# WISE-4250

## Wi-Fi 2.4/5 GHz 802.11 a/b/g/n/ac I/O and Sensor Module


## Features

- Wi-Fi Dual band 2.4/5 GHz up to 802.11 a/b/g/n/ac
- Supports interchangeable I/O and Sensor module
- Supports smart roaming function
- MQTT, Modbus/TCP, SNMP, SNTP, TCP/IP, HTTP, HTTPS, UDP, and DHCP protocols supported
- Supports WPA3 /TLS1.3 encryption protocol
- UDP based AES-128 encrypted wireless P2P (Peer to Peer) function
- Easy configuration done with web UI with mobile devices and PC
- 10000+ data logger with SNTP/RTC time sync and WDT auto connection recovery
- Supports Dropbox, WebAccess, Azure, AWS, and other cloud services
- Supports RESTful API for IoT integration

## Introduction

The WISE-4250 series is an Ethernet-based wireless IoT device, compatible with various I/O and sensors and integrated with IoT data acquisition, processing, and publishing functions and can communicate with different WISE devices via P2P function. Wireless watchdog timer, smart roaming, timestamps data logger and data recovery functions can enhance connection quality and solve risks from data loss. Data and connections can also be protected via WPA3 /TLS1.3 encryption protocol, it can be accessed via PC and mobile devices and be published to diverse type of cloud.

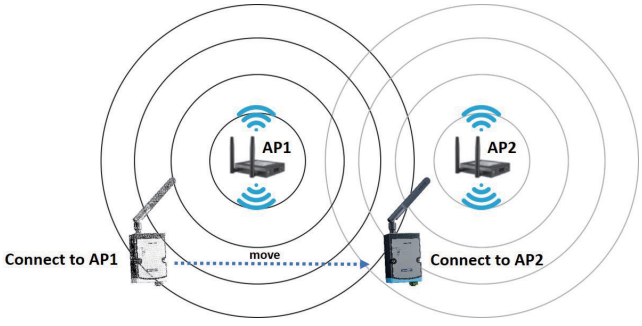
## Features

### IEEE 802.11 a/b/g/n/ac 2.4/5GHz Wi-Fi with AP Mode

The Wi-Fi interface is easily integrated with wired or wireless Ethernet devices, users only need to add a wireless router or AP to extend existing Ethernet network to wireless. The limited AP mode enables the WISE-4250 to be accessed via other Wi-Fi devices directly as an AP.

### Smart Roaming

This function help WISE-4250 series communicate and connect to surrounding AP much more flexibly and effectively to prevent long disconnection idle time and setup more stable network. 802.11 k/v/r are also supported to help on better signal strength management in advance and faster connection time.



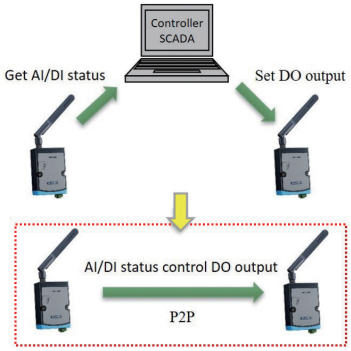

### Data Logger and Recovery

The WISE-4250 can log 10000+ data with time stamp and system log normally or if there's any wireless dis-connection gap. Once the memory is full, users can choose to overwrite the old data to ring log or just stop the log function. This function helps no missing data and help tracking complete data.


### Peer to Peer (P2P)

The function can help send signals from one module to another module remotely, periodically and change of status, AI/DI to DO. It support basic mode for one target module/channel and advanced mode for multiple target modules/channels.

The data support UDP protocol (ASCII command) and can be encrypted with AES-128.





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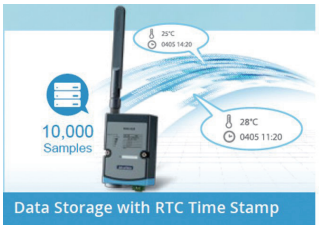
### HTML5 Web Configuration Interface

All the configuration interfaces are applied in web service, and the web pages are based on HTML5, so users can configure the WISE-4250 without the limitation of OS/devices. You can use your mobile phone or tablet to directly configure the WISE-4250.


