WISE-4250AS

Industrial Wi-Fi 2.4G/5G Wireless I/O Module driving with Azure Sphere

Features

- 2.4GHz/5GHz Wi-Fi reducing the wiring cost during big data acquisition
- IEEE 802.11 a/b/g/n with dual band 1T1R support
- Build-in security subsystem with its own dedicated Cortex-M4F core for secure boot and secure system operation
- Secure Over The Air (OTA) updates infrastructure
- Robust application deployment
- Reliable System software updates

Introduction

The WISE-4250AS series is an Ethernet-based wireless IoT device, integrated with IoT data acquisition, processing, and publishing functions. As well as various I/O and sensor types, the WISE-4250AS series is programmable to provide data pre-scaling, data logic, and data logger functions. The device is powered by Microsoft with Azure Sphere inside.

Azure Sphere is an end-to-end solution for securing MCU powered devices, from silicon partners, with built-in Microsoft security technology provide connectivity and a dependable hardware root of trust. The Azure Sphere Security Service renews device security in several ways.

Secure Over The Air (OTA) updates infrastructure

- Cloud infrastructure can deliver updates to Azure Sphere devices around the world

Robust application deployment and updates

- Customer written applications are signed, deployed and updated by the customer using the Azure Sphere cloud.
- Attestation authorizes only genuine software to execute on device.

Reliable System software updates

- Microsoft automatically manages updating device software to help ensure secure device operation.
- Updates are delivered privately to device creators first to test updates

How Does WISE-4250AS Work

Advantech offer the high adaptability interchangeable I/O module and sensors as well as the I/O configuration and SDK by each model. Users can follow the examples to compile their own codes for the device to ensure all compatibility and functionality of the hardware device.

Following is that end users or system integrator claim the device to their Azure Sphere tenant by developing the integrated application based on Advantech device and Microsoft software stack. Please take note that claiming is a one-time operation that you cannot undo even if the device is sold or transferred to another person or organization. A device can be claimed only once. Once claimed, the device is permanently associated with the Azure Sphere tenant.

One of the features of the WISE-4250AS is its advanced end-to-end IoT security with Microsoft Visual Studio IDE for not only accelerated application software development and debugging but also provide the application development by function.

Specifications

WISE-4250AS (WiFi IoT Modular I/O)

Wireless Specification

- **WLAN Standard** IEEE 802.11a/b/g/n
- **Frequency Band** 2.4GHz/5GHz ISM Band
- **Transmit Power** 802.11a: 13dBm Typ.
  802.11b: 15dBm Typ.
  802.11g: 15dBm Typ.
  802.11n(2.4GHz): 15dBm Typ.
  802.11n(5GHz): 13dBm Typ.
- **Antenna** Chip antenna with 2.2dBi peak gain
- **Certification** FCC, CE
- **Dimensions (W x H x D)** 70 x 102 x 38 mm
- **Enclosure** PC
- **Mounting** DIN 35 rail, wall, stack, and pole

General Specification

- **Power Input** 10 ~ 50 V_{DC}
- **Power Consumption** 3W @24V_{DC}
- **Power Reversal Protection**
- **Supports User Defined Modbus Address**

Environment

- **Operating Temperature** -25 ~ 70°C (-13~158°F)
- **Storage Temperature** -40 ~ 85°C (-40~185°F)
- **Operating Humidity** 20 ~ 95% RH (non-condensing)
- **Storage Humidity** 5 ~ 95% RH (non-condensing)

WISE-4250AS-S231 (Built-in Temperature and Humidity Sensor)

Temperature Sensor

- **Operating Range** -25°C ~ 70°C (-13°F ~ 157.9°F)
- **Resolution** 0.1 (°C/°F/K)
- **Accuracy (Typ.)** ±2.0°C (±35.6°F) (vertical installation)

Humidity Sensor

- **Operating Range** 10 ~ 90% RH
- **Resolution** 0.1% RH
- **Accuracy (Typ.)** ±4% RH @ 10%~50% RH
  ±6% RH @ 50%~60% RH
  ±10% RH @ 60%~90% RH

WISE-S214 (4AI/4DI)

Analog Input

- **Channels** 4
- **Resolution** 16bits Bipolar; 15bits Unipolar
- **Sampling Rate** 10Hz (Total) with50/60Hz 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); 240 Ω (External resistor for current)
- **Support Data** Scaling and Averaging

