



VIBRATION & TEMPERATURE NODE ASSEMBLY & INSTALLATION GUIDE

**For technical questions call 1-800-280-9517
and select Option 3 for Technical Support when prompted**

**Grace Engineered Products Inc. • 1515 E. Kimberly Rd • Davenport, IA
Phone: 1-800-280-9517 • Fax: (563) 386- 9639**



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Overview

The Vibration & Temperature Node has a tri-axial accelerometer that monitors the vibration signature and surface temperature of a rotating machinery. The sensor is built-in with an advanced edge processor that locally processes data at the sensor level and communicates via a proprietary Zigbee compatible protocol. Multiple mounting options support a variety of deployment options across any industry and application. Refer to your specific mounting installation details inside this document.

This instruction manual provides important information regarding safe installation and operation of GraceSense™ Vibration and Temperature Node. **Please read these instructions in its entirety before attempting sensor installation.**

ATTENTION!

The Vibration and Temperature Node should be installed by technically qualified personnel. Failure to install the node in accordance with applicable codes and regulations and according to the manufacturer's specified guidelines may result in electrical shock, fire hazard, poor performance or equipment failure, and may also void the product warranty.

Battery

The life of battery is expected to be approximately 3-5 years, use dependent and under normal operating environments. The battery is a non-rechargeable lithium metal battery and will require a replacement when depleted.

Battery Replacement

Do not attempt to replace batteries when the equipment is running and in operation. Only use GraceSense™ replacement batteries and follow battery replacement instructions. Incorrect use of batteries may result in void sensor warranty and other product certifications. Dispose batteries according to the battery recycle procedures.

⚠️ WARNING

Warning: Only qualified persons who are familiar with the equipment being serviced and those who have received proper safety training related to the hazards of the equipment should attempt to install these sensors. The individual must also possess proper tools, training, and be familiar to repair or modify the related equipment and its accessories. Installation should conform to appropriate codes and standards. Failure to follow these instructions may result in serious personal injury, death and/or property damage. Always follow your facility's PPE requirements when performing the installation and maintenance tasks on your equipment.

⚠️ WARNING

Electrical Hazard Warning: The Vibration and Temperature sensor installation DOES NOT require any wired connections to your equipment. Do not touch electrically live parts of the equipment. Disconnect, lockout and tagout the input power source to your equipment before installing or servicing the sensor.

⚠️ WARNING

Surface Temperature Warning: The external surface of the equipment may reach temperatures which can cause discomfort, burns or injury to individuals who come into contact with the hot surface. For safety reasons the equipment should be switched off and allowed to cool before attempting to install the sensor. Equipment surface temperatures should only be measured with suitable instruments and not estimated by hand touch or direct skin contact. Failure to observe this precaution could result in bodily injury

Note: No serviceable components inside the Vibration & Temperature Node and battery assembly.

We recommend installing your Vibration & Temperature node on your equipment using any one of the following methods:

Figure 1: Mounting Options



Magnetic Mount



Fin Mount with Epoxy



Plate Mount with Epoxy

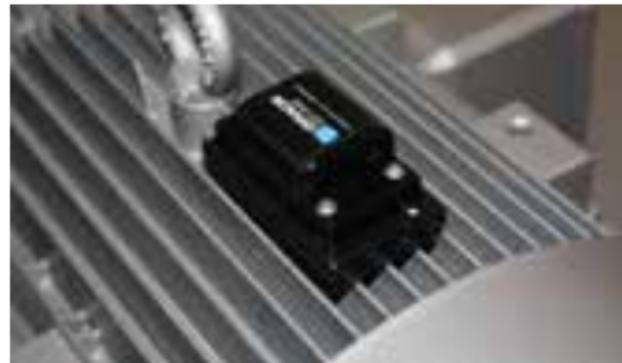
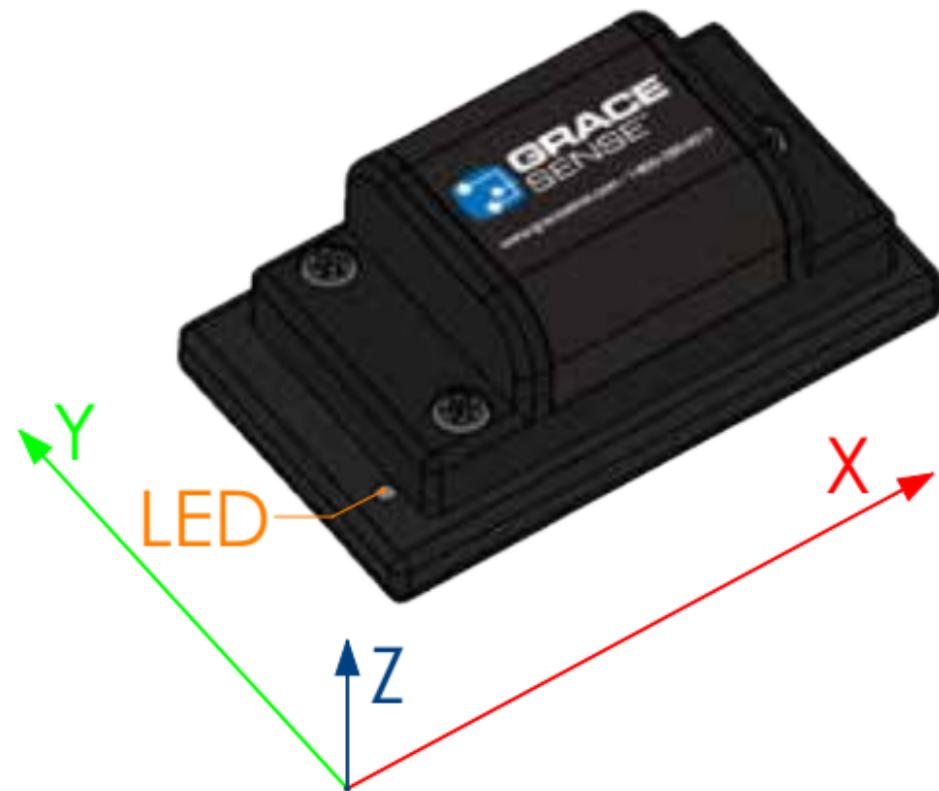
Note: Make sure the Vibration & Temperature Nodes are installed within 30m radius line of sight to the Panel-Mount or CloudGate Node

Sensor Mounting on the Asset

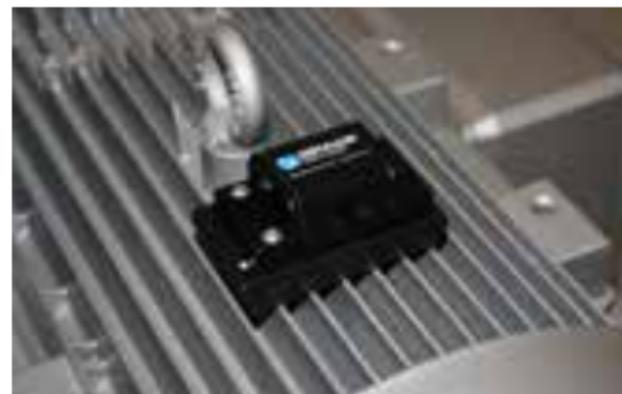
Selecting the most suitable location to deploy the node is important because certain locations on a machine can influence the node's ability to monitor temperature and vibration accurately.

For accurate measurements and best operation, the sensor node must be mounted either parallel or perpendicular to the shaft . See Figure 2 for detailed images.

Figure 2: Node Orientation



Parallel Orientation



Perpendicular Orientation

Magnetic Mount Instructions

The Magnetic Mount is a strong magnet making it suitable to be mounted on most types of equipment.

