RESENSYS

SenSpot™ Wireless MID-Resolution 2D Inclination/Tilt

Ultra-Low Power Precision Sensing & Wireless Communication

Typical Applications

- Bridge health monitoring
- Monitoring of bridge bearing and expansion joints
- General structural integrity monitoring (buildings, dams, etc.)
- Automation technology
- Aerospace engineering
- Monitoring of manufacturing process
- Tunnel monitoring
- Landslide monitoring
- Slope monitoring

- **2D-Measurement:** Monitoring the tilt of the whole surface instead of just one direction

Benefits

- **Long lifetime:** (battery life of up to 10 years).
- **Wireless communication**: No wiring is required for data collection.
- **Lightweight**: 215 g (7.6 oz.).
- **Easy mounting:** Flange-mount or adhesive tape.
  - Self-adhesive, no drilling is required (e.g., steel).
  - Flange-mount, drilling is required (e.g., concrete).
- **Adjustable sampling interval:** From 12 seconds to 6 minutes.
- **Quick installation,** 1-2 minutes.
- **Communication range:** 300m (980ft) for reliable communication.

Specifications

- **Two types:**
  - Type A (standard range):
    - Operation range: ± 60°
    - Resolution: 0.001 degree
  - Type B (extended range):
    - Operation range: ± 90°
    - Resolution: 0.01 degree
- **Repeatability**: ≤0.01°
- **Time constant:** ≤0.01sec
- **Working temperature:** -40°C to +65°C (-40°F to +150°F).
- **Dimension:** 59mm (2.32”) × 64.9mm (2.56”) × 35mm (1.38”).

- **Ingress Protection:** IP67, weatherproof
  Protected against rain, snow, and UV exposure.
- **Power source:** Standard non-rechargeable CR123 battery.

Description

SenSpot™ is designed to operate maintenance-free for more than a decade. After installation, SenSpot™ does not need calibration, battery replacement, or any other maintenance for up to 10 years. Due to small size and lightweight, SenSpot™ sensors can be applied easily to as many critical spots on a structure as needed, with minimal installation effort.

As a part of the Resensys solution for integrity monitoring system, SenSpot™ inclination/tilt can be used to monitor the smallest movements of structural components such as piers, decks, rocker bearings on a highway bridge. In addition, SenSpot™ inclination/tilt monitors changes in these quantities as the structure expands or contracts as a result of temperature variations. In addition to bridges, SenSpot™ inclination/tilt can be used in a variety of other structures. Examples include buildings, dams, etc.

Installation and Dimensions

Tilt meter SenSpot™ comes in either self-adhesive or flange-mount form factors. A general diagram of this unit is shown below.

