

IoT Wireless Pressure Sensor Installation Manual

LoRa & BLE



Environmental Information

Ambient Temperature -30 °C to + 75°C
IP66/IP67

Models 69X1N Series

SUPPLY: 2.8-3.6V / 4µA-35mA
FCC ID: 2A85PA6XX1N
IC: 29620-A6XX1N
915MHz for US and 868MHz for EU

Models 65X1N Series

SUPPLY: 3.6V / 4µA-35mA
FCC ID: 2A85PA6XX1N
IC: 2A85PA6XX1N

Explosive Atmospheres Designations for Models 69X1N-EX and 65X1N-EX Series

US and Canada:

CSA23CA80179223X
IS CL I, DIV 1, GRP A, B, C, D, T4;
CL I, ZN 0, AEx ia IIC T4 Ga;

ATEX and IECEx:

EPS 23 ATEX 1 117 X
IECEx EPS 23 .0042X
Ex II 1 G, Ex ia IIC T4 Ga;

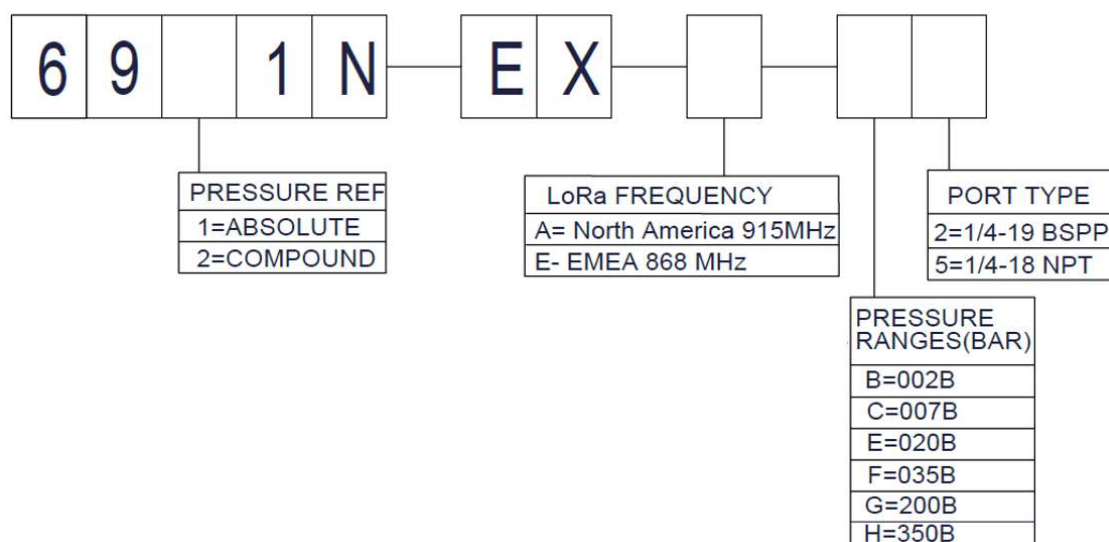
- **US Coverage**
 - ANSI/UL 60079-0-2020
 - ANSI/UL 60079-11-2018
 - ANSI/UL 913-2019
 - UL 61010-1, 3rd Edition (2012) + AMD1:2018
 - FCC Certified
- **Canadian Coverage**
 - CSA C22.2 No. 60079-0:19
 - CAN/CSA C22.2 No. 60079-11:14
 - CAN/CSA C22.2 No. 61010-1-12 + Update No 1:2015 + Update No 2:2016 + 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}

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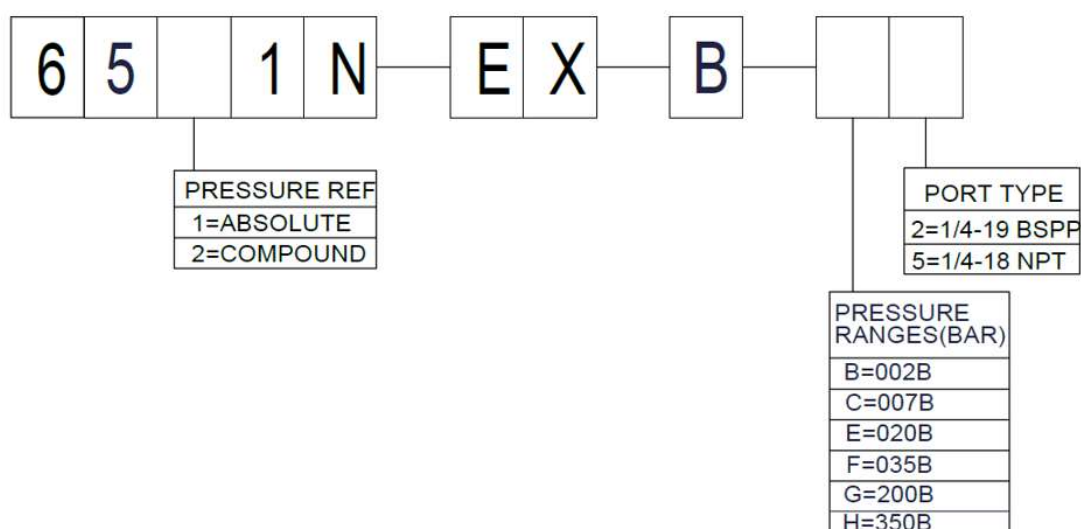
REVISION OF THE DOCUMENT

