Specifications

Output Signal	0-5 VDC or 4-20mA
Output Load Impedance	0-5VDC : >33K ohms 4-20mA : <400 ohms
Accuracy	1% FS (Active kW)
Response Time	500 mS (to 90% of step change)
Frequency Range	40-65 Hz
Power Supply	24VAC/DC(+/- 10%)
Power Consumption	<6.0 VA

NOTE: ***Power Supply and output signal ARE NOT isolated. Do not connect the negative terminals to a common point.***

kW Output Scale	0.5 to 200kW (not all ranges are available for each voltage range)
Voltage Input	600 VAC Maximum (See Ordering Information) *Note: Monitored voltage must within than 30-118% of the nominal range selected* 22-14AWG wire, 75/90˚C copper only Tighten to 5-7 inch-pounds torque
Fusing	Use Field supplied fuses or circuit breakers for voltage inputs (recommended)
Output Terminals	22-14AWG wire, 75/90˚C copper only Tighten to 5-7 inch-pounds torque
Indication	LED Green with proper phase match ups LED Amber if current and voltage are not matched correctly.
Isolated Voltage	1250VAC
Enclosure	UL94 V0 Flammability rated
Environmental	-4 to 122 DegF, (-20 to 50 Deg C) 0-95% RH non-condensing Altitude to 2000 meters Pollution Degree 2

Model Number Key

APT 4 - 420 - 24U - 10.0 - TH

Power Supply
24U 24 VAC/DC

Housing Type
TH Three Hole

Input Range
0.50 0.5kW
0.75 0.75kW
1.00 1.00kW
2.00 2.00kW
5.00 5.00kW
7.50 7.50kW
10.0 10.0kW
15.0 15.0kW
20.0 20.0kW
40.0 40.0kW
50.0 50.0kW
60.0 60.0kW
75.0 75.0kW
100 100kW
150 150kW
200 200kW

Note: not all ranges are available for each primary voltage input range.

Output Signal
420 4-20mA
005 0-5VDC

Monitored Voltage
1 208V
2 240V
4 480V
6 600V

APT-TH Series kW Transducer

Other Available Products Include:
DC Current Switches, Ground Fault Sensors
AC & DC Current Switches
Power Transducers
Current & Potential Transformers (CTs&PTs)

NK Technologies
3511 Charter Park Drive, San Jose, CA 95136
Toll free: 800-959-4014, Phone: 408-871-7510
Fax: 408-871-7515
sales@nktechnologies.com, www.nktechnologies.com

NK Technologies

INSTRUCTIONS

APT-TH Series
Active Power Transducer w/Proportional Analog Output

Quick "How To" Guide

1. Mount APT-TH Watt Transducer to DIN rail or panel in suitable enclosure. Note the "**Source**" and "**Load**" sides of the transducer.
2. With monitored load off, install each phase through the sensing windows. Designate one phase as A, B and C.
3. Connect line voltage (and neutral if used) to terminals with the same phase designated, terminals 1-4. Ensure phase relationships between the current sensing aperture and voltages is consistent. Use of field supplied fuses/circuit breakers as a means for disconnect is recommended.
4. Connect output terminals + and - (6-5) using 22-14 AWG copper wires rated 75/90ºC Tighten to 5-7 inch-pounds torque.
5. Connect supply voltage (24VAC or DC) to terminals 7-8, tighten to 5-7 inch pounds. Not polarity sensitive.
6. Energize power and monitored load.
7. LED shows Green when unit is installed correctly, Amber if the voltage and current wave shapes are not matched correctly . The LED will also be amber when power factor falls lower than 0.47.

Description

APT-TH Series watt transducers are intended to monitor consumption of three phase loads. They provide an analog signal proportional to the active power consumed by the monitored load. The three current carrying conductors pass through the three windows of the top section, and the matching voltage inputs connect to the base terminals (1-4).

Wiring

Current Sensing:

Be sure to observe all notes on polarity. Pass each phase through the appropriate sensing window. The sensor side with the power supply and output terminals facing the power source, thread phase A through the window on the left, phase B through the window in the center and phase C through the window on the right.