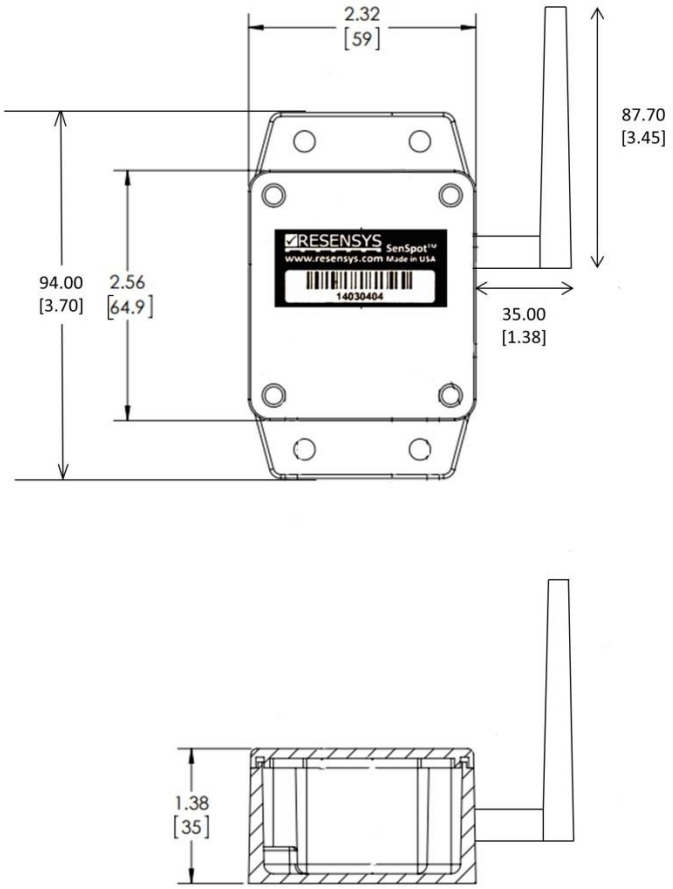

Figure 1: Tilt meter SenSpot™ (MRT) dimensions. All dimensions are in mm [inch].

