IoT Wireless Vibration Sensor Installation Manual

LoRa & BLE

- **US Coverage**
  - ANSI/UL 60079-0-2020
  - ANSI/UL 60079-11-2018
  - ANSI/UL 913-2019
  - UL 61010-1, 3rd Edition (2012) + AMD1:2018
  - FCC Certified
- **Canadian Coverage**
  - CSA C22.2 No. 60079-0:19
  - CAN/CSA C22.2 No. 60079-11:14
  - CAN/CSA C22.2 No. 61010-1-12
    + Update No 1:2015 + Update No 2:2016 + AMD1:2018
  - ISED Certified
- **European/IECEx Coverage**
  - IEC 60079-0:2017 Edition: 7.0
  - IEC 60079-11:2011 Edition: 6.0
  - IEC 61010-1:2010, IEC 61010-1:2010/AMD1:2016
  - RED Compliant
- **Radio Frequency Communication**
  - Bluetooth® Qualified
  - LoRaWAN Certified[CM]

Environmental Information

Ambient Temperature -40 °C to + 60 °C

IP66/IP67

Models 85X1N Series

SUPPLY: 3.6 V / 4µA – 35mA

FCC ID: 2A85PA85X1N

IC: 29620-A85X1N

Models 89X1N Series

SUPPLY: 3.6 V / 4µA – 35mA

FCC ID: 2A85PA89X1N

IC: 29620-A89X1N

915MHz for US and 868MHz for EU

Explosive Atmospheres Designations for Models 85X1N-EX and 89X1N-EX Series

US and Canada:

CSA22CA80098072X

IS CL I, DIV 1, GRP A, B, C, D, T4;

CL I, ZN 0, AEx ia IIC T4 Ga;

ATEX and IECEx:

EPS 21 ATEX 1 163 X

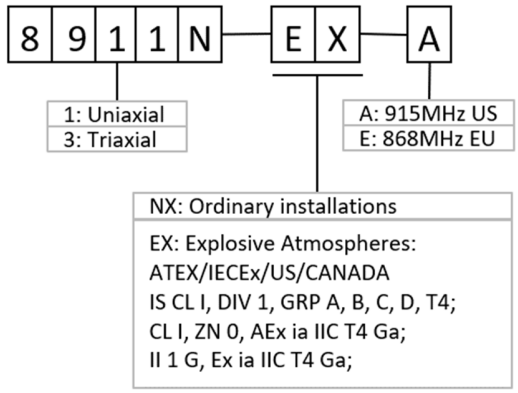
IECEx EPS 21.0053X

Ex II 1 G, Ex ia IIC T4 Ga;

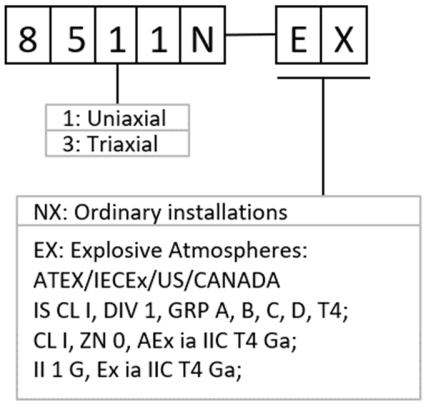
REVISION OF THE DOCUMENT

Release Date	Change Description	Rev.	Prepared by	Appr. ENG
11/07/2022	Initial release	A		

LoRa + BLE Sensor Model Number



BLE Sensor Model Number



WARNING & IMPORTANT SAFETY INSTRUCTIONS

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION **CAUTION** used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

ELECTRICAL INSTALLATION (Raccordement électrique)

⚠WARNING Suitable for use in Class I, Division 1, Groups A, B, C and D Hazardous Locations, or Non-Hazardous locations only.
(AVERTISSEMENT) Uniquement adapté à un usage dans les Zones dangereuses de la classe 1, division 1 des groupes A, B, C, et D ainsi que dans les zones non dangereuses.

⚠WARNING EXPLOSION HAZARD: Substitution of components may impair suitability for Class I Division 1

(AVERTISSEMENT) Risque d'explosion - Remplacement d'un composant peut empêcher la conformité de Classe I, Division 1.

