ERBESSD INSTRUMENTS ®
BALANCING - VIBRATION - ONLINE MONITORING - ALIGNMENT - MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

Phantom EPH-V10E & V11E Trixial Vibration Sensors

Every Phantom is Unique

To precisely identify individual sensors and monitored data collection locations, every Phantom sensor is encoded with a unique serial number – which is translated to a QR Code for quick scanning purposes.

The model of this sensor is: EPH-V11E (accelerometer high-sensitivity)

The 2-digit product code for all EPH-V11E sensors is: **11**

The 2-digit product code for all EPH-V10E sensors is: **10**

The unique 9-digit serial number for the sensor pictured is: **189295990**.

info@erbessd-instruments.com
+52(55) 6280-7264 México
www.erbessd-instruments.com
support@erbessd-instruments.com
+52(999)469-1603 Mérida

Fast and Easy Installation

Phantom Gen 3 vibration sensors can be installed 3 ways:

1. **Adhesive** mount. V10/11 sensors have an integral adhesive mounting surface suitable for epoxy.
2. **Drill and Tap** using a common ¼"-28 thread receptacle. Phantoms are shipped with a stud installed.
3. **Magnetic Base** (optional) for sensor portability.
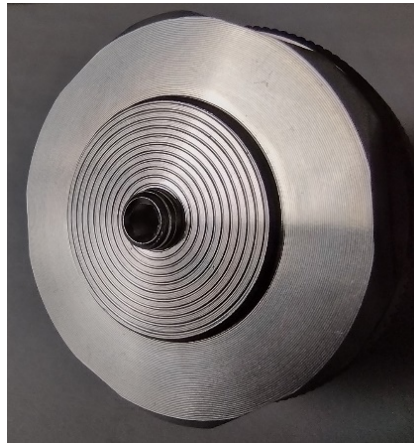
The large knurled ring compresses an o-ring between the top of the sensor and the base. When loosened, the orientation of the sensor may be rotated as needed. The knurled ring is locked in place by a set screw. Tighten the knurled ring hand-tight or to approx. 25 in/lbs of torque to compress the o-ring for a proper seal.

-ᴧ·)) ERBESSD INSTRUMENTS ®
BALANCING - VIBRATION - ONLINE MONITORING - ALIGNMENT - MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

The Gen 3 Phantom Expert sensors consist of four parts, the base, sensor body, battery and knurled ring with set-screw.
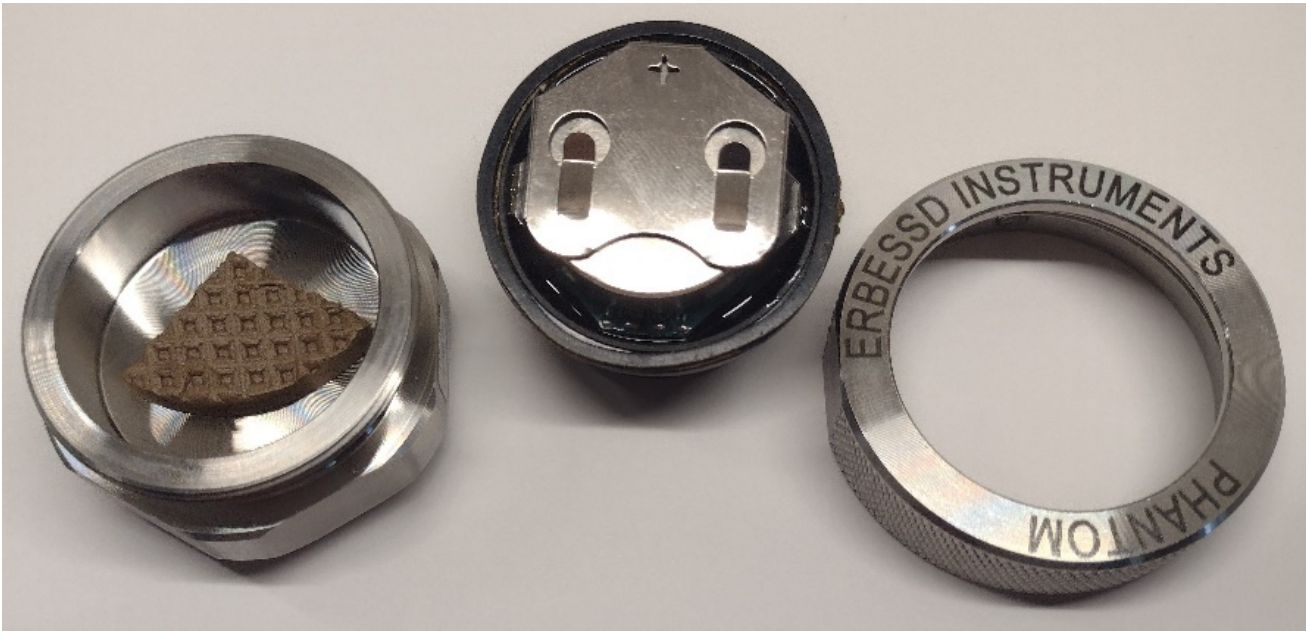
The Expert Phantoms are shipped with a Panasonic CR2477 battery. The battery slides out of the holder easily for replacement. **Note** – Not all CR2477 batteries have the same specifications. For example, the maximum operating temperature may vary between manufacturers. Panasonic batteries are recommended.

