 500V DC
Housing material .......................... ABS Resin(94V-0) or metal
Mounting .................................. Screw mount on metal case or Plastic case DIN Rail 35mm
Auxiliary Power .......................... AC 115/230V ± 15%, 50/60Hz, 3VA
                                          DC 24V ± 20%(optional)
                                          125V DC ± 20%(optional)
INPUT SPECIFICATIONS

AC Input ........................................ 120V/5A AC, 240V/5A AC for 1ø/2 wire, 240V/120V, 5A AC for 1ø/3 Wire
120V/5A AC, 240V/5A AC for 3ø/3 Wire & 3ø/4 Wire
custom input (600V max /10A AC max)
Frequency ........................................ 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz
Burden ............................................ ≤0.2VA per current circuit, ≤0.1VA per voltage circuit.
Response Sensitivity ............................ ≤0.5% of measuring range to maximum input range
Input Voltage ..................................... 600V AC rms continuous (absolute maximum)
Overload Capacity ............................... 1.25 times the rated input Voltage continuously.
.................................................. 2 times the rated input Voltage for 10 secs.
.................................................. 4 times the rated input Voltage for 5 secs.
Input Current ..................................... 3 times the rated input current continuously.
Overload Capacity ............................... 10 times the rated input current for 10 secs.
.................................................. 50 times the rated input current for 1 sec.
.................................................. 80 times the rated input current for 0.5 secs

OUTPUT SPECIFICATIONS

Output Variables ................................. DC mA or DC Volts
Ripple ............................................. < 0.5% of rated output. Peak to Peak (maximum)
Response Time ................................... < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment ................................. ± 5% of rated output (minimum)
Span Adjustment ................................. ± 10% of rated output (minimum)
Load Resistance ................................. 10 kΩ maximum for 0 to 1mA output
.................................................. 500 Ω maximum for 4 to 20mA output
.................................................. 500 Ω minimum for 0 to 10V output

Maximum Input range value = (CT Ratio) X (PT Ratio) X (Nominal VARs)
If CT = 200A:5A PT is 3300V:110V Nominal VARs = 500
CT Ratio = 40 PT Ratio = 30 and Maximum input range value = 40 x 30 x 500 = 600KVAR

CONNECTION DIAGRAM
MODELS OFFERED

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWQ-12</td>
<td>1 Phase, 2 Wire – 1 Element</td>
</tr>
<tr>
<td>TWQ-13</td>
<td>1 Phase, 3 Wire – 2 Element</td>
</tr>
<tr>
<td>TWQ-33</td>
<td>3 Phase, 3 Wire – 2 Element</td>
</tr>
<tr>
<td>TWQ-34</td>
<td>3 Phase, 4 Wire – 3 Element</td>
</tr>
</tbody>
</table>

- Accurate measurement of the active power and reactive power (Watts and VARs) of a single/three phase system with balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC Volts, representing the measured value of the active and reactive power (Watts and VARs).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations

GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.2% R.O. Standard for 10 to 100% of rated output</td>
</tr>
<tr>
<td></td>
<td>±0.1% R.O. (Special Option)</td>
</tr>
<tr>
<td>Temp. coefficient</td>
<td>≤100ppm/ºC of span</td>
</tr>
<tr>
<td></td>
<td>≤60ppm/ºC for ambient temperature of 25ºC ±10ºC</td>
</tr>
<tr>
<td>Temp. range</td>
<td>Storage temperature range -20ºC to 60ºC (-4ºF to 140ºF)</td>
</tr>
<tr>
<td></td>
<td>Operating temperature range 0ºC to 50ºC (32ºF to 122ºF)</td>
</tr>
<tr>
<td>Humidity range</td>
<td>Up to 95% RH non condensing</td>
</tr>
<tr>
<td>Isolation</td>
<td>Between Input/Output/Power/Case</td>
</tr>
<tr>
<td>Dielectric test</td>
<td>DIN-IEC 688</td>
</tr>
<tr>
<td></td>
<td>2K Vrms/1 min, Between terminal to terminal</td>
</tr>
<tr>
<td></td>
<td>2.8K Vrms/1 min, Between terminal to case</td>
</tr>
<tr>
<td>Surge test</td>
<td>DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 μs)</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Greater than 100 M Ω at 500V DC</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS Resin(94V-0) or metal</td>
</tr>
<tr>
<td>Mounting</td>
<td>Screw mount on metal case or Plastic case DIN Rail 35mm</td>
</tr>
<tr>
<td>Auxiliary Power</td>
<td>AC 115/230V ± 15%, 50/60Hz, 3VA</td>
</tr>
<tr>
<td></td>
<td>DC 24V ± 20%(optional), 125V DC ± 20%(optional)</td>
</tr>
</tbody>
</table>

