

WATTNODE[®] FOR LONWORKS[®]

AC Power Measurement



The **WattNode for LonWorks[®]** combines three true RMS instruments in one: watt meter, watt-hour meter, and demand meter. Typical applications include energy monitoring, performance verification, and sub-metering, where accuracy at reasonable cost is essential.



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The WattNode for LonWorks complies with LonMark® interoperability guidelines, Version 3.0, to ensure easy integration in any LonWorks network. Measurements are transmitted over the network as Standard Network Variable Types (SNVTs). The LonWorks network interface communicates power (watts), energy (kilowatt-hours), demand and alarm conditions. The WattNode works with either twisted pair or power line carrier networks. See Echelon's Internet site at <http://www.echelon.com> for more detail.

Ease of use and economy of installation were key design criteria. The WattNode's compact size permits installation inside of most electrical service panels and junction boxes. Detachable screw terminals make wiring a snap. WattNodes are line-powered and require no separate power source. With the power line transceiver models, no signal wiring is needed to couple the WattNode to the network. These features add up to BIG installation time and money savings.

Accuracy of the WattNode is 0.5% of reading. The WattNode measures true RMS power even with leading or lagging power factor and chopped or distorted waveforms. This makes the WattNode ideal for monitoring motors and pumps controlled by variable speed drives or loads with switching power supplies.

The complete line of WattNode for LonWorks models measures 1, 2, or 3 phases in 2, 3, or 4 wire configurations for voltages from 120 to 600 VAC, 50/60 Hz. You select the current range for each WattNode by choosing from our line of safe low-voltage output current transformers (CTs). Split-core, toroidal, and bus bar CTs are available to measure up to 3,000 Amps. Bus bar CTs are also available in sizes up to 10" x 10" (254mm x 254mm).

To assure reliability and accuracy, each WattNode is tested and calibrated by a custom, automated production system. A key part of the production system is calibration with NIST traceable standards. To assure the initial calibration accuracy is maintained, the WattNode has been designed with fixed, precision resistors, not potentiometers, in its measurement circuit.



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FEATURES

- **Three Measurements in One Instrument (Single-phase or Three-phase)**
- **Power (watts, kilowatts)**
 - Energy (watt-hours, kilowatt-hours)
 - Demand and peak demand (watts, kilowatts)
- **User-Configurable Power and Demand Alarms** – Useful for network control applications.
- **True RMS Measurements** – Ideal for loads with high harmonic content
- **LonWorks Interoperable** - Easy to integrate into network.
- **LonWorks Powerline Carrier (PL-21) Option** - No signal wiring needed for network connection.
- **LonWorks Twisted Pair Options** - Reduced cost for new building applications.
- **Compact size** – Fits inside of standard power panels and junction boxes.
- **Safe CTs** – Split-core or toroidal CTs, with integral burden resistor, output up to 0.333 VAC.
- **User Calibration of Unit with CT** – Easy to maintain accuracy in the field.
- **Digital signal processing** - Accurate, kWh measurement over a wide harmonic range.
- **Line powered** - No external power supply required.
- **Detachable terminal blocks** - Easy to install and remove.



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SPECIFICATIONS

MEASUREMENT CONFIGURATIONS

- Single phase: 2-wire or 3-wire
- Three phase: 3-wire or 4-wire

QUANTITIES MEASURED

- Energy in WH or kWH
- Instantaneous power in W or kW
- Demand (power) in W or kW
- Peak demand (billing demand) in W or kW
- Alarm conditions (2 stage, user defined):
 - peak demand
 - instantaneous power, min and max

QUANTITIES RETAINED DURING POWER LOSS

- Accumulated energy
- Peak demand
- Time of peak demand
- Alarm set points
- Operating range configuration

LONMARK INTEROPERABILITY

- Certified to meet version 3.0 of the LonMark Interoperability Guidelines
- Uses Standard Network Variable Types (SNVTs)

- Configuration: LonMark standard configuration SNVTs
- Installation: Service pushbutton and LED

CONFIGURATION CONTROL

- Configure operating ranges
- Reset accumulated energy to zero
- Reset peak demand to zero
- Set alarm levels

ELECTRICAL

- Line powered
- FCC Class A
- Operating Voltage Range: $\pm 15\%$ of nominal
- Power Line Frequency Range: 50 to 60 Hz
- Power Consumption: ≤ 2.6 Watts