ERBESSD INSTRUMENTS ®

BALANCING - VIBRATION - ONLINE MONITORING - ALIGNMENT - MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

All Expert Phantoms have the axis orientation marked on top to align the sensor when installing on the machine point. This must be administered in software correctly to obtain accurate time waveform data.

Example from Phantom config screen:

The image below shows a Phantom Triaxial Vibration Sensor attached to the top of a common electric motor.

The X-axis corresponds to the horizontal direction; the Y-axis corresponds to the vertical direction; the Z-axis corresponds to the axial direction. The vibration sensor should be configured as X=Horizontal, Y=Vertical, Z=Axial.

info@erbessd-instruments.com
+52(55) 6280-7264 México
www.erbessd-instruments.com
support@erbessd-instruments.com
+52(999)469-1603 Mérida

When the sensor is attached to the **side** of the motor, the axis orientation is different. For this setting, the configuration is X=Vertical, Y=Horizontal, Z=Axial.

Sensors are shipped from the factory in *sleep* mode. They will not be detected by any Phantom gateway until they are reset using the provided magnetic key. This will "wake up" the sensor and make it visible to gateways.

Begin by placing the magnet on the sensor just left of the LED and hold until the LED illuminates. If it does not, move the magnet around the sensor's radius slowly until it does. Remove the magnet and the LED will stay lit for several seconds, then blink 3 times and turn off. The sensor is now activated/reset.

