CTC CONNECT

WS100 Series ConnectSens™ Wireless Triaxial Accelerometer Troubleshooting Guide

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Introduction

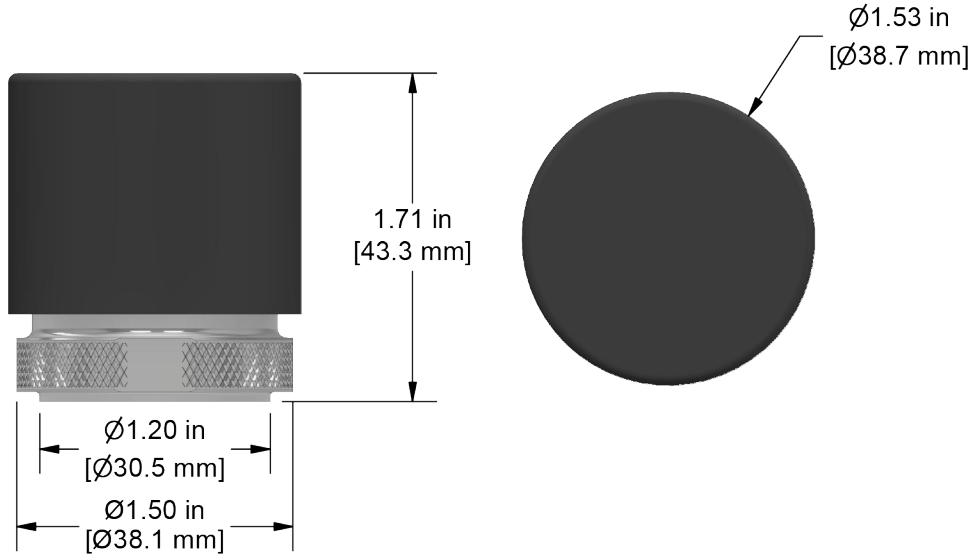
This document contains information on the maintenance and troubleshooting of the WS100 Series of wireless triaxial sensors.

WS100 Series Product Overview

CTC Connect WS100 Series Wireless Sensors periodically collect triaxial vibration data within a selected frequency band, as well as temperature measurements. From this vibration data, overall vibration amplitudes are calculated in RMS, peak, and peak-to-peak formats. This data is then transmitted through non-connectable **Bluetooth®** advertisements. Within a clear line of sight, they can transmit data as far as 2100 ft/640 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.

WS100 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 WS100 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 WS301 assemblies.

Battery Maintenance

WS100 Series Sensors feature user-replaceable batteries. Replacement batteries can be purchased from the CTC website. WS100 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

- 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.