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SENSOR
QUICK START GUIDE

LEAP WIRELESS DEVICE NODE **THERMOCOPLE** SINGLE AND DOUBLE

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Contents

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1. Getting Started

This user manual describes only the Leap Thermocouple Device Node. To get started with the Leap Wireless Sensor System, see the general user guide, 54-100187-01.

1.1 Audience

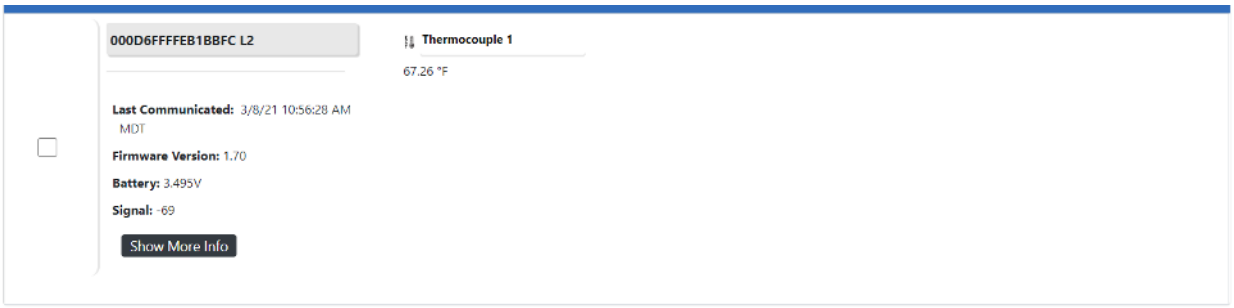
This manual assumes that you are already familiar with the Windows operating system, and are responsible for performing installation and monitoring of the test system.

1.1.1 Turning-On the Sensor

The sensor power switch is located on the side of the enclosure. Once the sensor makes connection with gateway, the software will update similarly to the image below.

If the sensor does not connect to the software, see the general user guide, 54-100187-01, for an explanation of the power switch LED blinking codes go gain insight to why the device node is not connecting.

See the main Leap User Manual for a full explanation of the information to the left of the sensor data.



1.2 Thermocouple Type

Thermocouples come in different types. Leap Thermocouple Device Nodes are configured for one type of thermocouple. The label will usually indicate the type of thermocouple.

Only use the thermocouple type that is designated on the Leap Device Node label.

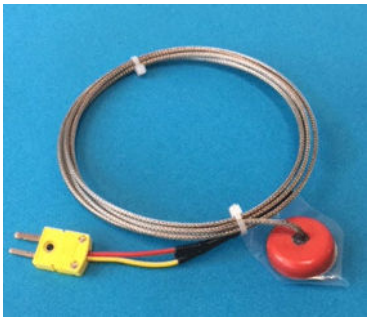
Thermocouple types are typically color coded. See *Wikipedia* for a full description of types, color code, and temperature ranges: *https://en.wikipedia.org/wiki/Thermocouple*

1.3 Thermocouple Connections

Thermocouples may be connected to the device node two ways:

1.3.1 Connection with Standard Mini 2-Blade Connector

Most thermocouple device nodes come with a "pigtail connector" that allows the connection of thermocouples with a standard mini blade connector.