Digital Input

- **Channels** 4 (Dry Contact)
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Support inverted digital input status**

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

Digital Input

- **Channels** 6 (Dry Contact)
- **Supports 3kHz Frequency Input**

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

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 32 addresses by 8 max. instructions)

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

Digital Input

- **Channels** 6 (Dry Contact)
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Support inverted digital input status**

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 32 address by max. 8 instructions)

Ordering Information

Wi-Fi 2.4G/5G Wireless I/O Module

- **WISE-4250AS-A** 2.4G/5G WiFi IoT Wireless Modular I/O
- **WISE-4250AS-S231-A** 2.4G/5G WiFi IoT Wireless Modular I/O with Temperature & Humidity Sensor

WISE-S200 Modular I/O for WISE-4200 Series

- **WISE-S214-A** 4AI/4DI
- **WISE-S250-A** 6DI, 2DO & 1RS-485
- **WISE-S251-A** 6DI & 1RS-485

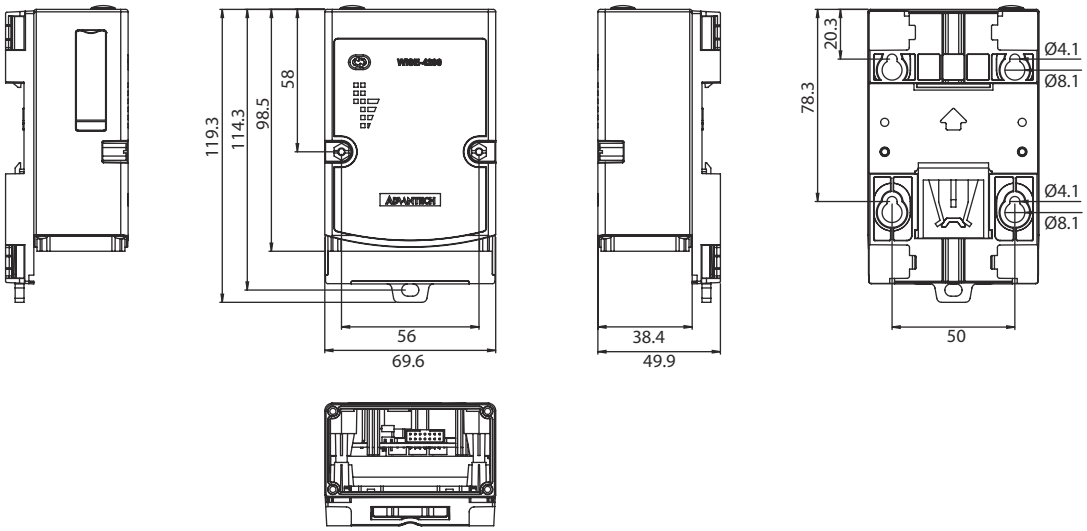
Accessories

- **PWR-242-AE** DIN Rail Power Supply (2.1A Output Current)
- **PWR-243-AE** Panel Mount Power Supply (3A Output Current)
- **PWR-244-AE** Panel Mount Power Supply (4.2A Output Current)

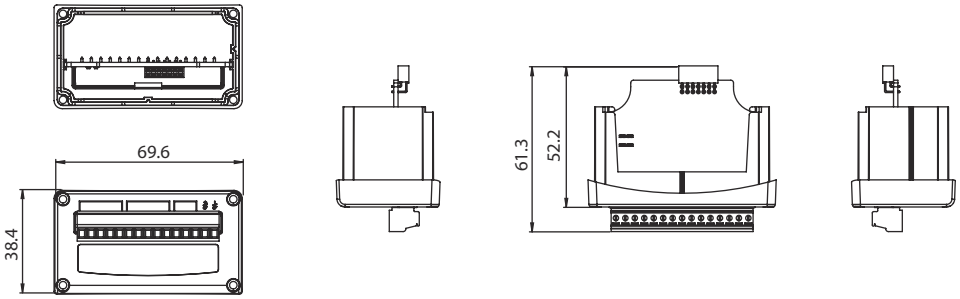
Dimensions

Unit: mm

WISE-4250AS



WISE-S200 I/O



WISE-4250AS-S231