

User Manual



WISE-4671

Advanced Industrial Cat.NB1/ Cat.M1 Wireless IO Module



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Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers are billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product is defective, follow the steps outlined below.

- Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
- 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
- If your product is diagnosed as defective, obtain a return merchandize authorization (RMA) number from your dealer. This allows us to process your return more quickly.
- 4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and proof of the purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
- 5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Part No. 2003E46700

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Declaration of Conformity

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from damage due to electrostatic discharge (ESD) and electromagnetic interference (EMI) leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

Technical Support and Assistance

- 1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
- Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

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Warnings, Cautions, and Notes

Warning! Warnings indicate conditions that if not observed may cause personal injury!





Caution! Cautions are included to help prevent hardware damage or data losses. For example, "Batteries are at risk of exploding if incorrectly installed." Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions."

Note!

Notes provide additional optional information.



Document Feedback

To assist us with improving this manual, we welcome all comments and constructive criticism. Please send all feedback in writing to support@advantech.com.

Packing List

Before system installation, check that the items listed below are included and in good condition. If any item is missing or damaged, contact your dealer immediately.

- 1 x WISE-4671 Wireless I/O Module
- 1 x Antenna
- 1 x Mounting Bracket
- 1 x WISE-4671 Startup Manual

Note!

I/O boards for pairing with WISE-4671 are available for order



- WISE-S614 4AI/4DI with M12 Connectors
- WISE-S614T 4AI/4DI with Terminal Block
- WISE-S615 4RTD with M12 Connectors
- WISE-S615T 4RTD with Terminal Block
- WISE-S617 2AI/2DI/1DO/1RS-485 with M12 Connectors
- WISE-S617T 2AI/2DI/1DO/1RS-485 with Terminal Block
- WISE-S672 6DI/1RS-485/1RS-485 or RS-232 with M12 Connectors

Note!

A micro-B USB cable for configuring WISE-4671 nodes is available for



1700023619-01 Micro USB type-B male to USB type-A male cable, 1 M

Note!

An M12 connector and cable for I/O or power wiring is available for order:



- **1654011516-01** M12, A-code, 8 Pin, Male
- 1655005903-01 M12, A-code, 4 Pin, Female
- 1700028162-01 M12, A-code, 4 pin, Female with 1M cable
- 1700028163-01 M12, A-code, 8 Pin, Male with 1M cable

Safety Instructions

- 1. Read these safety instructions carefully.
- 2. Retain this user manual for future reference.
- 3. Disconnect the equipment from all AC outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
- 4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
- 5. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
- 6. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
- 7. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
- 8. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
- 9. All cautions and warnings on the equipment should be noted.
- 10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
- 11. Never pour liquid into an opening. This may cause fire or electrical shock.
- 12. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
- 13. If one of the following occurs, have the equipment checked by qualified service personnel:
- The power cord or plug is damaged.
- Liquid has penetrated the equipment.
- The equipment has been exposed to moisture.
- The equipment is malfunctioning, or does not operate according to the user manual.
- The equipment has been dropped and damaged.
- The equipment shows obvious signs of breakage.
- 14. Do not leave the equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this may cause damage. The equipment should be kept in a controlled environment.
- 15. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
- 16. According to IEC 704-1:1982 standards, the sound pressure level at the operator's position does not exceed 70 dB (A).

DISCLAIMER: These instructions are provided in accordance with IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precautions - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

Disconnect the power supply before making any configuration changes. The sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

NCC 警语

根據低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾 現象時,應立即停用,並改善至無干擾時方得繼續使用。前項合法通信,指依電信法 規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波 輻射性電機設備之干擾。

電磁波警語標示:

「減少電磁波影響,請妥適使用」。

「本產品支援 LTE Cat NB1/M1 B3/8/28」。

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Industry Canada statement:

This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) the device may not cause harmful interference, and (2) the device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

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Chapter

Product Introduction

1.1 NB-IoT (Cat. NB) and LTE-M (Cat.M)

NB-IoT and LTE Cat. M1 are new wireless technologies included in the 5G evolution of cellular technology standards defined by the 3rd Generation Partnership Project (3GPP).

NB-IoT and LTE Cat. M1 feature low power consumption and utilize LTE networks based on licensed spectrum bands. These technologies are optimized for connectivity to machines, assets and sensors in order to enable IoT applications such as smart cities, smart agriculture and remote asset management.

WISE-4671 series is a cellular based IoT wireless sensor node compliant with LTE Cat. NB1 and Cat. M1 with external for flexible installation. In addition to offering various I/O types, WISE-4671 series provides a data logger and direct cloud connectivity so that data can be published to the cloud by messaging protocol such as MQTT, CoAP, LwM2M with secure socket supported.

WISE-4671 follows MQTT's publish and subscribe messaging model which is ideal for low bandwidth, high latency, and data limits. Additionally, as an IoT device, WISE-4671 also supports lightweight protocols such as CoAP, which are suitable for small devices that are unable to communicate efficiently with limited resources. As MQTT and CoAP are popular standards in the market, the data format can raise concern over messaging protocols. Accordingly, WISE-4671 also supports the LwM2M protocol which has the management interface built on top of CoAP to enable device management operations.

There is also the official publication of OMA LwM2M2 Objects and Resources to alleviate data inter-compatiblity concerns. LwM2M is a protocol offering flexible and scalable device management with improved time to the market; especially for low power devices with constrained processing and storage capabilities.

1.2 WISE-4671 Feature Highlights

Advantech's WISE-4671 NB-IoT/LTE-M wireless I/O module can be configured to support either NB-IoT or LTE-M using the WISE Studio utility via a USB port.

For advanced industrial applications, WISE-4671 can be equipped with optional GPS, a solar rechargeable battery, and an IP65-rated enclosure to protect from water and dust ingress.

The WISE-4671 wireless I/O module features an intelligent modular design that supports various I/O configurations according to usage requirements. This allows users to easily integrate their desired I/O module (WISE-S614, WISE-S614T etc.) with the WISE-4671 module.

1.3 WISE Series Family

Function	Model Description			
NB-IoT/LTE-M Wire- less I/O Module	WISE-4671	Advanced Industrial Cat.NB1/Cat.M1 Wireless IO Module		
	WISE-S614	4AI & 4DI (M12 Connectors, IP65)		
	WISE-S614T	4AI & 4DI (Terminal Block)		
	WISE-S615	4RTD (M12 Connectors)		
I/O Module	WISE-S615T	4RTD (Terminal Block)		
I/O Module	WISE-S617	2AI, 2DI, 1DO & 1RS-485 (M12 Connectors, IP65)		
	WISE-S617T	2AI, 2DI, 1DO & 1RS-485 (Terminal Block)		
	WISE-S672	6DI, 1RS-458, 1RS-458 or 1RS-232 (M12 Connectors, IP65)		

System Diagram & Battery Switch 1.4

Advantech's WISE-4671 NB-IoT /LTE-M wireless I/O module can be configured to support either NB-IoT or LTE-M using the WISE Studio utility via a USB port.