⚠ CAUTION When affixing the magnet to the desired surface of any piece of equipment, avoid pinching fingers between the magnetic node and the surface.

1. Verify communication between the sensor node and CloudGate prior to installation. (Refer to [set up documentation/video](#))
2. Determine the location and orientation of the sensor to be placed.
3. Verify the surface the sensor is to be mounted to is made of ferrous material.
4. Identify the threaded hole in the magnetic base metal plate.

5. Place the sensor squarely on the magnetic base metal plate lining up the through hole of the sensor to the threaded hole of the magnetic base plate.
6. Insert 1/4"-20 flanged headed bolt by turning clockwise till identifiably connected. (For best results use a non-permanent thread retaining compound.)
7. Use a 5/32" socket headed driver to tighten 1/4"-20 bolt up to, but not exceeding the torque value of 100 in. lbs.
8. Align the 6 pin connector and mounting screws of the battery to match the corresponding locations on the sensor board. (Do not remove the foam gasket and force fit the battery to the connector pins as you may damage the sensor.)
9. Insert all three battery mounting screws by turning clockwise until identifiably connected.

Figure 3: Magnetic Mount Assembly Stack

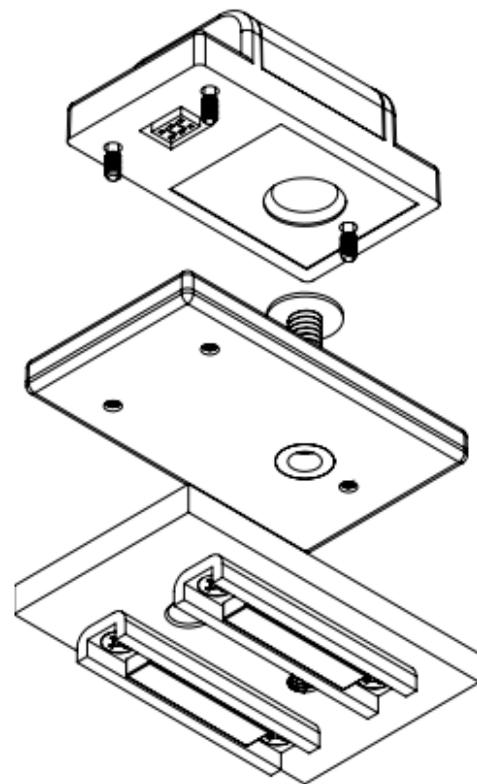
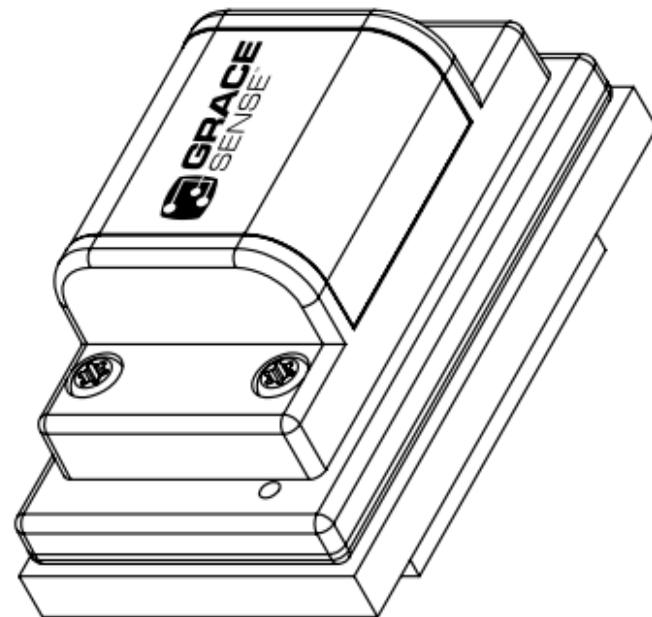


