SenSpot™ Wireless Surface Velocity Radar

Ultra–Low Power Precision Sensing & Wireless Communication

Typical Applications

- Flood monitoring
- Scour monitoring
- Hydrometeorology
- Ocean science
- Academic research
- Monitoring open channels flow, including:
  - Rivers
  - Streams
  - Canals
  - Irrigation canals
  - Outlet/inlets
  - Process water canals

- Extend wireless communication range by relaying data between SenSpot™ and SeniMax™ when the RF link is weak (Function as a Repeater).
- Gateway (Type cellular) for collecting data from other Resensys wireless SenSpot™s and send them to remote server.

Specifications

- **Wireless communication range**: 300m (980ft) for reliable communication.
- **Ingress Protection:** IP67, weatherproof, waterproof, protected against rain, snow, and UV exposure.

- **Two types:**
  - **Lite:** smaller. Need a gateway to connect to remote server.
  - **Cellular:** has a built-in modem. Does not need a gateway to connect to remote server.
- **Working temperature:** -40°C to +85°C (-40°F to +185°F)
- **Accuracy:**
  - +/- 2% of measured value (0.08 m/s to 4 m/s) (0.26 to 13.12 ft/s)
  - +/- 2.5% of measured value (4 m/s to 12 m/s) (13.12 to 39.37 ft/s)
- **Resolution:** 0.1 mm/s (0.0003 ft/s)
- **Measurement range velocity:** 0.08 to 15 m/s (0.26 to 49.12 ft/s), depending on flow conditions
- **Direction distance:** 1 to 50 m (3.3 to 164 ft.)
- **Distance Water**: 0.5 to 25 m (1.64 to 82 ft.)
- **Power source**: Re chargeable lithium-ion 18650 battery.
- **Rotation range of swivel mount:**
  - Lateral axis: ± 90°
  - Longitudinal axis: ± 15°
- **Dimensions:**
  - Wireless transceiver box (Type Lite): 140mm (5.50”) x 105mm (4.12”) x 62mm (2.44”)
  - Wireless transceiver box (Type Cellular): 155mm(6.125”) × 117mm(4.625”) × 62mm (2.44”)
  - Velocity sensor: 134.5mm (5.3”) x 114.5mm (4.5”) x 80mm (3.2”)
  - Solar panel: 140mm (5.5”) x 114 mm (4.5”) x 89 mm (3.5”)
- **Weight:**
  - Wireless transceiver (Type Lite): 400g (0.88 lb.)
  - Wireless transceiver (Type Cellular): 500g (1.10 lb.)
  - Velocity sensor (without mounting bracket): 820g (1.81 lb.)
  - Velocity sensor (with mounting bracket): 1530g (3.38 lb.)
  - Solar panel with mount and 3m (10ft) cable**:** 300g (0.66 lb.)
- **Cellular communication (Type Cellular):** 4G global LTE-M/NB-IoT. Nano SIM card.

Benefits

- **Wireless transmission:** No wiring is required for data collection.
- **Long lifetime** : Unlimited lifetime in presence of ambient light
- **Easy mounting :**Flange mount or adhesive tape
  - Self-adhesive, no drilling is required (smooth surfaces such as steel).
  - Flange-mount, drilling is required (uneven surfaces such as concrete).
- **Maintenance free :** No battery replacement, calibration or post-installation maintenance is required
- **Durable solution**: continuous non-contact surface velocity measurements during low, normal or high flows

Description

Surface Velocity Radar SenSpot™ provides an easy to install, scalable solution for monitoring water flow velocity in open channels.

It comes with a high-capacity lithium-ion battery and a solar panel and its mount. As a result, it does not require battery replacement and once installed, it is almost maintenance free.

There are two different Surface Velocity Radar SenSpot™ types. Lite type is smaller and cheaper but need a gateway for sending the data to remote server while the cellular type has a built-in cellular modem that allow

it to connect and send data to remote server without a separate gateway. The cellular type can function as a gateway at the same time to collect and send data of other Resensys Wireless SenSpot™ s eliminating need for a separate gateway.

Surface Velocity Radar sensor is mounted above the water surface, away from floating debris using a flexible bracket for vertical or horizontal installation.

This pruduct can also serve as SenSpot™ repeater at the same time to extend the wireless communication range between SenSpot™ and SeniMax™.