⚠WARNING POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE SPECIFIC CONDITIONS OF USE IN INSTRUCTIONS.

(AVERTISSEMENT) DÉCHARGE POTENTIEL ÉLECTROSTATIGUE HAZARD- VOIR LES INSTRUCTIONS

⚠WARNING To prevent ignition of flammable or combustible atmospheres, read, understand and adhere to the manufacturer's live maintenance procedures.

(AVERTISSEMENT) Pour éviter l'inflammation des atmosphères inflammables ou combustibles, lisez, comprenez et respectez les procédures de maintenance en direct du fabricant.

⚠WARNING Discontinue operation of sensor if plastic housing is broken, deformed or absent, ensure S/N match between sensor and plastic housing

(AVERTISSEMENT) Arrêtez le fonctionnement du capteur si le boîtier en plastique est cassé, déformé ou absent, assurez-vous que le numéro de série correspond entre le capteur et le boîtier en plastique.

⚠WARNING FOR MODEL 85X1N AND 89X1N SERIES USE ONLY SAFT (LI-$SOCl_2$) LS17330. Do not attempt to open, service or disassemble the battery, Do not short circuit. It may explode if disposed of in fire.

(AVERTISSEMENT) POUR LES MODÈLES DE LA SÉRIE 85X1N ET 89X1N UTILISEZ UNIQUEMENT DES PILES SAFT (LI-$SOCl_2$) LS17330. N'essayez pas d'ouvrir, de réparer ou de démonter la batterie. Ne court-circuitez pas. Il peut exploser s'il est jeté au feu.

Conditions for Safe Use

i. The non-metallic parts incorporated in the enclosure may generate an ignition-capable level of electrostatic charge. Upon installation, care shall be taken to avoid location where the external conditions are conductive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment shall only be cleaned with a damp cloth.
ii. The vibration sensor does not have an Earth ground terminal. The vibration sensor shall be Earth grounded as part of the final installation.
iii. Use only 3.6 V SAFT battery LS17330 Primary lithium-thionyl chloride (Li-SOCL2)2/3 A-size bobbin cell.
iv. The battery should be installed or replaced only in non-hazardous areas.

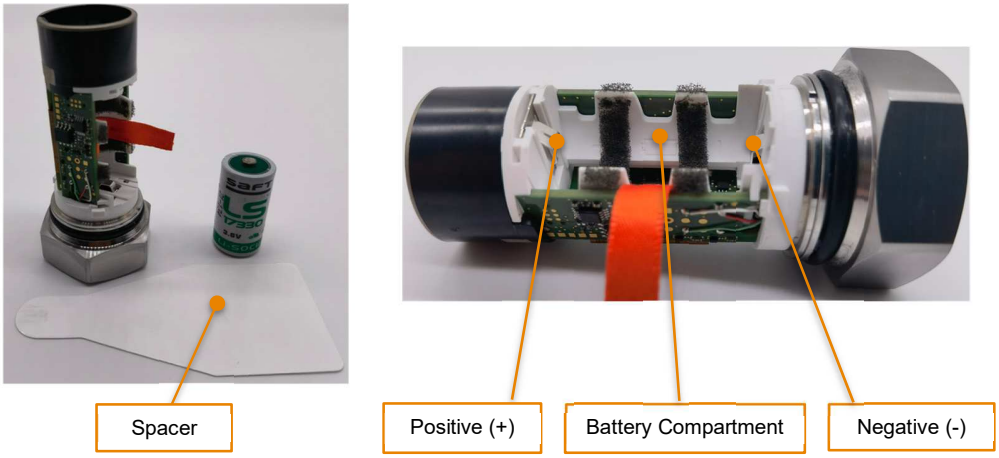
BATTERY INSTALLATION AND REPLACEMENT

Remove the cover

Hold the sensor firmly by the hex area at the bottom. Rotate the top cover counter-clockwise from the locked index mark on the cover to the unlocked mark. Carefully lift the cover off in a straight direction to avoid damage to internal components.

