

WISE-2410

LoRaWAN Wireless Condition Monitoring Sensor

NEW



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 10816-3 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 cycle

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.

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/TW
5.47 kbps at SF7 mode for JP

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** $\pm 2/4/8/16g$
- **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)** $\pm 40mg$
- **Nonlinearity** $\pm 0.5\%$
- **Cross-Axis Sensitivity** $\pm 1\%$
- **Sensitivity Change Due to Temperature** $\pm 0.02\%/^{\circ}C$

Temperature Sensor

- **Measurement Range** -20°C ~ 120°C
- **Accuracy** -2°C with 85°C
(TA = 27°C, Directly contact with heat source
(Metal Base of WISE-2410)

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
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LoRaWAN Gateway

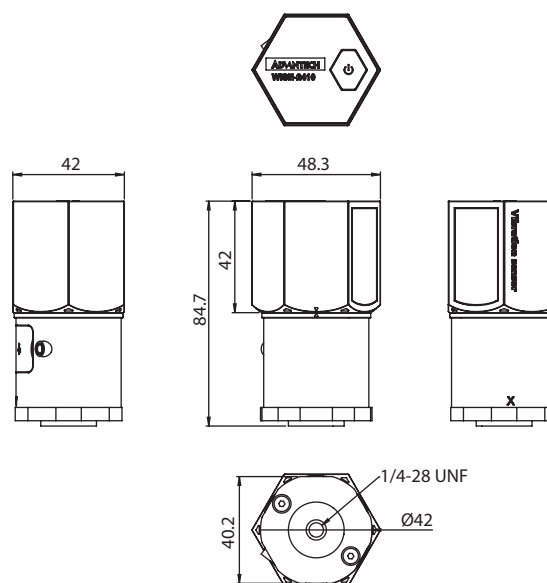
- **WISE-6610-N100-A** LoRaWAN gateway supports up to 100 nodes with 915 MHz
- **WISE-6610-E100-A** LoRaWAN gateway supports up to 100 nodes with 868 MHz
- **WISE-6610-A100-A** LoRaWAN gateway supports up to 100 nodes with 923 MHz

Accessories

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

Dimensions

Unit: mm



WISE-6610

Industrial LoRaWAN Gateway



Features

- Long-range wide area IoT gateway
- LoRaWAN protocol for closed and public system application
- Ethernet and I/O for connecting a wide array of field assets
- DIN rail and wall mounting design
- Low power consumption for solar and battery power applications
- Enhanced memory for hosting customer software applications
- Redundancy-enhanced functions for continuous data transmission

Introduction

The WISE-6610 is a high-performance LoRaWAN gateway that offers reliable connectivity for industrial environments. It supports the LoRaWAN protocol for building LoRaWAN private and public networks, as well as various protocols including MQTT. The hardware and software flexibility of the WISE-6610 provides rich features for edge intelligence systems, and its support for VPN tunneling with various protocols ensures safe communications. The WISE-6610 also provides a network server that can phase the LoRaWAN data in our device. The WISE-6610 provides the redundancy-enhanced functions to prevent connection loss.

Specifications

WSN Support

- **Standard** LoRaWAN
- **Frequency** 868/915/923MHz
- **ANT Connector** RP-SMA Male connector x 1

LAN Interface

- **Ethernet** 10/100 Mbps, auto MDI/MDIX
- **Connector** 1 x RJ45
- **Protection** 1.5-kV built-in magnetic isolation protection

Digital I/O

- **Port Type** 1x Digital Input On Voltage: 2.7V to 36V_{DC}
- **Port Connector** 4-way Molex mini-fit connector

