LoRaWAN 85X1N Wireless Bluetooth Vibration Sensor Owner's Manual

Contents

LoRaWAN

LoRaWAN 85X1N Wireless Bluetooth Vibration Sensor

OVERVIEW

The LoRaWAN™ 868/915MHz wireless vibration sensors measure both vibration and temperature data. This sensor combines a uniaxial or triaxial accelerometer, a data collector, and a radio into one compact, battery operated device. Designed for harsh environments and is ATEX-certified.

- **Accelerometer Type**: Wireless
- **Vibration Sensor Product Type**: Wireless Accelerometers
- **Wireless Application**: LoRaWAN
- **Frequency Band**: 915 MHz
- **Number of Sensing Axes**: Uniaxial

The model 89x1N wireless accelerometer uses the LoRaWAN™ communication protocol, offering a simple, reliable, and secure means of expanding condition based maintenance into plant areas where the cost to install wired systems is prohibitive, making data available to existing process control and information systems.

In addition to that, it offers a Bluetooth Low Energy interface to ease the embedded settings configuration at the sensor installation. The model 8931N incorporates three piezo-electric accelerometers which offer a wide bandwidth to >15kHz, outstanding measurement resolution and superior long-term stability compared to design using MEMS solutions. The accelerometers are oriented at 90# to each other providing data in X, Y, and Z directions. The 89x1N contains digital signal processing capability that provides an FFT analysis of the sensed vibration. The output data describes the center frequency, peak value, bandwidth, and percent of the total spectral content for the eight most significant acceleration peaks in the vibration signal from each axis. Because of this feature, the 89x1N directly provides the data most needed to plot trends and monitor changes in the performance and condition of factory machinery.

Benefits

- Compact design
- Up to 10-year battery life
- -40°C to +60°C operating temperature
- 35kHz resonant frequency
- Embedded FFT signal analysis
- Stud, magnet, or adhesive mounting accessories

Applications

- Condition-based monitoring
- Electric motors
- Oil & gas equipment
- ICE powerplants
- Pumps for liquids
- Compressors
- Factory equipment
- Robots and cobots
- Autonomous guided vehicles
- HVACR equipment

Technical Specifications

- Wireless piezoelectric 1-axis or 3-axis accelerometer
- Designed for condition monitoring
- Programmable and customer-configurable
- Corrosion-resistant stainless steel housing
- Wide bandwidth to >15kHz
- Exceptional long-term stability
- Superior measurement resolution
- ATEX certified
- Explosive atmospheres certified

The Power of IoT Wireless Vibration Sensors
TE Connectivity's 85x1N & 89x1N series wireless vibration sensors bring practical innovation to industrial monitoring. Engineered with LoRaWAN® and Bluetooth® technology, these compact sensors fit seamlessly into various environments, from tight spaces to remote infrastructures.

Features

Body Features

- Product Weight (g) 165
- Product Weight (oz) 5.82

- Primary Product Material Polymer, 316L Stainless Steel
- Number of Sensing Axes Uniaxial, Triaxial

Usage Conditions

- Operating Temperature Range (°C) -40 – 80
- Operating Temperature Range (°F) -40 – 176

Industry Standards

- IP Rating IP67
- Wireless Application LoRaWAN
- Hazardous Area Approval Yes

Other

- Overall Acceleration Range (±) (g) 50
- EU RoHS Compliance Compliant with Exemptions

Reference Number

- TE Internal Number CAT-WVS0001

Product Type Features

- Accelerometer Type Wireless
- Vibration Sensor Product Type Wireless Accelerometers

Signal Characteristics

- Frequency Band (MHz) 868, 915
- Frequency Response (Hz) 2 to 15000

Products (1 of 2)

