

HS-Link™ 100 KHz-MIL

Hardened Extended Range High Speed Wireless Node



Introduction

Fast, small, and rugged, the new **HS-Link™ 100KHz-MIL** high speed wireless node delivers the versatile **MicroStrain®** wireless sensing platform to applications that require speed. With maximum sample rates up to 100 kHz, and support for most types of analog sensors, including accelerometers, strain gauges, load cells, & pressure sensors, the node includes full strain gauge conditioning and programmable offset. HS-Link™ -100 kHz-MIL is EMI/EMC qualified to MIL STD 461F and is designed to be used in the most hostile environments

The node is designed to log data to internal memory and upload wireless data to a host computer once logging is complete. Data is collected during periodic, user definable sampling sessions, at rates up to 100 kHz. Burst data is temporarily stored in a sample buffer (125,000 data points) and is then transferred to non-volatile, internal flash memory.

The bi-directional RF communications link can trigger logging from 70 meters (up to 100 m possible), or request that stored data be transmitted to the host PC for data acquisition and analysis.

The node's scalable system architecture and programmable sensor interface enables a large network of nodes to simultaneously store dynamic data.

When used in conjunction with the **MicroStrain® WSDA®** or **WSDA® -MIL**. A proprietary beaconing protocol synchronizes every node's precision timekeeper and coordinates and receives data collected from all sensor nodes in the network.

Features & Benefits

- high-speed, burst datalogging rates up to 100 KHz
- on-board buffer stores up to 125,000 measurements per sampling burst, 1,000,000 points can be stored in the node's non-volatile flash memory
- 16 bit A/D resolution
- 1 full differential input with optional Wheatstone bridge completion or 1 single ended 0-3 volt input
- support for hundreds of simultaneous sampling wireless sensor nodes
- node to node synchronization up to ± 32 microseconds
- EMI/EMC qualified to MIL-STD-461F
- flight certified and qualified to MIL-STD-810F and MIL-STD-461F
- ultra-stable on-board precision timing reference of ± 3 ppm over industrial temperature range
- wireless communication range to 70m
- low power consumption for extended use
- simple bolt-through design for quick, easy mounting

Applications

- condition-based monitoring of machines
- health monitoring of structures and vehicles
- smart structures and materials
- experimental test and measurement
- vibration and acoustic noise testing
- shock detection
- bearing failure monitoring
- track and balance for fixed and rotary winged aircraft



Specifications

Operating temperature range	-40 °C to +85 °C
Sensor inputs	1 full differential input with optional Wheatstone bridge completion or 1 single ended 0 – 3 volt; optional internal sensors upon request
Amplifier gain	software programmable: 20 – 2560 (custom settings optional)
Wheatstone bridge channel offset	software programmable
Analog to digital (A/D) converter	successive approximation type, 16 bit resolution
Sensor compatibility	pressure, strain, load, force, magnetic field, single ended 0 – 3 volt
RF transmission frequency	2.405 GHz to 2.480 GHz (16 software defined channels, 2 MHz wide, channel spacing 5 MHz)
RF channels	16
RF transmission range	70 m (line of sight), 100 m (with optional high gain antenna)
RF output power	0 dBm
Radio frequency (RF) transceiver carrier	2.4 GHz direct sequence spread spectrum, license free worldwide (2.405 2.480 GHz) - 16 channels, radiated power 0 dBm (1 mW)
Wireless data standard	IEEE 802.15.4
Data acquisition resolution	16 bit
Max data acquisition rate	100 KHz
Maximum sample burst period	1.25 seconds at 100 KHz (125,000 samples)
Synchronization between remote nodes	±32 µseconds
Non volatile memory	2 MB (1,000,000 data points)
Power supply	3.6 Volts DC
EMI/EMC qualification	MIL-STD-461F RE102 radiated emissions, RS103 radiated susceptibility
Environmental qualification	MIL-STD-810F
Enclosure	MIL-DTL-5541 Aluminum, NP3 (Electroless Nickel / Teflon) Plating
Dimensions	79 mm height x 54 mm diameter
Weight	222 g
Software	Node Commander® , Windows XP compatible