Installation

Wireless transceiver box has mounting flange. It can be installed either through the flange holes and screws (for concrete and rough surfaces) or VHB adhesive tape (for steel and smooth surfaces).

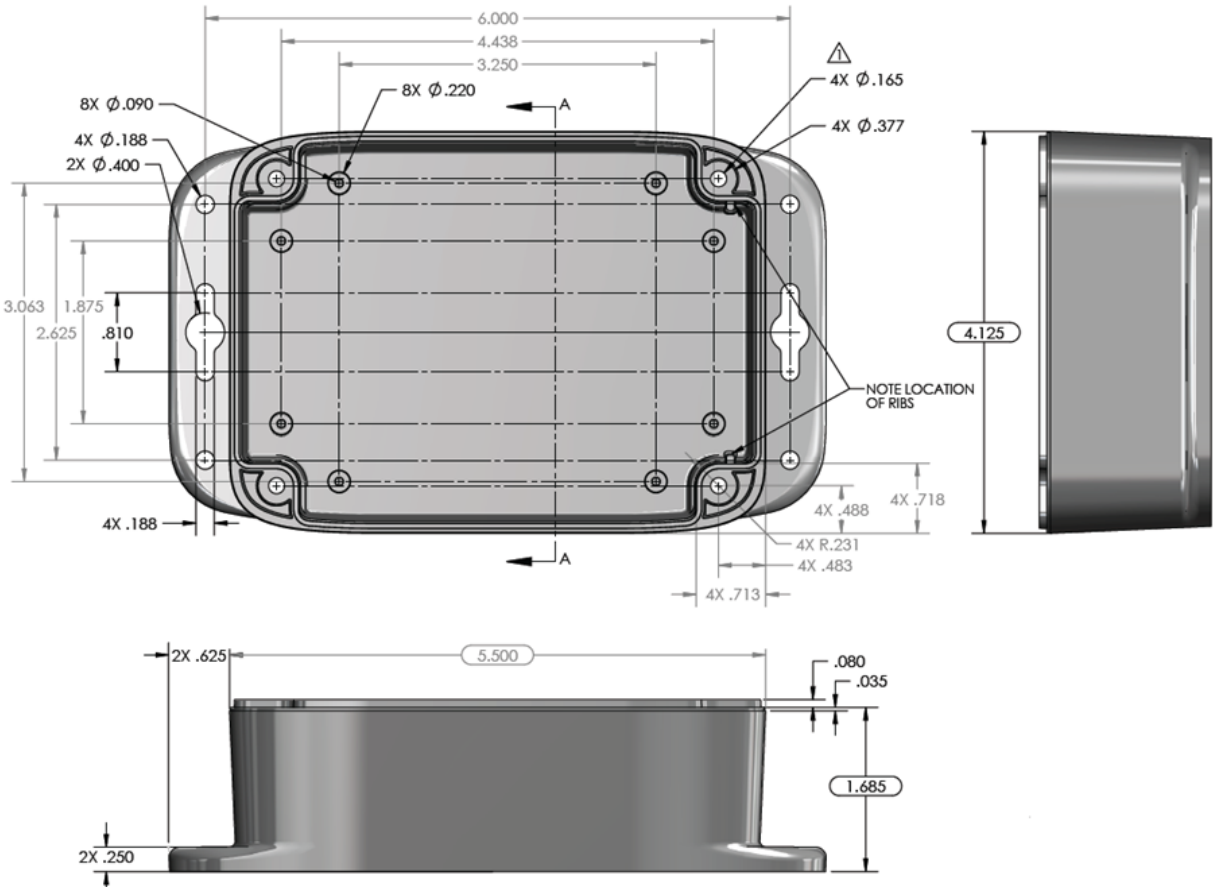

Figure 1: Wireless transceiver dimensions (Type Lite). All dimensions are in inch.