For advanced industrial applications, WISE-4671 can be equipped with optional GPS, a solar rechargeable battery, and an IP65-rated enclosure to protect from water and dust ingress.

The WISE-4671 wireless I/O module features an intelligent modular design that supports various I/O configurations according to usage requirements. This allows users to easily integrate their desired I/O module (WISE-S672, WISE-S614 etc.) with the WISE-4671 module.

There are three ways to power up the WISE module, battery power, solar panel power and line power. Open the rubber cover on the side of the WISE module and you will see a battery switch for turning on/off the battery power. Solar power not only recharges the battery but also powers up the device. Please refer to the application wiring section for solar panel power and line power pin assignment. Also, there is a USB port for the device configuration via WISE Studio but please note that the WISE device cannot be powered via USB.

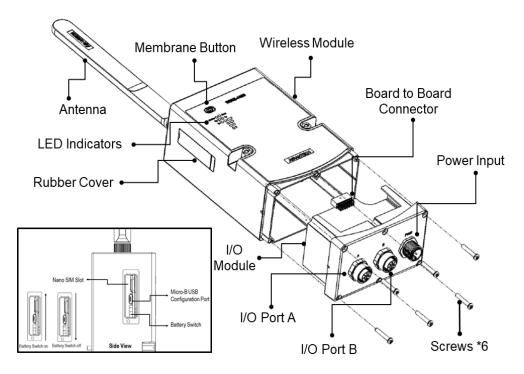


Figure 1.1 WISE-4671 System Diagram & Battery Switch

Note! Turn on the battery switch to recharge the battery.



1.5 LED Indicators

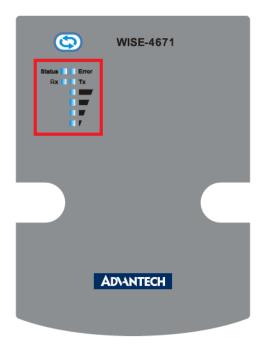


Figure 1.2 WISE-4671 LED Indicators

	LED	Color	Indication		Behavior		
	Status	Green		2 Hz	No NB-IoT network connection.		
			Blink	0.5 Hz	NB-IoT network connection is successfully initialized.		
	RF RX	Green	On		Receiving data via the NB-IoT network.		
	IXI IXX		Off		Idle		
	RF TX	Yellow	On		Sending data via the NB-IoT network.		
	RF IX		Off		Idle		
	Error	Red		2 Hz	a. RF related error with 4 th (Full) signal strength LED 2 Hz blinking.		
			Blink		b. I/O related error with 3 rd (Good) signal strength LED 2 Hz blinking.		
Upper Board				0.5 Hz	a. Battery related error.b. Low battery voltage (v <= 20%)		
(RF)			Off		No error		
	Signal Strength	Green	ON (normal)		4 ON: Full signal (RSRP Index > 56) (-85 dBm < RSRP) 3 ON: Good signal (RSSP Index >= 47) (-94 dBm ≤ RSRP ≤-85 dBm) 2 ON: Okay signal (RSRP Index >= 37) (-104 dBm ≤ RSRP≤-95 dBm) 1 ON: Poor signal (RSRP Index >= 0) (RSRP ≤-105 dBm) ALL OFF: No signal (Not registered to network, or registration denied)		
			ON (if Press Membrane Button)		Main battery remain capacity All OFF – v <= 20 % 1 ON – 20% < v < 40% 2 ON – 40% <= v < 60% 3 ON – 60% <= v < 80% 4 ON – v >= 80%		

If WISE-4671 is powered by battery, the LED indicators will turn off after Note! 15 seconds for power saving.



1.6 Membrane Button

There is a membrane button on the WISE-4671 front panel that can be used to configure between operating modes and light up the LED indicators. Please see the membrane button and behavior diagrams below.

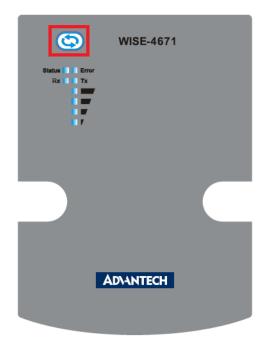


Figure 1.3 WISE-4671 Membrane Button

External Line Power Mode

When the battery is powered up (when the device is in "Line Power" only, or "Line Power" and "Battery Power" mode) the signal strength indicators will show battery capacity when pressing the membrane button, and will off after a while for power saving.

Push the button again to show the signal strength.

If there is no external line power and the battery is powering the device, the device will go into "battery power only mode."

Battery powered only Mode

In battery powered only mode, the LED indicators will display the device status after 25 seconds. The signal strength will be shown by the LED indicators when turning on the battery powered device.

After 25 seconds, the LED will go off for power saving.

Press the membrane button again and the 4 signal strength LED indicators will show the battery level after 25 seconds.

Press the button again and the LED will go off.

When the LED goes off, pressing the button again will make the 4 LED indicators display the signal strength again.

Note! It requires at least 10ms to press the membrane button.



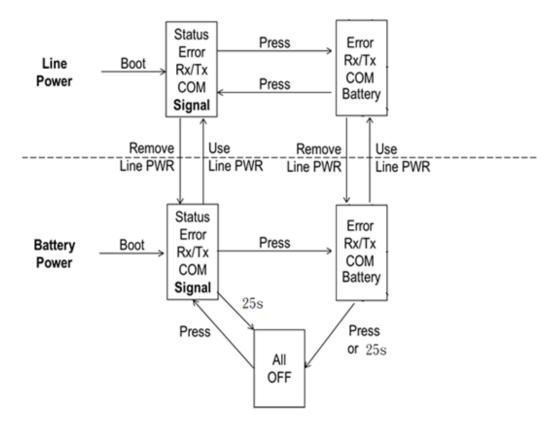


Figure 1.4 WISE-4671 Membrane Button Behavior

1.7 Packing List

WISE-4671 NB-IoT/LTE-M Wireless I/O Module

- 1 x WISE-4671 Wireless I/O Module
- 1 x Antenna
- 1 x Mounting Bracket
- 1 x WISE-4671 Startup Manual
- 1 x China RoHS Declaration

WISE-S614/WISE-S614T 4AI/4DI I/O Module

- 1 x WISE-S614 or WISE-S614T I/O Module
- 1 x I/O Information Label

WISE-S615/WISE-S615T 4RTD I/O Module

- 1 x WISE-S615 or WISE-S615T I/O Module
- 1 x I/O Information Label

WISE-S617/WISE-S617T 2AI, 2DI, 1DO & 1RS-485 I/O Module

- 1 x WISE-S617 or WISE-S617T I/O Module
- 1 x I/O Information Label

WISE-S672 6DI/1RS-485/1RS-485 or RS-232 Module

- 1 x WISE-S672 I/O Module
- 1 x I/O Information Label

Note! A micro-B USB cable for configuring WISE-4671 is available for order:



■ 1700023619-01 Micro USB type-B male to USB type-A male cable, 1 M

Note!