For complete details regarding the installation of the Phantom monitoring solution, please refer to the Phantom Setup Guide V4 document, which can be downloaded here:
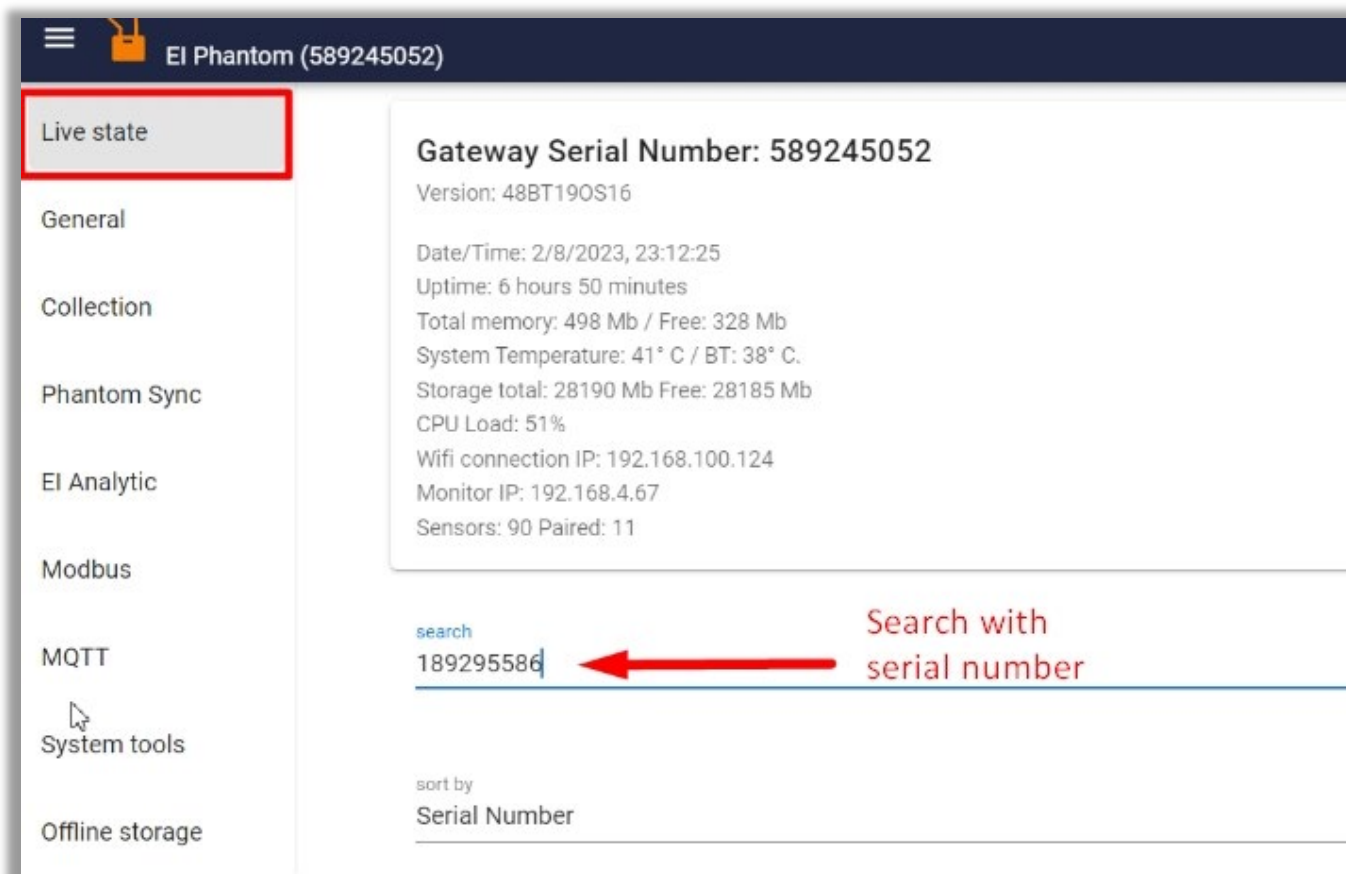
https://www.erbessd-instruments.com/wp-content/uploads/2024/01/Phantom-Setup-Guide-v4-X.pdf

info@erbessd-instruments.com
+52(55) 6280-7264 México
support@erbessd-instruments.com
www.erbessd-instruments.com
+52(999)469-1603 Mérida

Parameter settings

Once a Phantom Gateway is operational, the Admin Console web interface is used to manage the gateway and Phantom sensors within Bluetooth range.

Complete details regarding Gateway installation, how to access the Gateway Admin Console, and database connectivity are included in the Phantom Setup Guide.

The Live State screen will show all detected sensors. If a large number of sensors appear, a given sensor can be found using the **Search** function.

ERBESSD INSTRUMENTS®
BALANCING · VIBRATION · ONLINE MONITORING · ALIGNMENT · MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

Many sensors will require a Firmware Update when they first connect to a Gateway 2.0. They will appear with an update button. Press the **Update** button to download and install the latest sensor firmware. A blue status bar shows the update progress. Note -You may need to reset the sensor using the magnetic key as part of the firmware update process.
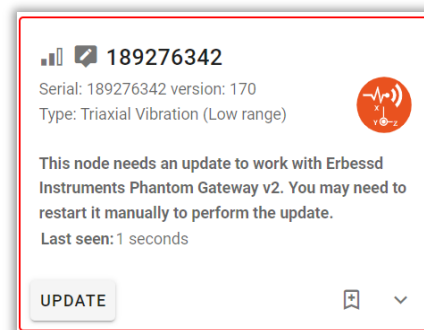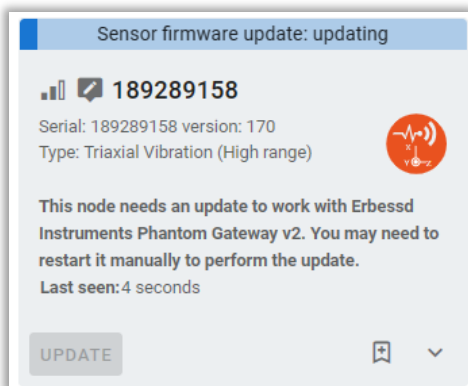
Now click **PAIR** to connect it with your gateway 2.0:

The sensor will download a time waveform signal the upon pairing to the gateway. The state settings of the sensor are now shown with **5 options** for each Phantom:
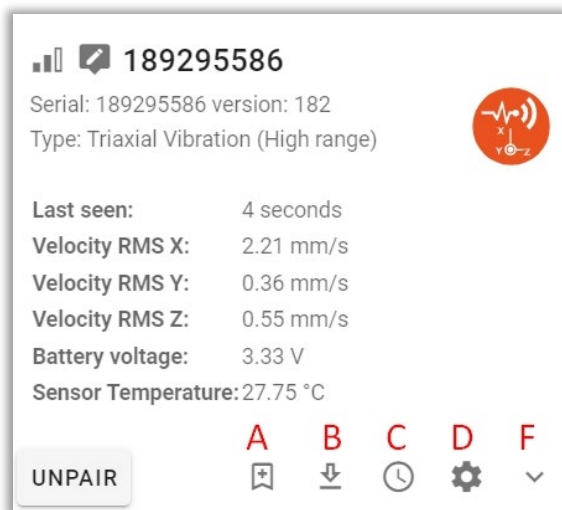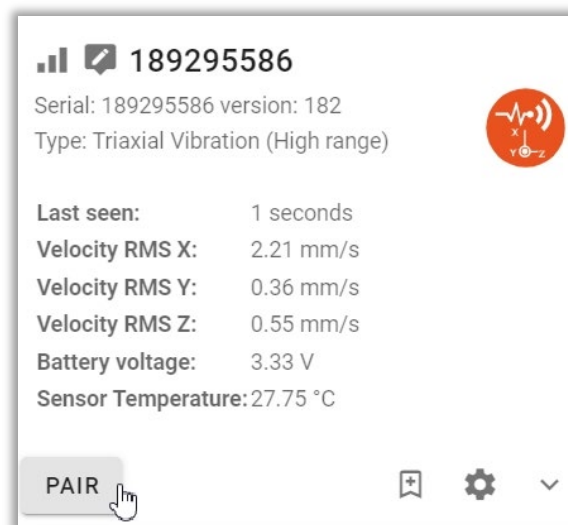

- **A**. Add to **Favorites** list
- **B**. **Collect Waveform now** will record a signal on demand.
- **C**. **Collection settings** – Timing and other settings.
- **D**.**In-sensor settings** (saved in the sensor's memory).
- **F**. **Expand** the Information tile

ERBESSD INSTRUMENTS ®
BALANCING - VIBRATION - ONLINE MONITORING - ALIGNMENT - MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

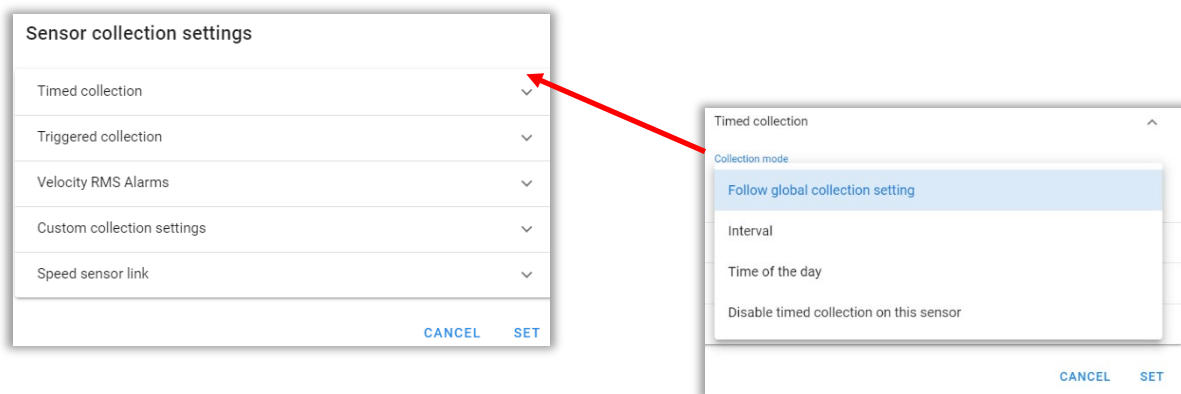**Favorite** Adds the sensor to the list of favorites.