ACCURACY

- 0.45% of reading + 0.05% of full scale through 25th harmonic

ENVIRONMENTAL

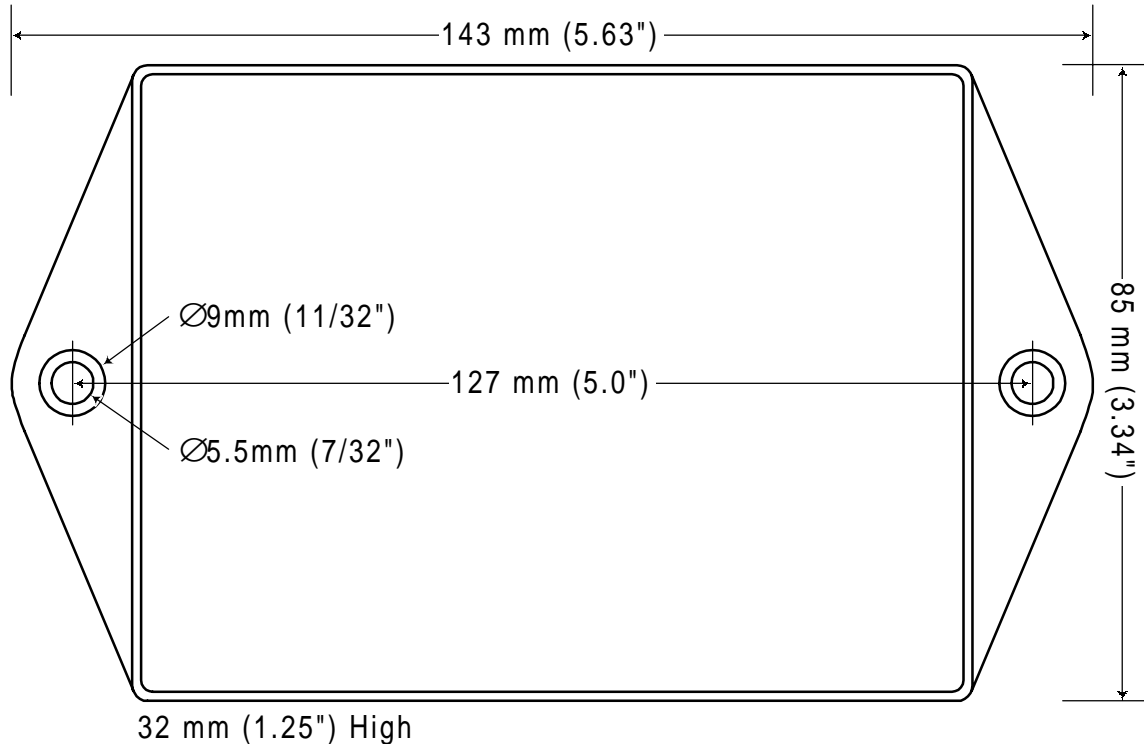
- Operating Temperature: -30° to 60°C
- Humidity: Up to 90% RH (non-condensing)



MECHANICAL

- Enclosure: High impact, UL rated, ABS plastic
- Size: 143mm x 85mm x 32mm (5.63" x 3.34" x 1.25") including mounting tabs

- Connectors: Euroblock style detachable screw terminals (UL, CSA recognized)
 - Light gray: 22 - 12 AWG, 600 V
 - Black: 26 - 16 AWG, 300 V



MODELS

WATTNODES

<u>Model</u>	<u>VAC Line to Neutral</u>	<u>VAC Line to Line</u>	<u>Phases</u>	<u>Wires</u>
WNA-1P-240-xxxx*	120	240	1	2 or 3
WNA-3Y-208-xxxx*	120	208-240	3	4
WNA-3Y-400-xxxx*	230	400	3	4
WNA-3Y-480-xxxx	277	480	3	4
WNA-3Y-600-xxxx	347	600	3	4
WNA-3D-208-xxxx	N/A	208-240	3	3
WNA-3D-480-xxxx	N/A	480	3	3
WNA-4WD-240-xxxx	120/208	240	3	4

The transceiver suffix "-xxxx" may be:

- -TP78, twisted pair 78Kbps transceiver
- -FT10, free topology 78Kbps transceiver
- -PL21, power line carrier (for selected models denoted with a *)

The delta models, WNA-3D-208-xxx and WNA-3D-480-xxx, should be used only when neutral is not present.



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TOROIDAL CURRENT TRANSFORMERS (SOLID CORE)

<u>Model</u>	<u>I.D.</u>	<u>Rated Amps</u>	<u>Max. Amps</u>
CTT-0300-yyy	0.30"	5, 15, 30	40
CTT-0500-yyy	0.50"	15, 30, 50, 60	80
CTT-0750-yyy	0.75"	30, 50, 70, 100	130
CTT-1000-yyy	1.00"	50, 70, 100, 150, 200	260
CTT-1250-yyy	1.25"	70, 100, 150, 200, 250, 300, 400	520

The CT suffix (-yyy) is the rated current.

OPENING CURRENT TRANSFORMERS (SPLIT CORE)

<u>Model</u>	<u>I.D.</u>	<u>Rated Amps</u>	<u>Max. Amps</u>
CTS-0750-yyy	0.75"	5, 15, 30, 50, 70, 100, 150	200
CTS-1250-yyy	1.25"	70, 100, 150, 200, 250, 300, 400, 600	800
CTS-2000-yyy	2.00"	600, 800, 1000, 1200, 1500	2000

The CT suffix (-yyy) is the rated current in Amps.

Bus bar CTs are also available in sizes up to 10" x 10" (254mm x 254mm) and currents up to 3000 amps.

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WattNode is a registered trademark of Continental Control Systems, LLC.

Keywords: wathour meter, electric power meter, energy monitoring, submetering, building automation, home automation, utility



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