8911N-NX-A, US 915MHz w/ 1acc + battery

8931N-EX-A, US 915MHz w/ 1 acc + battery

8931N-EX-E, EU 868MHz w/ 1 acc + battery

8911N-EX-A, US 915MHz w/ 1 acc + battery

TE Part #	20023687-80	20025129-80	20025129-90	20025127-80
Frequency Band	915 MHz	915 MHz	868 MHz	915 MHz
Number of Sensing Axes	Uniaxial	Triaxial	Triaxial	Uniaxial
Hazardous Area Approval		Yes	Yes	Yes
EU RoHS Directive 2011/65 /EU	EU RoHS Compliant with Exemptions	EU RoHS Compliant with Exemptions	EU RoHS Compliant with Exemptions	EU RoHS Compliant with Exemptions
EU ELV Directive 2000/53 /EC	Not Yet Reviewed for EU ELV	Not Yet Reviewed for EU ELV	Not Yet Reviewed for EU ELV	Not Yet Reviewed for EU ELV

EU RoHS Directive 2011/65/EU
These products comply with the substance restrictions of the Restriction on Hazardous Substances Directive 2011/65/EU (RoHS2). The RoHS2 Directive requires that certain electrical and electronic equipment products do not contain mercury, cadmium, hexavalent chromium, PBB, PBDE, lead, DEHP, BBP, DBP and DIBP above-defined thresholds. Products indicated as 'Compliant' do not contain any of these substances above the prohibition thresholds. Finished electrical and electronic equipment products will be CE-marked as required by the Directive. Components may not be CE marked.

EU ELV Directive 2000/53/EC
These products comply with the substance restrictions of the End of Life Vehicles Directive 2000/53/EC (ELV). The ELV Directive requires that materials and components of vehicles do not contain mercury, cadmium, hexavalent chromium, and lead above-defined thresholds. Products indicated as 'Compliant' do not contain any of these substances above the prohibition thresholds.

Products (2 of 2)

8931N-NX-A, US 915MHz w/ 1 acc + battery

8911N-EX-E, EU 868MHz w/ 1 acc + battery

8911N-NX-E, EU 868MHz w/ 1acc + battery

8931N-NX-E, EU 868MHz w/ 1acc + battery

TE Part #	20023689-80	20025127-90	20023687-90	20023689-90
Frequency Band	915 MHz	868 MHz	868 MHz	868 MHz
Number of Sensing Axes	Triaxial	Uniaxial	Uniaxial	Triaxial
Hazardous Area Approval		Yes		
EU RoHS Directive 2011/65	EU RoHS Compliant with	EU RoHS Compliant with	EU RoHS Compliant with	EU RoHS Compliant with
/EU	Exemptions	Exemptions	Exemptions	Exemptions

EU ELV Directive 2000/53 /EC Not Yet Reviewed for EU ELV Not Yet Reviewed for EU ELV Not Yet Reviewed for EU ELV Not Yet Reviewed for EU ELV

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Related Materials

- **Data Sheet**
  - 8931N WIRELESS VIBRATION SENSOR
  - English
- **Data Sheet**
  - 8911N WIRELESS VIBRATION SENSOR
  - English
- **Data Sheet**
  - 8511N
  - English
- For support call +1 800 522 6752 01/06/2025 02:50 AM |Page 6

Product Specifications

- **Models:** 85X1N Wireless Bluetooth Vibration Sensor, 89X1N Wireless LoRaWAN Vibration Sensor
- **Axis Options:** 1-Axis or 3-Axis
- **Hazloc Certification Options:** Available for specific models
- **Frequency Options:** 915 MHz or 868 MHz

Frequently Asked Questions

Q: How do I know if I need a Bluetooth or LoRaWAN sensor?

A: Determine if you need local monitoring (Bluetooth) or remote monitoring (LoRaWAN).

Q: What is the difference between 1-Axis and 3-Axis data?

A: 1-Axis data provides information along a single axis, while 3-Axis data captures vibrations along three axes for more detailed insights.

Q: When should I opt for a model with Hazloc certification?

A: Choose a model with Hazloc certification if your application involves hazardous locations where such certification is required for safety compliance.

Q: How do I select the appropriate frequency for installation?

A: Select the frequency (915 MHz or 868 MHz) based on the region where the sensor system will be deployed to ensure optimal performance.

Documents / Resources

	LoRaWAN 85X1N Wireless Bluetooth Vibration Sensor [pdf] Owner's Manual 85X1N Wireless Bluetooth Vibration Sensor, 85X1N, Wireless Bluetooth Vibration Sensor, Bluetooth Vibration Sensor, Vibration Sensor, Sensor

References

- User Manual