General

- **LED Indicators** PWR, DAT, WAN, ETH
- **Reboot Trigger** Reset button

Software

- **Network and Routing** DHCP server, NAT/PAT, VRRP, dynamic DNS client, DNS proxy, VLAN, QoS, DMVPN, NTP client/server, IGMP, BGP, OSPF, RIP, SMTP, SMTPS, SNMP v1/v2c/v3, backup routers, PPP, PPPoE, SSL, port forwarding, host port routing, Ethernet bridging, network server
- **Configuration** SSH, Web Browser
- **Network Security** HTTPS, SSH, VPN tunnels, SFTP, DMZ, firewall (IP filtering, MAC address filtering, inbound/outbound port filtering)
- **VPN tunneling** Open VPN client and server and P2P, L2TP, PPTP, GRE, EasyVPN, IPSec with IKEv1 and IKEv2

Cellular Interface (WISE-6610-EXXXC/WISE-6610-AXXXC Only)

- **LTE Bit rate** 150 Mbps (DL), 50 Mbps (UL)
- **LTE Bands** B20 (800 MHz), B8 (900 MHz), B3 (1800 MHz), B1 (2100 MHz), B7 (2600 MHz)
- **3G Bit rate** 42.0 Mbps (DL), 5.76 Mbps (UL)
- **3G Bands** 900, 2100 MHz
- **No. of SIM Slots** 2 x Mini SIMs (2FF)
- **ANT Connector** 2 x RP-SMA female connectors

Cellular Interface (WISE-6610-N100C-A/N500C-A Only)

- **LTE** Cat M1
- **LTE Bit rate** 375 Kbps (DL), 375 Kbps (UL)
- **LTE FDD** B12, B13, B28 (700 MHz), B20 (800 MHz), B5, B18, B19, B26 (850 MHz), B8 (900 MHz), B4 (1700 MHz), B3 (1800 MHz), B2 (1900 MHz), B1 (2100MHz)
- **LTE TDD** B39 (1900 MHz)

Mechanics

- **Dimensions (W x H x D)** 150 x 37.5 x 83 mm (5.9" x 1.48" x 3.27")
- **Mounting** DIN rail, wall
- **Weight** 500g
- **Enclosure Rating** IP30
- **SD Card** 1 x Micro SD Card Slot (WISE-6610-XXXXC Only)

Power Requirements

- **Power Input** 9 ~ 36 V_{DC}
- **Power Connector** 4-way Molex mini-fit connector
- **Power Consumption** 8.2W-9W (9-36V_{DC}/1A)

Environment

- **Operating Temperature** -40 ~ 75°C
- **Storage Temperature** -40 ~ 85°C
- **Operating Humidity** 10 ~ 95% RH

Regulatory Approvals

- **EMC** EN61000-4-2, Level 3
EN61000-4-3, Level 3
EN61000-4-4, Level 3
EN61000-4-5, Level 3
EN61000-4-6, Level 3
EN61000-4-12, Level 3
EN61000-4-11, voltage dip: 70%
- **Shock** IEC 60068-2-27
- **Free Fall** IEC 60068-2-32
- **Vibration** IEC 60068-2-6
- **RF** FCC/RED/NCC