An M12 connector and cable for I/O or power wiring is available for order:



■ **1655005903-01** M12, A-code, 4 Pin, Female

■ 1700028162-01 M12, A-code, 4 pin, Female with 1M cable

■ 1700028163-01 M12, A-code, 8 Pin, Male with 1M cable

Chapter 2

Hardware Installation

The wireless sensor nodes for WISE-4671, like those for all WISE-4000 series modules, are designed as separate units. The procedure for installing these nodes in the module is explained in the following sections.

2.1 Modular Design

WISE-4671 features a modular design that supports various I/O configurations. The benefit of a modular design is that the same wireless board can be leveraged by different I/O modules via a board-to-board connector based on the required usage scenario. This allows users to install two I/O modules according to their specific usage requirements. Moreover, the modules can be affixed to WISE-4671 using the six star screws provided (as shown in Figure 2.1).

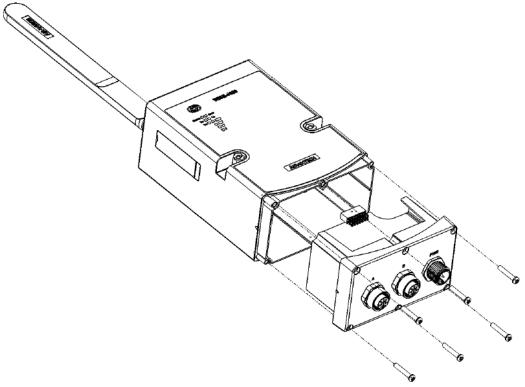


Figure 2.1 I/O Module Installation

Note! The recommended star screw torque is $2.5 \sim 3.0 \text{ kgf/cm}^2$.



2.2 System Dimensions

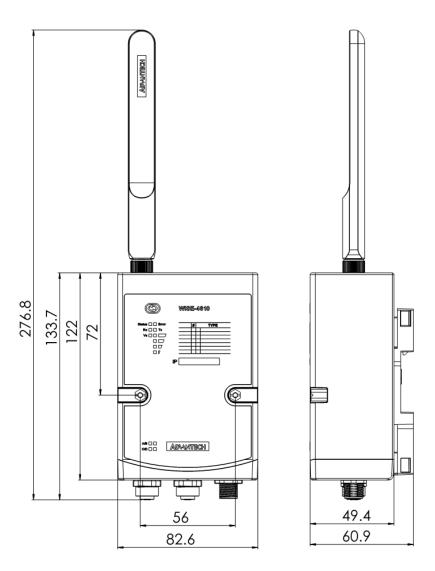


Figure 2.2 WISE-4671 Dimensions

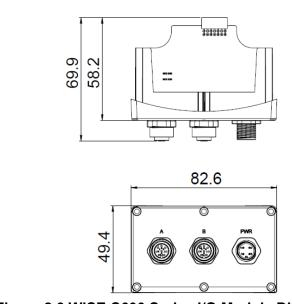
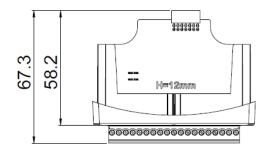


Figure 2.3 WISE-S600 Series I/O Module Dimensions



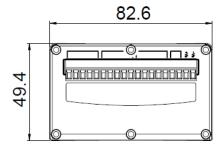


Figure 2.4 WISE-S600T Series I/O Module Dimensions

2.3 DIN-Rail Mounting

WISE-4671 modules can be fixed to a cabinet with mount rails. Use a flathead screw-driver to affix the DIN rail mounting adapter to the module. Then attach the end brackets provided with the product to prevent sliding.

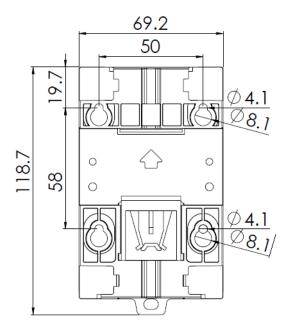


Figure 2.5 WISE-4000 Series Mount Kit Dimensions

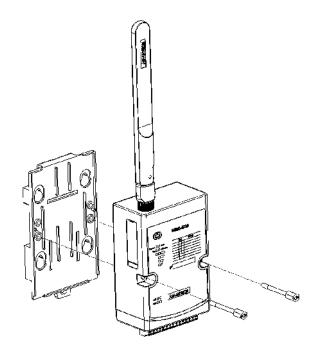


Figure 2.6 DIN-Rail Mounting Adapter Installation

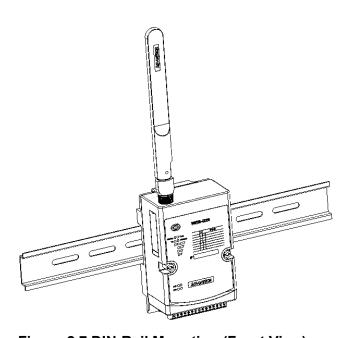


Figure 2.7 DIN-Rail Mounting (Front View)

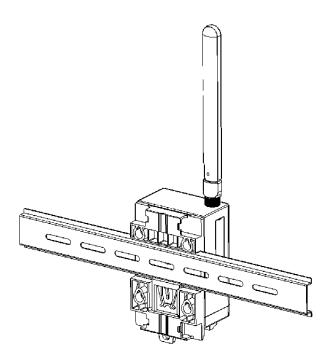


Figure 2.8 DIN-Rail Mounting (Rear View)

2.4 Wall Mounting

The plastic wall-mount bracket provided with the product, can be used to mount WISE-4671 on a wall, panel, or cabinet.

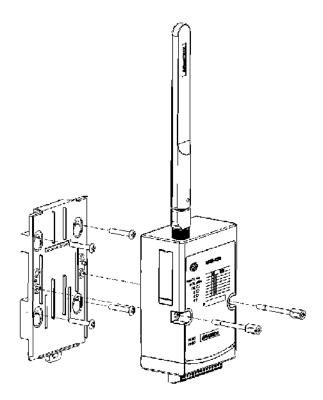


Figure 2.9 Wall Mount Bracket Installation

2.5 **Pole Mounting**

For pole mounting, feed the pole-mounting ring through the hole in the middle of the module. The pole-mounting ring must be unlocked with a screwdriver before inserting it into the module. To mount the module on the pole, tightly lock the pole-mounting

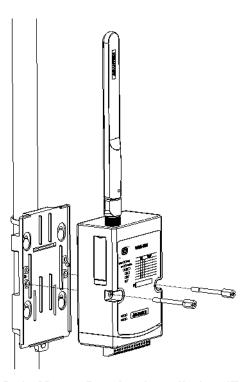


Figure 2.10 Pole Mount Bracket Installation (Front View)

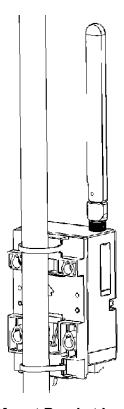


Figure 2.11 Pole Mount Bracket Installation (Rear View)

Chapter

Hardware Specifications

3.1 General Specifications

3.1.1 Wireless Interface

■ Standards: 3GPP R.13 LTE Cat. M1/NB1

Frequency band: B2, B3, B4, B8, B12, B13, B20, B28

■ SIM: 4FF/Nano SIM

3.2 **GPS**

■ GPS, GLONASS, BeiDou/Compass, Galileo and QZSS

Maximum Update Rate: Every 15 seconds.

