



Product description

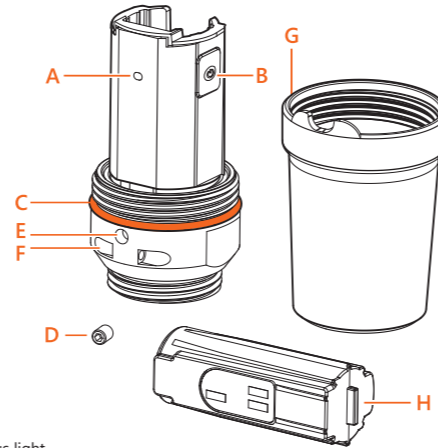
Treon Industrial Node X is a wireless batteryoperated sensor device for collecting condition monitoring data from industrial equipment and powering predictive maintenance.

It measures tri-axial vibration and surface temperature of rotating equipment, such as pumps, motors and compressors as well as tri-axial magnetic field of electric motors. Abnormal machine vibrations, changes in magnetic field or high temperatures can be used to detect early signs of equipment failure.

Treon Industrial Node X operates in a wireless mesh network transmitting sensor values directly or via other sensors to a gateway device, such as Treon Gateway. The data is sent from the gateway to Treon Connect backend, for analysis or delivery to other systems.

When the device is powered on, it starts automatically to measure and transmit data. Depending on the configuration Treon Industrial Node X sends values calculated from acceleration, velocity and magnetic field, such as RMS, Peak, Kurtosis and Crest factor, spectrums (FFT) from different frequency ranges as well waveforms.

Keys and parts

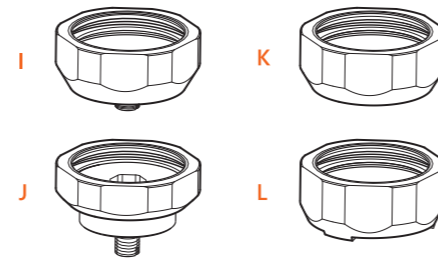


- A. Status light
- B. Power button
- C. O-ring
- D. Safety screw
- E. Opening for safety screw
- F. Opening for safety wire*
- G. Top cover
- H. Battery module

* Safety wire is not included with the product

Mounting Treon Industrial Node X

- I. Bolt mount adapter
- J. Orientation adapter
- K. Magnetic glue mount adapter for flat surface
- L. Magnetic glue mount adapter for curved surface



Treon Industrial Node X can be mounted to equipment either by gluing it directly from the bottom or by using an adapter. When attaching the adapter to the node using the thread at the bottom of the node, for best results it should be tightened to a torque of 20Nm.

When mounting Treon Industrial Node X to a monitored equipment, it is important to consider the location of the node and the contact between Treon Industrial Node X and the equipment. The best location to mount it depends on the monitored equipment and the vibration source. Typically, on rotating equipment sensors are mounted close to bearings avoiding partially or loosely connected parts that can resonate on non-relevant frequencies.

For best measurement quality, the sensor is mounted on a completely flat and smooth surface larger than the base of the sensor using direct gluing or tap'n'drill with Bolt mount adapter (I).

Other alternatives for mounting are:

- Orientation adapter (J) is intended for tap'n'drill bolt mounting on flat surface with the ability to orient the sensor axis with the equipment.
- Magnetic glue mount adapter for flat surface (K) is for gluing the sensor on a flat surface.
- Magnetic glue mount adapter for curved surface (L) is for gluing the sensor on a slightly curved surface.

Important note for using the adapters with magnets:

- Attaching the sensor only with the magnet is not recommended. The connection will not be strong enough to provide good measurement results over the full frequency range. The magnets are intended only to hold the sensor in place while the glue/ epoxy cures.
- When measuring magnetic field from electric motor, using adapter with magnet is not recommended as it can interfere with the magnetic measurement.

Glue such as 4090 Loctite can be used for gluing the sensor with or without adapters. Please, follow closely the instructions that come with the glue.

For more detailed instructions on where to mount the sensor and how to use the adapters please consult Treon Knowledge Base at <https://knowledge.treon.fi/>.