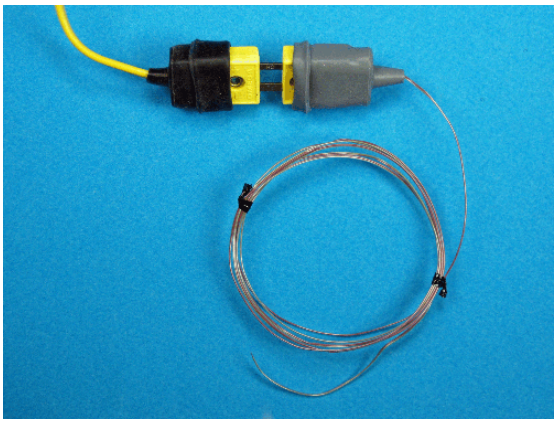


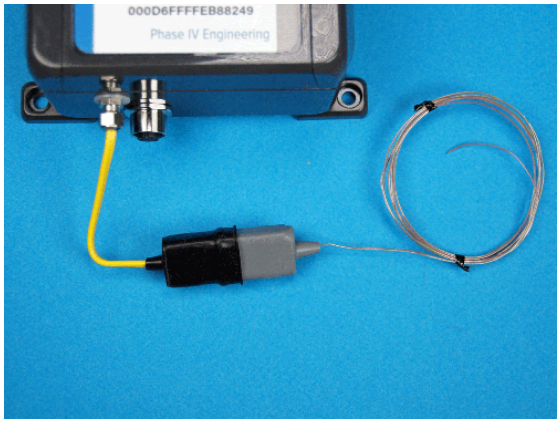
The proper type connector and proper thermocouple wire must be used to accurately measure the temperature at the probe tip.

1.3.2 Thermocouple Protective Rubber Boot

Most Leap Thermocouple Device Nodes come with a rubber "boot" that is black or gray in color. This boot helps protect the connector and helps hold the connectors together.

Roll-back the rubber boots when first connecting the male and female connector. Then, un-roll the rubber boots so that they overlap as shown below.

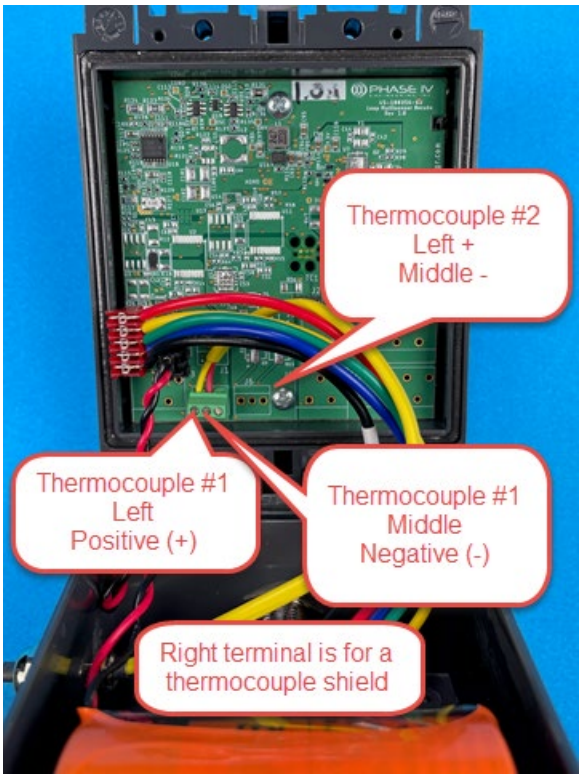




1.3.3 Connecting Thermocouples Directly to the Leap Circuit Board

If the Leap Device Node does not have a "pigtail connector", then the thermocouple may be run through the enclosure via a cable gland – then connected to the circuit board terminal block. See the photo below for proper connection.

Tighten the screw terminals well to assure a good connection.



