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USER GUIDE

MON-10411

Triaxial Vibration with Temperature, Wireless Vibration Sensor



This document explains how to install and maintain the MON-10411. The MON-10411 contains an integrated triaxial accelerometer and uses wireless communication to send diagnostic-quality waveforms back to the NI InsightCM™ server. It also features a temperature sensor that can trend temperature data. The sensor has a rugged, IP66/IP67-rated design so that it can be directly mounted on the monitored asset. The MON-10411 includes gating functionality to extend battery life in the field.

Note Read the *MON-10411 Safety, Environmental, and Regulatory Information* document on *ni.com/manuals* before installing.

Note The guidelines in this document are specific to the MON-10411. The other components in the system might not meet the same safety ratings. Refer to the documentation for each component in the system to determine the safety and EMC ratings for the entire system.

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Related Documentation

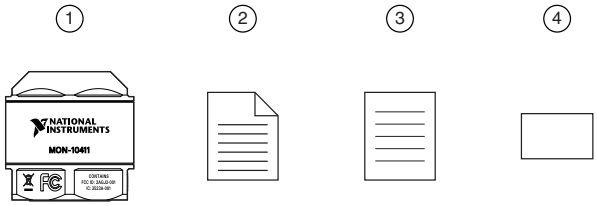
The following documents contain information about the MON-10411. To view them, go to *ni.com/manuals*.

- *MON-10411 Safety, Environmental, and Regulatory Information*
- *MON-10411 Specifications*

For help using your device in InsightCM, refer to the InsightCM Help in software or online at *ni.com/r/insightcmhelp*.

Kit Contents

Figure 1. MON-10411 Kit Contents



1. MON-10411 sensor(s)
2. MON-10411 Safety, Environmental, and Regulatory Information
3. NI Monitoring Devices Card
4. Label(s) for documentation (included in the individual box for each sensor)

Safety Guidelines

Caution Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to NI for repair.

Attention Suivez toutes les instructions et respectez toutes les mises en garde de la documentation utilisateur. L'utilisation d'un modèle de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée. Renvoyez les modèles endommagés à NI pour réparation.

Caution The protection provided by the model can be impaired if it is used in a manner not described in the user documentation.

Attention La protection apportée par le modèle risque d'être endommagée s'il est utilisé d'une autre façon que celle décrite dans la documentation utilisateur.

Caution Fire, explosion, and severe burn hazard. This device contains a replaceable primary lithium battery. Do not recharge or disassemble the battery. Do not heat the battery or the MON-10411 above 100 °C. Do not incinerate the battery or the MON-10411. Do not expose the battery contents to water.

Attention Risque d'incendie, d'explosion et de brûlures graves. Cet appareil contient une pile au lithium primaire remplaçable. Ne pas recharger ou démonter la pile. Ne pas chauffer la pile ou le MON-10411 à une température supérieure à 100 °C. Ne pas incinérer la pile ou le MON-10411. Éviter tout contact du contenu de la pile avec de l'eau.

Caution Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Attention Risque d'explosion si la pile est remplacée par un type de pile incorrect. Éliminer les piles usagées conformément aux instructions.

Caution The battery must be replaced by a trained service technician.

Attention La pile doit être remplacée par un technicien de maintenance qualifié.

EMC Notices

Refer to the following notices for prevention measures necessary to ensure the specified EMC performance.

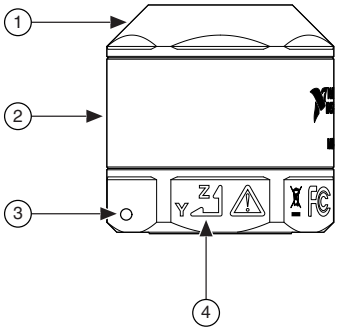
Notice For EMC declarations and certifications, and additional information, refer to the *Product Certifications and Declarations* section.

Notice Changes or modifications to the product not expressly approved by NI could void your authority to operate the product under your local regulatory rules.

Notice The performance of this product can be disrupted if subjected to Electrostatic Discharge (ESD) during operation. To prevent damage, industry-standard ESD prevention measures must be employed during installation, maintenance, and operation.