Direction Diagram

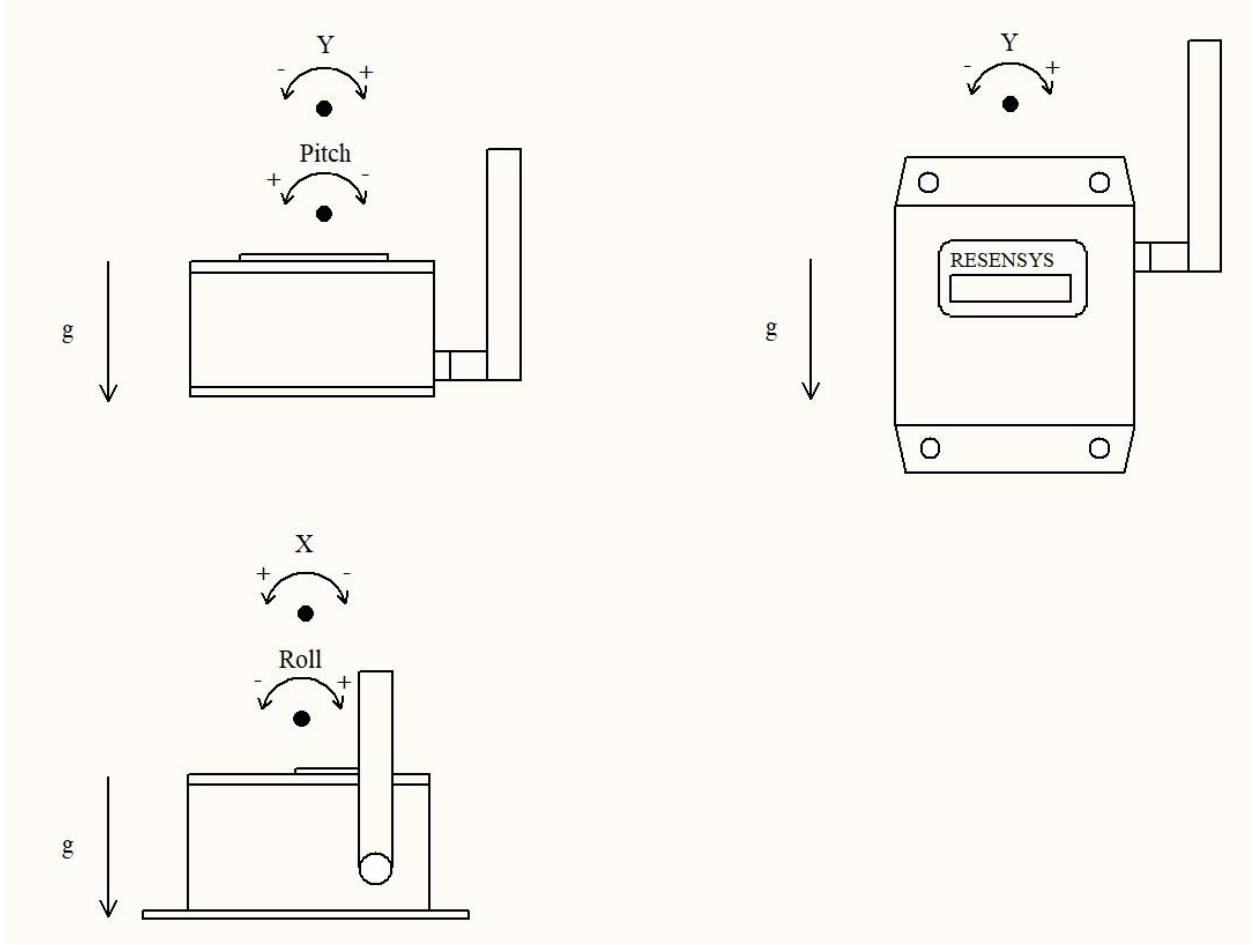

Figure 2: Tilt-X, Tilt-Y, Tilt-Z, Pitch & Roll orientations

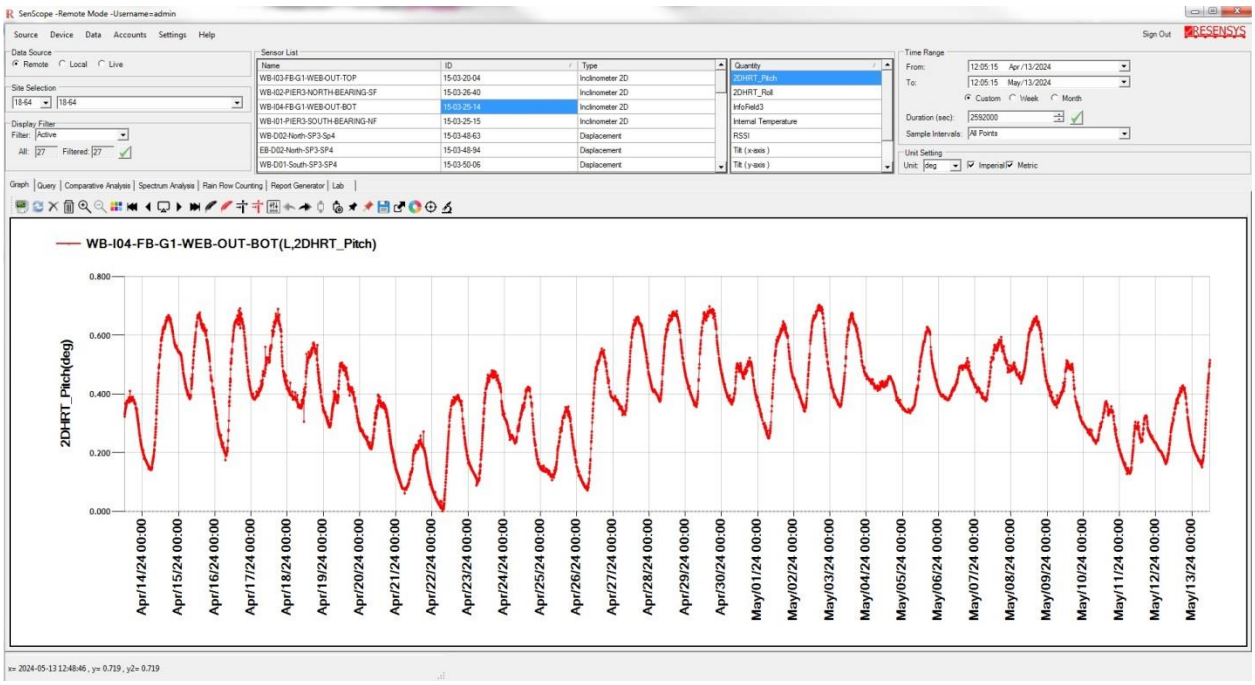

Figure 3: Pitch measurements of an installed Resensys 2DMRT SenSpot™

Figure 4: A Resensys 2DMRT SenSpot™ installed on a bridge bearing