Avoid touching any portion of the PC boards or electronic components.

Insert the battery

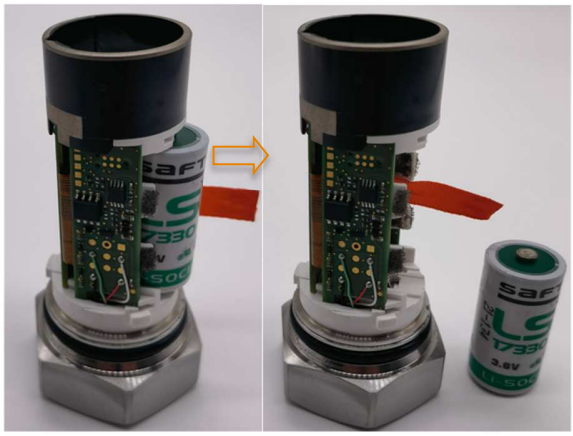


Follow these steps:

- Push the battery removal strip into the battery compartment so the new battery will sit on top of it.
- Hold the battery spacer so the narrow end covers the negative (-) battery contact electrode (nearer to the hex end of the device).
- Insert the battery (negative end first) so it traps the spacer between the negative battery contact and the negative electrode on the battery.
- Slowly push the positive electrode end of the battery into the battery compartment until it's fully seated.
- Holding the battery in place, slowly extract the spacer from the negative electrode.
- A one second flash from the LED will indicate that the battery has been inserted properly.

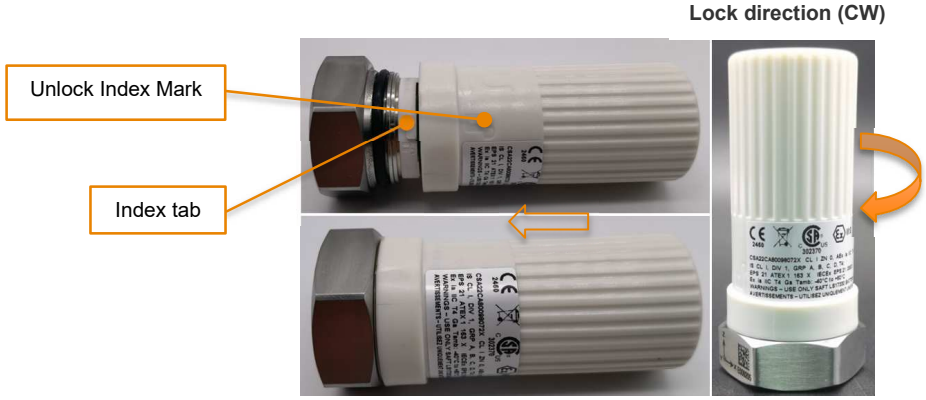
Remove the Battery

Remove the battery by pulling the battery removal strip. Be careful to avoid touching or holding the device around the PC boards and electronic components.



Reinstall the cover

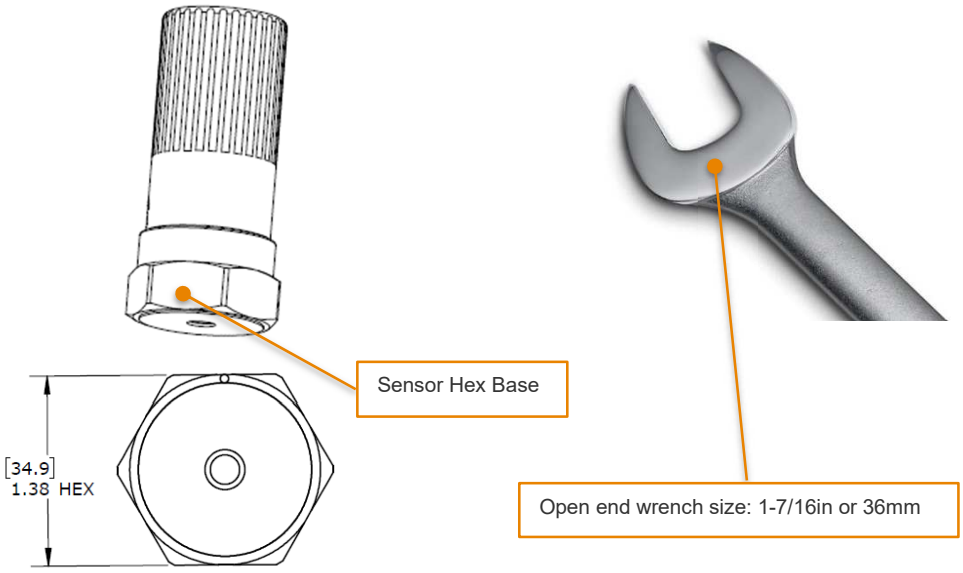
- Orient the cover so the unlock index mark aligns with tab at the base of the sensor.
- Slide the cover down so it fits tightly against the O-ring seal above the hex.
- Rotate the cover clockwise until the locked index mark aligns with the position of the base tab.



