LORD DATASHEET

Watt-Link™-LXRS®

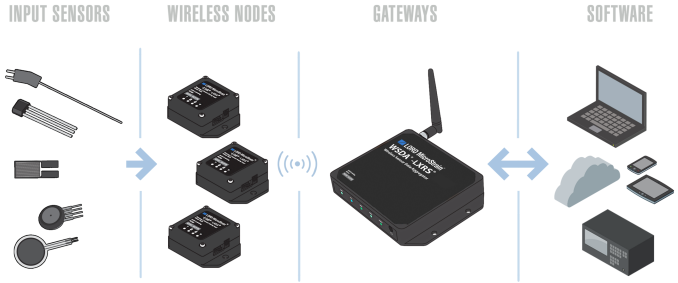
Wireless Energy Monitoring Node

Watt-Link™-LXRS® - *line powered node for AC power, phase, current, and frequency measurements, with low duty cycle and synchronized sampling options*

LORD MicroStrain® LXRS® Wireless Sensor Networks enable simultaneous, high-speed sensing and data aggregation from scalable sensor networks. Our wireless sensing systems are ideal for sensor monitoring, data acquisition, performance analysis, and sensing response applications.

The **gateways** are the heart of the LORD MicroStrain wireless sensing system. They coordinate and maintain wireless transmissions across a network of distributed wireless sensor **nodes**. The LORD MicroStrain LXRS wireless communication protocol between LXRS nodes and gateways enable high-speed sampling, ±32 microseconds node- to- node synchronization, and lossless data throughput under most operating conditions.

Users can easily program nodes for data logging, continuous, and periodic burst sampling with the **Node Commander®** software. The web-based **SensorCloud™** interface optimizes data aggregation, analysis, presentation, and alerts for gigabytes of sensor data from remote networks.



Wireless Simplicity, Hardwired Reliability™

Product Highlights

- Configurable AC line voltage inputs for measurement ranges of 120 to 600 VAC, 1 to 3 phases, and all standard wiring configurations
- Three current transformer inputs to monitor AC loads
- Designed for collection of local and remote time synchronized power and energy measurements without costly installation and maintenance of sub-panels
- User selectable monitoring settings such as measurement type, current transformer ratings, sample rates, and more

Features and Benefits

High Performance

- Lossless data throughput and node-to-node sampling synchronization of ±32 µS in LXRS-enabled modes
- Wireless range up to 2 km (800 m typical)

Ease of Use

- Scalable networks for easy expansion
- Easy to install in existing electrical panels
- Remotely configure nodes, acquire and view sensor data with Node Commander®.
- Optional web-based SensorCloud™ interface optimizes data storage, viewing, alerts, and analysis.
- Easy custom integration with comprehensive SDK
- Line-powered for long-term deployment

Cost Effective

- Reduction of costs associated with wiring
- Volume discounts

Applications

- Energy management
- Building automation
- Equipment performance monitoring
- Demand side management (DSM), sub-metering, and energy monitoring applications

LORD MicroStrain®
SENSING SYSTEMS

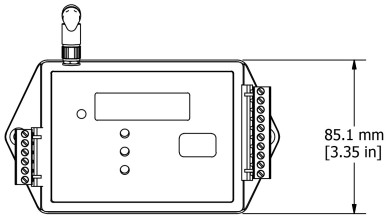
Watt-Link™-LXRS® Wireless Energy Monitoring Node

