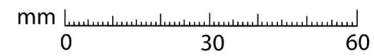


TC-Link[®] -1CH

2.4 GHz Wireless Thermocouple Node



Introduction

TC-Link[®]-1CH complete wireless thermocouple node, designed for integration with wireless sensor networks, combines full thermocouple conditioning with award-winning **MicroStrain[®]** wireless systems.

This amazing new wireless sensor node features a standard thermocouple input connector with an embedded cold junction temperature sensor. On-board linearization algorithms are software programmable to support a wide range of thermocouple types (J, K, N, R, S, T, E, B).

The node can simultaneously log data to internal memory, and transmit real-time data to a base station transceiver at a pre-programmed rate. At the base station, data is displayed and logged for further analysis. Embedded software provides the user-programmable wireless transmission rates, from two samples per second to one sample every seventeen minutes. And since each node has a unique address, a single host transceiver can address hundreds of sensor nodes.

Enclosures include an internal, 550 mAh, high-capacity primary battery. To further enhance the node's long-term data transmission capabilities, the processor conserves battery power by using a micropower sleep mode between samples.

The **TC-Link[®] -1CH** wireless thermocouple node features an open-architecture bidirectional communications standard (IEEE 802.15.4 spread spectrum 2.4 GHz), which supports license-free operation worldwide. Starter kits include **TC-Link[®] -1CH** wireless thermocouple nodes, base stations, and PC software for wireless node configuration, data acquisition, and data display.

Also included is a complete *Data Communications Protocol Manual* to enable users to develop their own applications.

Features & Benefits

- plug and play: quickly add wireless sensing and logging capabilities to existing thermocouples and probes
- supports type J, K, N, R, S, T, E, B thermocouples with on-board cold junction compensation
- simultaneous data acquisition from multiple sensors
- self-calibrating 24 bit sigma-delta analog to digital converter
- sample rates from 2 Hz to 1 sample every 17 minutes
- 2.4 GHz IEEE 802.15.4 spread spectrum radio with 70 m line-of-sight range (100 m with high gain antenna), license free worldwide
- miniature enclosure footprint allows unobtrusive coupling of nodes with existing sensors

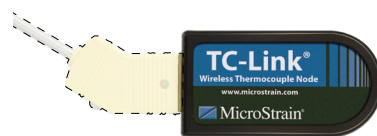
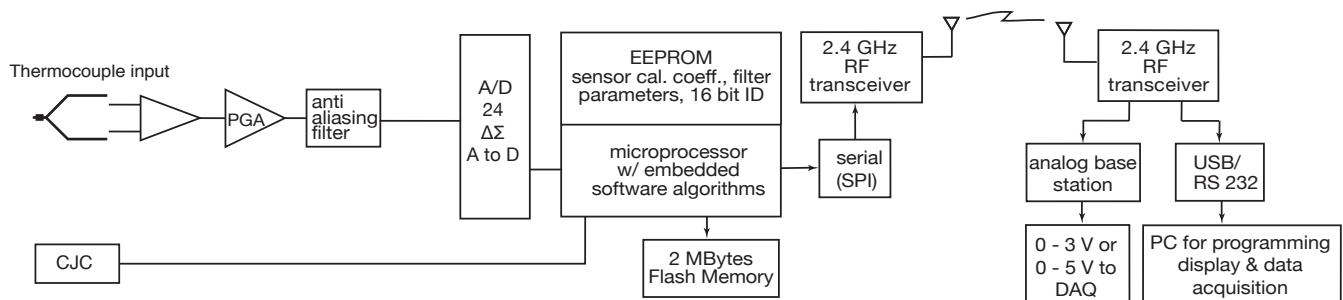
Applications

- civil structures sensing: concrete maturation
- industrial sensing networks: machine thermal management
- food and transportation systems: refrigeration, freezer performance monitoring
- advanced manufacturing: plastics processing, composite cure monitoring
- assembly line testing with smart packaging
- cryogenic applications



Specifications

Thermocouple inputs supported	software selectable: one, type-J, K, N, R, S, T, E, or B, 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 °C to 85 °C
Thermocouple connector	type 1 standard mini (SM) connectors for flat pin TC inputs
Analog to digital (A/D) converter	24 bit sigma-delta A/D
Sample Rate	programmable, from 2 Hz to 1 sample every 17 minutes, for datalogging or LDC modes
Datalogging mode	log up to 90,000 data points
Nodes per base station	supports up to 100 nodes per base station
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 0 dBm (1 mW)
Range for bi-directional RF link	up to 70 m line-of-sight, up to 100 m with high gain antenna on base station
RF data packet standard	IEEE 802.15.4, wireless communication architecture
PC Communications	115,200 baud over USB
Internal Li-ion battery	550 mAh, high capacity, Lithium-ion primary battery
Power consumption (battery life) with 550 mAh battery	2 samples per second - 0.8 mA (23 days) 1 sample per second - 0.48 mA (1.5 months) 3 samples per minute - 0.1 mA (6 months) 1 sample per minute - 0.09 mA (7 months, 13 days)
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	54.8 mm x 29.5 mm x 15.5 mm (with enclosure), 50.3 mm x 25.4 mm x 5.9 mm (circuit board assembly only), for dimensional print go to www.microstrain.com
Weight	30.1 grams (with enclosure and battery), 4.7 grams (circuit board assembly only)
Enclosure Material	ABS plastic
Compatible Base Stations	USB, RS-232, Analog, WSDA ®
Software	TC-Link ® Node Monitor, Windows XP/Vista compatible



TC-Link® -1CH with attached thermocouple sensor, depicting scale and connectivity