

Trico Corporation

Machine Vitals and Bluetooth Gateway Installation

Revision: v.3.5 - 05.28.2025



WARNING

Read all safety instructions before operating the equipment.

CAUTION

Failure to follow these instructions may result in personal injury or equipment damage.

NOTICE

Ensure all safety guards are in place before installation.

SCAN

Scan QR code for more product resources, including installation instructions.



FCC COMPLIANCE STATEMENT

Machine Vitals units comply with Part 15 of the FCC rules and regulations and the limits for a Class [A/B] digital device. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Compliance with the labeling requirements, FCC notices and antenna usage guidelines are required to fulfill FCC Certification, the OEM must comply with the following regulations:

1. The System integrator must ensure that the text on the external label provided with this device is placed on the outside of the final product.
2. RF modules may only be used with antenna that have been tested and approved for use with the modules.
3. This device may not cause harmful interference.
4. This device must accept any interference received, including interference that may cause undesired operation.

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1. Introduction

Please read this instruction manual before proceeding.

Thank you for choosing Machine Vitals, *The Wearable for Your Equipment*, powered by Sensei.

MACHINE VITALS®

What's the purpose?

- To supplement, not replace diagnostic testing.
- Provide data that hasn't been available in the past.
- Provides data trending.
- Provides intermittent machine conditions.

How is it used?

- Identify abnormal conditions for further diagnostics.
- Performing diagnostic testing based on condition.
- Monitoring change and rate of change
- Prioritizing labor activities

Sensei Machine Vitals provides warnings and notifications based on conditional data.

Always use best practice when using and installing Sensei® units, it is important that units are installed in a vertical, or not more than horizontal, orientation connected to the headspace of the desired unit.

SENSEI DASHBOARD

Once Machine Vitals® Units are installed and paired with your Sensei Dashboard you can now monitor and manage your units in real time.

2. Safety Precautions

1. Read and Retain Instructions - All safety and operating instructions should be read before using Sensei Machine Vitals. They also should be retained for future reference.
2. NEVER install a Machine Vitals® unit below the oil reservoir fill line (this can lead to damage of the Machine Vitals unit).
3. Refer to all internal company safety precautions & procedures when installing Machine Vitals.
4. ALWAYS wear appropriate Personal Protective Equipment (PPE) while operating this system.

3. Package Contents

- Machine Vitals Device
- Machine Vitals Pairing Tool or Low Strength Magnet
- User Manual QR codes
- (1) 3.6 Volt D-Series Lithium-ion battery 19000 mAh
- Four Top Cap Screws
- (1) Bag of Extra Top Screws
- Extra Serial Number Identification Stickers
- Battery Tab

4. Installation Requirements

- Machine Vitals Unit (1/2" MNPT)
- Machine Vitals Pairing Tool
- 7/8" Wrench

The correct fittings and adapters for your unit. Correct mated fitting is 1/2" FNPT (For applications requiring adapter fittings, we recommend the use of standard metal adapters or fittings, **NO plastic.**)



When installing your Machine Vitals unit, it is important that you get the unit mounted as close as possible to the equipment headspace. We recommend using the Multi-Port Adapter - <https://www.tricocorp.com/products/multi-port-adapter>.