Caution: The Cover is tightly matched with Base/O-ring, so some resistance might be felt on rotation.

SENSOR MOUNTING

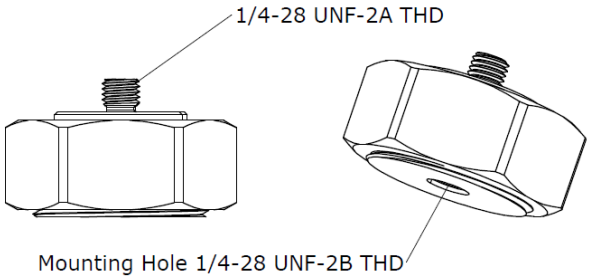
The vibration sensor should be stud mounted on a clean, flat surface. The correct mounting torque for the sensor is 2.2 to 2.9 lb-ft (3 to 4 N-m). It is recommended to put a small amount of silicon grease on the bottom of the vibration sensor before mounting. This provides better coupling of vibration signals into the sensor.



WARNING – Do NOT tighten the sensor by twisting on the housing. Damage to the sensor WILL occur. Tighten to the correct torque using a wrench on the hex base.

MOUNTING METHOD & ACCESSORIES

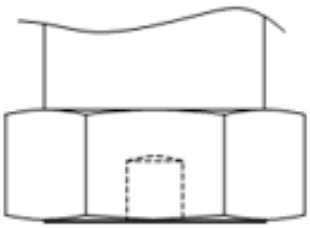
Shown below is a special mounting options available for the 8931N/8531N triaxial sensor. It consists of three machine parts to build one adaptor. This allows the 8931N/8531N sensors to be rotated in order to align the X and Y axes in the desired direction.



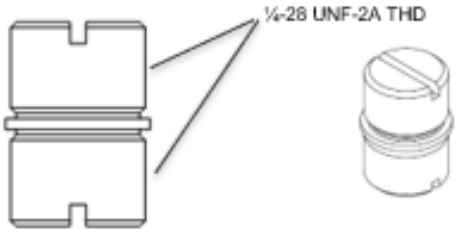
8X31 Adjustable Angle Mounting Block

20027468-00

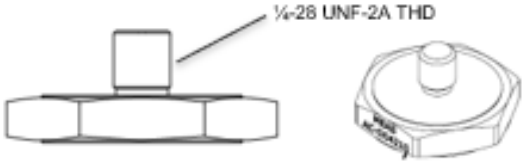
A solid mounting method is required to get optimum performance from the sensor. Any loose parts or unsecured mounting features will introduce noise and corrupt the signals of interest. Shown below are six different mounting options available for the 89X1N/85X1N sensor.