Figure 4: Magnetic Mount Assembled



10. Use a 6 lobe T15 driver to tighten battery screws up to, but not exceeding the torque value of 2.5 in. lbs.

11. Place magnets of base to surface of determined location making note of the sensor orientation to the reference axis.

Fin Mount Instructions

Epoxy, solvents, and other required tools are not included in the node kit, however, they are required for installation of the fin adapter accessory. *See page 23 of this guide for suggested epoxy.*

⚠ WARNING **Warning:** Direct skin exposure to solvents and epoxy could cause discomfort, skin irritation, or injury. Use appropriate protective gloves and follow the respective manufacturer's safety instructions.

1. Verify communication between the sensor node and CloudGate prior to installation. [\(Refer to set up documentation/video\)](#)

2. Determine location and orientation of the sensor to be placed.

3. Verify the area the sensor is to be mounted to, is of size to fit the mounting tab.

4. Thoroughly clean area of determined mounting surface making sure any loose protective coatings are removed.

5. Use solvent (i.e. paint thinner or acetone) to remove debris, grease and oils from mounting location.

6. Use sand paper or similar abrasive material to remove paint from the mounting surface.

7. Determine how much epoxy will be needed to fully encapsulate the mounting tab and fill recessed area the tab is to be secured to.
8. Mix determined quantity of epoxy per manufacturer's instructions
9. Firmly apply the epoxy between the motor fins for the fin mount.
10. Firmly insert the mounting tab into the epoxy.
11. Secure the mounting tab in place until epoxy has cured.
12. Identify the threaded hole in the mount.
13. Place the sensor squarely to desired orientation on the mount lining up the through hole of the sensor to the threaded hole of the mount.

14. Insert 1/4"-20 flanged headed bolt by turning clockwise till identifiably connected. (For best results use a non-permanent thread retaining compound.)
15. Use a 5/32" socket headed driver to tighten 1/4"-20 bolt up to, but not exceeding the torque value of 100 in. lbs.
16. Align the 6 pin connector and mounting screws of the battery to match the corresponding locations on the sensor board. (Do not remove the foam gasket and force fit the battery to the connector pins as you may damage the sensor.)
17. Insert all three battery mounting screws by turning clockwise until identifiably connected.
18. Use a 6 lobe T15 driver to tighten battery screws up to, but not exceeding the torque value of 2.5 in. lbs.