Positioning Accuracy: <2.5m Typ. (50% confidence)
 With SBAS: 2.0 m CEP (50% confidence)

Acquisition (Time to first fix,TTFF)
 Cold starts: 31 seconds Typ.

3.3 General

■ RTC Accuracy: ±2 s/day

■ Enclosure: PC + PBT

■ Mount Options: DIN rail, wall, and pole

■ Dimensions (W x H x D): 82 x 122 x 49 mm/3.22 x 4.8 x 1.92 in (without antenna)

Operating Temperature:

With rechargeable battery: 0 ~ 60 °C (32 ~ 140 °F)

Without battery: -25 ~ 70 °C (-13 ~ 158 °F)

Storage Temperature:

With rechargeable battery: -20 ~ 60 °C (-4 ~ 140 °F)

Without battery: -40 ~ 85 °C (-40 ~ 185 °F)

Operating Humidity: 5 ~ 95% RH (non-condensing)

■ Storage Humidity: 0 ~ 95% RH (non-condensing)

Note!



Batteries are at risk of exploding if it is incorrectly installed. Do not attempt to replace the battery yourself. Batteries should only be replaced by qualified service personnel.

3.4 Power

- Power Input Voltage:
 - Built-in 4100mAh Lithium rechargeable battery pack
 - 10~50V_{DC} external power
 - 17-21V_{DC} Solar panel
- Power Consumption:
 - WISE-4671: 1.4W@24V_{DC}, when the battery is not charging 11W@24V_{DC}, when the battery is charging
 - WISE-S614: 1.9 W @ 24 V_{DC}
 - WISE-S672: 0.3W@24VDC
- Solar Panel Input Voltage: 17~21 V_{DC}
- Battery Capacity: 4100 mAh
- Battery Life: 6 months (with hourly data updates and daily GPS updates)

Note!

The battery life is estimated in 25°C ambient temperature exclude the condition of battery discharge efficiency signal quality and its retry mechansim by MQTT)

3.5 WISE-S600 I/O Specifications

- Power Connector: 1 x M12 4-pin code-A male connector with male pins
- I/O Connector: 2 x M12 8-pin code-A female connector with female pins

3.5.1 WISE-S614/WISE-S614T I/O Module

3.5.1.1 Digital Inputs

- Channels: 4
- Logic Level (Dry Contact):
 - 0: Open
 - 1: Close DI COM
- Non-isolation
- Supports 200 Hz counter input (32-bit + 1-bit overflow)
- Supports keep/discard counter value when power OFF. (Only work with line powered model)
- Supports 200 Hz Frequency Input
- Supports inverted DI status

3.5.1.2 Analog Inputs

- Channels: 4
- Resolution: 16 bit
- Sampling Rate: 1 Hz per channel
- Accuracy:
 - ±0.1% of FSR (voltage)
 - ±0.2% of FSR (current)
- Input Range:
- ±150mV, ±500mV, ±1 V, ±5V, ±10V, 0 ~ 150mV, 0 ~ 500mV, 0 ~ 1V, 0 ~ 5V, 0 ~ 10V, 0 ~ 20mA, 4 ~ 20mA, ±20mA
- Input Impedance:

- $> 2M \Omega \text{ (voltage)}$
- 240 Ω (external resistor for current)
- Isolation Voltage: 2000 V_{RMS}
- Common Mode Voltage: 350 V_{DC}
- Drift:
 - Unipolar ±100ppm
 - Bipolar ±50ppm
- Burn-Out Detection: Yes (4 ~ 20mA only)
- Supports data scaling and averaging

3.5.2 WISE-S615/WISE-S615T RTD I/O Module

3.5.2.1 Analog Input

- Channels 4 differential
- Input Connections 2, 3-wire
- Input Impedance 10 MΩ
- Resolution 15 bits
- Sampling Rate 1 Sample/s (MAX)
- RTD Types and Temperature Ranges Pt 100 RTD
 - RTD 100 (a = 0.00385) -200°C to 600°C
 - RTD 100 (a = 0.00392) -200°C to 600°C

Pt 1000 RTD

- Pt -40°C to 160°C
- Accuracy ±0.1% FSR
- CMR @ 50/60 Hz 90 dB
- NMR @ 50/60 Hz 60 dB
- Span Drift ± 25 ppm/°C

3.5.3 WISE-S617/WISE-S617T I/O Module

3.5.3.1 Digital Input

- Channel: 2
- Logic Level (Dry Contact):
 - 0: Open
 - 1: Close to DI COM
- Non-isolation
- Supports 32-bit counter input function (maximum signal frequency: 200 Hz)
- Supports keep/discard counter value when power OFF. (Only work with line powered model)
- Supports frequency input function (maximum signal frequency: 200 Hz)
- Supports inverted digital input status

3.5.3.2 Analog Input

- Channels: 2
- Resolution: 16 bit
- Sampling Rate: 1 Hz per channel
- Accuracy:
 - ±0.1% of FSR (Voltage)
 - ±0.2% of FSR (Current)
- Input Range:
- ±1 V, ±5V, ±10V, 0 ~ 1V, 0 ~ 5V, 0 ~10V, 0 ~ 20mA, 4 ~ 20mA, ±20mA
- Input Impedance:
 - $> 2M \Omega$ (Voltage)
 - 120 Ω (External Resistor for Current)
- Isolation Voltage: 2000V_{RMS}
- Common Mode Voltage: 350 V_{DC}
- Drift
 - Unipolar: ±100ppmBipolar: ±50ppm
- Біроіаг. ±эорріп
- Burn-Out Detection: Yes (4 ~ 20mA only)
- Supports data scaling and averaging

3.5.3.3 Digital Output

- Channel: 1 (Sink Type)
- Non-isolation
- Output Current 100mA

3.5.3.4 **COM Port**

- Port Type: RS-485
- Baud Rate (bps): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- Data Bits: 7, 8
- Stop Bits: 1, 2
- Parity: None, Odd, Even
- Flow Control: Auto flow control
- Signals: DATA+ and DATA-
- Protection: 15 kV ESD
- Supported Protocols:
 - Modbus/RTU (Up to 32 addresses with a maximum of 8 instructions)
 - Modbus/RTU (Up to 64 addresses with a maximum of 30 instructions)

3.5.4 WISE-S672 I/O Module

3.5.4.1 Digital Inputs

- Channels: 6
- Logic Level (Dry Contact):
 - 0: Open
 - 1: Close DI COM
- Non-isolation
- Supports 32-bit counter input function (maximum signal frequency: 200 Hz)
- Supports keep/discard counter value when power OFF. (Only work with line powered model)
- Supports frequency input function (maximum signal frequency: 200 Hz)
- Supports inverted digital input status

