WSDA®-Base-101-LXRS®

Wireless Analog Output Base Station

WSDA®-Base-101-LXRS® - *USB data gateway with eight analog outputs replicating any connected sensor*

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.

Product Highlights

- Data acquisition gateway collects synchronized data from scalable networks of wireless sensors
- Quick deployment with USB host computer interface
- Supports up to eight channels of analog outputs to data acquisition equipment (DAQ) from multiple nodes
- Can be used as a stand-alone device or simultaneously with a host computer
- Compatible with all LORD MicroStrain® sensor nodes

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)
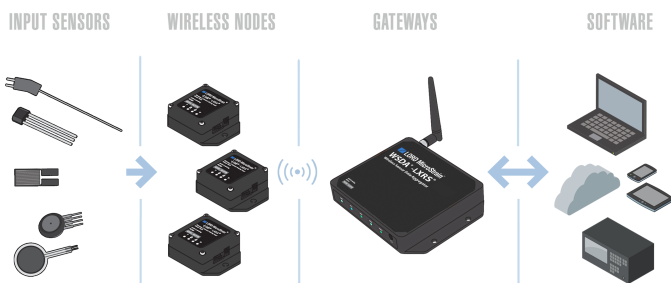
Ease of Use
- Scalable networks for easy expansion
- Supports eight-channel connection with analog DAQ's
- Stand alone operation using front panel buttons
- Remotely configure nodes, acquire and view sensor data with Node Commander®.
- Data visualization through web-based SensorCloud™ portal provides quick data navigation and analysis
- Easy custom integration with comprehensive SDK

Cost Effective
- Thousands of sensors managed from a single gateway
- Out-of-the box wireless sensing solution reduces development and deployment time.

Applications

- Structural health monitoring
- Equipment performance monitoring, verification, evaluation, and diagnostics
- System control
- Environmental monitoring

Wireless Simplicity, Hardwired Reliability™

LORD MicroStrain®
SENSING SYSTEMS

WSDA®-Base-101-LXRS® Wireless Analog Output Base Station

Specifications

General	
Connectivity	USB 2.0 virtual serial communication @ 921,600 bps

Analog Outputs	
Analog output	Eight channels, 0 to 3 V dc, 1 analog update indicator channel and 1 input/output pulse per second channel, supports streaming and low duty cycle data collection
Analog stand alone operation	Front panel buttons provide access to most software functions including trigger, sleep, beacon and more
Analog low pass filter	-3 dB cutoff @ 375 Hz
Zero scale error	+ 5 mV (typical), + 20 mV (maximum)
Full scale error	- 4.5 mV (typical), - 30 mV (maximum)
Zero to full scale error	± 3 mV (maximum)

Sampling	
Supported node sampling modes	Synchronized, low duty cycle, continuous, periodic burst, event-triggered, and datalogging (analog output support in low duty cycle mode only)
Synchronization beacon interval	1 Hz beacon provides ± 32 µsec node-to-node synchronization
Synchronization beacon stability	± 3 ppm
Network capacity	Up to 2000 nodes per RF channel (and per gateway) depending on the number of active channels and sampling settings. Refer to the system bandwidth calculator: http://www.microstrain.com/configure-your-system

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 consumption	Idle: 45.7 mA; Eight active node channels operating at 256 Hz low duty cycle: 65.6 mA
Operating temperature	-40 °C to + 85 °C (electronics) -30 °C to +70 °C (enclosure/antenna)

Physical Specifications	
Dimensions	128 mm x 70 mm x 20 mm without antenna
Weight	140 grams
Enclosure material	Black anodized aluminum

Integration	
Connectors	Micro-USB, screw terminal block
Communications cable	USB standard to USB micro-B (3 foot cable included in starter kit)
Front panel interface	Buttons for controlling node operation and sampling
Compatible sensor nodes	All LXRS® sensor nodes, all legacy 2.4 GHz nodes
Firmware	Firmware upgradeable through software interface
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), ROHS
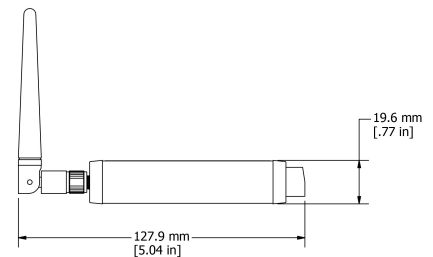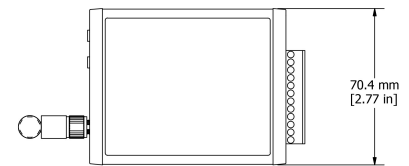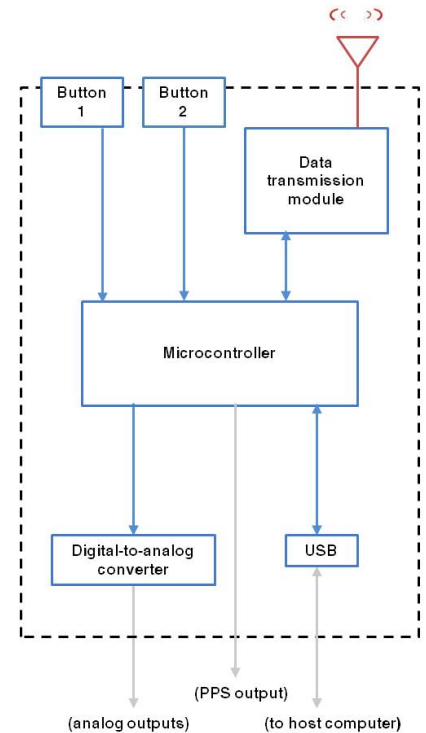
*Measured with antennas elevated, no obstructions, and no RF interferers.
**Actual range varies depending on conditions such as obstructions, RF interference, antenna height, & antenna orientation.

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