INPUT SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Input</td>
<td>120V/5A AC, 240V/5A AC for 1a/2 wire, 240V/120V, 5A AC for 1a/ 3 Wire</td>
</tr>
<tr>
<td>Frequency</td>
<td>120V/5A AC, 240V/5A AC for 3a/3 Wire &amp; 3e / 4 Wire</td>
</tr>
<tr>
<td>custom input (600V max /10A AC max)</td>
<td></td>
</tr>
<tr>
<td>Burden</td>
<td>≤0.2VA per current circuit, ≤0.1VA per voltage circuit.</td>
</tr>
<tr>
<td>Response Sensitivity</td>
<td>≤0.5% of measuring range to maximum input range</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>600V AC rms continuous (absolute maximum)</td>
</tr>
<tr>
<td>Overload Capacity</td>
<td>1.25 times the rated input Voltage continuously.</td>
</tr>
<tr>
<td></td>
<td>2 times the rated input Voltage for 10 secs. 4 times the rated input Voltage for 5 secs.</td>
</tr>
<tr>
<td>Input Current</td>
<td>3 times the rated input current continuously. 10 times the rated input current for 10 secs.</td>
</tr>
<tr>
<td>Overload Capacity</td>
<td>50 times the rated input current for 1 sec. 80 times the rated input current for 0.5 secs</td>
</tr>
</tbody>
</table>
OUTPUT SPECIFICATIONS

Output Variables.................. DC mA or DC Volts
Ripple..................................< 0.5% of rated output. Peak to Peak (maximum)
Response Time.......................< 400 milliseconds to go from 0 to 99% of output
Zero Adjustment.................. ± 5% of rated output (minimum)
Span Adjustment.................. ± 10% of rated output (minimum)
Load Resistance.................. 10 kΩ maximum for 0 to 1mA output
500 Ω maximum for 4 to 20mA output
500 Ω minimum for 0 to 10V output

To calculate the actual Watts and VARs Maximum Input range value, the CT and PT ratios have to be factored in:

Maximum input Range for Watts = (CT Ratio) X (PT Ratio) X (Nominal Watts)
Maximum input range value for VARs = (CT Ratio) X (PT Ratio) X (Nominal VARs)

For example:
If CT = 200A:5A PT is 3300V:110V Nominal Watts = 1000 Nominal VARs = 1000
then CT Ratio = 40 then PT Ratio = 30 and
Maximum input range value for Watts = 40 x 30 x 1000 = 1200KWatts
Maximum input range value for VARs = 40 x 30 x 1000 = 1200KVARs

CONNECTION DIAGRAM
MODELS OFFERED

- **TWH-12:** 1 Phase, 2 Wire – 1 Element
- **TWH-13:** 1 Phase, 3 Wire – 2 Element
- **TWH-33:** 3 Phase, 3 Wire – 2 Element
- **TWH-34:** 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the active energy (Watt Hours) of a single phase system with balanced or unbalanced loads.
- The output signals are isolated load independent pulses, representing the measured value of the active energy (WattHours, forward and reverse).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

GENERAL SPECIFICATIONS

- **Accuracy** ............................................................................... ± 0.2% R.O. Standard for 10 to 100% of rated output
                      ± 0.1% R.O. (Special Option)
- **Temp. coefficient** ............................................................. ≤100ppm/°C of span
                      ≤60ppm/°C for ambient temperature of 25°C ±10°C
- **Temp. range** ........................................................................ Storage temperature range -20°C to 60°C (-4°F to 140°F)
                    Operating temperature range 0°C to 50°C (32°F to 122°F)
- **Humidity range** ................................................................. Up to 95% RH non condensing
- **Isolation** ............................................................................ Between Input/Output/Power/Case
- **Dielectric test** ................................................................. DIN-IEC 688
  2KV Vrms/1 min, Between terminal to terminal
  2.8KV Vrms/1 min, Between terminal to case
- **Surge test** ........................................................................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
- **Insulation Resistance** ....................................................... Greater than 100 MΩ at 500V DC
- **Housing material** .............................................................. ABS Resin(94V-0) or metal
- **Mounting** ........................................................................... Screw mount on metal case or Plastic case DIN Rail 35mm
- **Auxiliary Power** ............................................................... AC 115/230V ± 15%, 50/60Hz, 3VA
                    DC 24V ± 20%(optional), 125V DC ± 20%(optional)