Aligning Treon Industrial Node X

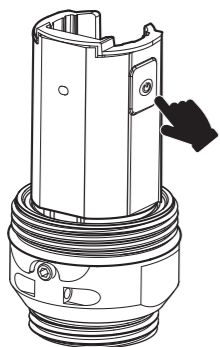
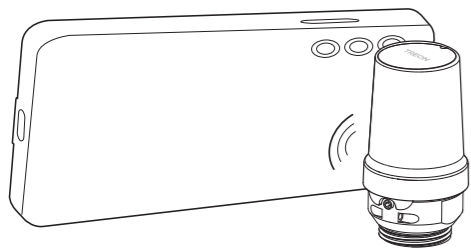
When aligning Treon Industrial Node X, follow the below guidelines for most accurate interpretation of measurement data:

1. One sensor axis is aligned with the direction of the shaft of the machine in question. This is called axial direction.
2. One axis is aligned in horizontal direction.
3. One axis is aligned in vertical direction.





Axis alignment

Switch on Treon Industrial Node X



Treon Industrial Node X can be powered on by bringing an NFC field (such as in smartphone) to the proximity of the sensor or by pressing and holding the power button until the status light turns green. If you want to switch off the sensor, press the power button until the status light turns red. Please note that to press the button or view the led, the top cap of the sensor needs to be removed.

You can also check if the sensor is connected to a Gateway by

- Press the power button briefly.
 
- If the status light turns green, the sensor is connected.

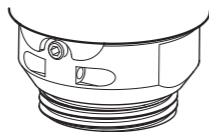
 CONNECTED

If the status light turns red, the sensor is not yet connected.

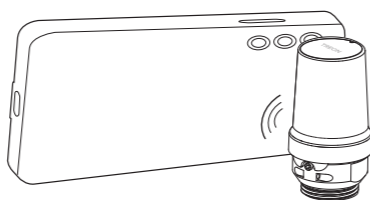
 NOT CONNECTED

In case the sensor is not connected, the Gateway has been powered on, both sensor and Gateway are configured to same network and the sensor has had time to establish the connection, the sensor may be too far from the gateway or surroundings are blocking the radio connection. In either case, the gateway needs to be moved closer to the sensor or an additional routing sensor can be added between the sensor and the gateway to help routing the data.

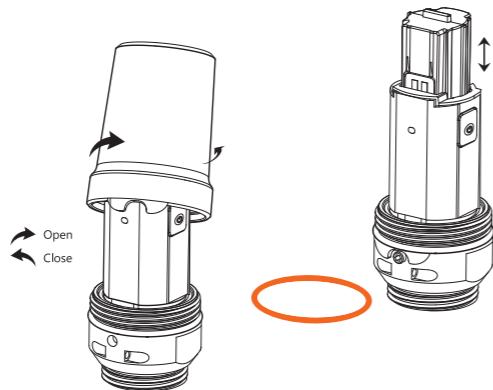
Read Treon Industrial Node X serial number




The sensor serial number and a QR code including serial number are printed on the base of the sensor.



You can also use an NFC reader, such as NFC-enabled mobile phone to read the identification number: switch on NFC on the reader and touch the left side of the of the sensor with the reader.



Replacing the battery module

 Replacement of Treon Battery Module B111 or B211 with an incorrect type of battery can defeat a safeguard. Battery module is to be replaced by instructed persons only.

To replace Treon Battery Module B111 or B211:

- Remove all dirt and dust from the sensor before opening the cover.
- Turn the safety screw counterclockwise to open it.
- Open the plastic top cover by turning it counterclockwise. The steel base can be supported with a 36mm tool to prevent base rotation. This can be especially helpful when the sensor has been mounted.
- Remove the Treon Battery Module by lifting it up from the sensor base.
- Replace the O-ring with a new one.
- Place a new Treon Battery Module in the sensor base.
- Close the plastic top cover by turning it clockwise. When fully closed the small notches at the bottom of the top cover will align with the screw opening at the base of the sensor.
- Secure the safety screw on the sensor. Make sure the screw is fully tightened to prevent any movement or loosening during use.

Product information

Important: For important info on the safe use of your device, read the Safety Guide.