3.5.4.2 COM #1

- Port Type: RS-485
- Baud Rate (bps): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- Data Bits: 8Stop Bits: 1, 2
- Parity: None, Odd, Even
- Flow Control: Auto flow control
- Signals: DATA+ and DATA-
- Protection: 15 kV ESD
- Supported Protocols:
 - Modbus/RTU (Up to 32 addresses with a maximum of 8 instructions)

3.5.4.3 COM #2

- Port Type: RS-485 or RS-232
- Baud Rate (bps): 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- Data Bits: 8Stop Bits: 1, 2
- Parity: None, Odd, Even
- Flow Control: Auto flow control (RS-485 only)
- Signals: DATA+ and DATA-
- Protection: 15 kV ESD
- Supported Protocols:
 - Modbus/RTU (Up to 32 addresses with a maximum of 8 instructions)

3.6 WISE-S600 I/O Pin Assignment

Pin Assignment of WISE-S600 I/O Module with M12 Connectors.

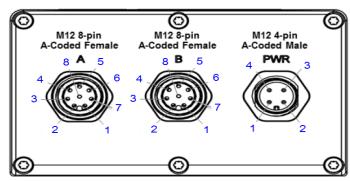
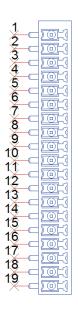


Figure 3.1 WISE-S600 Pin Out

	Model Name Pin Number	M12 Cable	WISE-S614	WISE-S615	WISE-S617	WISE-S672
	P/N	4Pin: 1700028162-01 8Pin: 1700028163-01	WISE-S614-A	WISE-S615-A	WISE-S617-A	WISE-S672-A
	1	White	DI0	RTD2+	IA0+	DI0
	2	Brown	DI1	RTD2-	IAO-	DI1
	3	Green	DI2	RTD2 COM	+12V_Out0	DI2
Α	4	Yellow	DI3	NC	+12V_Out_GND	DI3
A	5	Gray	NC	RTD3+	IA1+	DI4
	6	Pink	NC	RTD3-	IA1-	DI5
	7	Blue	NC	RTD3 COM	+12V_Out1	NC
	8	Red	DI COM	NC	+12V_Out_GND	DI_COM
	1	White	IA0+	RTD0+	DI0	DATA 0-
	2	Brown	IAO-	RTD0-	DI1	DATA 0+
	3	Green	IA1+	RTD0 COM	DI_COM	RS-232 TX
_	4	Yellow	IA1-	NC	DO0	RS-232 RX
В	5	Gray	IA2+	RTD1+	DO_GND	DATA 1-
	6	Pink	IA2-	RTD1-	RS-485 D+	DATA 1+
	7	Blue	IA3+	RTD1 COM	RS-485 D-	NC
	8	Red	IA3-	NC	RS-485 GND	RS-232 GND
PWR -	1	Brown	+VS	+VS	+VS	+VS
	2	White	-VS	-VS	-VS	-VS/ SP-
	3	Blue	SP+	SP+	SP+	SP+
	4	Black	SP-	SP-	SP-	NC

3.7 WISE-S600T I/O Pin Assignment



Model Name	WISE-S614T	WISE-	S672T	WISE-S	617T	WISE-S615T	WISE-S635
PCB P/N	19A3DC1410-01	19A3DC	7210-01	19A3DC1710-01		19A3DC1710-01	19A3DC3500-01
Version	A101-1	A10	1-1	A101	l-1	A101-1	A101-1
Power In	Line Power, Panel in	Line Power, Panel in		Line Power, Panel in		Line Power, Panel in	Line Power
I/O Description	4*AI, 4*DI	6*DI, 2*RS-485, 1*RS- 232		2*DI, 1*DO, 1*RS- 485, 2*AI, 2* 12V_output		4*RTD	1*RS-485
1	DI 0	DI	0	AI C)+	RTD 0+	NC
2	DI 1	DI	1	AI 0-		RTD 0-	NC
3	DI 2	DI	DI 2		+	COM 0	NC
4	DI 3	DI	3	Al 1-		RTD 1+	NC
5	DI COM	DI	4	VOUT 0		RTD 1-	NC
6	AI 0+	DI	5	VOUT GND		COM 1	NC
7	AI 0-	DI COM		VOUT 1		RTD 2+	NC
8	AI 1+	N	С	VOUT GND		RTD 2-	NC
9	AI 1-	NC		DO 0		COM 2	NC
10	AI 2+	DATA0+ ¬		DO GND		RTD 3+	NC
11	AI 2-	DATA0- DATA1+		DI 0		RTD 3-	NC
12	AI 3+			DI 1		COM 3	VOUT
13	AI 3-	DATA1-		DI COM		NC	IO INT
14	NC	RX	_	DATA+		NC	MCU INT
15	NC	TX	RS-232	DATA-	RS-485	NC	DATA+
16	NC	GND		GND		NC	DATA-
17	Panel In	Panel In		Panel In		Panel In	VOUT GND
18	+VS	+VS		+VS		+VS	+VS
19	-VS	-V	-VS		5	-VS	-VS

3.8 Application Wiring of WISE-S600 I/O Module with M12 Connectors

3.8.1 WISE-S614 I/O Application Wiring

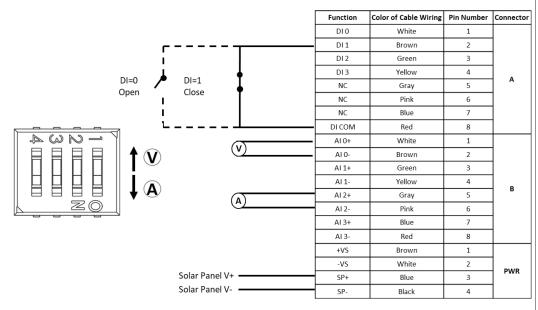
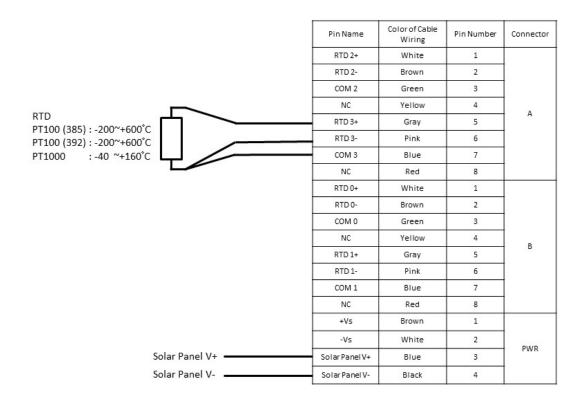