INPUT SPECIFICATIONS

- **AC Input** ............................................................................ 120V/5A AC, 240V/5A AC for 1ø/2 wire, 240V/120V, 5A AC for 1ø/ 3 Wire
  120V/5A AC, 240V/5A AC for 3ø/3 Wire & 3ø / 4 Wire
  custom input (600V max /10A AC max)
- **Frequency** ........................................................................... 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz
- **Burden** ............................................................................... ≤0.2VA per current circuit, ≤0.1VA per voltage circuit.
- **Response Sensitivity** ......................................................... ≤0.5% of measuring range to maximum input range
- **Input Voltage** ..................................................................... 600V AC rms continuous (absolute maximum)
- **Overload Capacity** ............................................................. 1.25 times the rated input Voltage continuously.
  2 times the rated input Voltage for 10 secs. 4 times the rated input Voltage for 5 secs.
- **Input Current** ..................................................................... 3 times the rated input current continuously. 10 times the rated input current for 10 secs.
- **Overload Capacity** ............................................................. 50 times the rated input current for 1 sec. 80 times the rated input current for 0.5 secs
OUTPUT SPECIFICATIONS

Output Variables: Pulses
Ripple: < 0.5% of rated output. Peak to Peak (maximum)
Response Time: < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment: ± 5% of rated output (minimum)
Span Adjustment: ± 10% of rated output (minimum)

To calculate the actual WattHours for each output pulse, the CT and PT ratios have to be factored in:

\[
\text{WattHours per Output Pulse} = \frac{(\text{CT Ratio}) \times (\text{PT Ratio})}{\text{Nominal Pulses per WattHour}}
\]

Calculation example: For Single phase 2 wire, TWH-12
If CT = 200A:5A then CT Ratio = 40  PT is 3300V:110V then  PT Ratio = 30

If 1 pulse per WattHour is selected, the output will actually be 1 pulse per 1200 WattHours
If 10 pulse per WattHour is selected, the output will actually be 1 pulse per 120 WattHours
If 100 pulse per WattHour is selected, the output will actually be 1 pulse per 12 WattHours

CONNECTION DIAGRAM

TWH-12

TWH-13

TWH-33

TWH-34
Since 1976

MODELS OFFERED

- **TWWH-12 base model**: 1 Phase, 2 Wire – 1 Element
- **TWWH-13 base model**: 1 Phase, 3 Wire – 2 Element
- **TWWH-33 base model**: 3 Phase, 3 Wire – 2 Element
- **TWWH-34 base model**: 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the active energy (WattHours) of a three phase system with balanced or unbalanced loads.
- The output signals are isolated load independent pulses, representing the measured value of the active energy (WattHours, forward and reverse) and DC mA or DC V for the active power (Watts).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>± 0.2% R.O. Standard for 10 to 100% of rated output</td>
</tr>
<tr>
<td></td>
<td>± 0.1% R.O. (Special Option)</td>
</tr>
<tr>
<td>Temp. coefficient</td>
<td>≤100ppm/°C of span</td>
</tr>
<tr>
<td></td>
<td>≤60ppm/°C for ambient temperature of 25°C ±10°C</td>
</tr>
<tr>
<td>Temp. range</td>
<td>Storage temperature range -20°C to 60°C (-4°F to 140°F)</td>
</tr>
<tr>
<td></td>
<td>Operating temperature range 0°C to 50°C (32°F to 122°F)</td>
</tr>
<tr>
<td>Humidity range</td>
<td>Up to 95% RH non condensing</td>
</tr>
<tr>
<td>Isolation</td>
<td>Between Input/Output/Power/Case</td>
</tr>
<tr>
<td>Dielectric test</td>
<td>DIN-IEC 688</td>
</tr>
<tr>
<td></td>
<td>2K Vrms/1 min, Between terminal to terminal</td>
</tr>
<tr>
<td></td>
<td>2.8K Vrms/1 min, Between terminal to case</td>
</tr>
<tr>
<td>Surge test</td>
<td>DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 μs)</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Greater than 100 MΩ at 500V DC</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS Resin(94V-0) or metal</td>
</tr>
<tr>
<td>Mounting</td>
<td>Screw mount on metal case or Plastic case on DIN Rail 35mm</td>
</tr>
<tr>
<td>Auxiliary Power</td>
<td>AC 115/230V ± 15%, 50/60Hz, 3VA</td>
</tr>
<tr>
<td></td>
<td>DC 24V ± 20%(optional)</td>
</tr>
<tr>
<td></td>
<td>125V DC ± 20%(optional)</td>
</tr>
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</table>

