WattNode® Modbus

Standard and Revenue-Grade

AC Power Measurement for Modbus Networks

The WattNode Modbus is a bidirectional networked energy meter offering energy measurement parameters such as energy (kW), power (kWh), voltage, current, demand, kVAR, kVARh, power factor, line frequency, etc. These energy values are communicated using the Modbus RTU communication protocol over RS-485 as individual phase measurements and sum or average readings.

In a Modbus network, there is one master device and up to 247 slaves, each with a unique slave address from 1 to 247. Addresses from 1 to 127 can be set on the front panel DIP switch. Addresses from 1 to 247 can be set by writing to the address register in the meter. Up to 247 WattNode Modbus meters can be daisy-chained on one RS-485 subnet.

The WattNode Modbus is available in standard and revenue-grade accuracy and can be used with any low voltage CT (0.333 Vac output). Revenue-grade system accuracy requires current transformers with Class 0.6 or better accuracy. The ACTL series of current transformers is available with Class 0.6 or Class 0.3 accuracy; these CTs are ideal for revenue-grade use for billing purposes, SREC and state revenue-grade requirements. Certificates of calibration are available for the WattNode Revenue meters and the ACTL revenue-grade transformers.

The WattNode Modbus' compact size permits installation inside most electrical service panels, junction boxes and OEM equipment. The WattNode Modbus is line-powered and therefore requires no separate power source. Diagnostic LEDs help ensure fast and correct installation as well as network communication.

The WattNode Modbus family of energy meters measure 1, 2, or 3 phases in 2, 3, or 4 wire configurations, 120 to 600 Vac, 50 to 60 Hz. CCS offers a complete line of low-voltage, solid and spilt-core current transformers for 5 to 6000 amps loads.

Features

- **Modbus RTU protocol (binary) communication**
- **100+ integer and floating-point (decimal numbers) registers**
- **50+ measurements (watts, kWh, volts, amps, PF, demand, etc.)**
- **Supports 127 DIP switch selectable addresses**
- **Line powered**
- **Small profile, easy installation**
- **5 year warranty**

Models

Model Number	Model Number	VAC Line to Neutral	VAC Line to Line	Phases	Wires
WNC-3Y-208-MB	RWNC-3Y-208-MB	120	208-240	3	4
WNC-3Y-400-MB	RWNC-3Y-400-MB	230	400	3	4
WNC-3Y-480-MB	RWNC-3Y-480-MB	277	480	3	4
WNC-3Y-600-MB	RWNC-3Y-600-MB	347	600	3	4
WNC-3D-240-MB	RWNC-3D-240-MB	130	208-240	3	3-4
WNC-3D-400-MB	RWNC-3D-400-MB	230	400	3	3-4
WNC-3D-480-MB	RWNC-3D-480-MB	277	480	3	3-4

"R" Designates revenue-grade

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WNMB-10.30.17: Specifications are subject to change

WattNode® Modbus

Quantities Measured

- True RMS Power: watts, per phase and sum
- Reactive Power: VARs, per phase and sum
- Power Factor: Phase, per phase and average
- True RMS Energy: kWh per phase and sum
- Reactive Energy: VAR hours, sum
- Frequency
- RMS voltage per phase
- RMS current per phase
- Demand and peak demand

Accuracy

- 0.5% nominal (see manual for details)

Electrical

- Operating Voltage Range: 80% to 115% of nominal
- Power Line Frequency Range: 50 to 60 Hz

Environmental

- Operating Temperature: -30°C to +75°C (-22°F to 167°F)
- Humidity: 5 to 90% RH (non-condensing)

Mechanical

- Enclosure: high impact, ABS plastic
- Flame Resistance Rating: 94V-0, IEC FV-0
- Size: 5.63" × 3.34" × 1.5" (143mm × 85mm × 38mm)
- Weight: 10.8 oz (305 gm)
- Connectors: euroblock style pluggable terminal blocks

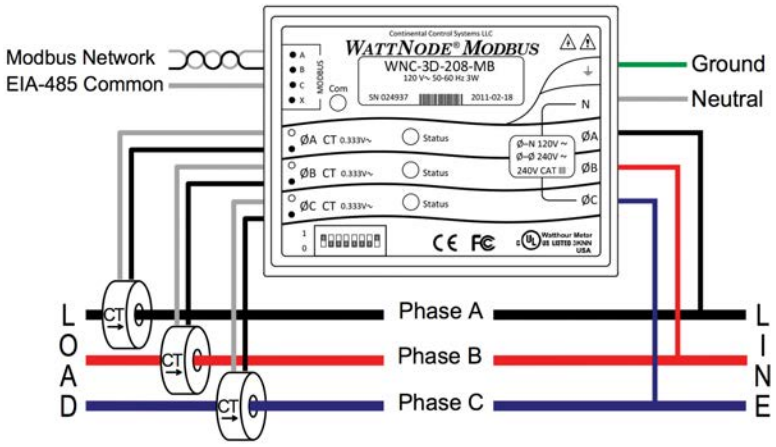
Modbus Communication

- EIA RS-485 interface
- Baud Rates: 9,600, 19,200 and 38,400 (Opt 38K)
- Duplex: half (two-wire plus common)
- Parity: N81 (no parity, eight data bits, one stop bit)
  E81 (even parity, Opt EP)
- Modbus Buffer: 256 bytes
- Response Time: 5 to 300 milliseconds

Regulatory

- FCC Class B, EN 55022 Class B
- UL and cUL Listed (UL 61010-1)
- CE Mark and RoHS compliant
- Immunity: EN 61326, (industrial locations)

WattNode® Wiring Diagram, Three Phase Example



Accu-CT® Split-Core CTs

- Safe, low voltage output, 0.333 Vac
- Primary Ratings: 5 to 600 amps, 600 Vac, 50 or 60 Hz
- UL & cUL, CE, RoHS compliant
- 0.75" and 1.25" opening
- High accuracy options C0.6, C0.3

Standard Split-Core, Solid-Core and Bus Bar Series CTs

- Safe, low voltage output, 0.333 Vac
- Multiple Models: 5 to 6000 amps, 600 Vac, 50/60 Hz nominal
- UL & cUL, CE, RoHS compliant
- Custom sizes available

Rogowski CTs

- Safe, low voltage output, 0.333 Vac
- Multiple Diameters: 3.1", 4.5", 7.5", 12"
- Primary Ratings: 250 to 6000 amps
- UL & cUL, CE, RoHS compliant

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