Figure 3.2 WISE-S614 I/O Application Wiring

3.8.2 WISE-S615 I/O Application Wiring



3.8.3 WISE-S617 I/O Application Wiring

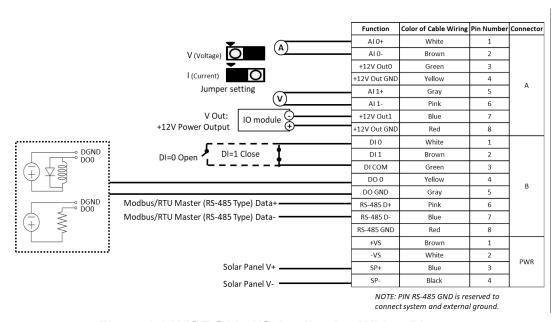


Figure 3.3 WISE-S617 I/O Application Wiring Diagram

3.8.4 WISE-S672 Application Wiring

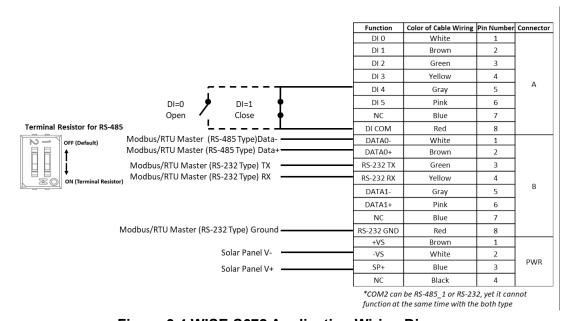


Figure 3.4 WISE-S672 Application Wiring Diagram

3.9 Application Wiring of WISE-S600T I/O Module with Terminal Block

3.9.1 WISE-S614T I/O Application Wiring

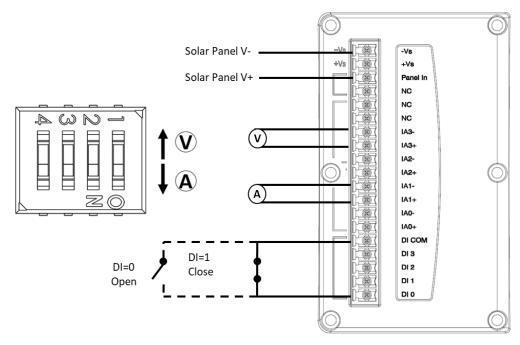


Figure 3.5 WISE-S614T I/O Application Wiring Diagram

3.9.2 WISE-S617T I/O Application Wiring

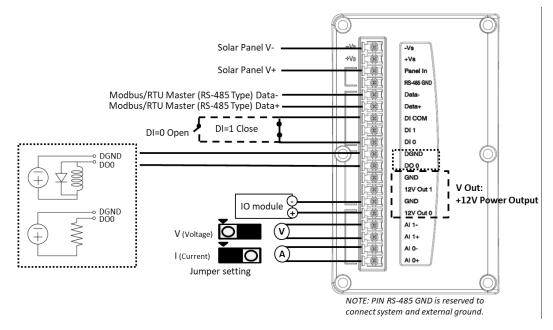


Figure 3.6 WISE-S617T I/O Application Wiring Diagram

3.10 Power Supply Wiring

WISE-4671 modules are designed to support a standard unregulated 24-V $_{DC}$ industrial power supply. However, they can also accept 10 ~ 50 V $_{DC}$ input with a peak-to-peak power ripple of 200 mV. The immediate ripple voltage should be maintained at 10 ~ 50 V $_{DC}$. The screw terminals labeled "+Vs" and "-Vs" are for the power supply wiring.

3.11 Block Diagram

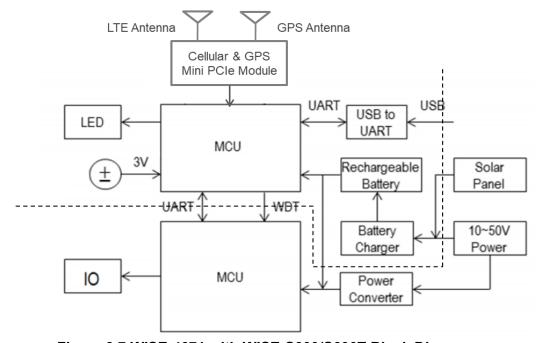


Figure 3.7 WISE-4671 with WISE-S600/S600T Block Diagram

3.12 Configuration Interface

Interface: USB virtual COM port

■ Connector: Micro-B USB

■ USB Chipset: Silicon Labs CP210x

Driver: CP210x USB-to-UART bridge VCP drivers

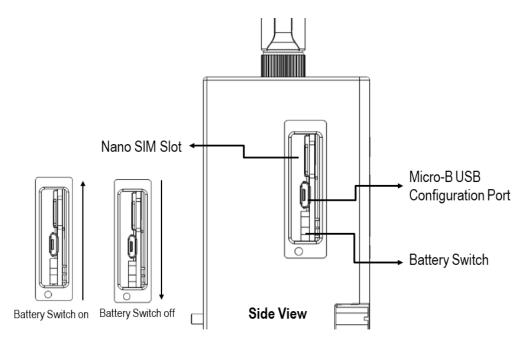
Chapter

4

Firmware Specifications

4.1 Connection

- 1. Open the rubber cover on the side of module and you will see the nano SIM card socket. Insert your SIM card here. Note that only nano SIM cards can be used. The SIM card is not hot swappable.
- 2. Download and install USB driver from https://www.silabs.com/products/develop-ment-tools/software/usb-to-uart-bridge-vcp-drivers.
- 3. For the USB port, see the following steps. Insert the micro-B USB cable here and note that it doesn't provide power for the WISE module.
- 4. Plug a DC power source into the +Vs, -Vs pin of your module and turn on the power.



4.2 Configuring WISE-4671 Using WISE Studio

WISE-4671 can be paired with WISE-S600 and WISE-S600T I/O modules. The instruction for configuration uses WISE-S672 DI and RS-485 as an example. All is supported by WISE-S614 and there are also instructions for All configuration in this chapter.

4.2.1 Minimum System Requirements

The minimum system requirements for WISE Studio are as follows:

- Microsoft Windows 7 or above
- Microsoft NET framework 3.5 or above
- Internet Explorer 10 or above

4.2.2 Installing WISE Studio

The latest version of WISE Studio is available on the Advantech support site: http://support.advantech.com/. To install the program, download the installation file and execute it locally.

4.2.3 A Brief Introduction to WISE Studio

WISE Studio is a new configuration tool for WISE modules. All configurations are done from a web interface, so you will notice that different models have similar configuration pages. For WISE modules configured by Ethernet, LAN, or WLAN, WISE Studio enables communication with the internal web server inside the WISE module; for those configured by USB, WISE Studio will execute a web server on the computer that the software is installed on. The web server will use the USB interface to communicate with the WISE module. Information will be viewable via the embedded web page or you could open a web page via a browser.

