LEAP® 2.0 Single & Dual Thermocouple Node Wireless Thermocouple Sensor Transmitter

Wireless Sensor Data Acquisition & Edge Processing

Applications

- Wireless transmission of one or two isolated thermocouple sensor outputs.
- Compatable with all common thermocouple types, including K, J, T, N, S, E, B, & R. Custom types available.
- Ideal for in process monitoring, equipment monitoring, general plant health monitoring, and operational threshold temperature tracking.

Special Features

- Transmission range of 3000 ft in open air.
- Configurable to power and transmit any thermocouple type.
- Edge computing gives small, actionable data.
- Configurable sample and transmit intervals to fit many application requirements.
- Simple integration into existing LEAP sensor system; Every transciever node comes preconfigured and paired with a new or an existing gateway.
- LED indicators for power, thread network connection, gateway connection, and database connection statuses.

Description & Product Highlights

Phase IV's LEAP Thermocouple Node is ideal for any remote temperature monitoring application. Any thermocouple type can be configured to be compatable. User configurable sample and transmit rates as well as event triggered rapid sampling conditions give the userpowerful insight to prevent failure conditions based on operating temperature.

The LEAP wireless sensor system greatly reduces the cost and complexity of laying cables between sensors and data acquisiton units. Wireless communication is much better suited for small, actionable datapoints.

Dual isolated thermocouple circuits eliminate the risk of ground loops occurring between two monitiring points, as well as reduces the induced noise in each sensor signal.

Single & Dual Thermocouple Node Model (Dual Shown)

Modularity and customizability

Each Thermocouple Node has the capability to support and interface simultaneously with two thermocouple sensors of any type. In addition, semi-custom solutions can be created leveraging our Multi-Sensor base board to expand sensor interfacing capabilities.

Ease of implimentation

All Leap device nodes come pre-configured and paired with selected LEAP Gateways for quick and simple integration into an existing LEAP system, or to act as a new stand-alone system. Custom firmware loaded on the device can configure the data viewing software to accept any and all new device types.

Real-time data viewing and alters

All LEAP Edge Nodes stream data to LEAP Gateway devices at configurable intervals. This data is accessible and viewable in real time. In addition to real-time viewing and graphing of sensor parameters, alerts based on any sensor condition are configurable, which can be sent directly to an email or cellphone for instant communication of a sensor reaching an alert condition.

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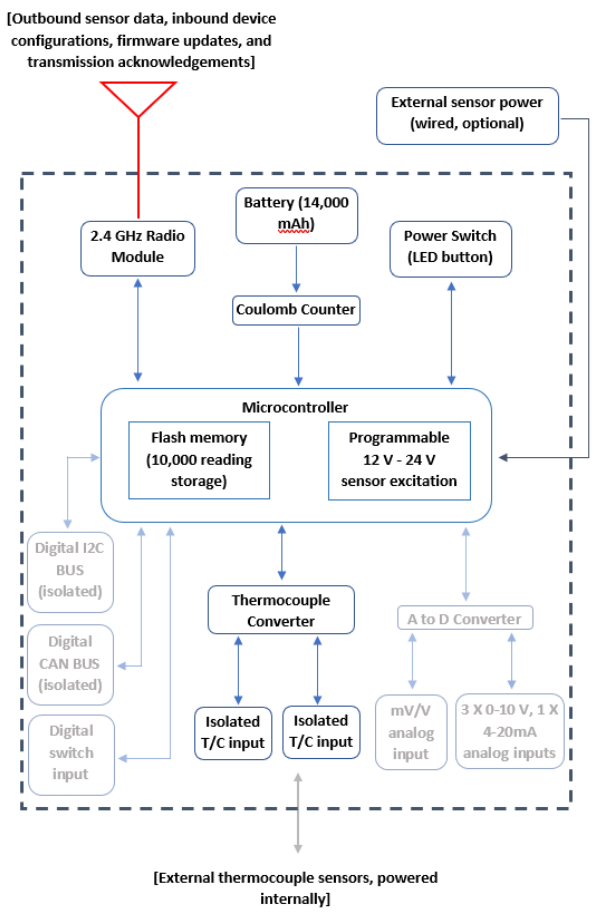
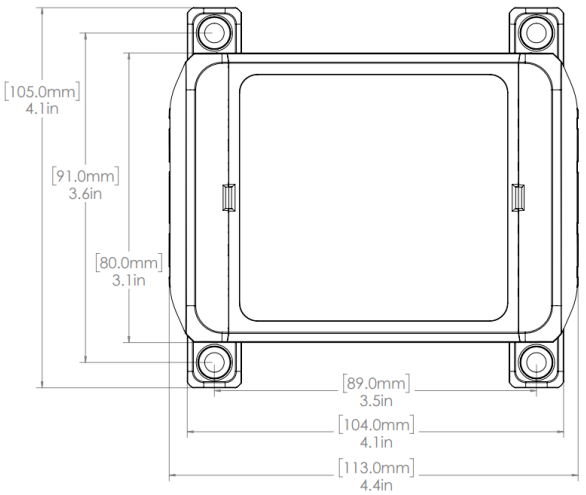
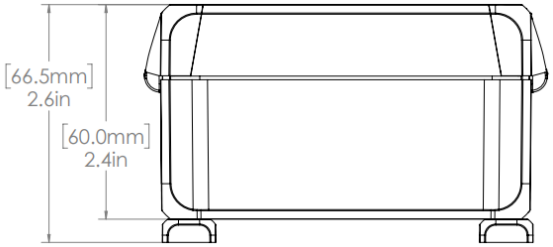
PHASE IV ENGINEERING INC.

