

SG-Link® -LXRS™

3 Channel Wireless Analog Sensor Node

The **SG-Link® -LXRS™ 3 Channel Wireless Analog Sensor Node** features 1 differential input channel with optional bridge completion, 1 single ended input channel with 0-3 volt excitation, and an internal temperature sensor channel. This array supports a wide range of Wheatstone bridge and analog sensors including acceleration, vibration, strain, load cells, torque, pressure, magnetic fields, displacement, geophones and more. The node can simultaneously log data to internal memory and/or transmit real-time data to a host computer at user programmable data rates up to 4096 Hz. Its form factor allows remote, long term deployment. Node Commander® software supports configuration of the wireless node including discovery, initialization, radio frequency, sample rate, reading/writing to node EEPROM, calibrating node sensors, managing node batteries including sleep, wake, and cycle power, and upgrading node firmware. The SG-Link® -LXRS™ is compatible with any WSDA® -Base, WSDA® -1000 or SensorCloud™.

Features & Benefits

High Performance

- Scalable, ultra-long-range wireless sensor network
- High-speed, synchronized platform accepts most analog sensors
- Lossless data throughput under most operating conditions
- Low-power for extended battery life
- SensorCloud – integrated web solution

Ease of Integration

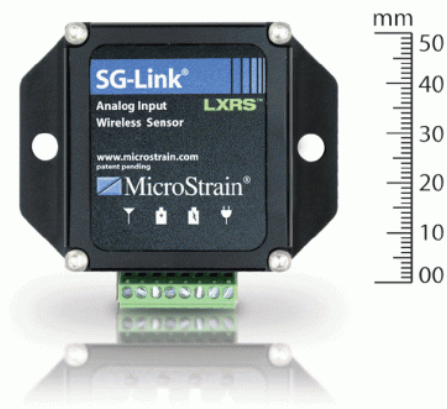
- Rapidly deployable wireless form factor
- Simple integration supported by comprehensive SDK

Cost Effective

- Reduced cost and rapid time to market for customer's applications
- Aggressive volume discount schedule

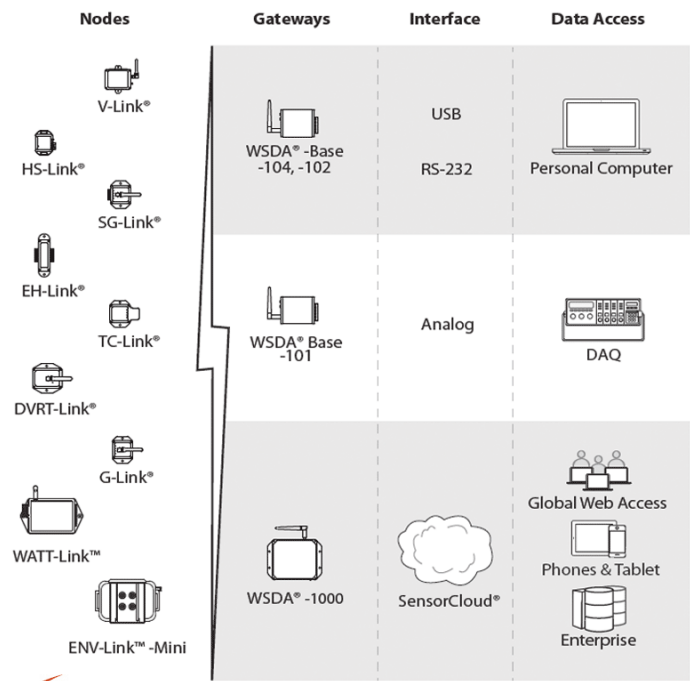
Applications

- Rotating Component Health
- Condition-Based Monitoring of Machines
- Health Monitoring of Aircraft, Structures and Vehicles
- Experimental Test and Measurement
- Robotics and Machine Automation



System Overview

At the heart of **LORD MicroStrain®'s LXRS™ Lossless Data Wireless Sensor Networks** are WSDA® gateways, which use our exclusive beaconing protocols to synchronize precision timekeepers within each sensor node in the network. The WSDA® also coordinates data collection from all sensor nodes. Users can easily program each node on the scalable network for simultaneous, periodic, burst, or data logging mode sampling with our **Node Commander®** software, which automatically configures radio communication to maximize the aggregate sample rate. Optional SensorCloud™ enabled WSDA® support autonomous web-based data aggregation.