Release Date	Change Description	Rev.	Prepared by	Appr. ENG
03/17/2023	Initial release	A	Vic Yang	Johnsun Zhao
30/11/2023	Update model number (add pressure ranges 2, 200bars) Update in the sensor mounting torque, the mounting/ installation recommendations and IS drawing.	B	A.Ben Abdelkader	N. Pecquet

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



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



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 ÉLECTROSTATIQUE 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 Hex 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 Hex et le boîtier en plastique.

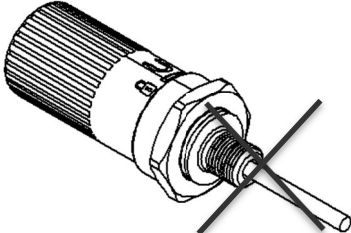
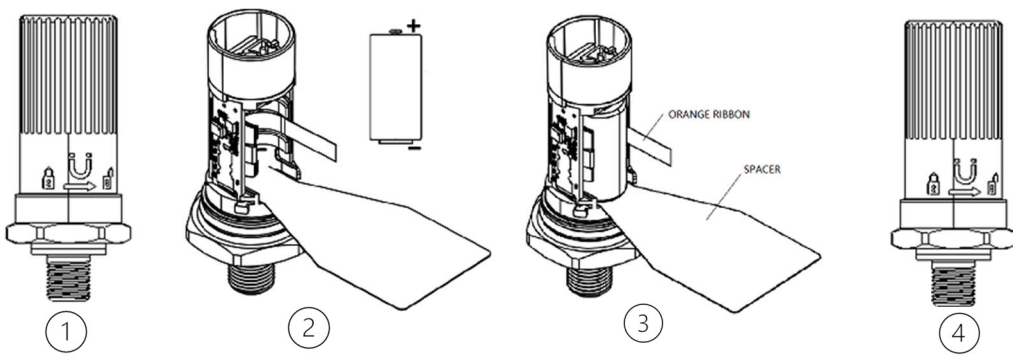
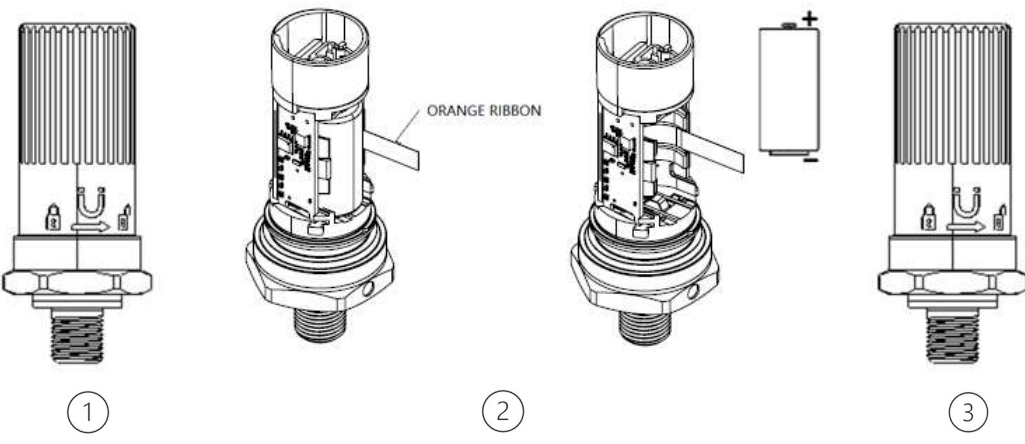
⚠ WARNING FOR MODEL 69X1N AND 65X1N SERIES USE ONLY SAFT (LI-SOCl₂) LS17330. Do not attempt to open, service or disassemble the battery, do not short circuit. It may explode if disposed of in fire.

