

MicroStrain[®] Extended Range Synchronized Wireless Displacement Node



Introduction

Combining MicroStrain's DEMOD-DC[®] signal conditioner with embedded processing, wireless communications, and precision timekeeping, DVRT[®]-Link-mXRS provides wireless data acquisition from all MicroStrain[®] DVRT[®] displacement sensors operating within a fast, synchronized, scalable network of wireless sensor nodes located up to 1 km from our WSDA[®]-Base. DVRT[®]-Link-mXRS nodes include an internal rechargeable Li-Ion battery and a standard connection to a user supplied microminiature or subminiature DVRT[®].

Features & Benefits

- Support for hundreds of simultaneous sampling wireless sensor nodes
- Node to node synchronization of +/- 32 microseconds
- Ultra-stable on-board precision timing reference of +/- 3 ppm over industrial temperature range
- programmable communication range from 70m to 2,000m

Applications

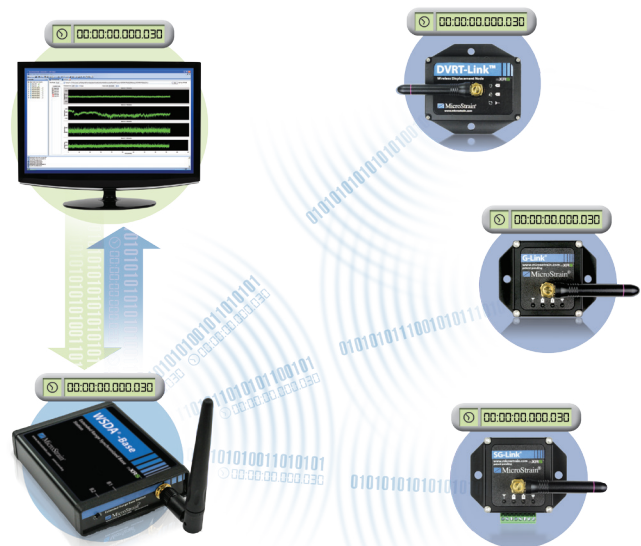
Used with MicroStrain[®] DVRT[®] sensors for:

- Miniature control elements for automotive and robotic systems
- Process control for production line monitoring
- Dimensional gauging for quality control applications
- Measuring strain and deflection in materials science and civil structures
- Linear/angular positioning of optical components
- Miniature force, torque, acceleration sensors
- Biomedical strain measurement in bone and soft tissue

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 DVRT-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.

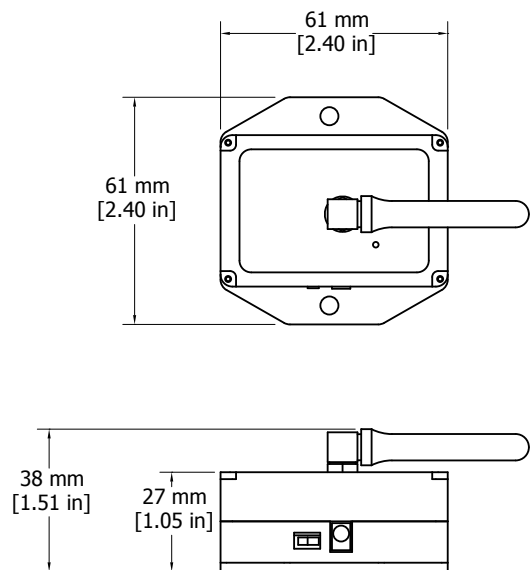
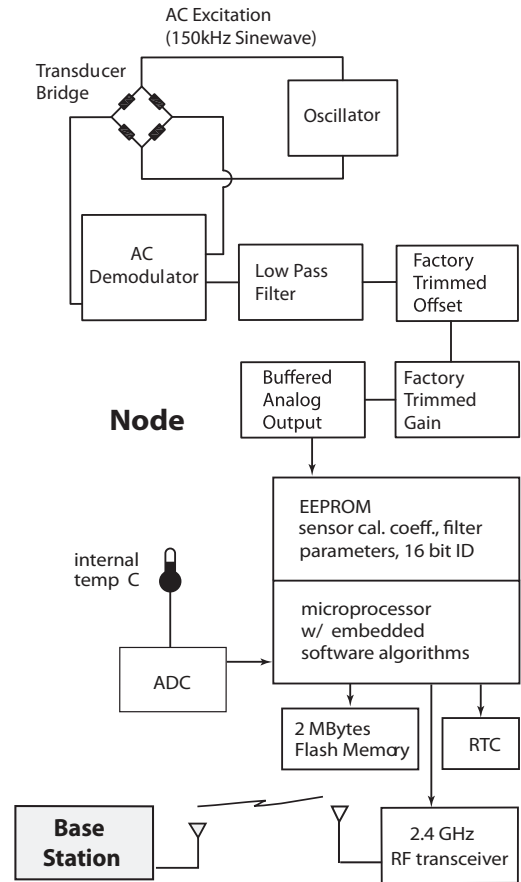
MicroStrain[®] Extended Range Synchronized (mXRS[™]) Wireless Sensing System



Specifications

Sensor Types	Inductive (DVRT®)
Temperature sensor	-40 °C to 70 °C range, typical accuracy ±2 °C (at 25 °C)
Signal to noise ratio	1,000 : 1 typical*
Excitation	regulated sinewave, 150 kHz standard other frequencies available on request
Low Pass Filter	800 Hz standard factory adjustable 10 Hz – 20 kHz
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
Sensor event driven trigger	commence datalogging when threshold exceeded
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
Synchronization between nodes	+/- 32 µsec in synchronous sampling mode with 10 second beacon interval
Synchronous sample rate stability	+/- 3 ppm
Radio frequency (RF) transceiver carrier	2.4 GHz direct sequence spread spectrum, license free worldwide (2.405 to 2.480 GHz) – up to 16 channels, radiated power programmable from 0 dBm (1 mW) to 20 dBm (100 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 250 mAh lithium ion rechargeable battery or external power 3.2 to 9 volts
Power consumption	Synchronous sampling (128 Hz) - 2.4 mA, datalogging - 25 mA, sleeping - 0.1 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 (high g option available)
Warm-up Time	30 seconds recommended
Dimensions	61 mm x 41 mm x 27 mm (enclosure without antenna) 46 mm x 36 mm x 16 mm (circuit board assembly only) for dimensional print go to www.microstrain.com
Weight	55.48 g (with enclosure and antenna)
Enclosure material	ABS plastic
Software	Node Commander® Windows XP/Vista compatible
Compatible base stations	USB, RS-232, Analog, WSDA-Base, WSDA
FCC ID	XJQMSLINK0001
IC ID	8505A-MSLINK0001

*Factory calibrated with DVRT® sensor



 **MicroStrain®**

MicroStrain Inc.
459 Hurricane Lane,
Suite 102
Williston, VT 05495 USA
www.microstrain.com

ph: 800-449-3878
fax: 802-863-4093
sales@microstrain.com