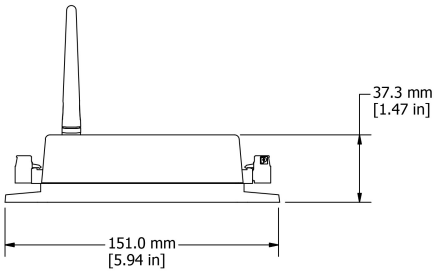
Specifications

General	
Sensor input channels	**AC line voltage**, 3 channels **Current transformer**, 3 channels
Options	AC input voltage range and phase configuration (specified by the node model number)
Measurement values	true RMS power (Watts, all phases & sum), reactive power (VAR, all phases & sum), power factor (all phases & sum) true RMS energy (KWh , all phases & sum), reactive energy (KVAR-hours, all phases), AC Frequency, computed RMS current (all phases), demand, peak demand
AC Line Voltage Input	
Measurement range	120 V ac to 600 V ac, single to 3 phase, wye (star),delta, and 2 to 4 wire configurations available (depending on the node model), measures -20 % to +15 % of the nominally rated voltage
Accuracy	± 0.5 % of reading
Frequency	48 Hz to 62 Hz
Current Transformer (CT) Inputs	
Measurement range	1 A to 250 A (depending on CT type and configuration)
Accuracy	± 0.5 % to ± 3 % of reading (depending on operating configuration)
CT operating voltage	0.333 VAC nominal; 0 to 0.5 VAC operating; 3 VAC maximum
Sampling	
Sampling modes	Synchronized, low duty cycle
Sampling rates	**Continuous sampling:** 1 sample/hour to 1 Hz
Sample rate stability	±3 ppm
Network capacity	up to 2000 nodes per RF channel (and per gateway) Refer to the system bandwidth calculator: http://www.microstrain.com/configure-your-system
Synchronization between nodes	± 32 µsec
Operating Parameters	
Wireless communication range	Outdoor/line-of-sight: 2 km(ideal)*, 800 m (typical)** Indoor/obstructions: 50 m (typical)**
Radio frequency (RF) transceiver carrier	2.405 to 2.470 GHz direct sequence spread spectrum over 14 channels, license free worldwide, radiated power programmable from 0 dBm (1 mW) to 16 dBm (39 mW); low power option available for use outside the U.S.A.- limited to 10 dBm (10 mW)
RF communication protocol	IEEE 802.15.4
Power source	line powered
Power consumption	10-30 mA
Operating temperature	-30 ˚C to + 55 ˚C
Altitude limit	up to 2000 meters
Physical Specifications	
Dimensions	151 mm × 85 mm × 38 mm without antenna
Weight	305 grams
Environmental rating	indoor use (unless in a NEMA 3R/4 rated electrical enclosure)
Flame resistance rating	94V-0, IEC FV-0
Enclosure material	high impact ABS plastic
Integration	
Compatible gateways	All WSDA® base stations and gateways
Compatible sensors	UL recognized current transformers including split core (opening) types (available from LORD MicroStrain®), other options available on request
Connectors	Euroblock style pluggable screw terminal blocks Green: 22 to 12 AWG (1.0 to 3.2 mm), 600 V Black: 22 to 12 AWG (1.0 to 3.2 mm), 300 V
Software	SensorCloud™, SensorConnect™, Node Commander®, WSDA® Data Downloader, Live Connect™, Windows XP/Vista/7 compatible
Software development kit (SDK)	Data communications protocol available with EEPROM maps and sample code (OS and computing platform independent) http://www.microstrain.com/wireless/sdk
Regulatory compliance	FCC (U.S.), IC (Canada), UL (U.S. and Canada), ROHS, CE

Models

Models	
3Y-208	**Line-to-Neutral:** 120 VAC **Line-to-Line:** 208 to 240 VAC 1 phase, 2 wire, 120 V with neutral 1 phase, 3 wire 120/240 V with neutral 3 phase, 4 wire, wye, 120/208 V with neutral
3Y-400	**Line-to-Neutral:**230 VAC **Line-to-Line:** 400 VAC 1 phase, 2 wire, 230 V with neutral 3 phase, 4 wire, wye, 230/400 V with neutral
3Y-480	**Line-to-Neutral:** 277 VAC **Line-to-Line:** 480 VAC 3 phase, 4 wire, wye, 277/480 V with neutral 1 phase, 2 wire 277 V with neutral
3Y-600	**Line-to-Neutral:** 347 VAC **Line-to-Line:** 600 VAC 3 phase,4 wire, wye, 347/600 V with neutral
3D-240	**Line-to-Neutral:** 120 to 140 VAC **Line-to-Line:** 208 to 240 VAC 1 phase, 2 wire, 208 V (no neutral) 1 phase, 2 wire, 240 V (no neutral) 1 phase, 3 wire 120/240 V with neutral 3 phase, 3 wire, delta, 208 V (no neutral) 3 phase, 4 wire, wye, 120/208 V with neutral 3 phase, 4 wire, delta, 120/208/240 V neutral
3D-400	**Line-to-Neutral:** 230 VAC **Line-to-Line:** 400 VAC 3 phase, 3 wire, delta, 400 V (no neutral) 3 phase, 4 wire, wye, 230/400 V with neutral
3D-480	**Line-to-Neutral:** 277 VAC **Line-to-Line:** 480 VAC 3 phase, 3 wire, delta, 480 V (no neutral) 3 phase, 4 wire, wye, 277/480 V with neutral 3 phase, 4 wire, delta, 240/415/480 V neutral





***Measured with antennas elevated, no obstructions, and no RF interferers.**
****Actual range varies depending on conditions such as obstructions, RF interference, antenna height, & antenna orientation.**

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