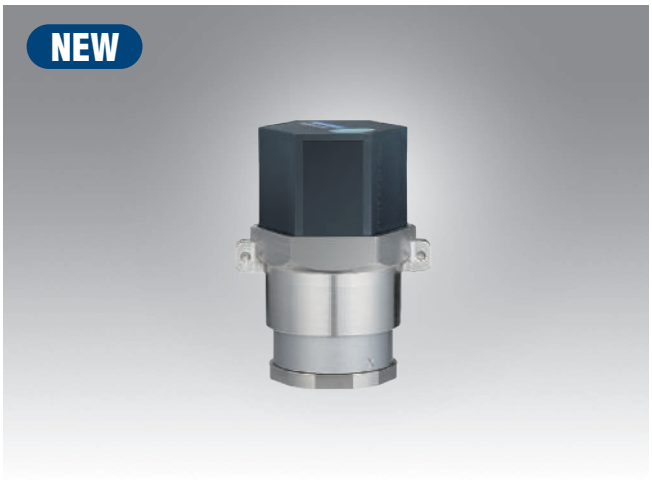
WISE-2410X

Explosion Proof LoRaWAN Wireless Condition Monitoring Sensor



Features

- LoRaWAN wireless connectivity
- Built-in 3-axis accelerometer and temperature sensor
- On-board computing. Directly sends VRMS, ARMS, Peak, Displacement, Kurtosis, Crest factor, Skewness and Standard Deviation values to applications
- Support battery power and remote configuration settings, no wiring installation needed
- Easy settings with user friendly interfaces on WISE Studio utility
- ISO 10816/20816 compliant
- Support wide temperature 0 ~ 70 °C
- IP65 enclosure design
- IECEx Zone 2, Zone 21, ATEX2 compliant

Introduction

WISE-2410X is an Explosion Proof LoRaWAN wireless condition monitoring sensor integrated with an ARM Cortex-M4 processor, LoRa transceiver, 3-axis accelerometer and temperature sensor. It balances the wireless bandwidth between WISE-2410X and the gateway, so it also mitigates the data transmission fail rates between edge-devices and gateways.

Star Topology

WISE-2410X is a LoRaWAN uses a star network topology and features a gateway data relay function between sensors and the application server. The communication between the sensors and gateway goes over the wireless channel, utilizing the LoRa physical layer, whilst the connection between the gateways and the central server are handled over a backbone IP-based network or over Modbus protocol to the application server.

Computing on Board

With an ARM Cortex-M4 Processor, WISE-2410X enables users to implement more features inside. WISE-2410X is able to calculate more complex eigenvalues itself, such as VRMS, ARMS, Peak, Displacement, Kurtosis, Crest factor, Skewness and Standard Deviation values. With its edge computing capability, WISE-2410X can balance the loading between WISE-2410X, gateway, and cloud service.

Plug & Play with 2-year Battery life cyle

WISE-2410X includes a 3.6V AA battery holders. Along with LPWAN technology verified by Advantech, the battery life on WISE-2410X can be up to 2 years with once per hour data update interval time(with 2 batteries condition only). With IP65 protection design, WISE-2410X is ideal for Low-Power Wide-Area Network (LPWAN) applications, such as pumps, HAVC system, motors, facility monitoring and more. WISE-2410X connects to Advantech's WISE Studio Utility for more user friendly and efficient installation.

All product specifications are subject to change without notice.

Common Specification

Wireless Communication

- **Frequency Band** EU 863-870 (MHz) / RU 864-870 (MHz)
  US 902-928 (MHz) / AU 915-928 (MHz)
  AS 919-924 (MHz) / TH 920-925 (MHz)
  JP 920-928 (MHz)
- **Spreading Factor** 7~12
- **Transmit Power** Up to 20dBm
- **Topology** Star (LoRa/LoRaWAN)
- **Sensitivity** -148dB
- **Data Rate** 50 kbps at FSK mode EU
  21.9 kbps at SF7 mode US/AS/AU
  5.47 kbps at SF7 mode for JP/TW

