

# APN Series

## Networkable Power Transducers



### Features

- Direct Modbus Connection with no expensive interface.
- Patented AutoPhase™ Technology corrects common wiring errors such as CT reversal and phase mismatch. This can save hours of field labor!
- Meter Grade Digital accuracy.
- Advanced microprocessor running at 5 MIPS (faster than many PCs!) allows measurement up to the 70th harmonic.
- Accepts ProteCT Current Transformers with 0.333 V safe output that eliminates need for costly shorting blocks. Also accepts traditional 5 Amp out CTs.

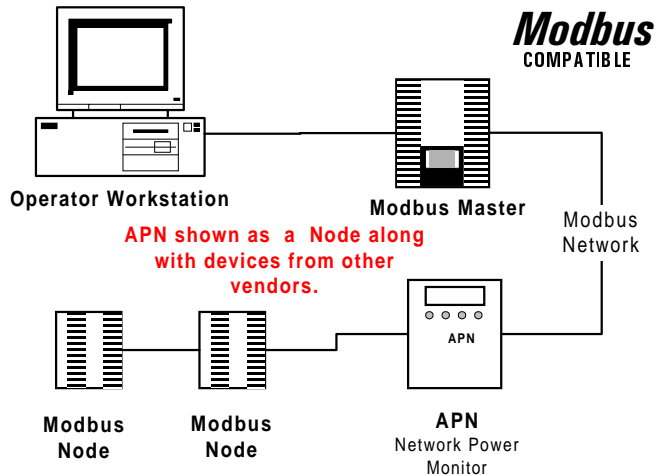
### Specifications

Power Required	None... Self powered
Accuracy	0.5% FS, True RMS Power +/- 0.5 Hz
Voltage Range	120-600 VAC, Auto Range Select, Up to 12 KV with optional Potential Transformers
Amperage Range	5-1500 A with ProteCTs 50-10,000 A with Current Output (5A) CTs
Isolation Voltage	3,700 VAC
Built In Fuse rating	600 VAC, 0.5A (No External fuses required)
Connections	Voltage: 12" Leads, # 18 AWG, pre-tinned Current Inputs & All Outputs: Captive screw terminal accept # 14-22 AWG wire
Environmental Dimensions	-18 to 50 C (0 to 122 F), 0-95% RH, NC Module: 9"Hx6.5"Wx2.6"D (23x16.5x6.5CM) NEMA1: 10"Hx10"Wx4"D(26x24x10CM)
Modbus Software Set	RTU Version
Modbus Hardware Set	RS485 Addressable, 9600 Baud
Optional	RS 232 Point to Point, 9600Baud
Approvals	UL and UL-C Listed

### Network Variables

#### Modbus Network Variables (All Values True RMS, 24 Points)

	$\phi A$	$\phi B$	$\phi C$	Total
Voltage	●	●	●	
Amperage	●	●	●	
kW	●	●	●	●
kWH	●	●	●	●
kVA	●	●	●	
Power Factor	●	●	●	
Frequency	●	●	●	
CT Value				●



### Applications

- **Cost Allocation** : Measures and display power QUANTITY. With both Demand (KW) and Consumption (KWH) information available, managers can control costs better.
- **Improve Plant Performance**: Low Power Factor causes erratic machine operation, overheats motors, shortens equipment life and increases utility bills. Measure and correct this vital Power Quality factor with a APN
- **Machine Control** KW monitoring provides a good picture of machine tool operation.
- **Generator Performance**: Back up generators are vital to the operation of many businesses. The KW-N2000 provides a cost effective way to monitor the power output and insure it meets "Information Age" standards.

### AutoPhase Advantage™

AutoPhase makes power transducer installation simple.