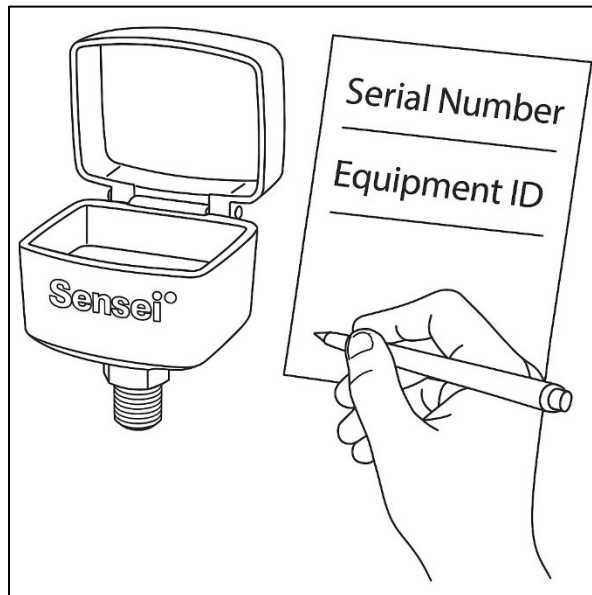
5. Device Overview

- Torque Specifications: **3.12 in/lb.**
- Connection: **1/2 in MNPT**
- Number of Installers: **One**
- Optimal distance to download data from Machine Vitals Unit: **Up to 20 ft**

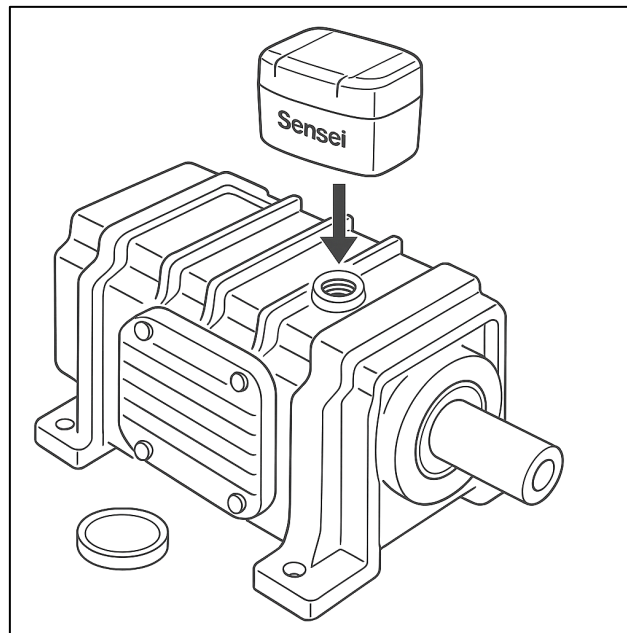
6. Installation Preparation (Bluetooth Gateway)

Make Sure your Machine Vitals unit is installed on your equipment before you start provisioning process.

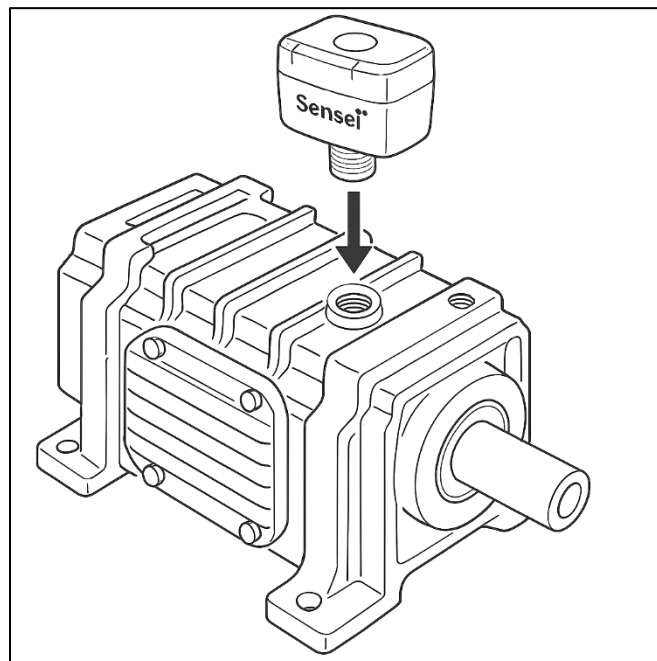
1. Record Machine Vitals Serial Number and your unique internal Equipment ID or number that the unit will be installed on.



