WISE-2410

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 supply, no wiring installation needed
- Easy settings with user friendly interfaces on WISE Studio utility
- ISO 10816-1 compliant
- Support wide temperature -20 ~ 80 °C (Battery-powered)
- IP66 enclosure design

Introduction

WISE-2410 is a 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-2410 and the gateway, so it also mitigates the data transmission fail rates between edge-devices and gateways.

Star Topology

WISE-2410 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-2410 enables users to implement more features inside. WISE-2410 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-2410 can balance the loading between WISE-2410, gateway, and cloud service.

Plug & Play with 2-year Battery life cyle

WISE-2410 includes two 3.6V AA battery holders. Along with LPWAN technology verified by Advantech, the battery life on WISE-2410 can be up to 2 years with once per hour data update interval time. With IP66 protection design, WISE-2410 is ideal for Low-Power Wide-Area Network (LPWAN) applications, such as pumps, HAVC system, motors, facility monitoring and more. WISE-2410 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)
  TW 920.3-923.4 (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
  5.47 kbps at SF7 mode for JP/TW

General

- **Power Input** 3.6V AA Battery *2pcs (Not included)
- **Battery Life** 2 years (once per hour data update interval time)
- **LED Indicator** Power, Tx
- **Configuration Interface** Micro-B USB
- **IP Class** IP66
- **Mounting** Stud mount, Mounting pad and Adhesives
- **Dimension (H x D)** 84.7 x 48.3 mm
- **Certification** CE (RED), FCC, NCC, TELEC, VCCI, BSMI, RCM, ANATEL

Environment

- **Operating Temperature** -20°C ~ 80°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** 6600Hz
- **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** -20°C ~ 120°C
- **Accuracy (TA = 27°C, Directly contact with heat source (Metal Base of WISE-2410)** -2°C with 85°C
  -5°C with 120°C

Ordering Information

Smart Condition Monitoring Sensor

- **WISE-2410-NB** Wireless Smart Condition Monitoring Sensor - US 902-928 (MHz)

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-2410-EB** Wireless Smart Condition Monitoring Sensor - EU 863-870 (MHz)

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

LoRaWAN Gateway

- **WISE-6610-N100-A** LoRaWAN gateway supports up to 100 nodes with 915 MHz
- **WISE-6610-E100-A** LoRaWAN gateway supports up to 100 nodes with 868 MHz
- **WISE-6610-A100-A** LoRaWAN gateway supports up to 100 nodes with 923 MHz

Accessories

- **1760002647-01** Bat.Cylindrical 3.6V/2500mAh AA Li/SOCl2
- **25F7000004N000** Magnet base D30XH9mm for WISE-2410 installation
- **WISE-2410-MTB01** Metal base for WISE-2410 installation

Dimensions

Unit: mm