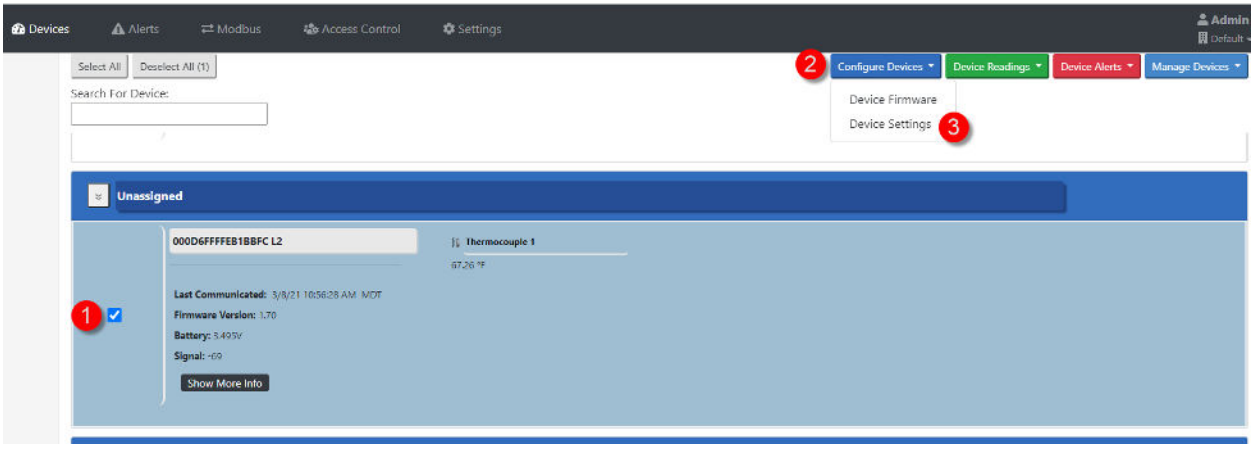
1.3.4 Cold Junction Compensation

Thermocouples require "cold junction compensation" to achieve accurate temperature readings at the tip of the thermocouple.

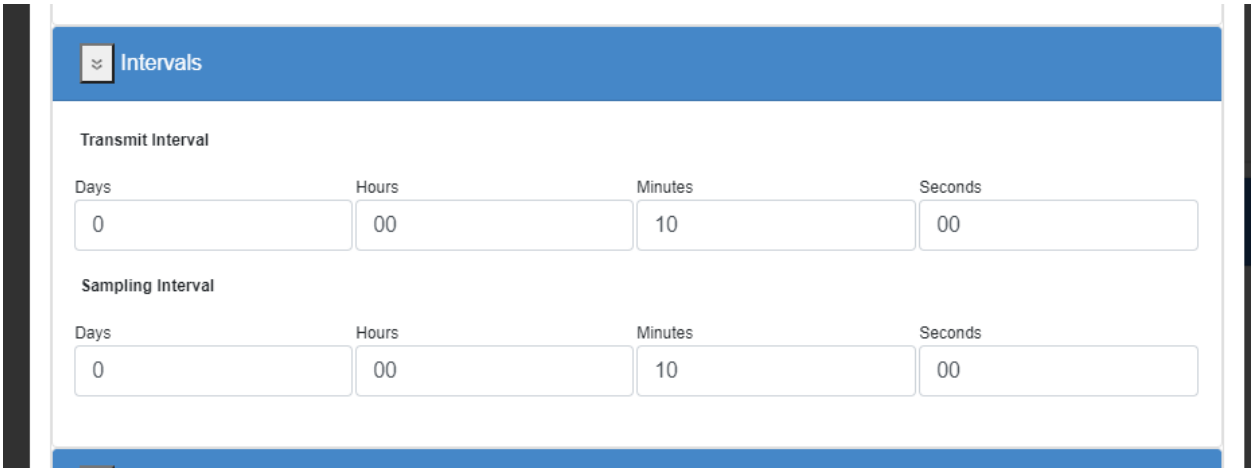
The Leap Device Node as a cold junction temperature sensor close to the terminal block on the circuit board. This temperature sensor is used for the "cold junction compensation". The temperature displayed in the Leap software includes the cold junction compensation.

1.4 Sample and Transmit Intervals

To change the temperature sampling time interval and the radio transmit time interval, select the sensor, then click on “Configure Devices”, then click on “Device Settings”.



Scroll down to the “Intervals” section.



“Sampling Interval” sets the time interval that the sensor readings are taken.

“Transmit Interval” sets the time interval that the transmitter will send the sensor data to the gateway.