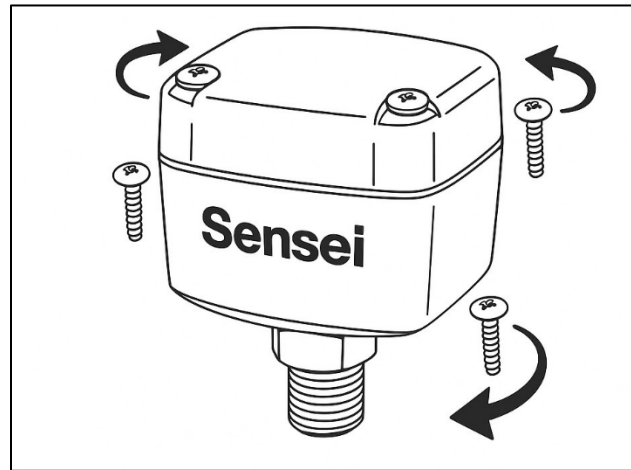
2. Machine Vitals is designed to be installed into the headspace port of an equipment reservoir. Equipment and reservoirs can vary in design along with the access ports. Typical installation location is in the breather ports, bungs, or fill ports.



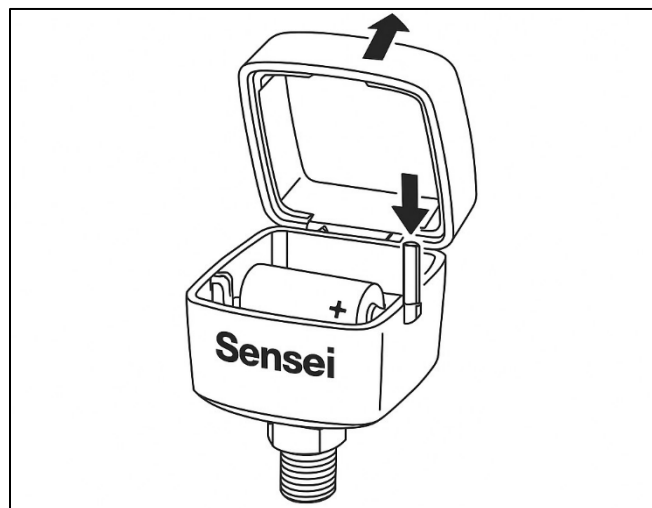
3. Thread Machine Vitals into appropriate access port.



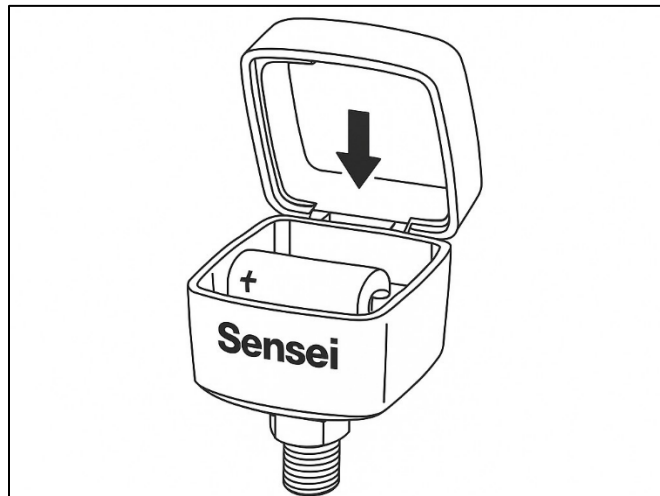
4. Once installed on equipment remove the four top screws securing the hinged cover.