General

- **Power Input** 3.6V AA Battery (Not included)
  (Battery use only Vitzrocell Co., Ltd. SB-AA11, Li - SOCI2, 3.6V, 2.5 Ah)
- **Battery Life** 1 years (Zone21 Condition with 1 battery, once per 30mins data update interval time)
  2 years (Zone2 Condition with 2 batteries, once per 30mins data update interval time)
- **LED Indicator** Power, Tx
- **Configuration Interface** Micro-B USB
- **IP Class** IP65
- **Mounting** Stud mount, Mounting pad and Adhesives
- **Dimension (H x D)** 84.7 x 63.5 mm
- **Certification** CE (RED), FCC, NCC, TELEC, VCCI, BSMI, IECEx Zone2, Zone21 (IECEx UL 21.0053X)

Environment

- **Operating Temperature** 0°C ~ 70°C (Battery powered)
- **Operating Humidity** 10% ~ 95% RH
- **Storage Temperature** -25°C ~ 90°C
- **Storage Humidity** 5% ~ 95% RH

3-Axis Accelerometer Sensor

- **Axis** X-Y-Z
- **Frequency Range** 10~1000Hz
- **Amplitude Range** ±16g
- **Statistical Time-Domain** Velocity RMS, Acceleration (RMS & peak), Displacement, Kurtosis, Crest factor, Skewness, Standard deviation
- **Output Data Rate** 6.6kHz
- **Resolution** 10 bit (all g range)
- **Accuracy (FC =100Hz)** Under 5%
- **Noise (MAX. TA = 25°C. 0g)** ±40mg
- **Nonlinearity** ±0.5 %
- **Cross-Axis Sensitivity** ±1 %
- **Sensitivity Change Due to Temperature** ±0.02 %/°C

Temperature Sensor

- **Measurement Range (TA = 25°C)** 0°C ~ 70°C
- **Accuracy (TA = 27°C, Directly contact with heat source (Metal Base of WISE-2410)** -1°C with 70°C

Ordering Information

Smart Condition Monitoring Sensor

- **WISE-2410X-E21NA** Explosion Proof LoRaWAN Smart Vibration Sensor (IECEx Zeon21 For NA915 Band)
- **WISE-2410X-A02NA** Explosion Proof LoRaWAN Smart Vibration Sensor (ATEX2 For NA915 Band)

Firmware Image (Optional)	
9662410AJ00	WISE-2410-JA Patch
9662410AT00	WISE-2410-TA AS923 Patch
9662410AK00	WISE-2410-KA Patch
9662410AZ00	WISE-2410-ZA AU915 Patch

- **WISE-2410X-A02EA** Explosion Proof LoRaWAN Smart Vibration Sensor (ATEX2 for EU868 Band)

Firmware Image (Optional)	
96632410R00	WISE-2410-RA Patch

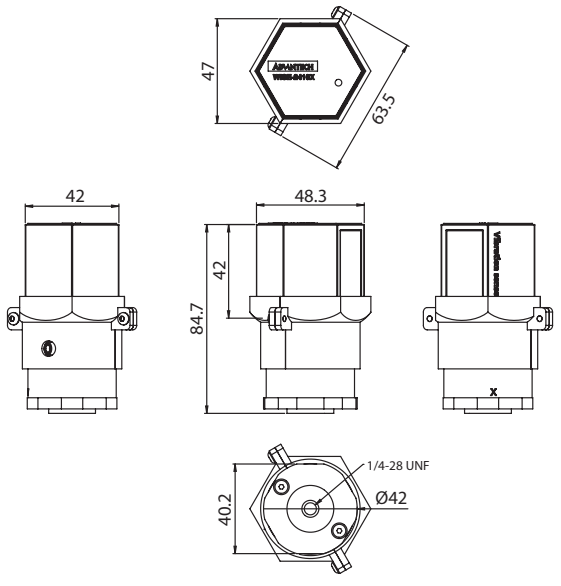
- **WISE-2410X-C12NA** Explosion Proof LoRaWAN Smart Vibration Sensor (C1D2 For NA915 Band)

LoRaWAN Gateway

- **WISE-6610-NB** LoRaWAN gateway with NA915 MHz
- **WISE-6610-EB** LoRaWAN gateway with EU868 MHz
- **WISE-6610-TB** LoRaWAN gateway with AS923 MHz
- **WISE-6610-JB** LoRaWAN gateway with JP923 MHz

Accessories

- **1760002647-01** Bat.Cylindrical 3.6V/2500mAh AA Li/SOCI2
- **25F7000004N000** Magnet base D30XH9mm for WISE-2410X installation
- **WISE-2410-MTB01** Metal base for WISE-2410X installation

Dimensions

Unit: mm