For example, if Sampling Interval is set to 5 minutes and Transmit Interval is set to 30 minutes, then sensor reading will be taken every 5 minutes, then every 30 minutes, the 6 stored set of readings will be transmitted to the gateway.

Once you have made your modifications, click the Save button at the bottom of the page to commit the changes. On the Devices tab, you will see “Configuration Pending” until the sensor and gateway communicate again and complete the configuration update.

1.5 Temperature Range

1.5.1 Device Node Temperature Range and Typical Accuracy

The Leap K-Type Device Node can report temperatures in the range of -150°C to +1300°C.

Typical accuracy of the device node electronics is +/- 2.0°C from -150C to 200C and +/-1% of full scale from 200C to 1300C.

This does not include inaccuracies from the thermocouple that is attached.

1.5.2 Thermocouple Probe Temperature Range

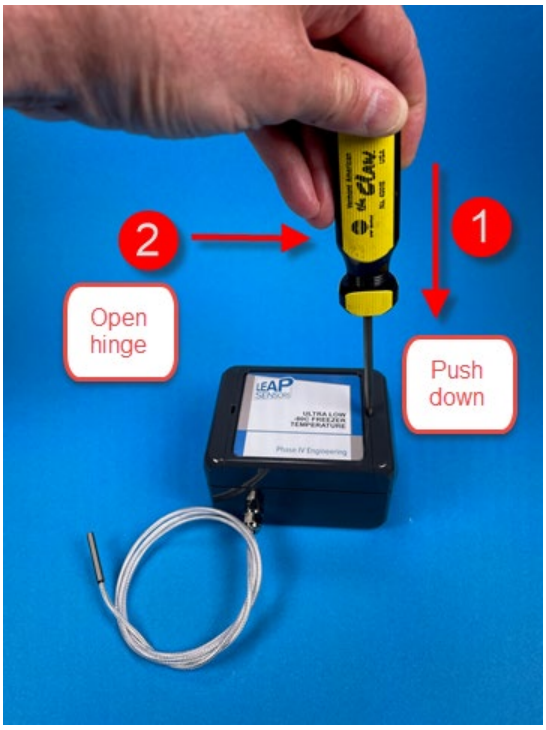
Most thermocouples are rated to operate in part, but not all, of the full temperature range for its thermocouple type. In addition, many thermocouples are not recommended for extended use at cold temperatures. Carefully examine the specifications of the thermocouple to assure it is rated for the temperature range of the application.

1.6 Battery

1.6.1 Battery Replacement

The Sensor uses one 3.6V D-cell battery. We recommend purchasing guaranteed-fresh batteries from Phase IV Engineering. Tadiran TL-5930/F 3.6V D-cell replacement batteries can be purchased on-line.

To open the enclosure, insert a #2 flat blade screwdriver as shown.
Press down on the screwdriver, then rotate to the side.



Remove the battery cable from the circuit board by pressing the locking tab and removing the connector.

Remove the battery from the holder and replace the battery.

Install the battery cable to the board. The connector is polarized and cannot be installed incorrectly.

Properly dispose of the battery. Never short-out the battery.

1.6.2 Expected Battery Life

To preserve battery life, a sampling rate of 10 minutes along with a transmit interval of 10 minutes should allow for a battery life of over 5 years. A 1-hour sample and transmit interval should result in a battery life of nearly 10 years.

1.7 Downloading the Data

The data may be downloaded to a CSV file and imported into Excel for analysis by first selecting a sensor in the software. (This will change the background color to blue). Then click on the "Device Readings" button and then "Download Readings".

See the main Leap User Manual for more details.

1.8 Technical Support

For more information about our products and services, or for technical assistance:

Visit us at: www.phaseivengr.com
Tel: +(303) 443 6611 (USA – MST 8:00 a.m. to 5:00 p.m., Mon.-Fri.)
E-Mail: support@phaseivengr.com

If you need assistance, please provide the following information:

- Product part number
- Product serial number
- Version