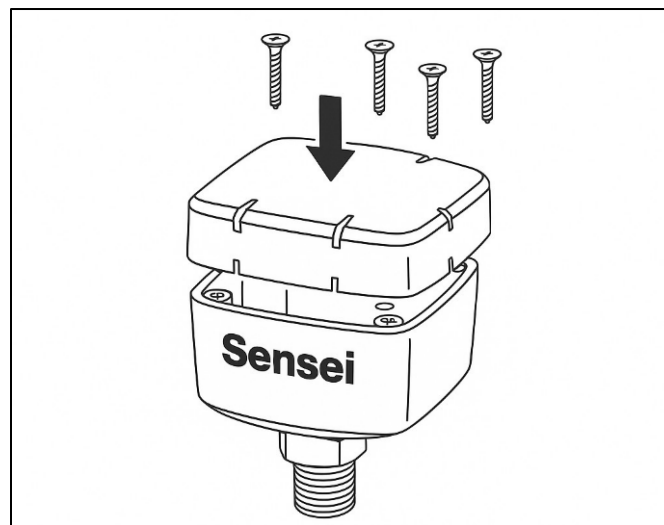
5. Upon opening the Machine Vitals hinged cap remove the battery and the battery tab (DO NOT remove Battery Tab unless you are ready to provision).



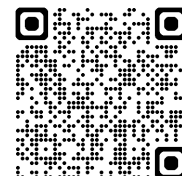
6. Then place battery back into the Machine Vitals unit.



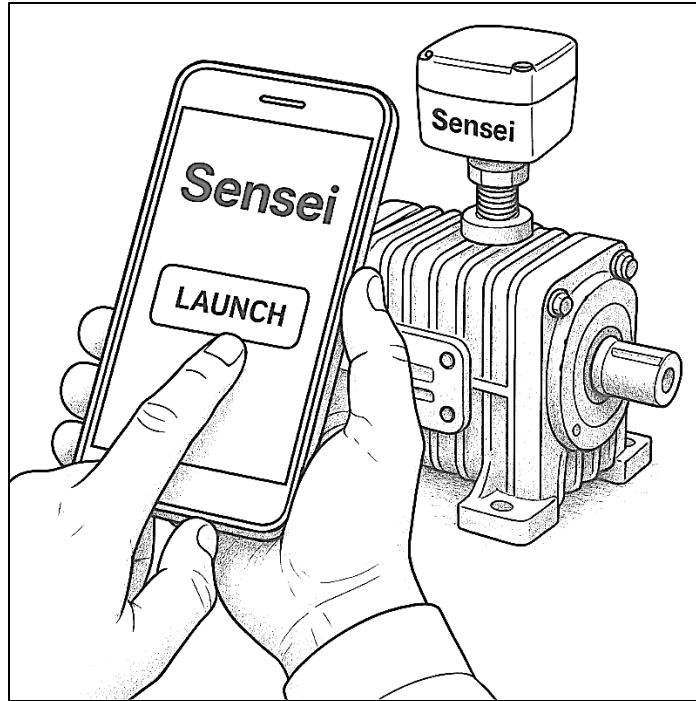
7. Close hinged cover and install four screws back into unit until snug or to torque specifications of 3.12 in/lbs.



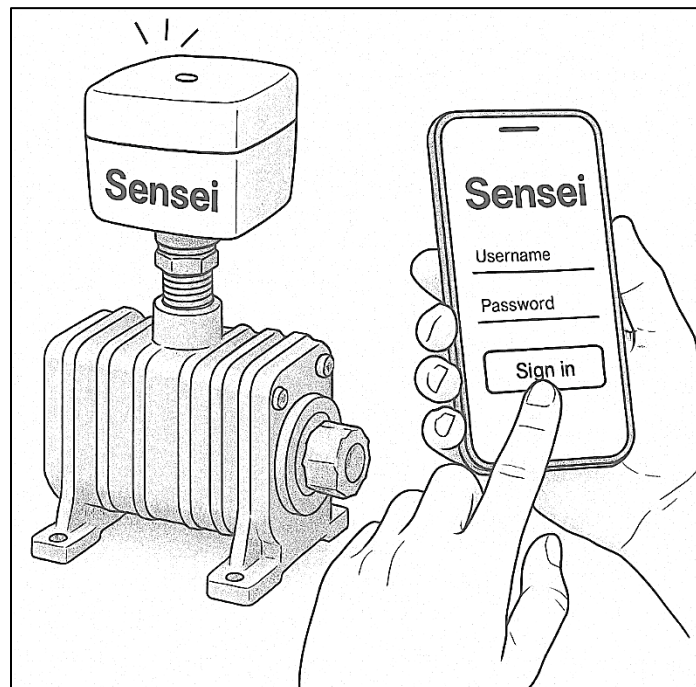
If you haven't already, download and install the Trico Mobile App, available for both iOS and Android® devices through the Apple App Store or Google Play Store.