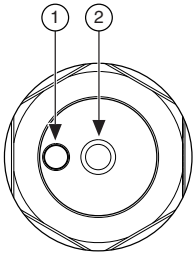
Parts Diagrams

Figure 2. Side View



1. Cap
2. Body
3. 2 mm hole for safety wire or tagging
4. Axes for alignment

Figure 3. Bottom View



1. Button
2. Threaded mounting hole

Before Mounting

Complete the following tasks before mounting the MON-10411 sensor. It is very important that you complete the tasks before mounting the sensor to ensure easy installation and best performance.

1. Contact your NI account manager to complete a site survey to identify the best locations to place the MON-10411 sensors and MON-10496 gateways for best performance.
2. Go to *ni.com/downloads* and download and install NI InsightCM version 3.5 or later.
3. Install your MON-10496 wireless monitoring gateway. Refer to the *MON-10496 User Guide* at *ni.com/manuals* for information on installing the MON-10496 gateway.
4. Document and map the serial numbers for all sensors.

When mapping the serial numbers for the sensors, be sure to include enough detail to identify the location of each sensor and its corresponding serial number as the serial number on the sensor body could become unreadable over time. The box for each sensor includes an additional label that you can use to document the serial number and other details about each sensor. NI recommends using this label to record or tag each sensor before mounting. This label is not intended to be applied to the body of the MON-10411.

5. Press and hold the button for five to ten seconds to turn on the sensor. Do not hold the button for longer than ten seconds.
6. Verify that the sensor is online in NI InsightCM.
7. Configure your device in NI InsightCM.

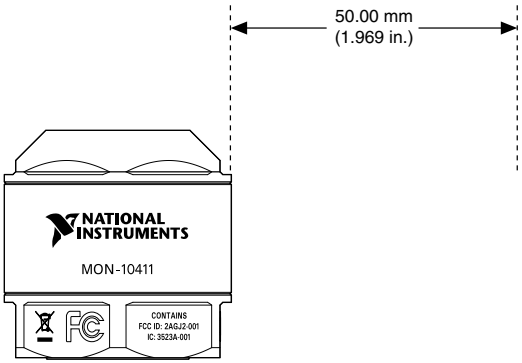
   For help using your device in NI InsightCM, refer to the NI InsightCM Help in software or online at *ni.com/r/insightcmhelp*.

Mounting Location Guidelines

Consider the following guidelines when planning locations to mount the MON-10411.

- Try to avoid locations that would expose the MON-10411 to direct sunlight to reduce environmental wear.
- Allow for a 50 mm (1.969 in.) clearance area from the MON-10411 cap as shown below for optimal wireless performance.

Figure 4. Optimal Clearance Area around the MON-10411 Cap



Mounting

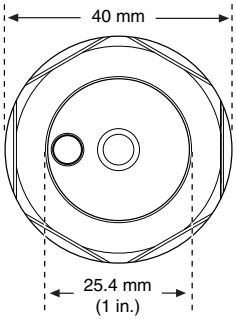
The MON-10411 has a 1/4"-28 threaded hole for stud-mounting the sensor onto a machine. You can also use standard accelerometer mounting accessories such as an adhesive pad or magnetic mount to mount the MON-10411. NI recommends stud-mounting the MON-10411 for better vibration performance.

For detailed dimensional drawings and 3D models, visit *ni.com/dimensions* and search for MON-10411.

Supplies needed:

- Drill
- 1/4"-28 tap
- Drill bit for spot-facing or a spot-facing tool
- #3 (7/32 in.) drill bit
- Threadlocker
- 1/4"-28 threaded male-to-male stud mount
- 36 mm wrench

Figure 5. Landing Pad and Diameter Dimensions



Complete the following steps to stud-mount the MON-10411.

1. Drill and tap a 1/4"-28 thread into the machine.
2. Spot-face the surface around the hole to accommodate the bottom of the MON-10411 sensor.

   Refer to the figure above. The MON-10411 has a 25.4 mm (1 in.) landing pad and a 40 mm outer diameter.
3. Clean the machine surface to remove any debris.
4. Apply threadlocker to a 1/4"-28 threaded male-to-male stud mount.
5. Screw 1/4"-28 threaded male-to-male stud mount into the MON-10411 sensor to a maximum depth of 6 mm.
6. Screw the MON-10411 sensor into the hole on the machine surface.
7. Tighten the MON-10411 body to a torque of 5 ft · lb with a 36 mm wrench.