(AVERTISSEMENT) POUR LES MODÈLES DE LA SÉRIE 69X1N ET 65X1N UTILISEZ UNIQUEMENT DES PILES SAFT (LI-SOCl₂) 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.

Specific Conditions for Safe 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 conducive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment shall only be cleaned with a damp cloth or touched with an insulating object only.
2. The Pressure Transducers do not have an earth ground terminal. The transducers 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.

BATTERY INSTALLATION AND REPLACEMENT

PRECAUTION 	Before installation, please verify that the product matches its intended use, especially the pressure fitting, pressure range. Sensitive diaphragm inside, do not stick anything into the pressure port. 
BATTERY INSTALLATION 	1. Remove the plastic housing following the opening direction. 2. Put the spacer on negative terminal before install the battery. Put the orange ribbon back to the cavity before install the battery. Install the Battery positive upward. 3. Pull the spacer out after install the battery. 4. Install the plastic housing and tighten it following the locking direction. 
BATTERY REPLACEMENT 	1. Remove the plastic housing following the opening direction. 2. Using the orange ribbon pull the battery out. Put the orange ribbon back to the cavity before install the new battery. 3. Install the plastic housing and tighten it following the locking direction. 

Follow these steps:

- Carefully lift the plastic housing off in a straight direction to avoid damage to internal components.
- Avoid touching any portion of the PC boards or electronic components.
- 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.

Install the cover

- Orient the plastic housing so the unlock index mark aligns with tab at the base of the sensor.
- Slide the plastic housing down so it fits tightly against the O-ring seal above the hex.
- Rotate the plastic housing clockwise until the locked index mark aligns with the position of the base tab.
- Before installing the cover, we recommend lubricating the O-ring with Parker Slube 884-2 or equivalent.

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

Warning: Ensure S/N match between sensor Hex and plastic housing.

Warning: It is only allowed to replace the battery in non-hazardous areas.

SENSOR MOUNTING

The pressure sensor should be installed in a clean and compatible thread, the use of an open-end wrench is recommended.

For the 1/4 NPT thread the use of pipe thread sealant or Teflon tape is recommended. The NPT threaded part should be tightened 2~3 turns from finger tight (T.F.F.T).

For 1/4 BSPP threads mounting torque for the sensor of pressure ranges 2 to 35 bar should not exceed 30Nm, and for sensors with ranges over 200 bar the mounting torque should not exceed 35 Nm.



Pressure Sensor Range **2 to 35 Bar**, max torque is **30Nm**
Pressure Sensor Range **200 and 350 Bar**, max torque is **35Nm**



Open end wrench size: 1-7/16in
or 36mm

Assembly torque depends on many factors, in particular the lubrication, the coating and the surface finish.

!The user should qualify the tighten torque in their application!



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.

WARNING – Install in a process connection with enough room to allow the use of Spanner/Wrench.

WARNING – To reduce the risk of burns or frost bite, wear protective personal equipment when installing or removing from high or below-freezing temperature process or environments.

WARNING – After installation carefully check for leaks.

20015809-02 Intrinsic safety Drawing

	6XX1N-EX IS Drawing EU+N.A.	20015809-02 Rev B / 09 JAN, 2024 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; Ex ia IIC T4 Ga; II 1 G Ex ia IIC T4 Ga Notes: 1. EX-RATED SCHEDULE DRAWING: NO CHANGES UNLESS AUTHORIZED BY APPROVAL AGENCY. 2. 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. 3. See user manual for more installation instructions. 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 conducive to the build-up of electrostatic charge on such surfaces. Additionally, the equipment shall only be cleaned with a damp cloth or touched with an insulating object only. 2. The Pressure Transducers do not have an earth ground terminal. The transducers 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 CONFIDENTIAL: THIS DRAWING AND THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF TE CONNECTIVITY CO. (IPANY) AND SHALL NOT BE USED, PUBLISHED OR DISCLOSED TO OTHERS WITHOUT THE EXPRESS WRITTEN CONSENT OF TE CONNECTIVITY CO. (IPANY). ALL DATA SUBJECT TO CHANGE. CONSULT FACTORY FOR DETAILS. TECHNICAL INFORMATION SUBJECT TO THE U.S. EXPORT ADMINISTRATION REGULATIONS (EAR). THIS TECHNICAL INFORMATION IS PROHIBITED FROM TRANSFER OR DISCLOSURE IN ANY MANNER TO NON-U.S. PERSONS IN THE UNITED STATES OR ABROAD WITHOUT PRIOR APPROVAL BY THE U.S. COMMERCE DEPARTMENT OR EAR EXEMPTION.		



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.

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