### RESTful Web Service with Security Socket

As well as supporting Modbus/TCP, the WISE-4250 also supports IoT communication protocol, RESTful web service. Data can be polled or even be pushed automatically from the WISE-4250 when the I/O status is changed. The I/O status can be retrieved over the web using JSON. The WISE-4250 also supports HTTPS which has security that can be used in a Wide Area Network (WAN).



Data Storage with RTC Time Stamp

Public and Private Cloud Connectivity

## Specifications

### General

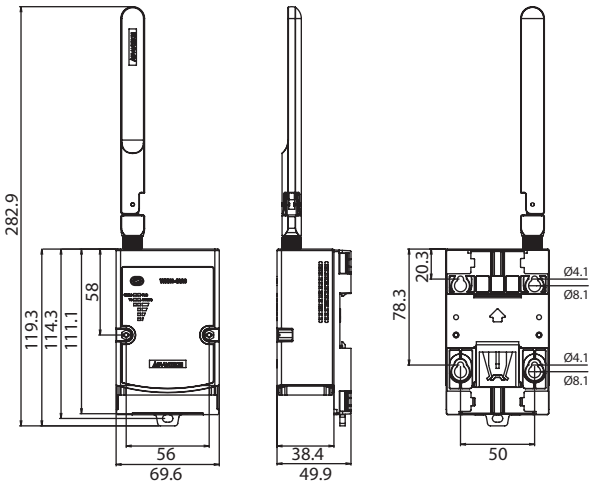
- **WLAN Standard** IEEE 802.11a/b/g/n/ac
- **Modulation** 802.11b : CCK(11, 5.5Mbps), DQPSK(2Mbps), BPSK(1Mbps)
  802.11a/g/n/ac : OFDM
- **Transmit Power** 2.4 GHz
  802.11b: 16.0 dBm ±2dBm
  802.11g: 14.0 dBm ±2dBm
  802.11n: 12.0 dBm ±2dBm
  5 GHz
  802.11a: 13.0 dBm ±2dBm
  802.11n: 10.0 dBm ±2dBm
  802.11ac: 8.0 dBm ±2dBm
- **Wireless Security** X.509(TLS1.2/1.3), WPA2/WPA3 Personal and Enterprise
- **Antenna** Connector: Reverse SMA
  Gain (Peak): 2.4G 3.64 dBi / 5G 5.65 dBi
- **Connectors** Plug-in-and-play I/O and sensor modules
- **Watchdog Timer** System (1.6 second) and Communication (programmable)
- **Certification** CE, FCC, IC, TELEC
- **Dimensions (W x H x D)** 70 x 102 x 38 mm
- **Enclosure** PC
- **Mounting** DIN 35 rail, wall, stack, and pole
- **Power Input** 10 ~ 50 $V_{DC}$
- **Power Consumption** 1.6W @ 24 $V_{DC}$
- **RTC Accuracy** ±2 second/day
- **Cloud** Dropbox, WebAccess, Azure, AWS, EdgeSync 360, Aliyun, etc.
- **Support wireless P2P (Peer to Peer) with AES-128 encryption and UDP protocol**
- **Support MQTT data recovery function**
- **Support smart roaming function and 802.11k/v/r**
- **Supports User Defined Modbus Address**
- **Power Reversal Protection**
- **Supports Data Log Function** 10000+ samples with SNTP/RTC sync time stamp
- **Supported Protocols** Modbus/TCP, TCP/IP, SNMP, SNTP, UDP, DHCP, HTTP, HTTPS, and MQTT
- **Supports RESTful Web API in JSON format**
- **Supports Web Server in HTML5 with JavaScript & CSS3**
- **Supports System Configuration Backup and User Access Control**

### Environment

- **Operating Temperature** -25 ~ 70°C (-13~158°F)
- **Storage Temperature** -40 ~ 85°C (-40~185°F)
- **Operating Humidity** 10 ~ 85% RH (non-condensing)
- **Storage Humidity** 0 ~ 60% RH (non-condensing)

## Dimensions

Unit: mm




## Supported I/O module

## WISE-S214 (4AI/4DI)

### Analog Input

- **Channels** 4
- **Resolution** 16bits Bipolar; 15bits Unipolar
- **Sampling Rate** 10Hz (Total) with 50/60Hz Rejection
- **Accuracy** ±0.1% for Voltage Input; ±0.2% for Current Input
- **Input Range** 0~150mV, 0~500mV, 0~1V, 0~5V, 0~10V, ±150mV, ±500mV, ±1V, ±5V, ±10V, 0~20mA, ±20mA, 4-20mA
- **Input Impedance** >1MΩ (Voltage)
  120 Ω (External resistor for current)
- **Support Data** Max/min, Scaling and Averaging
- **Support burn out detection**