Product name: Treon Industrial Node X Ex, model 2211


Operating frequencies: 2400MHz - 2483.5 MHz


Maximum power: Maximum power: +8 dBm

Operating temperature range: -40 - +85 °C

Battery: Battery type: replaceable Treon Battery Module B111 or B211 including a 3.6V A-size lithium thionyl chloride (LI-SOCl₂) bobbin cell primary battery.

 Do not charge, short circuit, crush, disassemble, heat above 100°C (212°F), incinerate or expose the battery contents to water.

 Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

 Leaving a battery in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.

 A battery subjected to extremely low air pressure may result in an explosion or the leakage of flammable liquid or gas.

NORWAY. This device is not allowed to be used within a 20 km radius of the centre of Ny-Alesund at Svalbard, Norway.

CERTIFICATION INFORMATION

Manufacturer: Treon Oy, Visiokatu 1, 33720 Tampere, Finland.

SUPPLIER'S DECLARATION OF CONFORMITY

Manufacturer: Treon Oy, Visiokatu 1, FIN-33720 Tampere, Finland

<https://www.treon.fi>

Responsible Party – U.S. Contact Information:

Treon Inc.

470 Ramona Street, Palo Alto, CA94301

United States

<https://treon.fi/home-usa/>

Tel. +1 213-269-8876

FCC

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications made to the device not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiofrequency radiation exposure information:

This device complies with the radiation exposure limits prescribed for an uncontrolled environment for fixed and mobile use conditions. This device should be installed and operated with a minimum distance of 20 cm between device and the body of the user or nearby persons.

EU DECLARATION OF CONFORMITY

Hereby, Treon Oy declares that the radio equipment Treon Industrial Node is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <https://www.treon.fi/documentation>

Safety guide and Warranty


Introduction

Read these safety guidelines. Not following them may be dangerous or against local laws and regulations. For further information visit <https://knowledge.treon.fi/>.

Care and maintenance

Handle your device with care. The following suggestions help you keep your device operational.

- Do not open the device other than as instructed in the user guide.
- Unauthorized modifications may damage the device and violate regulations governing radio devices.
- Do not drop, knock, or shake the device. Rough handling can break it.
- Do not paint the device. Paint can prevent proper operation.
- The device is dust and waterproof. However, it is not recommended to immerse it in water.

 To avoid electrostatic charging use only a moist, soft, clean cloth to clean the surface of the device or Treon Battery Module B111 or B211. Do not clean the device with solvents, toxic chemicals, or strong detergents as they may damage the device or battery module and void the warranty.

Safety distance

Safety distance 150 mm from the magnetic adapters surface must be kept due to high strength magnets.

Damage

If the device is damaged, contact support@treon.fi. Only qualified personnel may repair this device.

Small children

Your device is not a toy. It may contain small parts. Keep them out of the reach of small children.

Interference with medical devices

The device may emit radio waves, which could affect the operation of nearby electronics, including cardiac pacemakers, hearing aids and defibrillators. If you have a pacemaker or other implanted medical device, do not use the device without first consulting your doctor or the manufacturer of your medical device. Maintain a safe distance between the device and your medical devices and stop using the device if you observe a persistent interference with your medical device.

Storage

Always store and use the device with covers attached. Device and battery storage area should be clean, dry and ventilated, with temperature between +10 - +30.

Recycle

Check the local regulations for proper disposal of electronic products and batteries.

The Directive on Waste Electrical and Electronic Equipment (WEEE), which entered into force as European law on 13th February 2003, resulted in a major change in the treatment of electrical equipment at end-of-life. The purpose of this Directive is, as a first priority, the prevention of WEEE, and in addition, to promote the reuse, recycling and other forms of recovery of such wastes so as to reduce disposal.

The crossed-out wheeler-bin symbol on your product, battery, literature, or packaging reminds you that all electrical and electronic products and batteries must be taken to separate collection at the end of their working life.

Do not dispose of these products as unsorted municipal waste: take them for recycling. For info on your nearest recycling point, check with your local waste authority.

WARRANTY

Treon Limited Warranty document is available at the following internet address: <https://www.treon.fi/documentation>

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