Collect waveform now Requests a data collection from the sensor. A blue message bar will appear, indicating the signal is downloading:
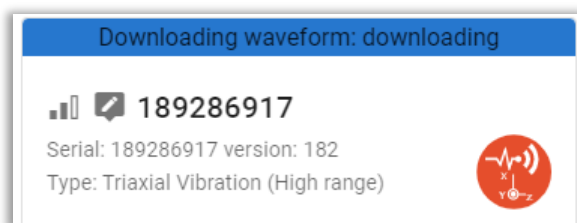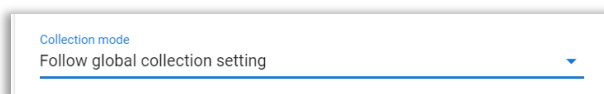

Sensor Collection settings Contains five parameters:

a) **Timed collection:** Allows you to select the sensor collection mode from the four available options:

i. **Follow global collection setting:** Causes the sensor to record data according to the global configuration settings of the gateway. See *Global Collection Settings* in the Phantom Setup Guide.

8

ERBESSD INSTRUMENTS®
BALANCING - VIBRATION - ONLINE MONITORING - ALIGNMENT - MASTERS OF MACHINE HEALTH

19 Exchange Street
Glens Falls, NY 12801 USA
+1.877.223.4606 toll-free
+1.518.874.2700 office
+1.518.874.2717 fax

ii. **Interval:** Allows you to collect data using a defined interval. Select units of minutes, hours or days as long as you stay within the allowed range of the sensor. The default Interval is 720 minutes(12 hrs).

iii. **Time of the day:** You can choose specific times of the day to collect data. Click on **Custom waveform collection time;** a clock will appear allowing you to choose a time. Click on ADD TIME to add this time to the list. Multiple Custom recording times may be administered by repeating this process.

iv. **Disable timed collection on this sensor:** Disables time waveform data collection. RMS velocity, temperature and battery level will continue to be reported.

b) In the **Triggered collection** section, you can link vibration sensors with other sensors to use parameters such as current, speed, or dry contact to trigger a time waveform collection. For details see the *Triggering Sensors* section of the Phantom Setup guide.

info@erbessd-instruments.com
+52(55) 6280-7264 México
www.erbessd-instruments.com
support@erbessd-instruments.com
+52(999)469-1603 Mérida

c) In the **Velocity RMS Alarms** section, you can activate sensor alarms.

Alarm level 1 will cause the sensor to send a data collection if the RMS velocity threshold is exceeded on any of the measured axes.

Alarm level 2 will trigger an email/push notification if the RMS velocity threshold is exceeded on any of the measured axes.

Alarm count threshold: This parameter defines number of consecutive *counts* for which an alarm condition exists before an alarm is triggered. A *count* is the amount of time defined by the **Sensor Update Interval** , which is set via the **In-Sensor Settings**

.

Time to ignore alarm after collection indicates how much time must pass before the sensor can alarm again (applies to both Level 1 and 2).

Velocity RMS Alarms

☑ Enable RMS Alarms Level 1 (trigger waveform collection only)

Alarm level 1 (mm/s)

Axis X	Axis Y	Axis Z
10	10	10

☑ Enable RMS Alarms Level 2 (triggers notification)

Alarm level 2 (mm/s)

Axis X	Axis Y	Axis Z
12	12	12

Alarm count threshold
1   counts

Time to ignore alarm after collection
15   Minutes

Custom collection settings

CANCEL   SET

d) In **Custom collection settings** you can select **Override global collections settings** to modify the settings for *this sensor only*. Otherwise the sensor will take the global settings from the gateway.

e) **Speed Sensor Link** When an EPH-S40 Phantom Speed sensor is installed in Continuous mode (powered locally via 5-24VDC), a parameter can be set to cause an RPM measurement to be sent whenever an Expert Triaxial Phantom sensor sends a full vibration signal file to the database.