INPUT SPECIFICATIONS

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<th>Details</th>
</tr>
</thead>
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<td>AC Input</td>
<td>120V/5A AC, 240V/5A AC. Custom input (600V max /10A AC max)</td>
</tr>
<tr>
<td>Frequency</td>
<td>60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz</td>
</tr>
<tr>
<td>Burden</td>
<td>≤0.2VA per current circuit, ≤0.1VA per voltage circuit.</td>
</tr>
<tr>
<td>Response Sensitivity</td>
<td>≤0.5% of measuring range to maximum input range</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>600V AC rms continuous (absolute maximum)</td>
</tr>
<tr>
<td>Overload Voltage</td>
<td>1.25 times the rated input Voltage continuously.</td>
</tr>
<tr>
<td></td>
<td>2 times the rated input Voltage for 10 secs.</td>
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<tr>
<td></td>
<td>4 times the rated input Voltage for 5 secs.</td>
</tr>
<tr>
<td>Input Current</td>
<td>3 times the rated input current continuously.</td>
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<tr>
<td>Overload Capacity</td>
<td>10 times the rated input current for 10 secs.</td>
</tr>
<tr>
<td></td>
<td>50 times the rated input current for 1 sec.</td>
</tr>
<tr>
<td></td>
<td>80 times the rated input current for 0.5 secs.</td>
</tr>
</tbody>
</table>
OUTPUT SPECIFICATIONS

Output Variables: Pulses (WattHours) and DC mA or DC V (Watts)
Ripple: < 0.5% of rated output. Peak to Peak (maximum)
Response Time: < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment: ± 5% of rated output (minimum)
Span Adjustment: ± 10% of rated output (minimum)

To calculate the actual WattHours and Watts for each output pulse, the CT and PT ratios have to be factored in

\[ \text{Watts} = (\text{CT Ratio}) \times (\text{PT Ratio}) \times \text{Nominal Watts} \]

\[ \text{WattHours per Output Pulse} = \frac{(\text{CT Ratio}) \times (\text{PT Ratio})}{\text{Nominal Pulses/WattHour}} \]

Calculation example: For Single phase 2 wire, TWWH-12
If CT = 200A:5A then CT Ratio = 40  PT is 3300V:110V then PT Ratio = 30
Watts = 30 x 40 x 500 = 600kW

If 1 pulse per WattHour is selected, the output will actually be 1 pulse per 1200 WattHours
If 10 pulse per WattHour is selected, the output will actually be 1 pulse per 120 WattHours
If 100 pulse per WattHour is selected, the output will actually be 1 pulse per 12 WattHours

CONNECTION DIAGRAM

TWWH-12  TWWH-13  TWWH-33  TWWH-34

www.texmate.com
MODELS OFFERED

- **TQH-12:** 1 Phase, 2 Wire – 1 Element
- **TQH-13:** 1 Phase, 3 Wire – 2 Element
- **TQH-33:** 3 Phase, 3 Wire – 2 Element
- **TQH-34:** 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the reactive energy (VAR Hours) of a single phase system with balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC Volts, representing the measured value of the active energy (WattHours, forward and reverse).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