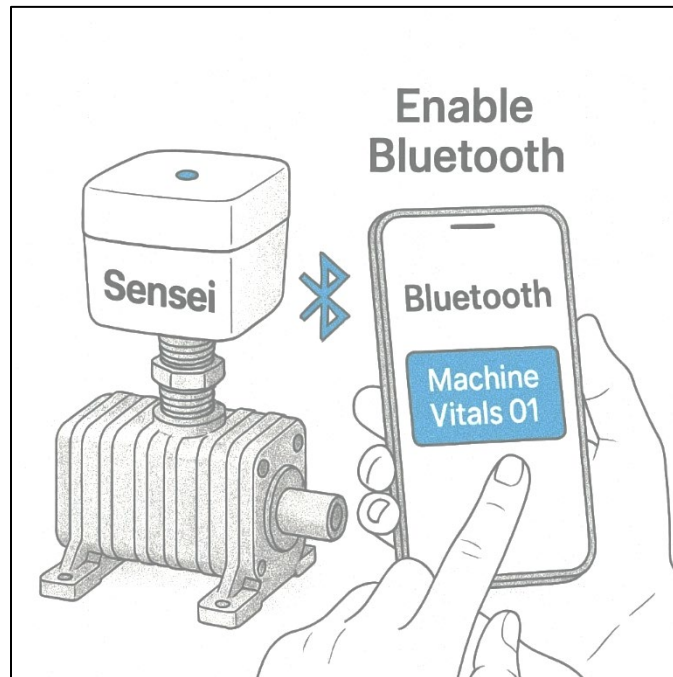
8. Power on your mobile device and open the Sensei app. Ensure Bluetooth is enabled and your location permissions are active.



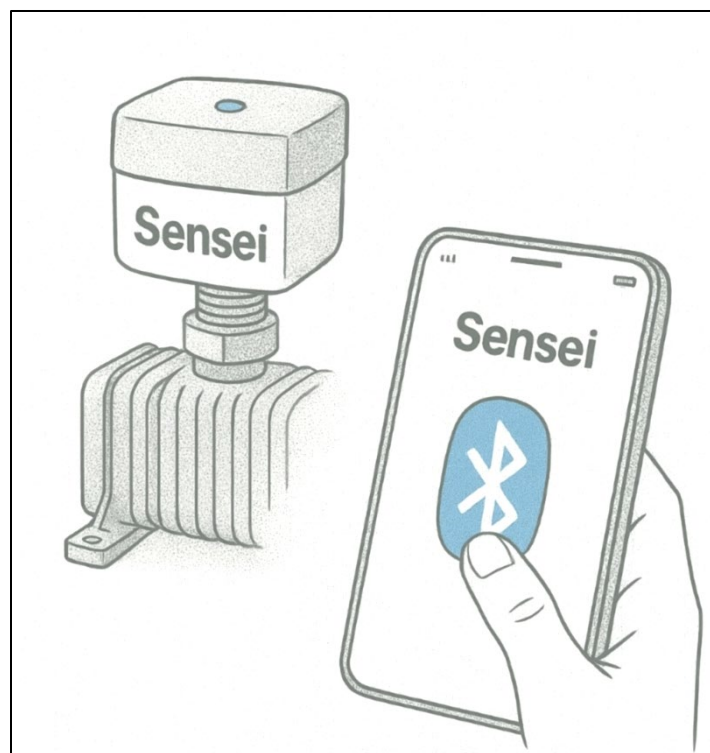
9. Access the app with your Single Sign-On (SSO) to connect securely to your Sensei environment.