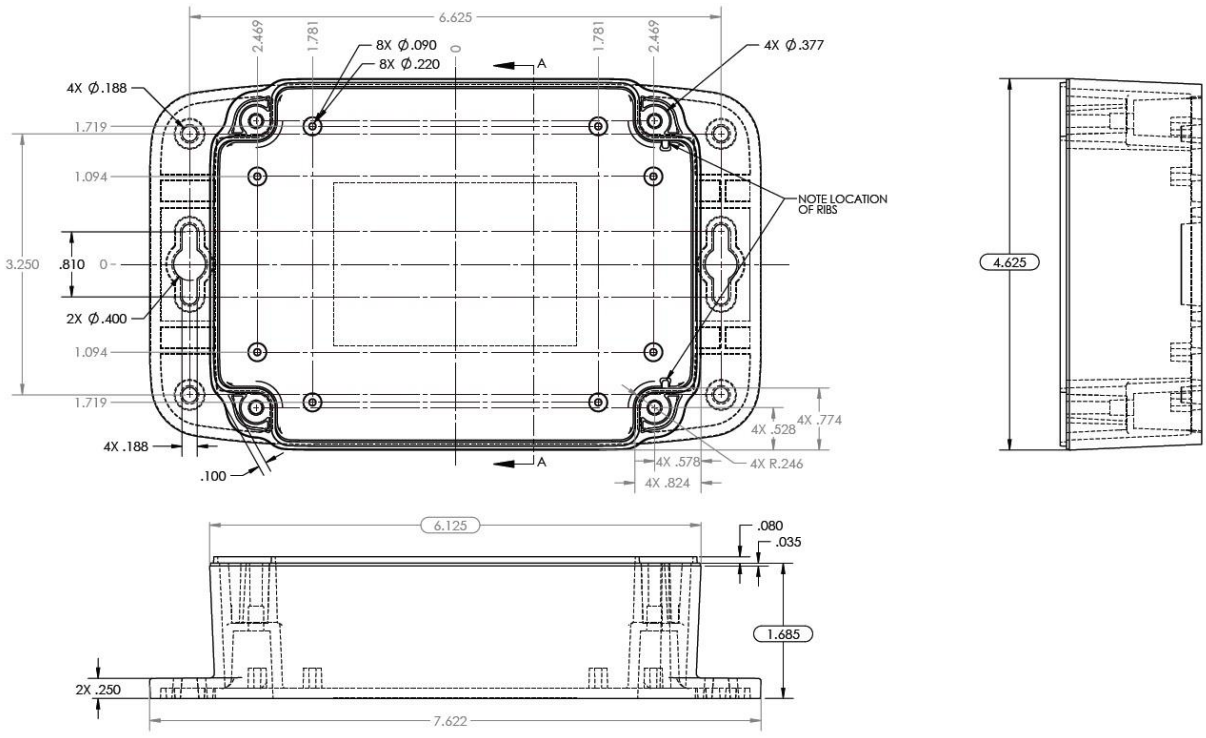

Figure 2: Wireless transceiver dimensions (Type Cellular). All dimensions are in inch.

Figure 3: An installed Resensys wireless water velocity SenSpot™ .

