# HS-Link®-S -100 KHz

Data Sheet

## High Speed Wireless Sensor Node


## Introduction

Small, rugged and very fast, the **HS-Link® -S -100 kHz High Speed Wireless Sensor Node** features complete strain gauge conditioning, embedded signal processing, an internal rechargeable battery, precision timekeeping, and operates within a synchronized, scalable network of wireless sensor nodes. The HS-Link® -S-100 kHz supports a wide range of Wheatstone bridge and analog sensors including acceleration, vibration, strain, load cells, torque, pressure, magnetic fields, displacement, geophones and more. 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 HS-Link® -S -100 kHz is compatible with any WSDA® -Base, WSDA® -1000 or SensorCloud™.

## Features & Benefits

### High Performance

- Scalable, ultra-long-range wireless sensor network
- Ultra 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

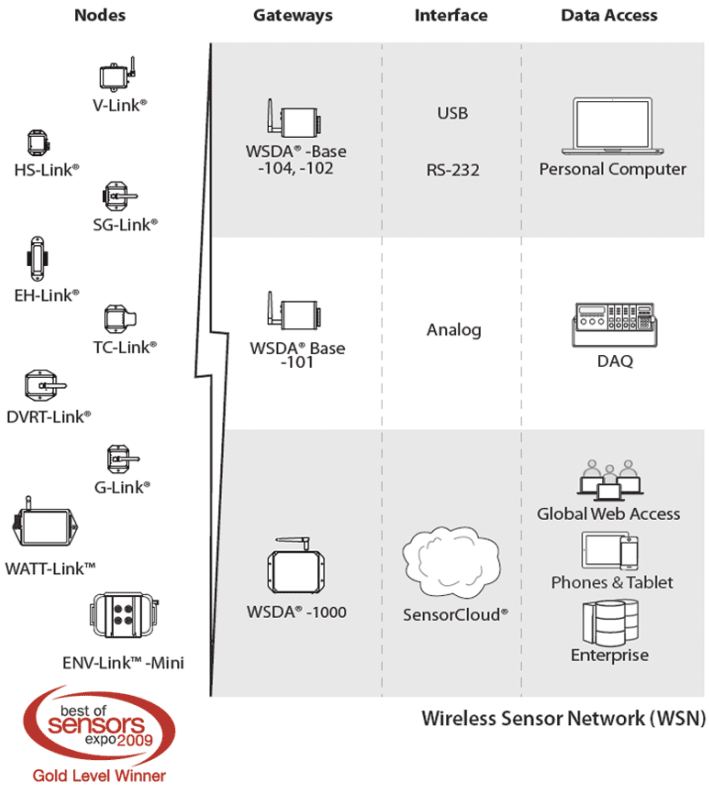
- Reduced cost and rapid time to market for customer's applications
- Aggressive volume discount schedule

## Applications

- Robotics and machine control
- Linear/angular positioning of optical components
- Quality control
- Production Process Monitoring
- Structural load and stress monitoring

## System Overview

At the heart of **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.

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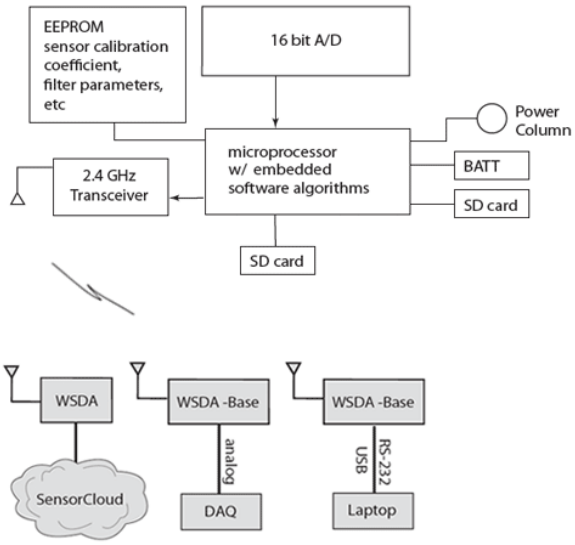
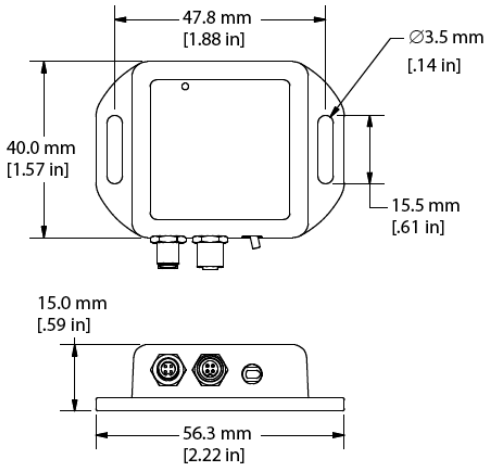
# Specifications

| | |
|---|---|
| Input channel (2 options) | 1 differential input channel with optional full, ½ or ¼ Wheatstone bridge completion –OR- optional 1 single ended 0-3 VDC input channel |
| Anti-aliasing filter bandwidth | -3 dB cutoff at 250 Hz (factory adjustable) |
| Measurement accuracy | ± 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 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 channels from 30 to 2359 (can be reduced with hardware resistor change) |
| Programmable offset | software programmable |
| Analog to digital (A/D) converter | successive approximation type, 16 bit resolution |
| Synchronized and armed datalogging storage capacity | 4 MB (approximately 2,000,000 data points) |
| Sampling modes | synchronized, armed datalogging, streaming |
| Synchronized sampling rates | burst (1 KHz to 100 KHz ) or continuous (512 Hz to 1 Hz) |
| Synchronized session length | burst (100 to 65500 samples) or continuous (100 to 65500 samples) |
| Synchronization between nodes | ± 32 µsec with 10 second beacon interval |
| Synchronization rate stability | ± 3 ppm for <512 Hz, ± 25 ppm for > 512 Hz |
| Armed datalogging sampling rates | 1 KHz to 100 KHz |
| Armed datalogging session length | finite (100 to 65500 samples) or continuous |
| Streaming sampling rate | 797 Hz |
| Streaming session length | finite (+-0.1 to 135 seconds) or continuous |
| Sensor event driven trigger | commence datalogging when threshold exceeded |
| Shunt calibration | channel 1, internal shunt calibration resistor 499 KΩ |
| 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 0 dBm (1 mW) |
| RF data packet standard | IEEE 802.15.4, open communication architecture |
| RF data downloading | 16 minutes to download full memory |
| Range for bi-directional RF link | up to 70 meters line-of-sight |
| Status LED | node activity |
| Power | internal: 3.7 volt 250 mAh lithium ion rechargeable battery |
| Power consumption | idle 29.6 mA, sleep 0.068 mA, synchronized sampling 12.0 mA, armed datalogging 15.5 mA, streaming 28.9 mA |
| 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 |
| Dimensions | 56 mm x 47 mm x 15 mm including connectors |
| Weight | 25 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) |

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Patent Pending

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