Voltage Connection:

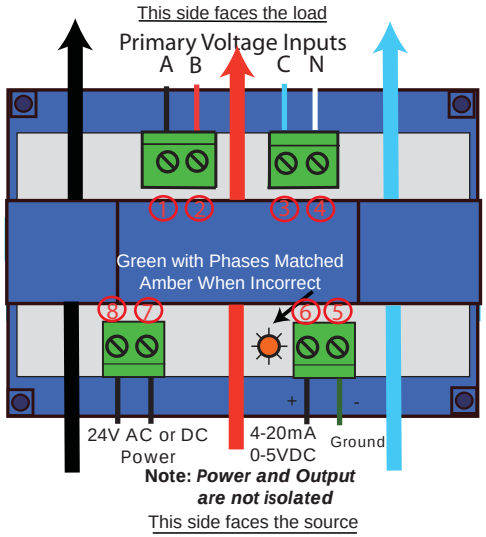
Ensure the voltage of the system you are monitoring and rated voltage for APT transducer match. Connect voltage directly to terminal blocks on APT transducer as indicate on the wiring diagram to the right. Phase A connects to term. 1, phase B to term. 2, phase C to term. 3 and the neutral to term. 4. Tighten to 5-7 inch pounds of torque. Add fuses if required by local code (fuses not included). Use code approved splice materials and techniques.

Power Supply and Output Connection:

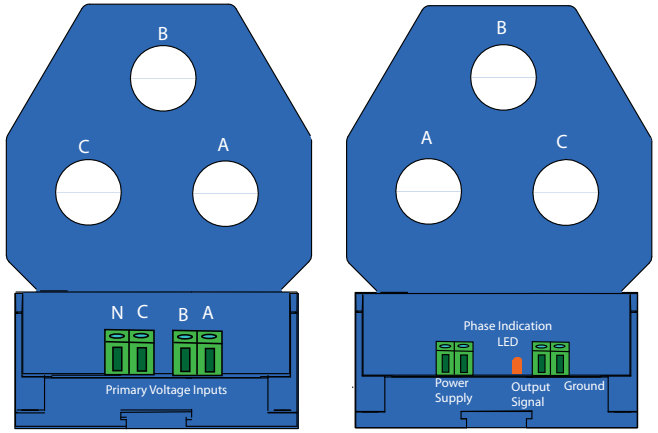
Connect output wiring to supervisory or other controller. Connect to the APT transducer using terminal 5 for negative and terminal 6 for the positive output signal. Tighten to 5-7 inch pounds. Connect power supply to transducer as shown in wiring diagram. (terminals 7-8). Tighten to 5-7 inch pounds.

The power supply can be positive or negative on either terminal. Green Power LED should illuminate to indicate power is supplied to unit. Energize load to confirm KW transducer is sensing current/voltage and outputs correct voltage signal proportional to KW being sensed.

Wiring Schematic Diagram



Top View



Load Side Source Side

The APT-TH power transducer provides current sensing windows with an inside diameter of 0.74 inches. This should be large enough to accommodate a single conductor carrying 200 amps.

Watt Calculation:

Voltage (phase to phase) ***X*** Current ***X*** √3 *(1.732)* ***X*** power factor

Example:

The APT6-420-24U-200-TH is factory scaled so full output signal (20mA) represents 200kW. If the measured voltage is 600, and there is unity power factor, the current flow will be 192.46 amps. This would generally be carried using a conductor rated for 200 amps.

Troubleshooting

1. Transducer output is higher than expected

Verify that the measured voltage is lower than the transducer range. Check the current in at least one phase to be certain that load uses less wattage than the transducer output range.

2. Transducer output is lower than expected

Check the measured voltage and current and multiply the readings. Multiply the result by 1.732, and that would be the 3-phase wattage actually used at unity power factor.

Example:

Measured voltages ((206+209+208)/3)=**207.67**

Measured current (42+40+43)/3)= **41.67**

207.67 * 41.67*1.732= 14,986.9 watts (**14.9869** kW)

Transducer output is full scale **15kW** (APT1-420-24U-15.0-TH)

Output calculation: ((20-4)/15.0)*14.9869)+4= 19.99mA

+/-1% would mean 19.83 to 20.15mA output

Note that power factor may be lower than expected.

3. Amber LED

Check that the unit power supply and output terminals face the power source. Check that the phase A conductor is the same phase where phase A voltage is derived, and for the other two phases.

Change the orientation of the transducer, and/or change which conductor passes through each sensing window. The LED will show Green when the phase relationship is correct.

Also note that if power factor falls below 0.47, the LED will show Orange

4. No Output

If the voltage of any phase falls below 30% of nominal, the output will be reduced to the minimum. This would produce an output of 0 volts or 4mA, depending on the model used.