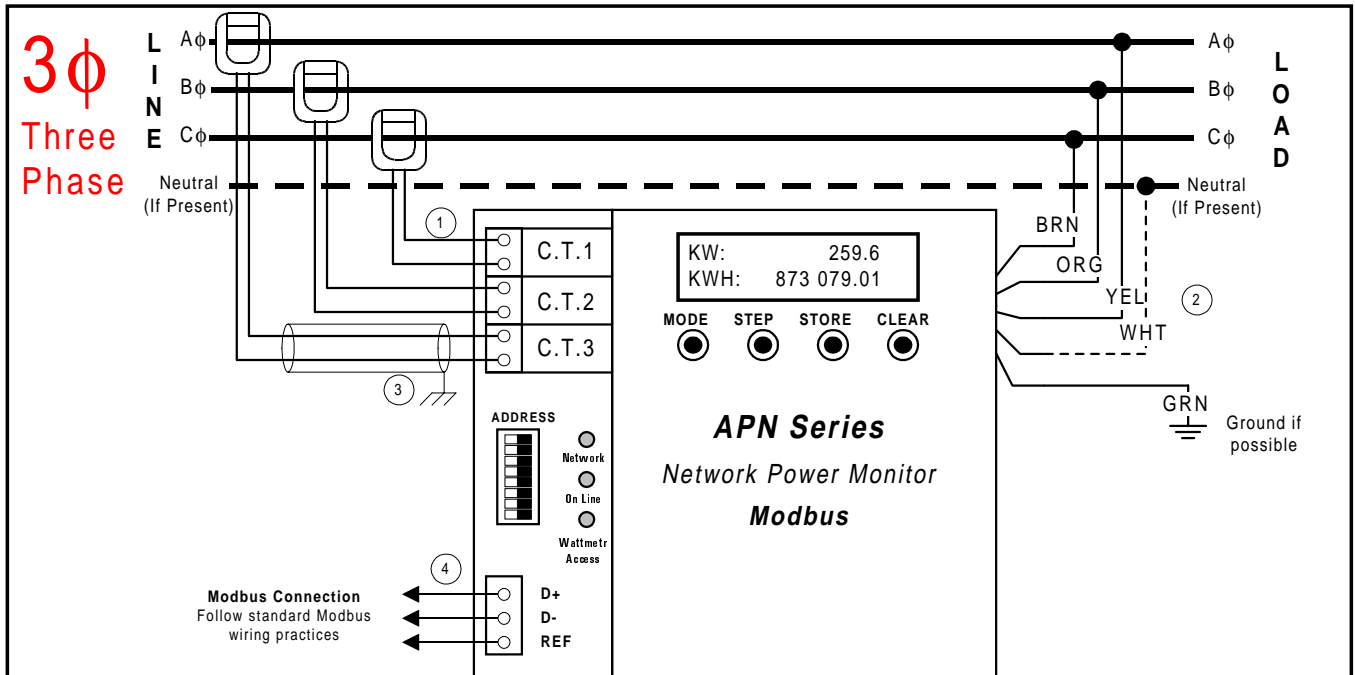
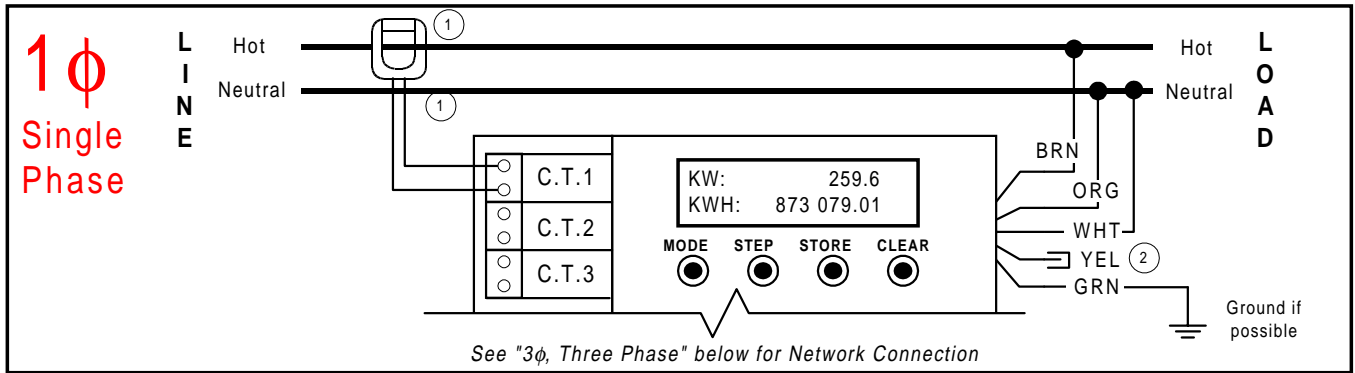
There are over 40 ways to wire up a 3 phase, 4 wire kW transducer. For example, reversing the orientation of a CT flips the output waveform, tricking ordinary watt transducers into thinking there is a 180 degree phase shift. Or if CT and voltage inputs are mismatched, the transducer thinks there is a 120 degree phase shift. Either way, you have a problem.

AutoPhase identifies the phases and polarity automatically and corrects for the error in software. This eliminates flashing "ERROR" lights, tedious and dangerous reconnecting of inputs. AutoPhase even tells you which CTs are reversed and which phases are mismatched!

AutoPhase is protected by US Patent 5,652,505.



# Connections



**NOTES**

- ① Connect Current Transformers as shown.
- ② **1φ**: Connect Voltage inputs as shown. **3φ**: Connect voltage inputs as shown. Disconnect recommended. Unit is internally fused. Safe off unused wire(s). Ground connection not required for operation, recommended for personal safety.
- ③ Shielded twisted wire recommended for ProteCT current transformers. Shield not required for Current Output CTs.
- ④ Modbus connection. Removable terminal block sized to accept two #18 LAN wires under each terminal. Follow all standard Modbus wiring conventions.

# Ordering Information

**Example: APN-MOD-5A-MX-LM**

AC Power Transducer with Modbus RTU output, module for mounting inside a panel or switchgear with an LCD display

<p><b>APN</b> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span></p> <p><b>Output</b></p> <p>MOD Modbus RTU R23 RS232 Other protocols under development. Contact factory for current list.</p>	<p><span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span></p> <p><b>CT Input</b></p> <p>5A 5 Amp CTs (Ratio:5) PC ProteCT low voltage output CTs</p>	<p><span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span></p> <p><b>Case Style</b></p> <p>MX Module (Aluminum) MN Module in NEMA 1 encl. M4 Module in NEMA 4 encl. BX Board Level D DIN Rail (Plastic)</p>	<p><span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span> <span style="border: 1px solid black; display: inline-block; width: 20px; height: 15px; vertical-align: middle;"></span></p> <p><b>Display</b></p> <p>LM LCD on Module LC LCD on enclosure (MN Case only) LR LCD shipped loose, remote mount by others</p>
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