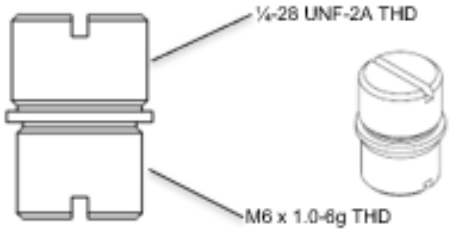
1/4-28 UNF Female THD
(Integrated part of the sensor)



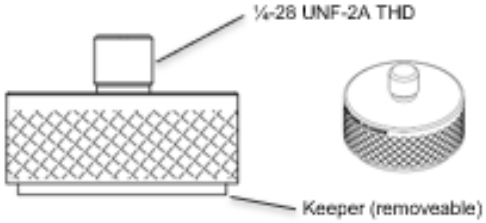
1/4-28:1/4-28 Male Stud
P/N AC-D03636



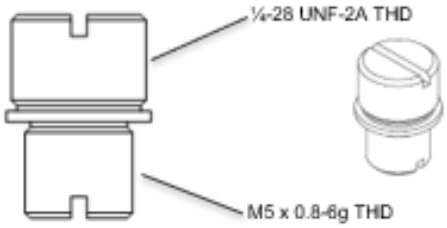
Adhesive Mounting Stud
P/N AC-D04210



1/4-28:M6 Male Stud
P/N AC-D03665



Magnetic Mounting Stud
P/N AC-A04209



1/4-28:M5 Male Stud
P/N AC-D03664

For the adhesive mounting stud, secure with a rigid adhesive such as epoxy or cyanoacrylate. Do not use pressure sensitive adhesives or foam tapes. For the magnetic mounting stud, remove the keeper prior to attachment. The magnetic mounting will have a 30 lb pull strength when attached to a ferrous surface.

Impact energy level code: IK05

20023687-20 Installation Drawing

85X1N/89X1N
Intrinsically Safe Drawing

20023687-20
Rev A / 2022-9-30
SHEET 1 OF 1

Hazardous Location

IS Class I, Div 1, Groups A, B, C, and D;
Class I Zone 0, AEx ia IIC T4 Ga;
II 1 G Ex ia IIC T4 Ga

85X1N/89X1N
WIRELESS
ACCELEROMETER
3.6V BATTERY

Notes:
1. Canadian Installations should be in accordance with Canadian Electrical Code, Part 1. U.S. Installations should be in accordance with Article 504 in the National Electrical Code, ANSI/NFPA 70.
2. See user manual for more installation Instructions.
3. Ex rated document, no changes allowed unless authorized by Ex agency.

Specific Conditions of Use:
1. The non-metallic parts incorporated in the enclosure may generate an ignition-capable level of electrostatic charge. Upon installation, care shall be taken to avoid location where the external conditions are conductive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment shall only be cleaned with a damp cloth.
2. The accelerometer do not have an earth ground terminal. The accelerometer shall be earth grounded as part of the final installation.
3. Use only 3.6 V SAFT battery LS17330 Primary lithium-thionyl chloride (Li-SOCL2)2/3 A-size bobbin cell.
4. It is only allowed to replace the battery in non-hazardous areas.

WARNING -- SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.
AVERTISSEMENT - LE SUBSTITUTION DE COMPOSANTS PEUT NUIRE À LA SÉCURITÉ INTRINSÈQUE

WARNING -- TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES, READ, UNDERSTAND AND ADHERE TO THE MANUFACTURER'S LIVE MAINTENANCE PROCEDURE.
AVERTISSEMENT - POUR ÉVITER L'ALLUMAGE D'ATMOSPHÈRES INFLAMMABLES OU COMBUSTIBLES, LISEZ, COMPRENEZ ET RESPECTEZ LA PROCÉDURE D'ENTRETIEN EN DIRECT DU FABRICANT.

WARNING -- POTENTIAL ELECTROSTATIC CHARGING HAZARD -- SEE SPECIFIC CONDITIONS OF USE IN INSTRUCTIONS
AVERTISSEMENT - RISQUE POTENTIEL DE CHARGE ÉLECTROSTATIQUE - VOIR LES CONDITIONS D'UTILISATION SPÉCIFIQUES DANS LES INSTRUCTIONS

WARNING -- USE ONLY SAFT LS17330 BATTERY
AVERTISSEMENT - UTILISEZ UNIQUEMENT UNE BATTERIE SAFT LS17330

Additional Notes:

- For more product information please refer to our website: www.te.com
- It is recommended to remove the battery if the sensor is not in use.

Sales and technical support

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