Custom collection settings

☑ Override global collections settings

Mode
Triaxial

Sample rate
25.6   kHz

Lines of resolution
6,400 (16,384 samples per channel)

Range
± 8 g

CANCEL   SET

Speed sensor link

☑ Send speed with vibration meassurements

A speed meassurement will be sent along with vibration data. The RPM sensor needs to be hardwire to power and set to continous meassurement mode.

RPM Source Sensor

CANCEL   SET

The **RPM Source Sensor** drop-down contains the phantom codes for all available RPM sensors.

10

In **General** , set the **Max transfer power**. The default and recommended setting is **8 dbm** for Expert Vibration sensors.

The **Sensor update interval** defines how often the sensor updates its status to a Gateway. For vibration sensors, this is the interval used to send an RMS velocity value, internal temperature and battery voltage level to the gateway This is called a sequence or **count**. This interval is also used to check the sensor's Alarm status.

Check **Long Range mode** if this sensor is to use Long Range instead of Regular Bluetooth scanning mode.

You can check the **Connect to Phantom Gateway v1** option if you want this sensor to connect to an older Gateway v1 receiver.

The **Vibration triaxial settings** contains the options for the **RMS** value calculation:

- **Lower cutoff or Higher cutoff**: Defines the frequency range.
- **Calculation range:** Choose the dynamic range.
- **Sample rate:** Sets the sample rate and maximum frequency.
- **Lines of resolution:** Select the resolution lines for calculation.

Click **SET** to save the changes in the sensor.

11

Additional information displayed after a sensor is paired includes:

- **Last download:** Time since last downloaded signal.
- **Last alarm download:** Time since last signal downloaded by alarm.
- **Last trigger download:** Time since last signal downloaded by trigger activation.
- **Last seq change:** Time elapsed in the last sequence.
- **Battery type:** Sensor battery type.
- **Update interval:** Update interval set in sensor.
- **Max transfer power:** Maximum transfer power set in sensor.
- **Seq:** Number of sequences that the sensor has been through.
- **Unpair**: Unlinks the sensor from the Gateway.
- **Forget**: Forgets this sensor and its settings. It will not appear in the Gateway list until it sends data again.
- **Sleep**: Disables the sensor for battery conservation. The sensor will not take measurements or save new settings until it is reset with the magnetic key.
- **Advanced**: Allows you to add codes for specific firmware updates. This option requires the Gateway to have internet access. To avoid damage to your Phantom sensors, do not enter a code without the help of a Technical Support assistant.
- **Request Measurement Update** [⟳] Causes the sensor to send an immediate RMS reading and resets the Update Interval timer to 0.

12

info@erbessd-instruments.com
support@erbessd-instruments.com
+52(55) 6280-7264 México
www.erbessd-instruments.com
+52(999)469-1603 Mérida

Specific conditions of use

- **Range:** -40°C to 80°C (-40°F to 176°F)
  Guidelines: The sensor must be operated within this temperature range to prevent damage and ensure accurate measurements. Operating outside this range may result in malfunction or permanent damage to the sensor.
- **IP69 Rating:**
  Dust Protection: The sensor is completely dust-tight, preventing any ingress of dust particles that could interfere with its functionality.
  Water Protection: The sensor is protected against high-pressure water jets and steam cleaning, making it suitable for use in environments where it might be exposed to rigorous cleaning processes or wet conditions.
- Phantom sensors can be used for both indoor and outdoor locations (Please refer to the environmental conditions specified in this manual).
- Do not use any other battery than CR2477 (Please refer to Maintenance section in this manual).
- Epoxy glue is the recommended adhesive for machine mountings.
- Do not push or force any objects to open a Phantom sensor.
- Use a flat-head screwdriver to remove the locking set screw.
- Make sure the Phantom's O-Ring is correctly positioned before tightening.
- The communication range in ideal conditions is 100 meters (330 ft); however, due to the signal interference of other machines, competitive signals and solid obstructions, the maximum range may decrease.

Environmental Conditions

- **Industrial Settings:** The sensor is ideal for use in various industrial environments, including factories, manufacturing plants, and processing facilities where it can monitor the vibrations of motors and machines.