Replacing the Battery

Refer to the *MON-10411 Specifications* on *ni.com/manuals* for the compatible replacement battery manufacturer and model.

Caution Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Attention Risque d'explosion si la pile est remplacée par un type de pile incorrect. Éliminer les piles usagées conformément aux instructions.

Caution The battery must be replaced by a trained service technician.

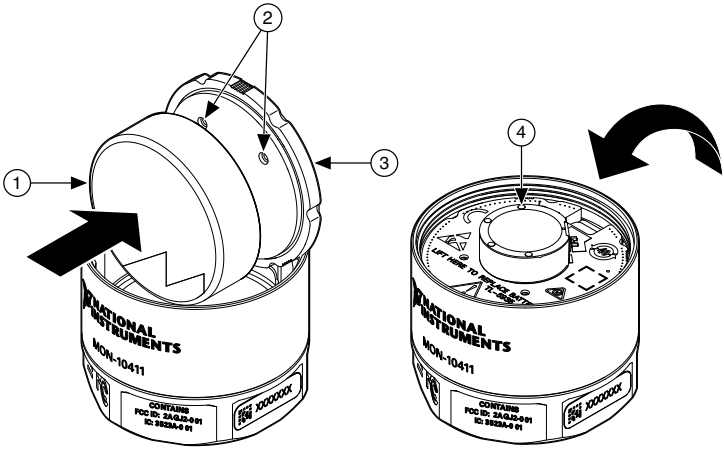
Attention La pile doit être remplacée par un technicien de maintenance qualifié.

Notice The performance of this product can be disrupted if subjected to Electrostatic Discharge (ESD) during operation. To prevent damage, industry-standard ESD prevention measures must be employed during installation, maintenance, and operation.

Supplies needed:

- ESD strap
- New battery
- 36 mm wrench

Figure 6. Replacing the Battery



1. Battery
2. Holes for battery
3. PCB
4. Antenna

Complete the following steps to replace the battery.

1. Put on an ESD strap.
2. Discharge ESD before opening the cap.
3. Loosen the cap with a 36 mm wrench.

4. Unscrew and remove the cap.
5. Grab the PCB by the bottom-front edge (marked "lift here to replace battery") and gently lift it up. Be careful not to pull on the antenna.
6. Remove the battery.
7. Align and insert the new battery into the holes on the board. Refer to the figure above.
8. Place the battery and PCB back into the body.
9. Inspect the O-ring for tears or other damage. Replace the O-ring if it is damaged.
10. Verify that the O-ring is properly lubricated with silicone lubricant such as Dow Corning 4 to maintain the environmental rating listed in the *MON-10411 Specifications*.
11. Attach and tighten the cap with a 36 mm wrench to a torque of 5 ft · lb.
12. Verify that the MON-10411 is online in NI InsightCM. It may take up to 90 seconds for it to come online. If it is not online, press and hold the button for 5 to 10 seconds.

Battery Recycling

The MON-10411 contains a replaceable battery. Products containing lithium must be disposed of or recycled in accordance with all local laws and site regulations. For more information about disposing of or recycling this device's battery, please refer to *tadiran.com*.

If you need to return the MON-10411 to NI, follow the Return Material Authorization (RMA) process. You shall also be responsible for using sufficient protective packaging in accordance with all applicable laws and transportation requirements. Visit *ni.com/contact* or call (866) 275-6964 for more information on the RMA process.

Where to Go Next

After you have finished mounting your MON-10411 wireless vibration sensor, finish setting up and configuring your system in NI InsightCM. For help using your device in NI InsightCM, refer to the NI InsightCM Help in software or online at *ni.com/r/insightcmhelp*.

For help with your MON-10496 gateway, refer to the following documentation on *ni.com/manuals*.

- *MON-10496 Safety, Environmental, and Regulatory Information*
- *MON-10496 User Guide*
- *MON-10496 Specifications*

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit *ni.com/product-certifications*, search by model number, and click the appropriate link.

Worldwide Support and Services

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Visit *ni.com/services* for information about the services NI offers.

Visit *ni.com/register* to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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