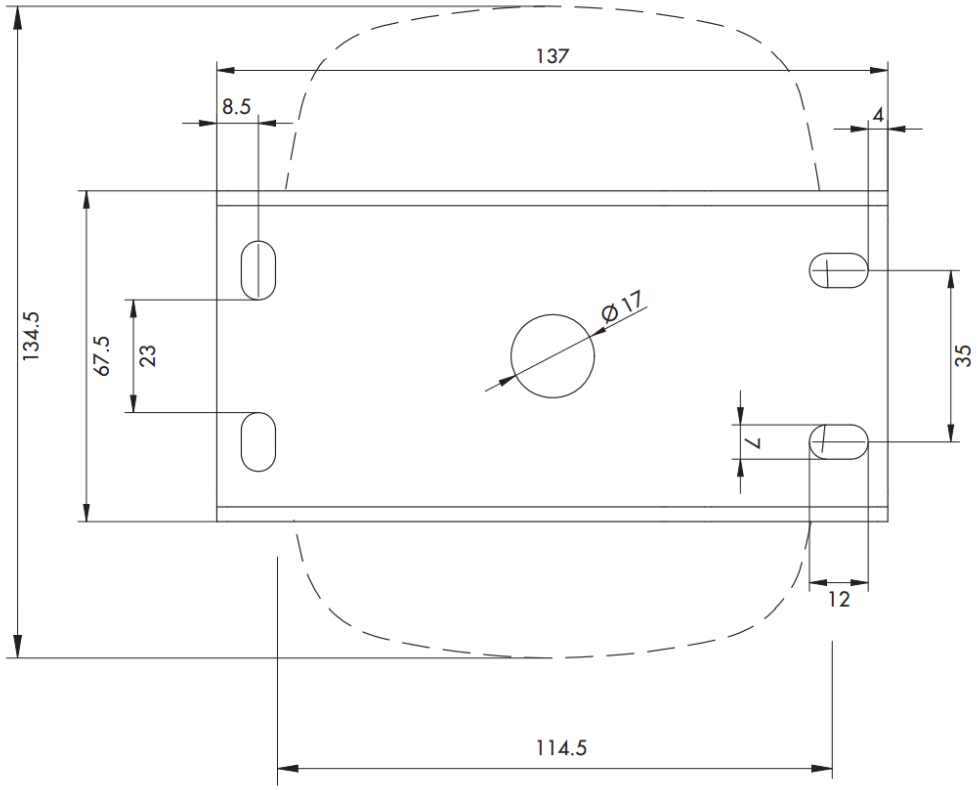

Figure 4: Surface Velocity Radar/Sensor and Mount Dimension. All dimensions are in mm.

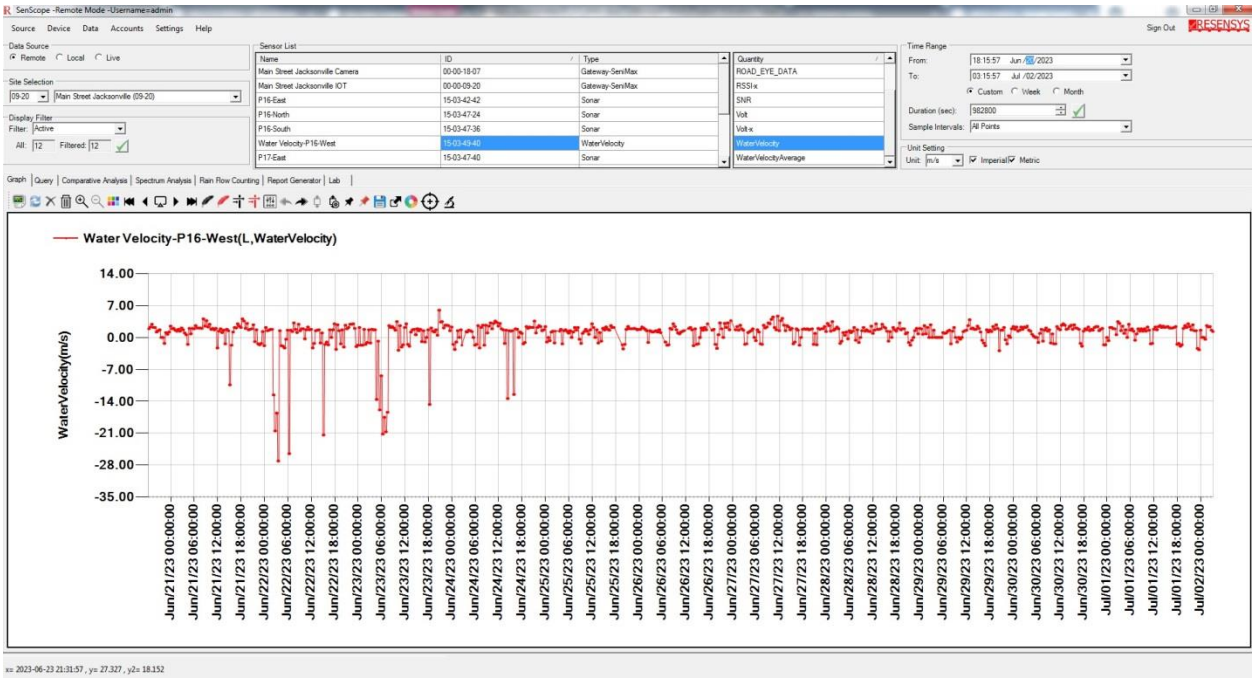

Figure 5: Water velocity readings of an installed Resensys SenSpot™ .

Ordering Information:

Type	Part Number
Cellular (with built-in modem)	SP-WV-CEL
Lite (smaller, no built-in modem)	SP-WV-LIT