Wireless Sensor Network (WSN)



Specifications

Input channels	1 full differential input channel, 350 Ω resistance or higher (with optional bridge completion), 1 single ended input (0 - 3 volts maximum), and internal temperature sensor
Temperature sensor	-40 °C to 70 °C range, typical accuracy ± 2 °C (at 25 °C)
Anti-aliasing filter bandwidth	-3 dB cutoff at 500 Hz (factory adjustable)
Measurement accuracy	$\pm 0.1\%$ full scale typical
Resolution	1 bit: 0.024% 1 microstrain typical for 3 wire full bridge strain gauge (when used in accordance with LORD MicroStrain® recommendations)
DC bridge excitation	+3 volts DC at 50 mA maximum (pulsed to sensors for sample rates of 100 Hz and below to conserve power)
Programmable gain	software programmable for differential input channel from 104 to 1800 (can be reduced with hardware resistor change)
Programmable offset	software programmable
Analog to digital (A/D) converter	successive approximation type, 12 bit resolution
Data storage capacity	2 megabytes (approximately 1,000,000 data points)
Sampling modes	synchronized, armed datalogging, streaming, low duty cycle
Synchronized sampling rates	1 Hz - 512 Hz
Synchronized sampling mode network capacity	transmit real time data from node to PC - rate depends on number of active channels and transmitting nodes. e.g.: 3 nodes, 1 channel, 512 Hz 15 nodes, 1 channel, 256 Hz 31 nodes, 1 channel, 128 Hz 63 nodes, 1 channel, 64 Hz 127 nodes, 1 channel, 32 Hz sample rates and # of channels are easily configured within Node Commander® Network Configuration Wizard
Synchronization between nodes	± 32 μ sec with 10 second beacon interval
Synchronization rate stability	± 3 ppm
Armed datalogging sampling rates	1 channel enabled: 32 Hz to 4096 Hz; 2 or more channels enabled: 32 Hz to 2048 Hz
Streaming sampling rates	1 channel enabled: 736 Hz; 3 channels enabled: 617 Hz per channel
Low duty cycle sampling rates	512 Hz to 1 sample per 60 minutes
Sensor event driven trigger	commence datalogging when threshold exceeded
Shunt calibration	channel 1, internal shunt calibration resistor 499 K Ω
Radio frequency (RF) transceiver carrier	2.4 GHz direct sequence spread spectrum, license free worldwide (2.405 to 2.480 GHz) - 16 channels, radiated power programmable from 0 dBm (1 mW) to 16 dBm (39 mW); European models limited to 10 dBm (10 mW)
RF data packet standard	IEEE 802.15.4, open communication architecture
RF data downloading	8 minutes to download full memory
Range for bi-directional RF link	programmable communication range from 70 meters to 2 kilometers
Status LEDs	AC power, battery charging, battery charged, node activity
Power	internal: 3.7 volt 250 mAh lithium polymer rechargeable battery; external: +3.2 to +9.0 VDC
Power consumption	25 mA at idle
Operating temperature	-20 °C to +60 °C with standard internal battery and enclosure, extended temperature range optional with custom battery and enclosure, -40 °C to +85 °C for electronics only
Maximum acceleration limit	500 g standard (high g option available)
Dimensions	58 mm x 50 mm x 21 mm
Weight	42 grams
Enclosure material	ABS plastic
ROHS	compliant
Compatible base stations	all WSDA®-Base and WSDA®-1000
Software	Node Commander® Windows XP/Vista/7 compatible
Software development kit (SDK)	includes data communications protocol, EEPROM maps and sample code (OS and computing platform independent)
FCC ID	XJQMSLINK0001
IC ID	8505A-MSLINK0001