LEAP® 2.0 Single & Dual Thermocouple Node Specifications		
General Sensor Specifications		
Analog Input Signals	**Thermocouple Chip:** 2 X isolated thermocouple inputs	
Supplied Sensors	Contact factory for configurable thermocouple options.	
Programmable Sensor Excitation	12 V @ 80 mA max, 24 V @ 25 mA max	
Enclosure Connectors	Pre-configured cable gland, or female thermocouple connector.	
Output Units	Temperature in C, K, F, R	
Integrated Temperature Chip (Cold Junction Compensation)		
Chip Specifications	+-0.0625 °C resolution, open and short circuit detection	
Compatible Thermocouple Types	K, J, T, N, S, E, B, R	
Accuracy	+- 0.5 °C (typical)	
Power Specifications		
Battery Power	3.6 V, 14,000 mAh D-cell, *FANSO*® Lithium Thionyl Chloride	
Battery Life	8-10 years at 10 minute transmit & sample intervals.	
Power / Current Consumption	**Sleep Current:** 8uA **Operating Current:** 6mA - 30mA (depending on sensors) **Transmit Current:** 9mA @ 0dBm and 80mA @ 20 dBm **RX Current:** 11 mA	
Wireless Specifications		
Wireless Transmission Range	Industrial Environments*	Open-Air*
	750 ft	3000 ft
RF Transmission Power	User configurable 0-20 dBm, factory configured to 20 dBm**	
RF Receive Sensitivity	RX Sensitivity: -102.7 dBm	
RF Communication Protocol	Thread, IPV6LoWPAN, IEEE 802.15.4	
RF Frequency and Modulation	2.4 GHz (16 Channels), DSSS-OQPSK (DSSS provides higher noise and interference resistance)	
Data Security	AES 128-bit encryption with secure join and key exchange (J-PAKE)	
Certifications	FCC (US). Tested and found to be IC (Canada) and ACMA (Australia) compliant.	
Internal Electronics Features		
Operating Temp.	- 40 °C to 85 °C	
Gateway Compatibility	Compatible with all LEAP® Wireless Gateways	
Firmware	Over-the-air upgradeable via WEB-UI	
Certifications	FCC (US). Tested and found to be IC (Canada) and ACMA (Australia) compliant.	
Gateway Communication	Send and receive (data, acknowledgements, updates, and device configuration)	
LED Power Switch	Power status, gateway connection status, thread-network connection status, data server connection status.	
Internal Memory	1 MB (10,000 time-stamped device readings)	
Enclosure & Hardware Specifications		
Processor	Silicon Labs EFR32MG12P* @ 48MHz	
Dimensions	113 mm x 80 mm x 60 mm	
Weight	370 grams (single thermocouple) 385 grams (dual thermocouple)	
Material	Poly-Carbonate (UL-94 rated)	
Ingress Protection	IP68	
Connectivity Options	IEEE 802.15.4 wireless	







** Transmission ranges vary with environmental conditions. Reported values are test averages.*
*** Transmission power requirements are governed regionally.*