

QI2500 Wireless Vibration Sensor

Maintenance Person User Manual

1. Purpose of the Sensor

The QI2500 Wireless Vibration Sensor is a battery-powered device used to monitor machine health using vibration and temperature data.

The sensor:

- Periodically measures vibration and temperature
- Compares readings to preset thresholds
- Alerts maintenance personnel using a colored light
- Stores data for trend review and troubleshooting

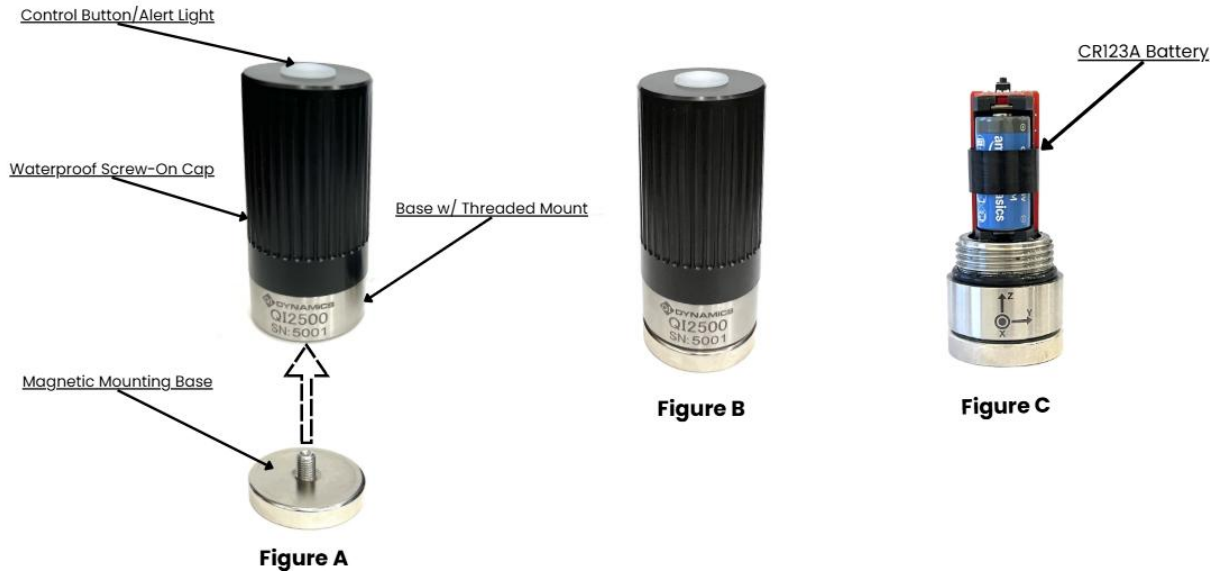
The QI2500 is intended to help maintenance teams identify early signs of:

- Imbalance
- Misalignment
- Mechanical looseness
- Bearing wear
- Overheating

Early detection allows corrective action **before equipment failure or unplanned downtime.**

2. Sensor Overview

Main Components



- **Control Button**
Used to turn the sensor on/off and enter setup mode.
 - **Alert Light**
Primary indicator of sensor status and machine condition.
 - **Waterproof Screw-On Cap**
 - **Stainless Steel Base**
Includes threaded mounting hole.
 - **Magnetic Mounting Base**
Flat base included; curved base available separately.
 - **Battery**
One CR123A lithium battery.
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3. Sensor Modes and Alert Lights (READ THIS FIRST)

This section is the most important for daily use.

Control Button Functions

| Button Press Mode | Description |
|------------------------------|--|
| Single press ON | Sensor powers on and begins collecting data |
| Double press SETUP | Sensor creates Wi-Fi access point for setup and data viewing |
| Triple press OFF (Hibernate) | Sensor powers off completely |

Important:

Press the button at **one-second intervals**. Pressing too quickly or too slowly may not change modes correctly.

Alert Light Meanings

| Light Behavior | Meaning | Action |
|-----------------------------|----------------------------------|-----------------------------|
| Blue blink | Sensor is on and collecting data | No action |
| Solid green | Setup Mode | Connect device to sensor |
| Solid yellow → yellow blink | Sensor powering off | No action |
| Yellow blink | Caution alert | Plan inspection |
| Red blink | Critical alert | Inspect machine immediately |

Rule of thumb

- **Yellow** = Condition is changing
 - **Red** = Condition requires immediate attention
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4. Required Items

- QI2500 Wireless Vibration Sensor with magnetic mount
- Smartphone, tablet, or PC with Wi-Fi and web browser

No tools or facility Wi-Fi required.

5. Installation Overview (Quick Summary)

1. Turn sensor on
2. Enter Setup Mode
3. Connect mobile device or PC to sensor's Wi-Fi
4. Verify or adjust thresholds
5. Save settings
6. Power sensor off
7. Mount sensor on machine
8. Turn sensor back on

Details for each step are provided below.

6. Basic Setup and Connection

6.1 Powering On and Entering Setup Mode

1. Press the Control Button **once**
→ Blue light blinks (sensor on)
2. Press the Control Button **twice**
→ Solid green light (Setup Mode)

If no setup activity occurs for 5 minutes, the sensor exits Setup Mode automatically.

6.2 Connecting to the Sensor

1. Open Wi-Fi settings on your device
2. Connect to network:
QI2500-AP (sensor serial number)
3. Password: **123456789**
4. Open a web browser

5. Enter address: **192.168.4.1**

The Sensor Home Page will load.