### Digital Input

- **Channels** 4 Dry Contact (Wet Contact by request for customization)
- **Logic Level** 0: Open
  1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Supports keep/discard counter value on power-off**
- **Support inverted digital input status**
- **Support configuration by each channel**
- **Support digital filter (min 0.1ms)**
- **Support high-to-low and low-to-high latch**

## WISE-S250 (6DI, 2DO& 1RS-485)

### Digital Input

- **Channels** 6 Dry Contact (Wet Contact by request for customization)
- **Logic Level** 0: Open
  1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Supports 3kHz Frequency Input**
- **Supports 3kHz Counter Input (32-bit + 1-bit overflow)**
- **Supports keep/discard counter value on power-off**
- **Support inverted digital input status**
- **Support configuration by each channel**
- **Support digital filter (min 0.1ms)**
- **Support high-to-low and low-to-high latch**

### Digital Output (Sink Type)

- **Channel** 2
- **Output Current** 100 mA
  At 0 -> 1: 100 us
  At 1 -> 0: 100 us
  (for Resistive Load)
- **Supports Pules Output** 5 kHz
- **Max. Load Voltage** 30V
- **Support pulse high/low width and duty cycle adjustment**
- **Support high to low and low to high delay time setup**

### Serial Port

- **Port Number** 1
- **Type** RS-485
- **Data Bits** 8
- **Stop Bits** 1, 2
- **Parity** None, Odd, Even
- **Baud Rate (bps)** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protocol** Modbus/RTU (Total 64 addresses by 30 max. instructions)
- **Support Server response timeout and Delay between Polls setting**

## WISE-S251 (6DI/1RS-485)

### Digital Input

- **Channels** 6 Dry Contact (Wet Contact by request for customization)
- **Logic Level** 0: Open
  1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Supports keep/discard counter value on power-off**
- **Support inverted digital input status**
- **Support configuration by each channel**
- **Support digital filter (min 0.1ms)**
- **Support high-to-low and low-to-high latch**

### Serial Port

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- **Baud Rate (bps)** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protocol** Modbus/RTU (Total 64 addresses by 30 max. instructions)
- **Support Server response timeout and Delay between Polls setting**

## WISE-S232 (Temperature & Humidity Sensor)

### Temperature Sensor

- **Operating Range** -40°C ~ 125°C (-40°F ~ 257°F)
- **Resolution** 0.1 (°C)
- **Accuracy** ±0.2°C (vertical installation)

### Humidity Sensor

- **Operating Range** 0 ~ 100% RH
- **Resolution** 0.1% RH
- **Accuracy** ±2% RH @ 0%~25% RH at 25°C
  ±1.8% RH @ 25%~75% RH at 25°C
  ±2% RH @ 75%~100% RH at 25°C

The sensor cover includes a special membrane that effectively filters dust particles from the environment and can be removed for washing.

# Ordering Information

### Wi-Fi 2.4/5GHz Wireless I/O Module

- **WISE-4250-A** Wi-Fi 5 2.4/5GHz Wireless I/O Module

### WISE I/O Module

- **WISE-S214-A** 4AI/4DI
- **WISE-S250-A** 6DI, 2DO & 1RS-485
- **WISE-S251-A** 6DI & 1RS-485
- **WISE-S200/S400** can be customized based on requirement
- **WISE-S232** Temperature & Humidity Sensor

### Accessories

- **96PSD-A30W24-DS** DIN Rail Power Supply (1.25A Output Current)
- **BB-RPS-V2-WR2-US** Power Supply, 12V/1A, US plug
- **BB-RPS-V2-WR2-EU** Power Supply, 12V/1A, EU plug
- **1750008648-01** 2.4/5GHz External Dipole Antenna, Peak Gain: 2.4G 3.64 dBi / 5G 5.65 dBi
- **1750008767-01** Magnetic Antenna Extend Cable Base 150cm
- **1760000897-11** RTC Battery 3V/200 mAh with Cable Connector
- **EKI-6333AC-2G** IEEE 802.11 a/b/g/n/ac Concurrent Dual-Band Wi-Fi AP/Client