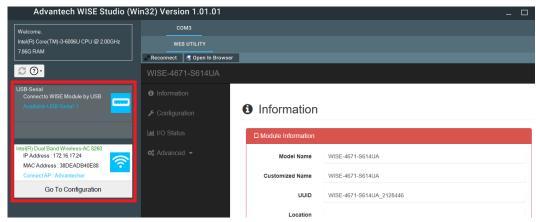


Figure 4.1 Communication Box

There are several communication interfaces for configuring different WISE modules. The WISE-4671 series uses the USB-serial interface for configuration.

Refresh: Pressing this button refreshes the USB-serial interface.

USB-Serial: This block is for connecting to a WISE module via USB. The available USB-serial port number will be shown here. Click **Go to Configuration** to connect the USB COM port.

USB-Serial Configuration Page

After you click on the **Go to Configuration** button, all available USB COM ports will be displayed. Choose the COM port that you are going to configure and click **Connect to open the Configuration page**. You can further click **Open in Browser** to use your default browser to configure the WISE module (IE is the default browser embedded in WISE Studio).

4.2.4 Information Page

Module Information

This page displays the name of the module and related information. Click Go to Configuration to view or change the settings:

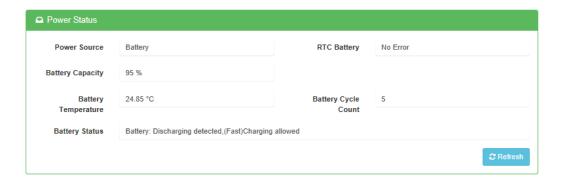
- Model Name: Model of the WISE module.
- Customized Name/UUID: Refer to the model name and UUID of the module. The default UUID is a combination of the model name and IMEI. You can modify this value.
- **Location Information:** Information on the location of the module is given here. The function is disabled by default.
- **Description:** Any comments describing this module can be given here.
 - Information



Power Status

The power status displays the power source and its status. If there is no battery included, it will show line power (no battery) on the module.

PIN Status:

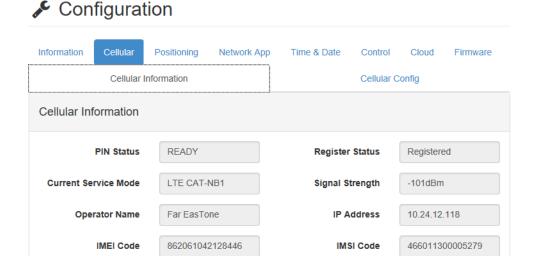




Cellular Information

This block shows information on the cellular RF module and cellular network status.

- PIN Status: The PIN code status of the SIM card.
- **Register Status:** Registration status of the cellular network operator.
- Current Service Mode: Network service mode (e.g., LTE CAT-NB1)
- **Signal Strength:** Indicates reference signal receiving power (RSRP) of the cellular network.
- IP Address: IP address assigned by the cellular network.
- Operator Name: Name of the cellular network operator.
- Modem Manufacturer: Manufacturer of the RF module.
- IMEI Code: International Mobile Equipment Identity of the current modem.
- IMSI Code: International Mobile Subscriber Identity of the current SIM card.
- ICCID Code: Integrate Circuit Card Identity.



Firmware Information

Modem Manufacturer

In this page, you can check the model name and module description. The firmware version is also shown at the end of the configuration web page. To update the firmware, go to the **Firmware Version** section.

- Module Name: Name of the WISE module.
- Module Description: Description of the WISE module.

Quectel

- Firmware Description: Firmware and bootloader version of the WISE module.
- **Web Page Version:** The web page version is given at the bottom of the Configuration page before the copyright information.



4.2.5 Connecting to a Cellular Network

Enter the PIN Code

First, insert a SIM card into the WISE module, and then go to the Configuration page and click the Cellular tab. Enter the PIN of the SIM card in the PIN Authentication dialog box if needed. Selecting the Auto Write PIN Code check box will save the PIN code to the WISE module.

Cellular Information

After the PIN code has been entered, information on the cellular network will be available in the Cellular tab:

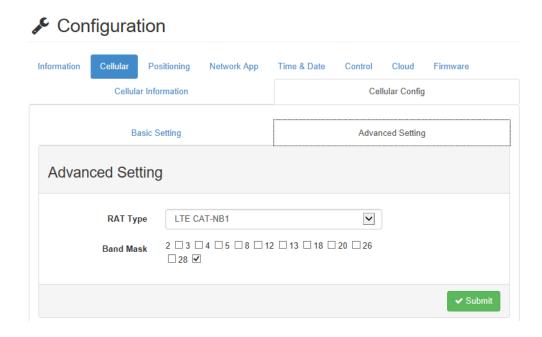
- PIN Status: The PIN code status of the SIM card.
- **Register Status:** Registration status with the cellular network operator.
- Current Service Mode: Network device mode (e.g., LTE CAT-NB1).
- **Signal Strength:** Indicates reference signal receiving power (RSRP) of the cellular network.
- IP Address: IP address assigned by the cellular network.
- Operator Name: Name of the cellular network operator.
- Modem Manufacturer: Manufacturer of the RF module.
- **IMEI Code:** International Mobile Equipment Identity of the modem.
- IMSI Code: International Mobile Subscriber Identity of the SIM card.



Advanced Setting

RAT Type: Select the operating mode category.

Band Mask: Select the specific band to save the connection time.

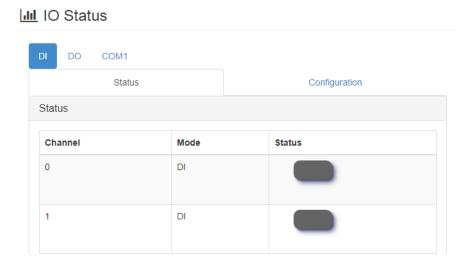


4.2.6 I/O Status Configuration

4.2.6.1 Digital Input

Status

The value of all digital input channels can be determined from the related LED display in the DI tab (green LED = logic high; grey LED = logic low).

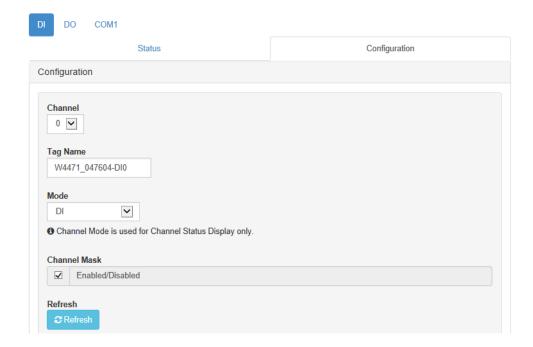


Configuration

The digital input channels support several operation modes and can be configured from this page.

- Channel: Select the channel to be configured.
- **Tag Name:** Each channel can be given a tag name for identification.
- **Mode:** The operation mode of each channel can be configured here, or channels can be disabled to improve the performance of enabled channels. After a

- channel has been configured, pressing **Submit** at the end of this page will apply the changes.
- Channel Mask: Each channel can be disabled individually for reducing date traffic during communication.
- **Refresh:** Refresh the configuration.



