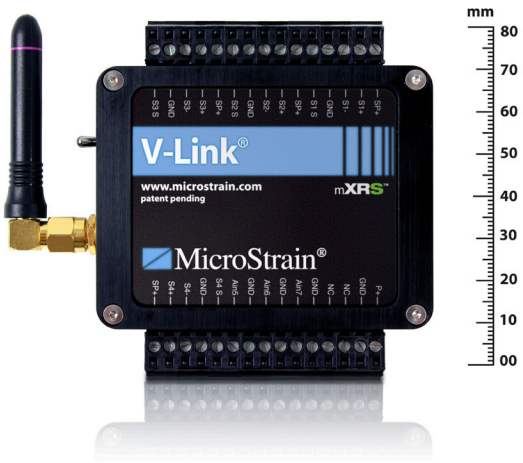
V-Link®-mXRS™

Data Sheet

Extended Range Synchronized Wireless Voltage Node



Introduction

Fast, compact, & extremely versatile, **V-Link®** wireless voltage nodes are designed to operate as part of a high speed wireless sensor network.

Featuring 2 KHz sweep rates, combined with 2 MB flash memory, these little nodes pack a lot of power in a small package. With every node in the wireless network assigned a unique 16 bit address, a single host transceiver can address thousands of multi-channel sensor clusters.

On-board sensor excitation, bridge completion, programmable gains & offsets, and differential & single ended inputs provide an extremely versatile sensor interface.

Features & Benefits

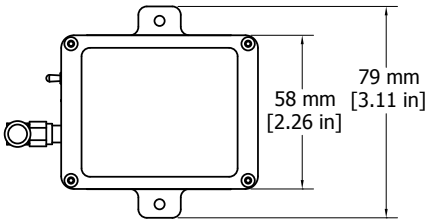
- 2.4 GHz direct sequence spread spectrum radio is license free worldwide
- IEEE 802.15.4 open communication architecture
- supports simultaneous streaming from multiple nodes
- datalogging rates up to 2048 Hz, storing up to 1,000,000 measurements
- real-time streaming rates up to 4 KHz
- programmable communication range from 70m to 2,000m
- regulated 3 volt sensor excitation supports most analog sensors
- on-board bridge completion resistors
- includes internal resistor for wireless shunt calibration
- low power consumption for extended use
- internal rechargeable battery
- SensorCloud™ ready

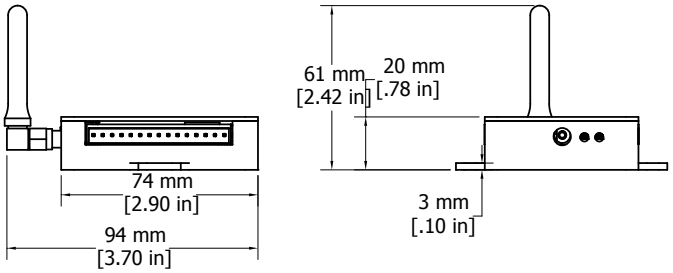
Applications

- condition-based monitoring of machines
- health monitoring of structures and vehicles
- smart structures and materials
- experimental test and measurement
- robotics and machine automation
- vibration and acoustic noise testing
- sports performance and sports medicine analysis
- distributed security networks

System Overview

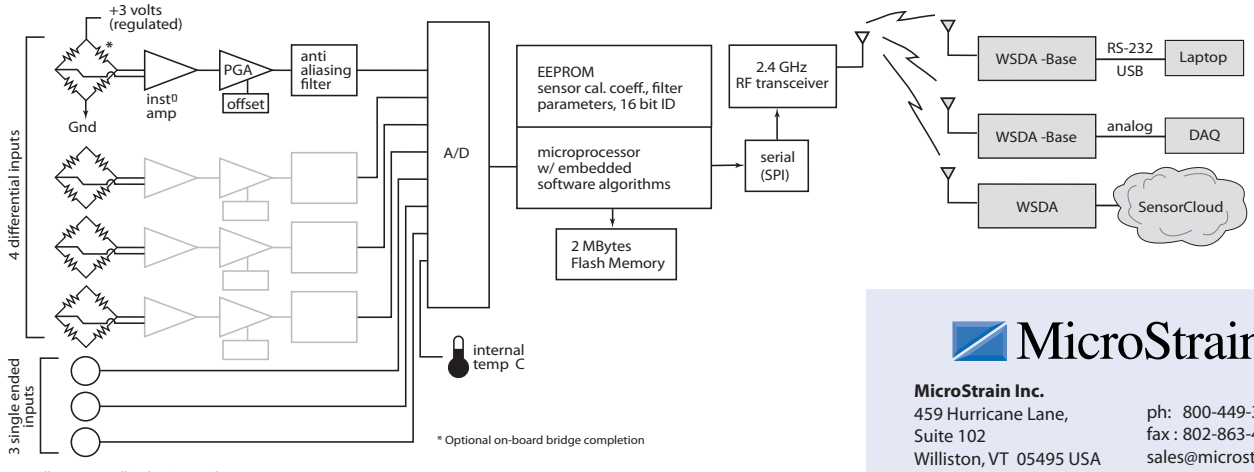
At the heart of MicroStrain's extended range synchronized (mXRS™) system is the WSDA®-Base, which uses our exclusive beaconing protocols to synch precision timekeepers embedded within each sensor node in the network. The WSDA®-Base also coordinates data collection from all sensor nodes, including V-LINK® -mXRS. Users can easily program each node on the scalable network for simultaneous, periodic, or burst mode sampling with our Node Commander® software, which then automatically configures network radio communications to maximize the aggregate sample rate.





Specifications

Input channels	up to 8 input channels: 4 full differential, 350 Ω resistance or higher (with optional bridge completion), 3 single ended inputs (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 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 210 to 4844 (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)
Data logging mode	Log up to 1,000,000 data points (from 100 to 65,500 samples or continuous) at 32 Hz to 2048 Hz
Sample Rates	1/hr - 4 kHz; synchronous mode 1 Hz - 512 Hz
Synchronous 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
Sensor event driven trigger	commence datalogging when threshold exceeded
Synchronization between nodes	± 32 µsec in synchronous sampling mode with 10 second beacon interval
Synchronous sample rate stability	± 3 ppm
Wireless shunt calibration	channels 1 to 4, 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 programmable from 0 dBm (1 mW) to 20 dBm (100 mW); European models limited to 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 70m to 2,000m
Internal Li-Ion battery	3.7 volt 600 mAh lithium ion rechargeable battery or external power 3.2 to 9 volts
Power consumption	**V-Link®** node only: real-time streaming - 2.4 mA, datalogging - 25 mA, sleeping - 0.1 mA with 1000 ohm strain gauge
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	74 mm x 79 mm x 20 mm (enclosure without antenna)
Weight	140 g (with enclosure)
Enclosure material	ABS plastic
Compatible base stations	**WSDA®, WSDA® -Base (Analog), WSDA® -Base (USB/RS-232)**
Software	**Node Commander®** Windows XP/Vista/7 compatible



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Patents Pending