Building Monitor

Specifications

Overview

The Building Monitor is a long-range, battery-powered, sensor for monitoring water usage and leakage. The monitor can be connected to the vast majority of utility water meters. The node and sensor are designed to be used in environments such as basements or outdoors. The nodes are contained within an IP68-rated (submersion of 1.5 meters for 30 min.) waterproof enclosure and the sensors are encased in epoxy. The node communicates via LoRaWAN wireless protocol to connect to the Helium Network. The data is sent to our console for monitoring and leak detection.

LoRa/LongFi Node

Weight:

- 200g

Dimensions:

- Node: 4.6” x 2.165 x 2” (LxWxH)
    - The base antenna adds 3.75” to the Length

- Cable: 8 feet (connectors and extensions can be added)
- Sensor: 1.3” x 2.5” x 0.8”

LoRa/LongFi specifications

- High Sensitivity down to -148 dBm
- LoRa Chip sx1276/sx1278
- 127 dB Dynamic Range RSSI

Power Consumption

- 8.5Ah battery
- 3 years of battery life, up to 7 years. Battery life is determined by:
    - Status rate (minimum of 3 years at 1 data point per 5 min.
        - Decreasing status rate to 10 min. will nearly double the battery life.
    - Signal strength (determines ADR configuration).
    - Environmental conditions
        - Low temperatures may decrease battery life.

Configuration

The node has multiple over-the-air (OTA) configuration settings:

- Clear Memory
- Adjusted Data Rate (ADR) - decreases battery usage by decreasing transmission power
- Status Rate

Range from Hotspot

The range is highly dependent upon:

- Hotspot antenna height
- Antenna gain: a 9 dB roof-mounted antenna will increase the range over stock (2 dB) hotspot in a 2nd story window by 65%
- Increasing hotspot antenna height from 6 m to 12 m will give a 40% increase in range
- Node antenna height
- Intervening obstructions
- Terrain Example: Urban environment with antenna at 6 M and node in stone foundation basement has 500 m of range.

Water Meters

Compatible Water Meters

Positive displacement, single or compound, as well as turbine meters ½" up to 4". The Water Monitor is compatible with all of the most common utility water meters using magnetic registers including those manufactured by Neptune, Badger, Sensus, MasterMeter, Muller, and Zenner.

Generally not compatible with ultrasonic meters.

Accuracy

The resolution of the water monitor is dependent on the water meter to which the monitor is strapped. For example, the Neptune ⅝" T-10 (one of the most commonly used utility water meters)

revolves 114 times per
gallon. The water monitor reads each of these revolutions. In this case, the water monitor has a resolution of 1/114 of a gallon (about 0.9% of a gallon).