

## 6 Channel Wireless Thermocouple Node



### Introduction

The TC-Link<sup>®</sup>-6CH-LXRS<sup>®</sup> 6 Channel Wireless Thermocouple Node features six standard thermocouple input connectors, an embedded cold junction temperature compensation sensor, and an optional relative humidity sensor. On-board linearization algorithms are software programmable to support a wide range of thermocouple types including J, K, N, R, S, T, E and B. Its internal rechargeable battery allows remote, long term deployment.

### Features & Benefits

#### High Performance

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

#### Ease of Integration

- Small, easy to integrate wireless form factor
- SDK for quick custom app development
- Rapidly deployed wireless solution

#### Cost Effective

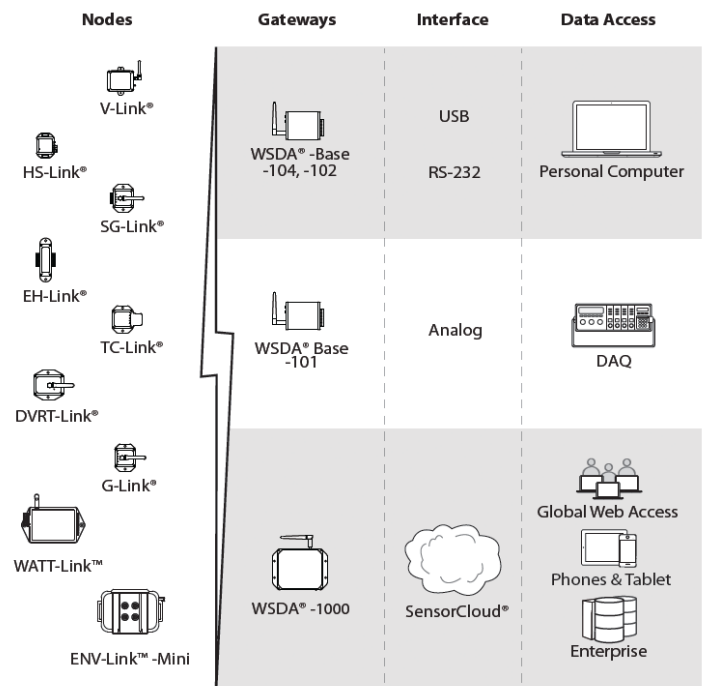
- Low-cost per channel with 6 thermocouples per node
- Significantly reduced development cost
- Competitive OEM and volume discount schedule

### Applications

- civil structure sensing, concrete maturation
- industrial sensing networks, machine thermal management
- food and transportation systems, refrigeration, freezer performance monitoring
- advanced manufacturing, plastic processing, composite cure monitoring
- cryogenic applications

### System Overview

At the heart of MicroStrain's<sup>®</sup> LXRS<sup>™</sup> Lossless Data Wireless Sensor Networks are WSDA<sup>®</sup> gateways, which use our exclusive beaconing protocols to synchronize precision timekeepers within each sensor node in the network. The WSDA<sup>®</sup> 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<sup>®</sup> software, which automatically configures network radio communication to maximize the aggregate sample rate. Optional SensorCloud<sup>®</sup> enabled WSDA<sup>®</sup> support autonomous web-based data aggregation.



Wireless Sensor Network (WSN)

## Specifications:

Thermocouple inputs supported	software selectable: type-J, K, N, R, S, T, E, B six-input channel, one ambient CJC channel
Standard thermocouple measurement range	J: -210 to 760 °C; K: -200 to 1372 °C; N: -200 to 1300 °C; R: -50 to 1664 °C; S: -50 to 1664 °C; T: -200 to 400 °C; E: -200 to 1000 °C; B: 250 to 1820 °C
Temperature measurement accuracy	± 0.1 % full scale or ±2 °C, whichever is greater (does not include errors due to TC wire or transducer)
Temperature repeatability	±0.1 °C (does not include errors due to TC wire or transducer)
Temperature resolution	0.0625 °C
Cold junction compensation range	-20 to 85 °C
Thermocouple connector	six type-1, standard, mini (SM) connectors for flat pin TC inputs
Optional relative humidity (RH) sensor	range 0 to 100 % RH, accuracy ± 2 % RH (from 10 to 90 % RH), repeatability ± 0.1 % RH
Analog to digital (A/D) converter	24 bit sigma-delta A/D
Sample Rate	programmable from 2 samples/second to 1 sample/17 minutes for datalogging or LDC modes
Datalogging mode	log up to 90,000 data sets (up to 630,000 data points)
Nodes per gateway	supports up to 100 nodes per gateway
Sample rate stability	datalogging and LDC modes ±25 ppm
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
Range for bi-directional RF link	programmable communication range from 70m to 2,000m
RF data packet standard	IEEE 802.15.4, wireless communication architecture
PC Communications	115,200 baud over USB
Internal Li-ion battery	rechargeable 3.7 volt lithium ion, 740 mAh capacity, customer may also supply external power from 3.2 to 9 volts
Power consumption (battery life)	2 samples per second - 0.8 mA (1 month) 1 sample per second - 0.48 mA (2 months) 3 samples per minute - 0.1 mA (8 months) 1 sample per minute - 0.09 mA (10 months)
Operating temperature	-20 to +60 °C with standard internal battery and enclosure, extended temperature range optional with custom battery and enclosure; -40 to +85 °C for electronics only
Maximum acceleration Limit	500 g standard (high g option available)
Dimensions	130 mm x 72 mm x 28 mm (enclosure without antenna)
Weight	142 grams (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
*For dimensioned print go to <a href="http://www.microstrain.com">www.microstrain.com</a>	