Figure 5: Fin Mount Assembly Stack

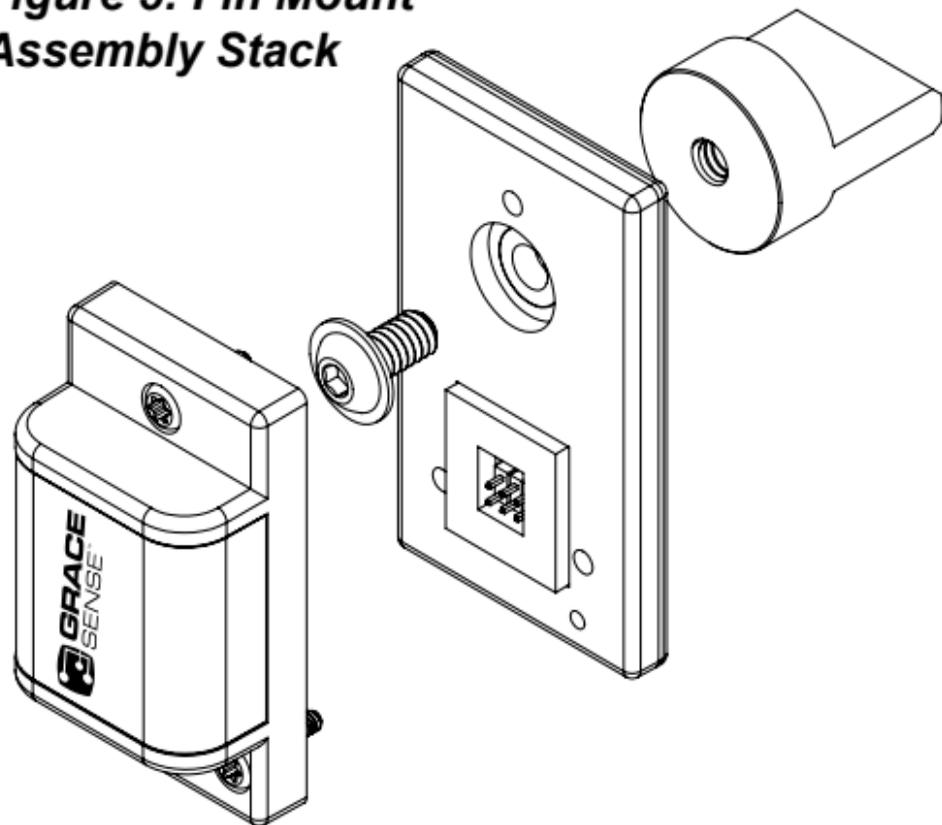


Figure 6: Fin Mount Assembled

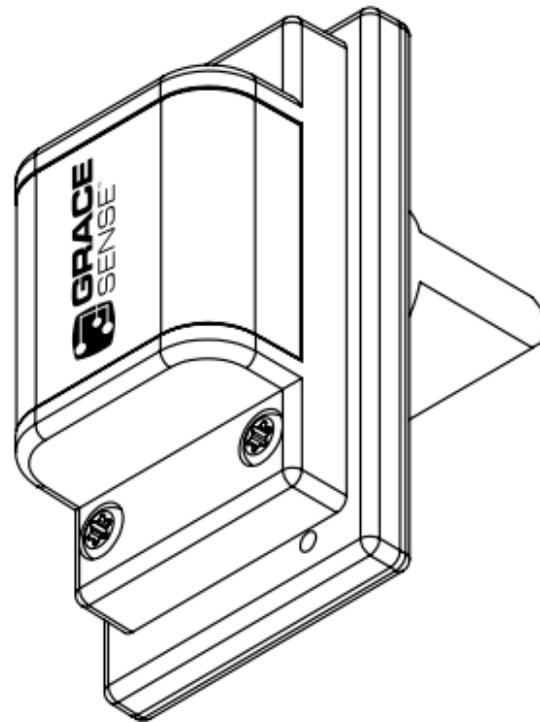


Plate Mount Instructions

Epoxy, solvents, and other required tools are not included in the node kit, however, they are required for installation of the fin adapter accessory. See *page 22 of this guide for suggested epoxy.*

⚠ WARNING Warning: Direct skin exposure to solvents and epoxy could cause discomfort, skin irritation, or injury. Use appropriate protective gloves and follow the respective manufacturer's safety instructions.

1. Verify communication between the sensor node and CloudGate prior to installation. *(Refer to set up documentation/video)*
2. Determine location and orientation of the sensor to be placed.
3. Verify the area the sensor is to be mounted to is of size to fit the plate mount.

4. Identify the threaded hole in the mount.
5. Place the sensor squarely to desired orientation on the mount lining up the through hole of the sensor to the threaded hole of the mount.
6. Insert 1/4"-20 flanged headed bolt by turning clockwise till identifiably connected. (For best results use a non-permanent thread retaining compound.)
7. Use a 5/32" socket headed driver to tighten 1/4"-20 bolt up to, but not exceeding the torque value of 100 in. lbs.
8. Align the 6 pin connector and the mounting screws of the battery to the corresponding connector and screw holes of the sensor board. (Do not remove the foam gasket and force fit the battery to the connector pins as you may damage the sensor.)