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<tr>
<th>Specification</th>
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<tr>
<td>Accuracy</td>
<td>± 0.2% R.O. Standard for 10 to 100% of rated output ± 0.1% R.O. (Special Option)</td>
</tr>
<tr>
<td>Temp. coefficient</td>
<td>≤100ppm/°C for span ≤60ppm/°C for ambient temperature of 25°C ±10°C</td>
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<tr>
<td>Temp. range</td>
<td>Storage temperature range -20°C to 60°C (-4°F to 140°F) Operating temperature range 0°C to 50°C (32°F to 122°F)</td>
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<tr>
<td>Humidity range</td>
<td>Up to 95% RH non condensing</td>
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<td>Isolation</td>
<td>Between Input/Output/Power/Case</td>
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<tr>
<td>Dielectric test</td>
<td>DIN-IEC 688</td>
</tr>
<tr>
<td></td>
<td>2K V rms/1 min, Between terminal to terminal</td>
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<tr>
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<td>2.8K V rms/1 min, Between terminal to case</td>
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<td>DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)</td>
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<tr>
<td>Burden</td>
<td>≤0.2VA per current circuit, ≤0.1VA per voltage circuit.</td>
</tr>
<tr>
<td>Response Sensitivity</td>
<td>≤0.5% of measuring range to maximum input range</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>600V AC rms continuous (absolute maximum)</td>
</tr>
<tr>
<td>Overload Capacity</td>
<td>1.25 times the rated input Voltage continuously.</td>
</tr>
<tr>
<td></td>
<td>2 times the rated input Voltage for 10 secs.</td>
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<td></td>
<td>4 times the rated input Voltage for 5 secs.</td>
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<tr>
<td>Input Current</td>
<td>3 times the rated input current continuously.</td>
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<tr>
<td>Overload Capacity</td>
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</tr>
<tr>
<td></td>
<td>50 times the rated input current for 1 sec.</td>
</tr>
<tr>
<td></td>
<td>80 times the rated input current for 0.5 secs</td>
</tr>
</tbody>
</table>
OUTPUT SPECIFICATIONS

Output Variables.................. Pulses
Ripple.............................. < 0.5% of rated output. Peak to Peak (maximum)
Response Time...................... < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment................... ± 5% of rated output (minimum)
Span Adjustment................... ± 10% of rated output (minimum)

To calculate the actual VARHours for each output pulse, the CT and PT ratios have to be factored in

\[
\text{VARHours per Output Pulse} = \frac{(CT \text{ Ratio}) \times (PT \text{ Ratio})}{\text{Nominal Pulses /VARHour}}
\]

Calculation example: For Single phase 2 wire, TQH-12
If CT = 200A:5A then CT Ratio = 40  PT is 3300V:110V then  PT Ratio = 30

If 1 pulse per VARHour is selected, the output will actually be 1 pulse per 1200 VARHours
If 10 pulse per VARHour is selected, the output will actually be 1 pulse per 120 VARHours
If 100 pulse per VARHour is selected, the output will actually be 1 pulse per 12 VARHours

CONNECTION DIAGRAM
MODELS OFFERED

TQQH-12: 1 Phase, 2 Wire – 1 Element
TQQH-13: 1 Phase, 3 Wire – 2 Element
TQQH-33: 3 Phase, 3 Wire – 2 Element
TQQH-34: 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the reactive power and reactive energy (VARs and VAR Hours) of a three phase system with balanced or unbalanced loads.
- The output signals are isolated load independent pulses, representing the measured value of the reactive energy (VAR Hours, forward and reverse) and DC mA or DC mV for the reactive power (VAR).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.2% of Rated Output (R.O.)
- Super high accuracy ±0.1% of Rated Output (R.O.) available as a special order.*
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

GENERAL SPECIFICATIONS

Accuracy............................... ± 0.2% R.O. Standard for 10 to 100% of rated output
+ ± 0.1% R.O. (Special Option)
Temp. coefficient ...................... ≤100ppm/°C of span
+ ≤60ppm/°C for ambient temperature of 25°C ±10°C
Temp. range................................... Storage temperature range -20°C to 60°C (-4°F to 140°F)
+ Operating temperature range 0°C to 50°C (32°F to 122°F)
Humidity range ............................. Up to 95% RH non condensing
Isolation..................................... Between Input/Output/Power/Case
Dielectric test......................... DIN-IEC 688
+ 2K Vrms/1 min, Between terminal to terminal
+ 2.8K Vrms/1 min, Between terminal to case
Surge test ....................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
Insulation Resistance .............. Greater than 100 MΩ at 500V DC
Housing material ....................... ABS Resin(94V-0) or metal
Mounting................................... Screw mount on metal case or Plastic case on DIN Rail 35mm
Auxiliary Power ....................... AC 115/230V ± 15%, 50/60Hz, 3VA
+ DC 24V ± 20%(optional)
+ 125V DC ± 20%(optional)

