SeniMax™ Cellular Gateway

Ultra-Low Power Sensing and Remote Wireless Communication

SeniMax™

Highlights

- **Wireless interfaces:**
  - ZigBee (IEEE 802.15.4) for communication with SenSpot™ nodes.
  - 4G LTE (for cellular communication)
- **Ingress Protection:** IP66, weatherproof and protected against rain, snow, and UV exposure.
- **Coverage:** up to 100 SenSpot™ nodes
- **Lightweight:**
  - Transceiver box: 2.1 kg (4.63 lb.)
  - Dual solar panel with mount and 3m (10ft) cable: 450 g (1 lb.)
- **ZigBee Wireless Communication range:** 300m (980ft) for reliable communication.
- **Power source:** Redundant (two) rechargeable lithium-ion 18650 battery.
- **Battery charging:**
  - **Option 1:** redundant (two) integrated solar panels
  - **Option 2:** mains power (100-24V AC)
- **Health check:** regularly reports battery voltage, charge currents, cellular signal strength, modems error codes.
- **Mounting options**
  - Flange mount: secured to concrete using two small bolts.
  - Adhesive tape, does not need any drilling (smooth surfaces such as steel)
  - Belt, securing the gateway to a pole or column with couple of zip ties.
- **Ultra-low power**: With fully charged batteries functions 6 weeks in absence of solar/mains charging.

Camera option: A Resensys proprietary camera can be connected to the SeniMax gateway. It takes photos regularly (typically one every 3 hours).

- **Trigger photos:** in addition to regular photos, the camera can be triggered using an over the air command from wireless strain gauge. SenSpot™ or wireless accelerometer SenSPot™.
  - **Trigger by wireless strain gauge SenSpot™:** when triggered by wireless strain gauge, the pictures can capture heavy and overload vehicles on a bridge.
  - **Trigger by accelerometer SenSpot™:** when triggered by wireless accelerometer, the pictures can capture collision or impacts against bridges by barges, ships, or over-height vehicles.
- **Camera specifications:**
  - Image resolution: 640×480, 320×240
  - Data format: JPEG
  - Pixels: 0.3Mega
  - Angel of view: 90°(Default), 170°/150°/120°/60°/45°/30°/15°

Applications

Resensys SeniMax™ is a low-power, high-performance data collector, and remote communication gateway. SeniMax™ wirelessly receives data from Resensys SenSpot™ nodes using , and it sends the data to a remote cloud server using cellular data service. A single SeniMax™ can cover up to 100 SenSpot™ sensors within its wireless communication range. The solar powered SeniMax™ is the ideal solution for applications involving distributed sensing and data acquisition where access to main power or communication infrastructures is unavailable. Specific applications include structural integrity monitoring for highway bridges, retaining walls, dams, tunnels, buildings, mining equipment, construction projects, pipelines, and more.