9. Insert all three battery mounting screws by turning clockwise until identifiably connected.
10. Use a 6 lobe T15 driver to tighten battery screws up to, but not exceeding the torque value of 2.5 in. lbs.
11. Thoroughly clean area of determined mounting surface making sure any loose protective coatings are removed.
12. Use solvent (i.e. paint thinner or acetone) to remove debris, grease and oils from mounting location
13. Use sand paper or similar abrasive material to remove paint from the mounting surface.

14. Determine how much epoxy will be needed to fully cover the plate.
15. Mix determined quantity of epoxy per manufacturer's instructions.
16. Apply the epoxy on the surface the metal plate is attached to.
17. Firmly apply the mounting plate with epoxy to the asset.
18. Secure the mounting plate in place until epoxy has cured.

Figure 7: Plate Mount Assembly Stack

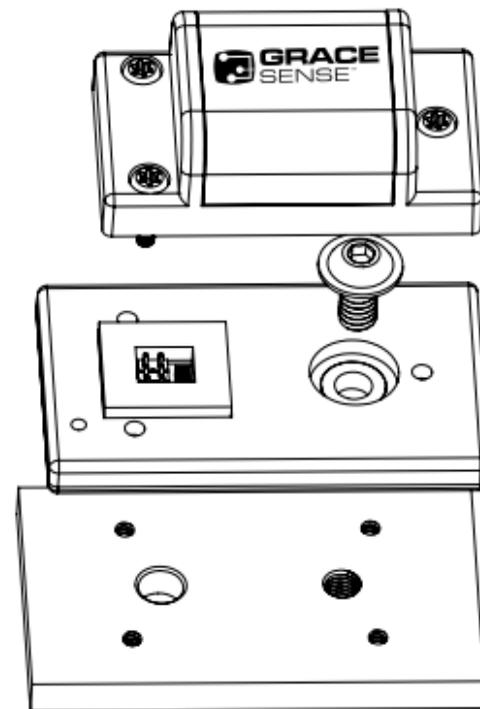
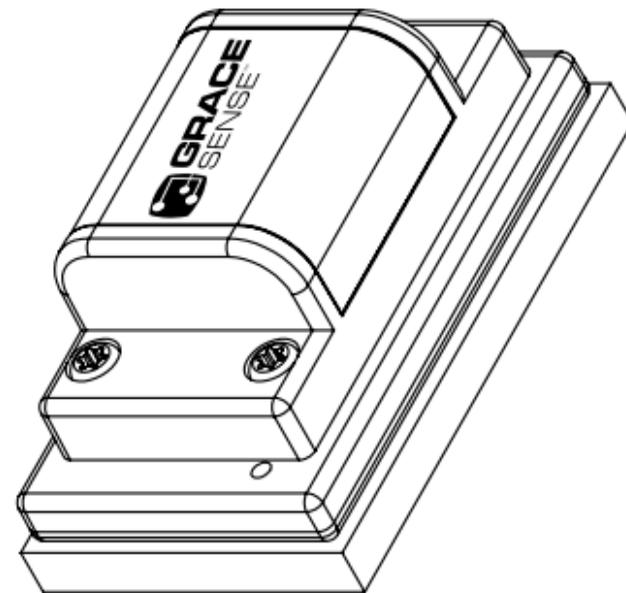


Figure 8: Plate Mount Assembly Stack



Suggested Epoxy

Industrial Epoxy suggested for use with Fin Mount and Plate Mount Assemblies.

Use Epoxy rated for your specific application environment.

a. Loctite®, Part No. EA 3463

b. LPS Labs®, Part No. 60159

⚠️ WARNING **Warning:** Direct skin exposure to solvents and epoxy could cause discomfort, skin irritation, or injury. Use appropriate protective gloves and follow the respective manufacturer's safety instructions.

LED Indication Chart

Upon installation, activation of the Vibration & Temperature Node will be indicated by the intermittent flashing LED light.

LED Color	Meaning
Blue	Power On
Red	Attempting to connect to a CloudGate
Green	Connected to the CloudGate

Once the installation is complete, log into hub.gracesense.com to complete the set up.