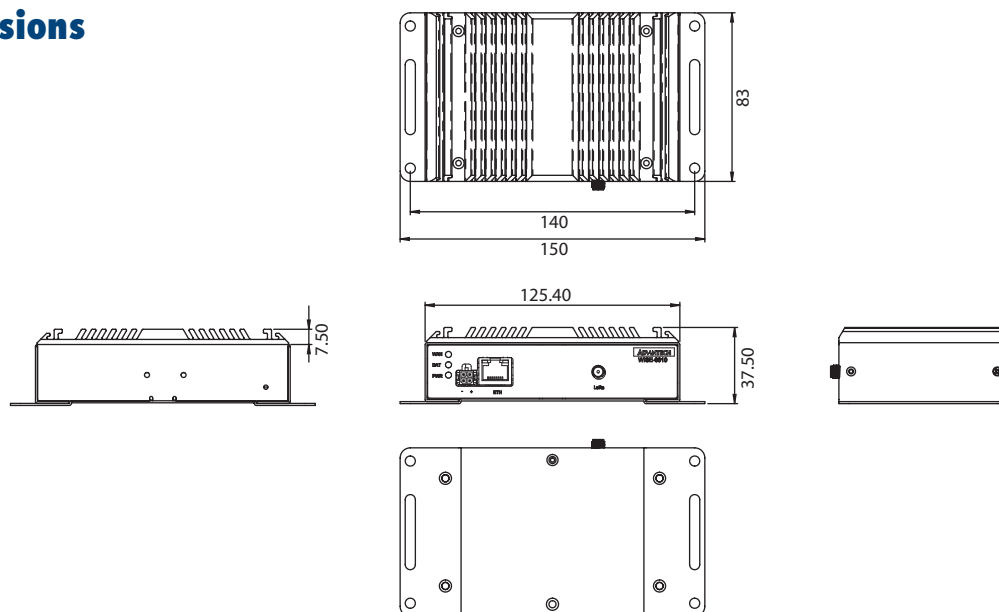
Accessories

- **Power Supply** BB-RPS-MQ4-M (not included)
- **LoRaWAN Antenna** 1750008946-01(included)
- **LTE Antenna** 1750009236-01 (cellular version included)

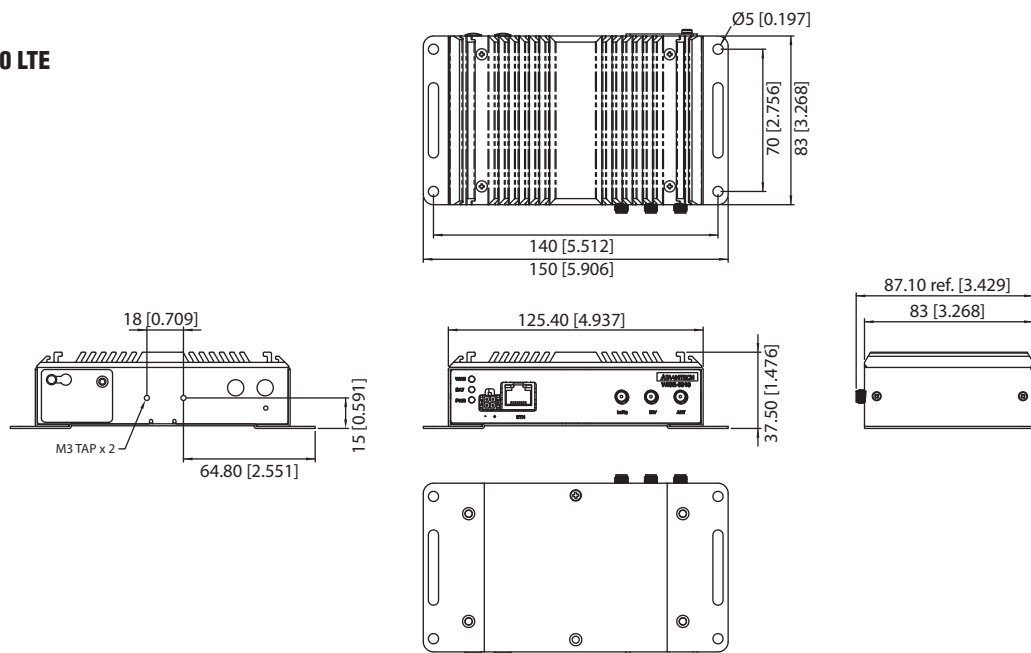
Dimensions

WISE-6610

Unit: mm [inch]



WISE-6610 LTE



Ordering Information

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|---|---|---|---|
| <ul style="list-style-type: none"> WISE-6610-N100-A | LoRaWAN gateway supports up to 100 nodes with 915 MHz | <ul style="list-style-type: none"> WISE-6610-A500C-A | LoRaWAN Cellular Gateway support up to 500 nodes with 923 MHz |
| <ul style="list-style-type: none"> WISE-6610-E100-A | LoRaWAN gateway supports up to 100 nodes with 868 MHz | <ul style="list-style-type: none"> WISE-6610-A500-A | LoRaWAN gateway supports up to 500 nodes with 923 MHz |
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