INPUT SPECIFICATIONS

AC Input................................. 120V/5A AC, 240V/5A AC. Custom input (600V max /10A AC max)
Frequency.............................. 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz
Burden ..................................... ≤0.2VA per current circuit, ≤0.1VA per voltage circuit.
Response Sensitivity .................. ≤0.5% of measuring range to maximum input range
Input Voltage ......................... 600V AC rms continuous (absolute maximum)
Overload Capacity ........................ 1.25 times the rated input Voltage continuously.
+ 2 times the rated input Voltage for 10 secs.
+ 4 times the rated input Voltage for 5 secs.
Input Current ............................ 3 times the rated input current continuously.
Overload Capacity ........................ 10 times the rated input current for 10 secs.
+ 50 times the rated input current for 1 sec.
+ 80 times the rated input current for 0.5 sec
OUTPUT SPECIFICATIONS

Output Variables.......... Pulses (VARHours) and DC mA or DC V (VARs)
Ripple.......................... < 0.5% of rated output. Peak to Peak (maximum)
Response Time.................. < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment............. ± 5% of rated output (minimum)
Span Adjustment............... ± 10% of rated output (minimum)

To calculate the actual VARHours and VARs for each output pulse, the CT and PT ratios have to be factored in

\[
\text{VARs} = (\text{CT Ratio}) \times (\text{PT Ratio}) \times \text{Nominal Watts}
\]

\[
\text{VARHours per Output Pulse} = \left(\frac{(\text{CT Ratio}) \times (\text{PT Ratio})}{\text{Nominal Pulses /VARHour}}\right)
\]

Calculation example: For Single phase 2 wire, TQQH-12
If CT = 200A:5A then CT Ratio = 40  PT is 3300V:110V then PT Ratio = 30

VARs = 30 x 40 x 500 = 600kVAR

If 1 pulse per VARHour is selected, the output will actually be 1 pulse per 1200 VARHours
If 10 pulse per VARHour is selected, the output will actually be 1 pulse per 120 VARHours
If 100 pulse per VARHour is selected, the output will actually be 1 pulse per 12 VARHours

CONNECTION DIAGRAM
MODELS OFFERED

TPF-12: 1 Phase, 2 Wire – 1 Element
TPF-33: 3 Phase, 3 Wire – 2 Element
TPF-34: 3 Phase, 4 Wire – 3 Element

- Accurate measurement of the Power Factor (Cos φ) of a three phase system with balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC V, representing the measured value of the Power Factor (Cos φ).

FEATURES

- Uses Time Division Multiplication (TDM) for precision measurement of even distorted signals.
- High accuracy ±0.5% of Rated Output (R.O.).
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>Accuracy</td>
<td>± 0.2% R.O. Standard for 10 to 100% of rated output</td>
</tr>
<tr>
<td></td>
<td>± 0.1% R.O. (Special Option)</td>
</tr>
<tr>
<td>Temp. coefficient</td>
<td>±100ppm/°C of span</td>
</tr>
<tr>
<td></td>
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<td>Temp. range</td>
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<td>Operating temperature range 0°C to 50°C (32°F to 122°F)</td>
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<td>Humidity range</td>
<td>Up to 95% RH non condensing</td>
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<td>Isolation</td>
<td>Between Input/Output/Power/Case</td>
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<tr>
<td>Dielectric test</td>
<td>DIN-IEC 688</td>
</tr>
<tr>
<td></td>
<td>2K Vrms/1 min, Between terminal to terminal</td>
</tr>
<tr>
<td></td>
<td>2.8K Vrms/1 min, Between terminal to case</td>
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<td>Surge test</td>
<td>DIN-IEC 255-4, ANSI C37</td>
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<td></td>
<td>90a/1974 5KV(1.2x50 µs)</td>
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<tr>
<td>Insulation Resistance</td>
<td>Greater than 100 M Ω at 500V DC</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS Resin(94V-0) or metal</td>
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<tr>
<td>Mounting</td>
<td>Screw mount on metal case or Plastic case on DIN Rail 35mm</td>
</tr>
<tr>
<td>Auxiliary Power</td>
<td>AC 115/230V ± 15%, 50/60Hz, 3VA</td>
</tr>
<tr>
<td></td>
<td>DC 24V ± 20%(optional) 125V DC ± 20%(optional)</td>
</tr>
</tbody>
</table>

