**WISE-4210-AP WISE-4210-S231 WISE-4210-S251**

# LPWAN IoT Wireless to Ethernet AP LPWAN IoT Wireless Sensor Node LPWAN IoT Wireless Sensor Node

##

**Features**

* Proprietary LPWAN with using sub-1GHz wireless frequency
* Battery power for 5 years with 3 x 3.6V AA batteries
* Up to 5 km communication range in open space
* Longer communication range than 2.4GHz
* Better penetration through concrete and steel than 2.4GHz
* Less interference than 2.4GHz spectrum
* Application-ready I/O combination with modularization design

**Introduction**

LPWAN, created for machine-to-machine (M2M) and Internet of things (IoT) networks, is not a single technology, but a variety of low-power, wide area network technologies. Compare with traditional mobile network, LPWAN is known as lower cost with higher power efficiency. WISE-4210 series is the proprietary LPWAN which provides better connection compare with traditional 2.4G WiFi, WISE-4210 series is helpful of eliminating network interference.

Additionally, WISE-4210 utilize a LPWAN(low-power, wide-area networks) wireless interface, which has a kilometer-long communication distance and battery power. The features of LPWAN make WISE modules ideal solutions for energy and environment monitoring.

### Reduced Interference and Extended Communication Range

Compared with Wi-Fi, Bluetooth, Zigbee, or other 2.4GHz wireless interfae, a sub-GHz interface can reduce interference at sites. Moreover, Sub-GHz is a type of LPWAN designed for long-range communications. Under the same power consumption, sub-GHz offers a longer communication range with low data rate than other 2.4 GHz. technologies.

### Powered by a 3.6V AA Lithium Battery

The low power consumption of sub-GHz enables the sensor node to be powered by a battery. With a 3.6V AA Lithium battery, the sensor node can maintain communication at a distance of 5 km for up to 5 years, thereby eliminating the need to recharge or change batteries.

### MQTT and RESTful API IoT Protocol Support

IoT Wireless sensor nodes are designed for not only automation applications but also IoT applications that may use MQTT or RESTful web API IoT protocols for cloud integrations.

### Azure IoT Hub Support

To provide a complete IoT sensing solution, the WISE-4210 series goes beyond being a wireless communication interface for sensors—it also provides cloud connectivity for additional user applications. With support for HTTPS and integrated APIs for Azure IoT Hub, the WISE-4210 series can automatically push data to the cloud without requiring an IoT gateway.

Private Server

**Modbus MQTT RESTful**

**LPWAN AP**

WISE-4210-AP

##

5 years

5 km

### Star Topology

Star topology, also known as star network, is the most common network setup. In star topology, every node connects to a central network device which means WISE-4210-S200 series nodes acts as clients should be connected with WISE-4210-AP. In this configuration, user can organize their own network with 64 nodes paired. Data on a star network pass through WISE-4210-AP before continuing to its destination. WISE-4210-AP with a LAN cable manages and controls most of all functions of the network.

X64

#### LPWAN Sensor Node

WISE-4210-S200 Series

####  Wireless IoT Sensing Devices

All product specifications are subject to change without notice. Last updated: 29-Nov-2018

# Common Specification

### Wireless Communication

* **IEEE Standard** 625bps: IEEE 802.15.4g FSK Modulation

50kbps: IEEE 802.15.4g GFSK Modulation

 **Frequency Band** AS923: 923MHz (920.60~924.60), BW: 400kHz

### Serial Port

##### Port Number 1

* **Type** RS-485
* **Data Bits** 7, 8
* **Stop Bits** 1, 2
* **Parity** None, Odd, Even

# WISE-4210

EU868: 868MHz (865.00~869.00), BW: 400kHz UN433: 433MHz (433.05~434.55), BW: 300kHz

* **Antenna Gain** 902~928MHz:1.33 dBi 863~870MHz:2.19 dBi
* **Data Rate** 625bps, 50kbps
* **Outdoor Range** 625bps: 5 km with line of sight

50kbps: 2 km with line of sight

* **Topology** Star
* **Network Capacity** 64 clients

### General

* **Power Input** AP: 10 ~ 50 VDC

Sensor Node: 3 x AA, 3.6V Lithium Battery or 10 ~ 50 VDC

* **Battery Life** 625bps: 5 years with 10 minute update rate

50kbps: 5 years with 1 minute update rate

##### Configuration Interface

 **Baud Rate (bps)** 1200, 2400, 4800, 9600, 19200, 38400, 57600,

115200

 **Protocol** Modbus/RTU (Total 32 address by max. 8 instructions)

# Pin Assignment

### WISE-4210-AP WISE-4210-S231 WISE-4210-S251



**Ordering Information**

* AP: LAN port

Sensor Node: Micro-B USB

* **LED Indicator** Status, Error, Tx, Rx, Battery/Signal Level
* **Mounting** DIN 35 rail, wall, pole and stack
* **Dimension (W x H x D)** 70 x 102 x 38 mm
* **Certification** CE (RED), FCC, IC, NCC, TELEC

### Environment

* **Operating Temperature** -25 ~ 70°C
* **Operating Humidity** 5 ~ 95% RH
* **Storage Temperature** -40 ~ 85°C
* **Storage Humidity** 0 ~ 95% RH

# WISE-4210-AP

### General

* **Ethernet** RJ-45 (for configuration and data query)
* **RS-485** Data+, Data- (for query node data)
* **Messaging Protocol** Modbus/TCP, Modbus/RTU, REST, MQTT
* **Application Protocol** HTTP, HTTPS, SNTP, DHCP
* **Transport Protocol** TCP, UDP

##### Supports RESTful Web API in JSON format

* **Supports Web Server in HTML5**

**WISE-4210-S231**

**Temperature Sensor**

 **Operating Range** -25°C ~ 70°C (-13°F ~ 157.9°F)

* **Resolution** 0.1 (°C/°F/K)
* **Accuracy** ±1.0°C (±1.8°F) (vertical installation)

### Humidity Sensor

* **Operating Range** 10 ~ 90% RH
* **Resolution** 0.1% RH
* **Accuracy** ±4% RH @ for 0%~50% RH

±6% RH @ 50%~60% RH

±10% RH @ 60%~90% RH

# WISE-4210-S251

### Digital Input

* **Channels** 6 (Dry Contact)

##### Supports 32-bit counter input function (maximum signal frequency 200Hz)

* **Supports keep/discard counter value on power-off**
* **Support inverted digital input status**

**Wireless Access Point**

* **WISE-4210-APNA\*** LPWAN Wireless to Ethernet AP – AS923/EU868
* **WISE-4210-APUA** LPWAN Wireless to Ethernet AP – UN433

### Wireless Sensor Node

* **WISE-4210-S231NA\*** LPWAN WSN with Temp/RH Sensors – AS923/EU868
* **WISE-4210-S251NA\*** LPWAN WSN with 6DI and RS-485 – AS923/EU868
* **WISE-4210-S231UA** LPWAN WSN with Temp/RH Sensors – UN433
* **WISE-4210-S251UA** LPWAN WSN with 6DI and RS-485 – UN433

### Accessories

* **1760002647-01** Bat.Cylindrical 3.6V/2500mAh AA Li/SOCl2

 **1750008836-01** 863-870MHz Dipole Antenna for WISE-4210

 **1750008837-01** 902-928MHz Dipole Antenna for WISE-4210

\* AS923/EU868 version of WISE-4210 need to order antenna separately

Side View

Front View

38

Unit: mm

**Dimensions**

70

163

275

 **Online Download** [www.advantech.com/products](http://www.advantech.com/products)

102