- **Harsh Environments:** Thanks to its high protection grade, the sensor can be used in harsh environments with exposure to dust, water, and extreme temperatures without compromising its performance. Phantom is not suitable for submersible applications because the radio cannot transmit effectively through water.
- Do not place your Phantom sensor in corrosive environments (Acid or oil)

Environmental Conditions	
Operation temperature	-40°C to +80°C (-40°F to 176 °F)

Maintenance

Battery Replacement: The sensor uses a field replaceable CR2477 battery. Regularly monitor battery life and replace it when necessary to avoid data loss. This sensor is designed to facilitate easy battery replacement, just unscrew the lock, and turn the cabinet to open it. Make sure screw is properly place when closing the sensor.

Firmware Updates: Regularly update the firmware from the Gateway Admin Console. Keeping the firmware up-to-date ensures that the sensor benefits from the latest improvements and bug fixes.

Environmental Protection: While the sensor is robust with an IP69 rating, it's still advisable to periodically inspect the sensor for any physical damage or degradation, especially in harsh environments Clean the sensor periodically to remove any accumulated dust or debris. Use a soft, damp cloth and avoid harsh chemicals that might damage the sensor housing.

Repair

PROBLEM	POSSIBLE CAUSE	SOLUTION
Sensor does not turn on.	Battery is drained.	Battery replacement.
Sensor presents sign of dust or water inside enclosure.	Incorrectly O-ring position or screw unlocked	Make sure O-ring is well positioned.

ABS cover dielectric strength

Electrical	Value	Test Method
Hot-wire Ignition (HWI)		UL 746
1.50 mm	PLC 4	
3.00 mm	PLC 3	
High Amp Arc Ignition (HAI)		UL 746
1.50 mm	PLC 0	
3.00 mm	PLC 0	
Comparative Tracking Index (CTI)	PLC 0	UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 1	UL 746
Arc Resistance	PLC 7	ASTM D495

List of Standards

We declare under our sole responsibility that Phantom EPH-V11E and EPH10VE sensors, are in conformity with the applicable requirements of the following directives and standards.

DIRECTIVE	STANDARD OR DESCRIPTION	STATUS
IC – SENSORS & GATEWAY	RSS-102	COMPLIED
KCC-SENSORS & GATEWAY	CLAUSE 2, ARTICLE 58-2	COMPLIED
FCC-SENSORS & GATEWAY	PART 15 SUBPART C AND CANADA RSS-247	COMPLIED
JAPAN TELEC - SENSORS & GATEWAY	ARIB STD-T66	COMPLIED
AUSTRALIA/NEW ZEALAND RCM - SENSORS & GATEWAY	AS/NZS 4268:2017	COMPLIED
TAIWAN NCC - SENSORS & GATEWAY	GFSK	COMPLIED
BRAZIL ANATEL - SENSORS & GATEWAY	25.081.009/0001-03	COMPLIED
D.C. 2014/53/EU	ETSI EN300 328 V2.1.1:2016	COMPLIED
D.C. 2014/53/EU	EN301 489-1 V2.1.1: 2017 – EMI EN 55032:2015 EN301 489-1 V2.1.1: 2017 – EMS EN 55024:2010+A1:2015 EN301 489-1 V2.1.1: 2017 – EMS EN 61000-4-2:2009 EN301 489-1 V3.11: 2018 – EN600-4-3:2006+A1:2008+A2:2010	COMPLIED
D.C. 2014/53/EU	EN50566:2017 EN50663:2017	COMPLIED
D.C. 2011/65/EU	RESTRICTION ON THE USE OF CERTAIN HAZARDOUS SUBSTANCES IN ELECTRONIC AND ELECTRICAL EQUIPMENT	COMPLIED
D.C. 2014/30/EU	ELECTROMAGNETIC COMPATIBILITY (EMC)	COMPLIED
D.C. 2014/35/EU	LOW VOLTAGE DIRECTIVE	COMPLIED
D.C. 2001/95/EC	GENERAL PRODUCT SAFETY DIRECTIVE	COMPLIED
D.C. 1995/5/EC	ARTICLES 3.1(A), 3.1(b), 3.1 RADIO FREQUENCY	COMPLIED
MILSTD-810G	DROP & SHOCK TESTING	COMPLIED
IP67-ALL SENSORS/GX400(X)	INTRUSION PROTECTION	COMPLIED
IP54 -GATEWAY	INTRUSION PROTECTION	COMPLIED