INPUT SPECIFICATIONS

| Measuring Range                      | Power Factor |
|                                      | Lead (capacitive) 0.5 …. 1 …. Lag (Inductive) 0.5 |
| AC Voltage Input                     | 30 to 600V   |
| AC Current Input                     | 0 to 5A AC   |
| Frequency                            | 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz |
| Burden                               | ≤0.2VA per current circuit, ≤0.1VA per voltage circuit |
| Response Sensitivity                 | ≤0.5% of measuring range to maximum input range |
| Input Voltage                         | 600V AC rms continuous (absolute maximum) |
| Overload Capacity                     | 1.25 times the rated input Voltage continuously. |
|                                      | 2 times the rated input Voltage for 10 secs. |
|                                      | 4 times the rated input Voltage for 5 secs. |
| Input Current                         | 3 times the rated input current continuously. |
| Overload Capacity                     | 10 times the rated input current for 10 secs. |
|                                      | 50 times the rated input current for 1 sec. |
|                                      | 80 times the rated input current for 0.5 secs |
OUTPUT SPECIFICATIONS

Output Variables.......................... DCmA or DCV (Power Factor, Cos φ)
Ripple........................................ < 0.5% of rated output. Peak to Peak (maximum)
Response Time............................ < 400 milliseconds to go from 0 to 99% of output
Zero Adjustment.......................... ± 5% of rated output (minimum)
Span Adjustment.......................... ± 10% of rated output (minimum)

CONNECTION DIAGRAM

TPF-12

TPF-33

TPF-34
Since 1976

MODELS OFFERED

TF-1: Frequency

- Accurate measurement of the Frequency of a single or three phase system with balanced or unbalanced loads.
- The output signals are isolated load independent DC mA or DC V, representing the measured value of the Frequency.

FEATURES

- High accuracy ±0.05% of Rated Output (R.O.).
- Frequency range from 45 Hz to 10KHz.
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277) or screw mounting.
- Many input and output signal combinations.

GENERAL SPECIFICATIONS

<table>
<thead>
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<tr>
<td>Accuracy</td>
<td>± 0.2% R.O. Standard for 10 to 100% of rated output ± 0.1% R.O. (Special Option)</td>
</tr>
<tr>
<td>Temp. coefficient</td>
<td>≤100ppm/°C of span ≤60ppm/°C for ambient temperature of 25°C ±10°C</td>
</tr>
<tr>
<td>Temp. range</td>
<td>Storage temperature range -20°C to 60°C (-4°F to 140°F) Operating temperature range 0°C to 50°C (32°F to 122°F)</td>
</tr>
<tr>
<td>Humidity range</td>
<td>Up to 95% RH non condensing</td>
</tr>
<tr>
<td>Isolation</td>
<td>Between Input/Output/Power/Case</td>
</tr>
<tr>
<td>Dielectric test</td>
<td>DIN-IEC 688 2K Vrms/1 min, Between terminal to terminal 2.8K Vrms/1 min, Between terminal to case</td>
</tr>
<tr>
<td>Surge test</td>
<td>DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Greater than 100 M Ω at 500V DC</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS Resin(94V-0) or metal</td>
</tr>
<tr>
<td>Mounting</td>
<td>Screw mount on metal case or Plastic case on DIN Rail 35mm</td>
</tr>
<tr>
<td>Auxiliary Power</td>
<td>AC 115/230V ± 15%, 50/60Hz, 3VA DC 24V ± 20%(optional) 125V DC ± 20%(optional)</td>
</tr>
</tbody>
</table>
**INPUT SPECIFICATIONS**

- **AC Voltage Input range**: 2V to 200V AC or 30 to 600V AC
- **Frequency**: 60Hz ±3Hz, 50Hz ±3Hz, 400Hz ±3Hz
- **Burden**: ≤0.2VA per current circuit, ≤0.1VA per voltage circuit.
- **Response Sensitivity**: ≤0.5% of measuring range to maximum input range
- **Input Voltage**: 600V AC rms continuous (absolute maximum)
- **Overload Capacity**: 1.25 times the rated input Voltage continuously.
  2 times the rated input Voltage for 10 secs.
  4 times the rated input Voltage for 5 secs.