Tip:

You may add the Sensor Home Page to your device's home screen for faster access.

7. Basic Sensor Settings (Recommended for Initial Use)

Each sensor ships with default settings that work for most machines. Only adjust settings if needed.

7.1 Timing Settings

Data Period

Controls how often measurements are taken.

- Longer periods = longer battery life
- Shorter periods = more frequent data

Sample Divider

Controls vibration sample rate.

- **Default: 4 (Recommended)**
- Leave unchanged for most applications

Divider Sample Rate

| | |
|----|-----------|
| 1 | 32,000 Hz |
| 4 | 8,000 Hz |
| 64 | 500 Hz |

Leave this setting at 4 unless you are troubleshooting specific vibration issues.

7.2 Display Settings

- Temperature units: °F or °C
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7.3 Velocity Thresholds (Primary Alert Settings)

Velocity thresholds determine when alerts occur.

- **Yellow Threshold** – Caution (early wear)
- **Red Threshold** – Critical (advanced wear)

Set thresholds based on machine size using ISO guidelines.

Interpretation

- Yellow alert → Schedule inspection
 - Red alert → Inspect machine immediately
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7.4 Temperature Thresholds

Set thresholds based on normal operating temperature of the machine.

- Yellow = above normal
 - Red = excessive temperature
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7.5 Saving and Exiting Setup

1. Click **Save All**
 2. Exit Setup Mode:
 - Click **Disconnect**, or
 - Press Control Button once
 3. Power sensor off before mounting:
 - Press Control Button **three times**
 - Yellow light confirms shutdown
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8. Mounting the Sensor

1. Attach magnetic base securely to sensor
2. Select a rigid metal surface on the machine
 - As close to bearings as possible

3. Clean surface of oil, loose paint, and debris
4. Attach sensor firmly (no wobble)
5. Press Control Button once to turn sensor on

The sensor will now begin monitoring automatically.

9. Viewing Sensor Data

9.1 Accessing Data

Data can only be viewed in Setup Mode.

1. Enter Setup Mode
 2. Connect to sensor Wi-Fi
 3. Open Sensor Home Page
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9.2 Graph Data Page

- Displays recent trends for vibration and temperature
- Shows last 200 data sets when machine is running
- Tap data points for exact values

Trend guidance

- Stable data = normal operation
 - Gradual increase = developing issue
 - Sudden spike = inspect mounting or machine condition
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9.3 Downloading Data

- Click **Download Data**
- Data downloads as CSV file
- Includes all stored measurements (up to 10,000)

Use downloaded data for

- Long-term trend analysis
 - Sharing with engineering or reliability teams
 - Duty cycle evaluation
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9.4 Exporting Graph Images

- Click **Export PNG**
 - Image opens in new browser tab
 - Save or share as needed
 - Close tab to return to sensor interface
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10. Best Practices for Maintenance Use

- Establish baseline readings when machine is healthy
 - Use trends, not single readings
 - Confirm mounting before diagnosing issues
 - Adjust thresholds only after collecting several readings
 - Replace battery when voltage reaches 2.6–2.7 V
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11. Sensor Maintenance

| Task | Frequency |
|-------------|------------------|
|-------------|------------------|

| | |
|---------------|----------------|
| Check battery | Every 3 months |
|---------------|----------------|

| | |
|------------------|----------------|
| Inspect mounting | Every 3 months |
|------------------|----------------|

| | |
|-------------|-----------|
| Review data | As needed |
|-------------|-----------|

Replace battery with CR123A lithium cell. Dispose of batteries according to facility guidelines.

12. Troubleshooting

| Issue | Likely Cause | Action |
|-------------------------------------|---------------------------------|-------------------------------|
| No vibration data | Machine below running threshold | Lower running threshold |
| Yellow alert, machine sounds normal | Early wear or baseline shift | Monitor trend |
| Red alert after mounting | Poor mounting or loose surface | Re-mount sensor |
| Red alert with no vibration trend | Low battery | Replace battery |
| Graphs missing colors | Thresholds set to zero | Set yellow and red thresholds |

13. Reference: Advanced Diagnostics (Optional)

This section is intended for advanced troubleshooting and reliability analysis. It is **not required for normal maintenance use**.

Includes:

- Running Threshold
- High-Pass Filter
- Band Velocity
- Dominant Frequency
- Acceleration
- Crest Factor

(Advanced diagnostics content retained but clearly marked as reference material.)

14. Technical Specifications

Physical

- Dimensions: 1.5 in (D) × 3.25 in (H)
- Weight: 230 g (sensor), 160 g (magnet)

- Materials:
 - Cover: HDPE / PC UL94
 - Base: 304 / 316 stainless steel

Wireless

- Frequency: 2.4 GHz
- Protocol: IEEE 802.11
- Range: Up to 100 ft (line of sight)

Measurements

- Frequency range: 0–16,000 Hz
- Acceleration: up to 588 m/s² (60 g)
- Velocity: up to 375 mm/s RMS
- Sample size: 4096 samples per axis
- Storage: 10,000 data sets

Power

- Battery: CR123A lithium
- Battery life: 1–2 years (typical)

Environmental

- IP rating: IP68
- Operating temperature: –4 °F to 160 °F
- Suitable for high-humidity environments

15. Contact Information

QI Dynamics, LLC

Website: www.qi-dynamics.com