WS200 Series ConnectSens™ Wireless Single Axis Accelerometer Troubleshooting Guide

Table of Contents

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CTC's experienced support team will review your inquiry and work quickly to resolve your issues.

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Introduction

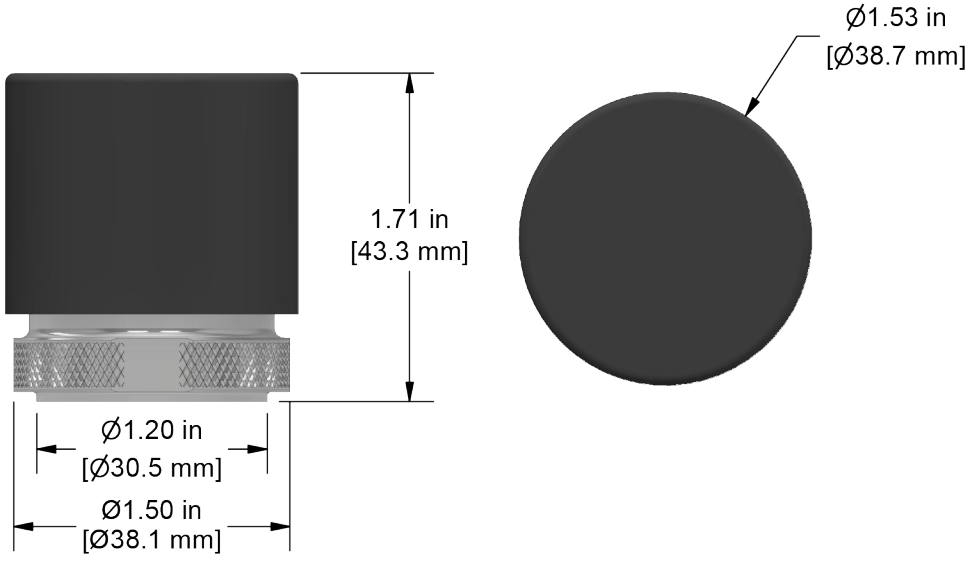
This document contains information on the maintenance and troubleshooting of the WS200 Series of wireless sensors.

WS200 Series Product Overview
CTC Connect WS200 Series Wireless Sensors capture and transmit dynamic vibration signals over a **Bluetooth®** Low Energy 5.2 connection, as well as temperature measurements. Within a clear line of sight, they can transmit data as far as 1200 ft/365 m.

Data can be accessed via CTC ConnectView™ Web App running on a CTC Gateway, or through custom software integration with the CTC Connect API and CTC Gateway.

Note: CTC does not support direct Bluetooth communication between CTC ConnectSens Wireless Sensors and Bluetooth devices such as phones, tablets, or third-party hardware without a CTC Wireless Gateway. CTC will not provide documentation, support materials, or remote technical support for direct Bluetooth integrations.

WS200 Series sensors are designed for permanent mounting on the machine surface. To prepare the machine surface for installation, spot face, drill, and tap the mounting location. CTC suggests using MH117 Series Installation Tool Kits. To view in depth mounting instructions, please view our Mounting Guide.



Battery Performance

Estimated battery life and performance will vary based on sensor use and environment. Predicably, the more frequently readings are taken, the faster the battery will drain. Being far away from a gateway device, or being in an environment with a high amount of interference (e.g. large structures, EMI, etc.), can also cause faster battery drain. The use of non-CTC gateway devices or custom software can negatively affect battery life as well, depending on how well the system is designed. Additionally, the lithium batteries used inside WS200 Sensors are particularly sensitive to environmental temperature. The higher the environment temperature, the faster the battery will drain.

In a lower temperature environment (30 °C or lower), using CTC gateway and software with a strong Bluetooth® signal strength, and at two readings per day, the battery is estimated to last between 3-4 years for WS201 assemblies.

Battery Maintenance

WS200 Series Sensors feature user-replaceable batteries. Replacement batteries can be purchased from the CTC website. WS200 Sensors will report estimated remaining battery life via Bluetooth®, which can be viewed in the software. When this value reaches 5%, a low battery flag will be set and a battery replacement should be planned as soon as possible. CTC also recommends replacing the battery every four years regardless of remaining battery life reported by software, due to effects of battery degradation over time. If operating above 50 °C, replace the battery every two years. It is highly recommended to unmount the sensor and replace the battery in a controlled environment to avoid any dirt, dust, or moisture ingress getting inside the sensor assembly. When replacing the battery, press and hold the battery reset button while connecting the new battery. Continue holding this button for at least five seconds after the new battery is connected. This must be performed to reset the battery statistics (and thus the estimated battery life remaining value reported).

Troubleshooting

- Sensor not appearing in software
  - Try bringing the sensor closer to the gateway device
  - Check that the battery is properly installed with the correct polarity
  - Try using a new/different battery
  - If possible, use a different Bluetooth® scanner device to search for the sensor. CTC recommends downloading the NRF Connect app on your mobile device.
  - Try power cycling the sensor by disconnecting and reconnecting the battery

- Vibration amplitudes that are not expected for the application
  - If possible, confirm present vibration levels with another device such as an IEPE accelerometer
  - Check that the sensor is properly mounted snuggly and flush with the mounting surface
  - Try re-programming a different configuration to the sensor
  - Note that if vibration frequency is close to the sensor's resonant frequency, natural mechanical gain will occur, see datasheet for frequency response curve
  - Be aware that different mounting methods other than stud mount can detrimentally affect the sensor's frequency response curve

- FFT peaks are not located at expected frequencies
  - The sensors perform an internal calibration routine during power up. If drift occurs over time, a new calibration routine can be run by either –
    - Power cycling the sensor by disconnecting and reconnecting the battery
    - Programming a new configuration, or re-programming the same configuration
  - Note, FFT frequency tolerance should be within ±0.5% when properly calibrated

- Connectivity Issues
  - If signal strength is low, if possible, move the gateway device closer to the sensor or install another gateway device closer to the sensor.
  - Try using a fresh battery even if there is life left, and if battery level is low, replace the battery.
  - If more than 20 sensors are being serviced by the same gateway device, it is recommended to add another gateway device to the system.