**OUTPUT SPECIFICATIONS**

- **Output Variables**: DCmA or DCV
- **Ripple**: < 0.5% of rated output. Peak to Peak (maximum)
- **Response Time**: < 400 milliseconds to go from 0 to 99% of output
- **Zero Adjustment**: ± 5% of rated output (minimum)
- **Span Adjustment**: ± 10% of rated output (minimum)
- **Load Resistance**: 10 kΩ maximum for 0 to 1mA output
  500 Ω maximum for 4 to 20mA output
  500 Ω minimum for 0 to 10V output

**CONNECTION DIAGRAM**

![Connection Diagram Image]
MODELS OFFERED

**TD-1:** DC Volts or mA

- The DC to DC Isolation Transmitter can receive various DC Voltage or Current signals and can output desired voltage or current signals isolated from each other.

**FEATURES**

- High accuracy ±0.2% of Rated Output (R.O.)
- High immunity to external noise.
- Quick and easy mounting to 35mm DIN Rail (DIN46277)
- Many input and output signal combinations

**GENERAL SPECIFICATIONS**

**Accuracy** ......................... ± 0.1% R.O.
**Temp. coefficient** ............. ≤100ppm/°C of span
- ≤60ppm/°C for ambient temperature of 25°C ±10°C
**Temp. range** ..................... Storage temperature range -20°C to 60°C (-4°F to 140°F)
- Operating temperature range 0°C to 50°C (32°F to 122°F)
**Humidity range** ............... Up to 95% RH non condensing
**Isolation** .......................... Between Input/Output/Power/Case
**Dielectric test** ................. DIN-IEC 688
- 2K Vrms/1 min, Between terminal to terminal
- 2.8K Vrms/1 min, Between terminal to case
**Surge test** ......................... DIN-IEC 255-4, ANSI C37 90a/1974 5KV(1.2x50 µs)
**Insulation Resistance** ....... Greater than 100 M Ω at 500V DC
**Housing material** .............. ABS Resin(94V-0) or metal
**Mounting** .......................... Screw mount on metal case or Plastic case on DIN Rail 35mm
**Auxiliary Power** ................. AC 115/230V ± 15%, 50/60Hz, 3VA
- DC 24V ± 20%(optional)
- 125V DC ± 20%(optional)
**INPUT SPECIFICATIONS**

- DC Voltage ................. 0 to 600V
- DC Current .................... for current input can be obtained from shunt

**OUTPUT SPECIFICATIONS**

- Output Variables............... DC Voltage (0~10V)
  ................................ DC Current (0~20mA)
- Response Time.................. < 400 milliseconds to go from 0 to 99% of output
- Zero Adjustment................ ± 5% of rated output (minimum)
- Span Adjustment............... ± 10% of rated output (minimum)

**CONNECTION DIAGRAM**

- **Metal Case**
  - + OUTPUT
  - - INPUT
  - + OUTPUT
  - - INPUT

- **Plastic Din Rail**
  - + OUTPUT
  - - INPUT
  - + OUTPUT
  - - INPUT

- **Auxiliary Power**
  - 115/230 VAC ±15%
  - 24 VDC ±15%
  - 125 VDC ±15%
  - Custom Power ±15%

- **Accuracy**
  - RO7 ±0.1%

- **Base Model**
  - TD-1 DC Volts or mA

- **Case**
  - Metal
  - Plastic

- **Models**
  - P1
  - P2
  - P3
  - PY

- **Input Signal**
  - 0 to 1mA DC
  - 4 to 20mA DC
  - 0 to 10mA DC
  - 0 to 10V DC
  - Custom Input (600V max)
CASE DIMENSIONS

**Case A**

Metal Case, Screw Mounting

- Case C

Fire Retardant, ABS Case

DIN Rail Mounting

- Dimensions:
  - Case A:
    - Width: 4.32" (107.5mm)
    - Height: 4.95" (125.7mm)
    - Depth: 0.6" (15.2mm)
    - Rail: 1.38" (35mm) (DIN 46277)
  - Case C:
    - Width: 3.15" (80mm)
    - Height: 2.36" (60mm)
    - Rail: 0.6" (15.2mm)

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**Texmate Inc.**

450 State Place, Escondido, CA 92029

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- Email: orders@texmate.com • 24 Hours • Fax: (760) 598-9828 •
- For tech assistance call: (760) 598-9899

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CASE DIMENSIONS

Case B
Metal Case, Screw Mounting

Case D
Fire Retardant, ABS Case
DIN Rail Mounting

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