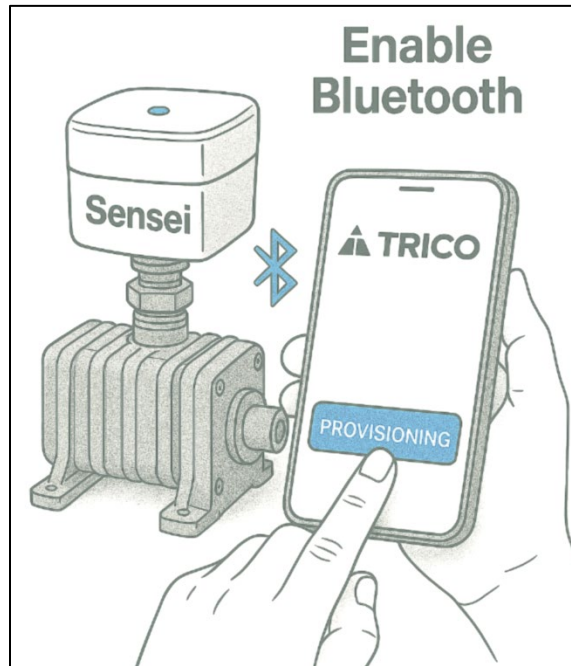
10. Within the app, enable Bluetooth permissions and wait for nearby devices to populate. Look for the Machine Vitals unit based on its serial number or proximity.



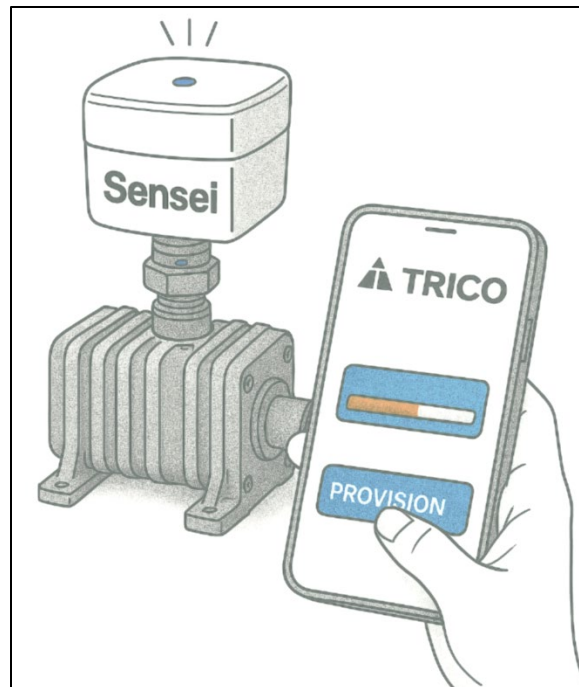
11. Tap the Bluetooth icon on the app home screen. The app will scan for available Machine Vitals units in the area.



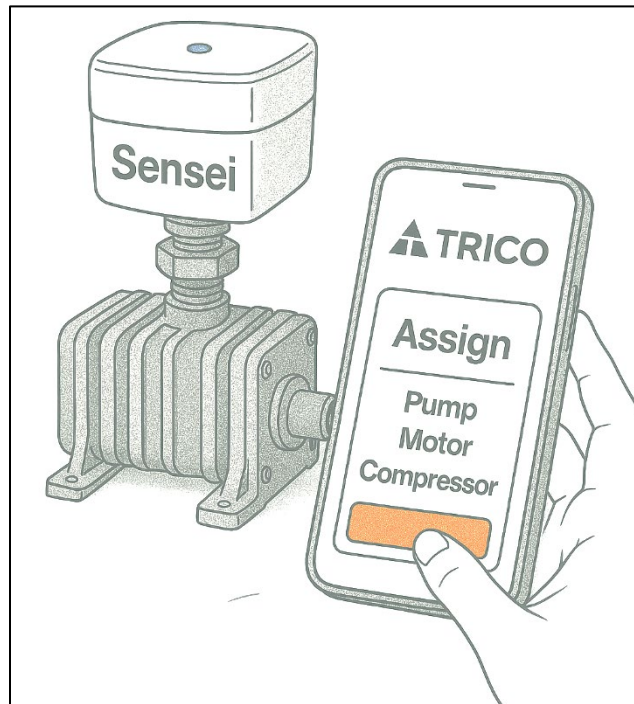
12. From the list of discovered units, locate the one matching your Machine Vitals serial number. Tap to connect. The blue light on the unit should switch from blinking to solid, indicating successful pairing.