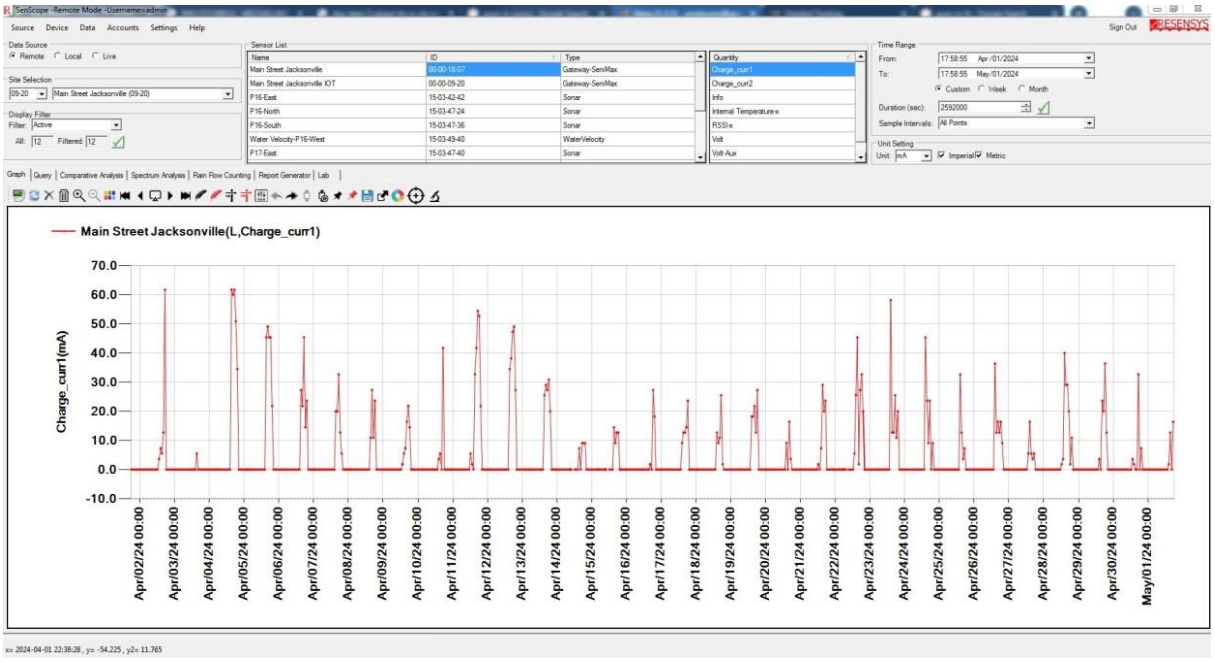

Figure 1: Solar panel charging current within 1 month

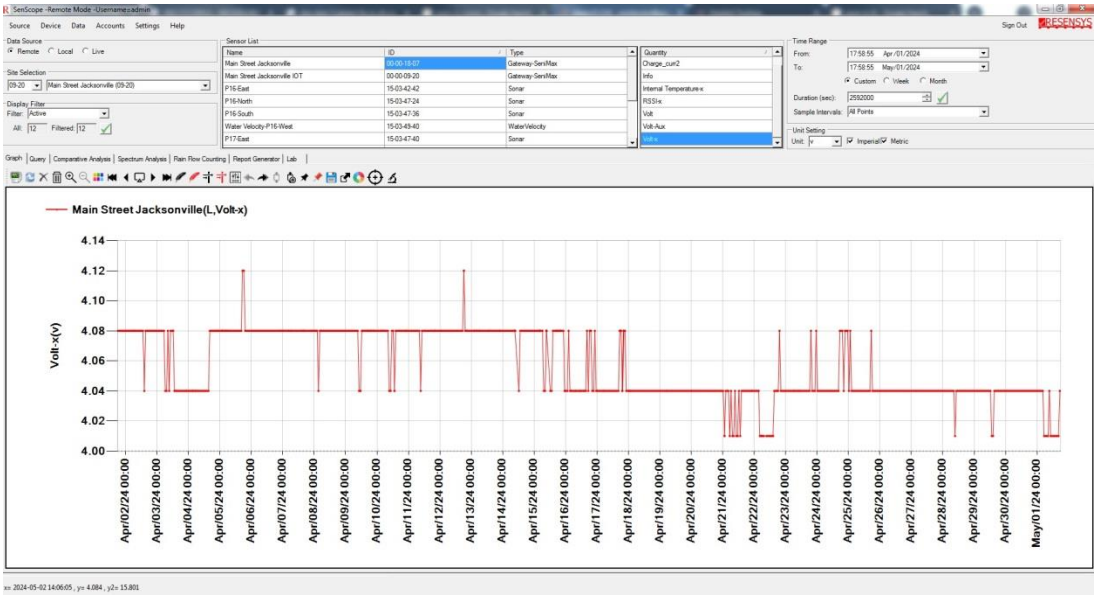

Figure 2: SeniMax™ battery voltage within 1 month

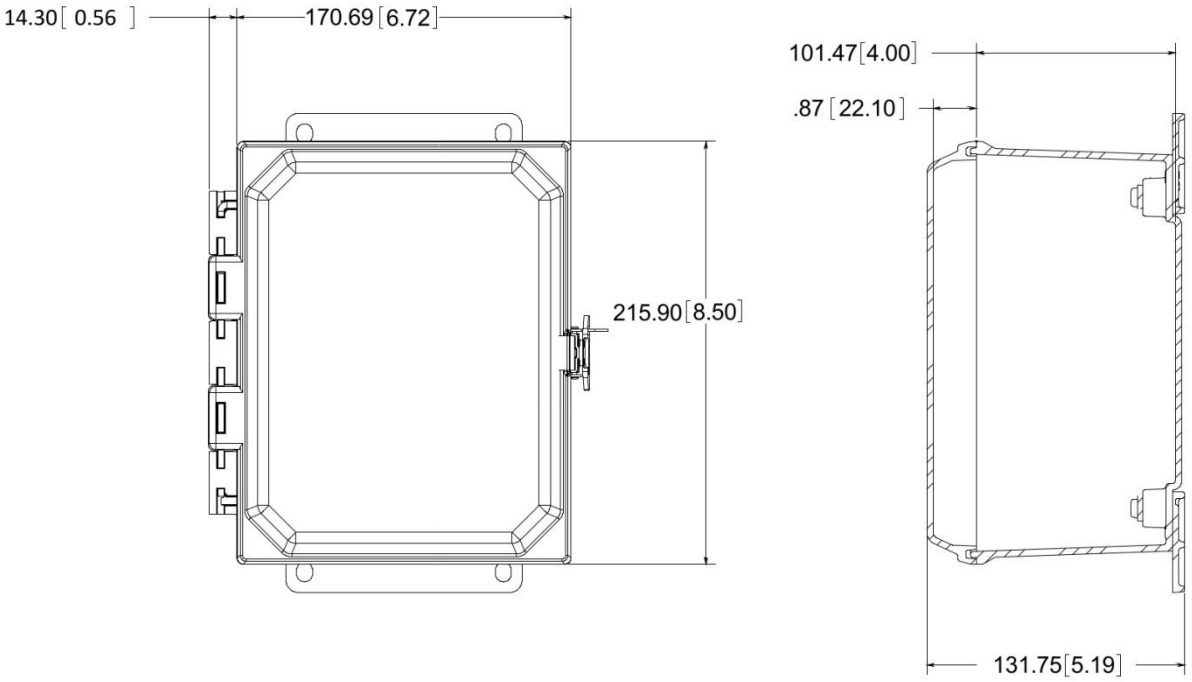

Figure 3: SeniMax™ enclosure dimensions. All dimensions are in mm (inch)

Figure 4: Installed SeniMax™ (left) and SeniMax with camera (right)