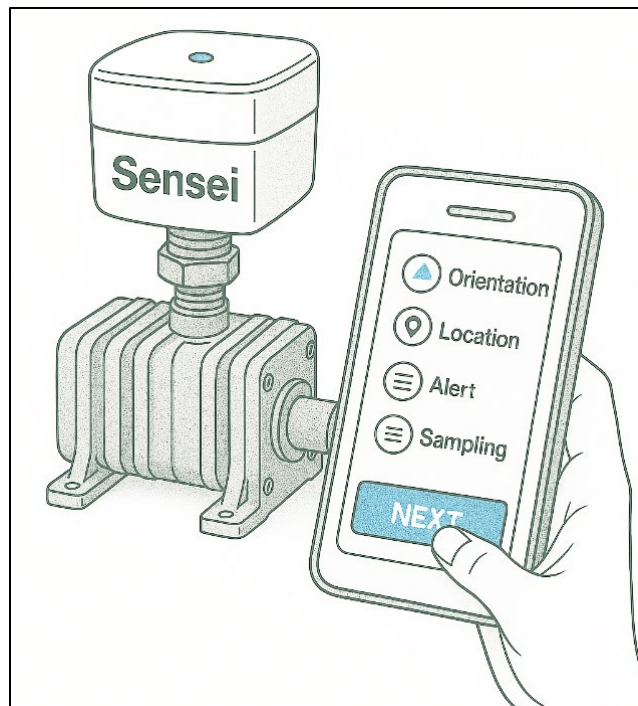
13. Once connected, the app will prompt you to begin provisioning. Confirm the unit's blinking indicator is visible before proceeding. The orange provisioning bar will guide you through the process.



14. From the app interface, select the appropriate equipment asset. Confirm assignment. The unit will now associate with that asset in the Sensei hierarchy.



15. The app will walk you through additional setup stages: orientation, location tags, alert thresholds, and optional sampling points. Review and confirm each screen.



7. Maintenance

Below is a list of potential and important Machine Vitals unit Maintenance:

- Clean the device with a soft lint-free cloth to remove dust.
- Use indirect compressed air to help remove excess fluids and debris.
- Replacing the battery (use care when replacing the battery never use foreign objects to help remove the battery from the Unit.)
- Check software updates regularly.
- Inspect connections and cables periodically for wear or damage.

8. Troubleshooting

Issue	Possible Cause	Recommended Actions	Notes
Device not powered on.	<p>Dead battery</p> <p>Battery Tab still in place</p>	<p>Replace battery.</p> <p>Remove battery, then remove battery tab and place battery back into the Machine Vitals unit.</p>	<p>Operating and battery life depend on several conditions including device configuration, battery brand, environment, and signal strength.</p>
Device is not reporting data.	<p>Not paired</p> <p>Dead battery</p>	<p>Try re-pairing the device.</p> <p>Replace battery.</p> <p>Remove interference may need to add Repeaters to your network.</p> <p>Check Sensei Network is on and connected.</p>	
Battery life is too short.	<p>Temperature</p> <p>Connectivity</p>	<p>Make sure the unit is within solid connection range.</p> <p>Make sure the Machine Vitals unit operates within the recommended temperature range.</p>	<p>Operating and battery life depend on several conditions including device configuration, battery brand, environment, and signal strength.</p>
Ambient readings appear inaccurate.	<p>External ports blocked</p> <p>Covered in debris</p>	<p>Use indirect compressed air and lint free cloths to help remove excess fluids or debris.</p>	
App cannot detect devices via Bluetooth.	<p>Bluetooth disabled on phone.</p> <p>Device is already connected to another phone.</p>	<p>Ensure Bluetooth is enabled on your phone.</p> <p>Reset app and restart phone.</p> <p>Try removing and re-inserting battery to restart device.</p>	<p>The device can only pair with one phone at a time during provisioning.</p>
Provisioning fails midway.	<p>Low battery.</p> <p>Signal interference.</p> <p>App crash or timeout.</p>	<p>Replace battery.</p> <p>Move closer to device,</p> <p>Restart provisioning from the beginning.</p>	<p>Use fresh batteries during the provisioning process to avoid voltage drops.</p>

Internal readings appear inaccurate.	Saturated sensor.	<p>Step 1: Carefully remove the labyrinth retainer located in the bottom stem of the device using a flat head screwdriver.</p>	
		<p>Step 2: Carefully remove membrane barrier, and O-ring. (If membrane or O-ring are damaged or visibly ruined contact Trico Program Advisor).</p>	
		<p>Step 3: Over Saturation or Debris Removal: Use indirect compressed air and lint free cloths to help remove excess fluids or debris. Check ambient and internal readings verify unit is working properly if readings are still inaccurate then see Step 4.</p>	
		<p>Step 4: Drying: Place the device in an upright position in a dry location to allow it to dry thoroughly. We recommend leaving it in this position for at least 24 hours to ensure complete drying.</p>	
		<p>Step 5. Reassemble and verify internal and ambient readings are back to normal before re installation.</p>	

Indicator light is red.	Hardware Issue	See <i>Machine Vitals LED Meanings</i> section below for more information.	
Indicator light is green.	Terminal Mode Activated	See <i>Machine Vitals LED Meanings</i> section below for more information.	
Indicator light is purple.	Factory Reset	See <i>Machine Vitals LED Meanings</i> section below for more information.	
Indicator light is blue.	Unit is connected to network	See <i>Machine Vitals LED Meanings</i> section below for more information.	

MACHINE VITALS LED MEANINGS

- **Blue:** Shows the device is in pairing mode. Device stops flashing once a connection is established to Sensei Network.
- **Green:** Turns Terminal mode on and off (if green light is flashing then CORE is in terminal mode, cycle through light colors to green using pairing tool to turn off terminal mode).
- **Red (Will only display if error):** Indicates hardware errors or issues during operations. Rapid flashing suggests failure in operation or persistent hardware errors.
- **Purple:** Appears during the Network reset process, indicating that the Machine Vitals Network is resetting its configuration.
- **Yellow:** Factory reset of Machine Vitals unit.
- **White:** Allows you to exit LED option menu.

9. Specifications

Power Battery Battery Life	3.6 Volt D Size Battery 3 years (depending on data & frequency settings)
Mechanical Dimensions Material Thread Connection	3.34"H x 2.63"W x 3.25"L Cover: Polycarbonate Base: Powder Coated Aluminum ½" NPT
Network Wireless Wireless Range Protocols Pairing LED	2.4GHz - Low power network base on 802.15.4 100 m Indoor Line of Sight MQTT Bluetooth technology Provides feedback on connection to network
Environmental Installation Operating Temperature	Indoor or Outdoor (designed to IP65) -0° to 175°F (-18° to 79°C)
Wireless Security	Device Authentication AES-128 Encrypted Network Joining Scheme Pre-Shared Key and Rotating Session Key AES-128 Encrypted Secured Data Transmission

Operating and battery life depends on several conditions including device configuration, battery brand, environment, and signal strength.

10. Warranty and Support

Machine Vitals Powered by Sensei® is covered under Trico Corporations limited warranty. Warranty covering manufacturing defects. For warranty information contact us here: www.tricocorp.com/contact.