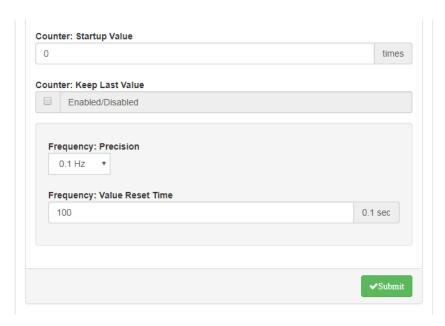
- Invert Signal: WISE digital input channels support the invert digital input status function. To enable/disable this, select the Invert Signal check box on the Configuration page.
- **Digital Filter:** Digital input channels have a digital filter that can remove high-frequency noise. The filter can be enabled/disabled by clicking the Digital Filter check box. When the filter is enabled, the minimum acceptable signal width can be defined in the **Min. Low Signal Width** and **Min. High Signal Width** boxes (increment: 0.1 ms).



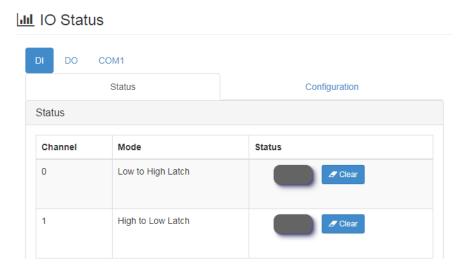
■ Counter: When counter mode is selected for a given channel, a counter will count the number of pulses in the digital signal from that channel and then record the value to the register. In the **Status** page, the current count value of the selected channel is displayed in the **Counter value** box. The counter can be started/stopped by pressing **Start/Stop**, which is located beside the counter

value. The counter can be reset (the value in the register will be initialized to the startup value, which is zero by default) by clicking Reset. The predefined startup value will be the value shown in the **Counter value** box. When this value is reset, either by pressing **Reset** on the **Status** page or by issuing a command, it will return to the startup value, which is zero by default.

If **Keep Last Value** is enabled, the last counter value will be kept in the register when the module is powered off. When the module is powered on, the counter will continue to count from that value. When this function is disabled, powering off the module will cause the counter to be reset and the count value in the register to be reset to zero.



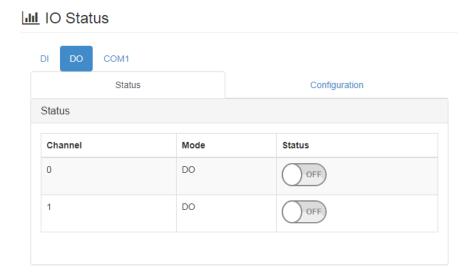
- Low-to-High Latch: Under low-to-high latch mode, once a digital input channel detects that the logic level has changed from low to high, the logic status will remain as "logic high" until the latch is cleared manually, which will return the logic status to "logic low." The logic status is viewable on the latch status LED display on the DI Status page. Clear the latch by clicking Clear on this page.
- **High-to-Low Latch:** Under high-to-low latch mode, once a digital input channel detects that the logic level has changed from high to low, the logic status will remain as "logic low" the latch is cleared manually, which will return the logic status to "logic high". The logic status is viewable on the latch status LED display on the **DI Status** page. Clear the latch by clicking **Clear** on this page.



4.2.6.2 Digital Output

Status

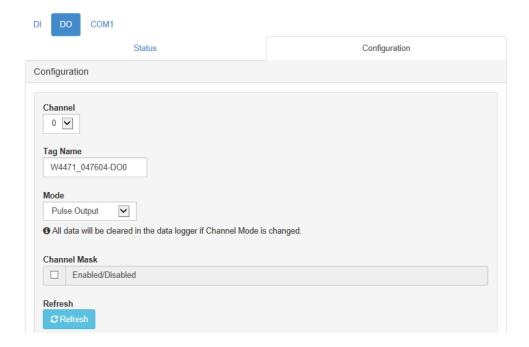
The values of all digital output channels can be controlled via the status switch, the color of which indicates the current value of the digital output channel.



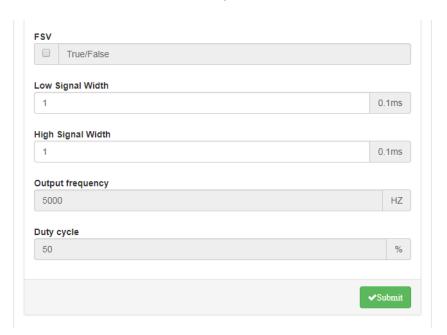
Configuration

The digital output channels support several operation modes and can be configured from this page.

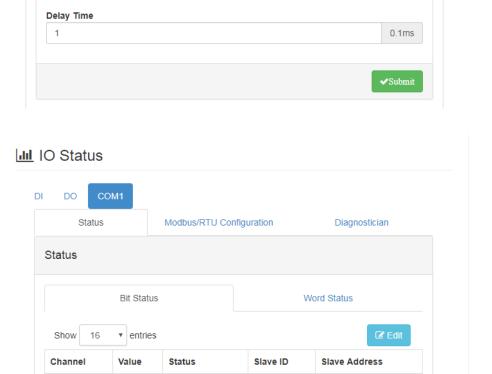
- Channel: Select the channel to be configured.
- **Tag Name:** Each channel can be given a tag name for identification.
- Mode: The operation mode of each channel can be configured here, or channels can be disabled to improve the performance of enabled channels. After a channel has been configured, pressing Submit at the end of this page will apply the changes.
- Channel Mask: Each channel can be disabled individually for reducing date traffic during communication.
- Refresh: Refresh the configuration.



- FSV (Fail-Safe Value): The digital output channels can be set to generate a predefined value when communication between a host controller and a WISE digital module is broken. To do this, select the FSV check box for the module to set the output channel to "logic high" when the WDT times out. If the FSV check box is clear, the module will set the output channel to "logic low" if the WDT times out. To set the module so that the FSV is triggered by the WDT, go to Network App on the Configuration page to enable Communication WDT Trigger FSV for all of the module's output channels, and then set the communication WDT mode to Communication WDT. The default host idle time is 720s, and this can be configured by entering a value in the Host Idle (Timeout Sec) box (unit: s) in this page.
- Pulse Output: In pulse output mode, the selected digital output channel can generate a continuous pulse train or finite pulses. The pulse width can be set by entering a value in the Low Signal Width and High Signal Width boxes on the Configuration page (increment: 0.1 ms). The frequency and duty cycle of the pulse output signal will be calculated automatically and displayed in the Output frequency and Duty cycle boxes, respectively. Whether a continuous pulse train or finite pulses will be generated is determined by clicking Continuous or Fixed total, respectively. The number of pulses to be generated can be set by entering the value in the box to the right of Fixed total. After the pulse output mode has been selected, click Start or Stop to generate or stop the pulse output.



- Low-to-High Delay: Low-to-high delay mode is similar to digital output mode; the only difference is that there will be a time delay when the output value changes from "logic low" to "logic high". The delay time can be defined by entering its value in the Delay Time box on the Configuration page. The digital output value can be controlled by clicking DO tab and the current value can be viewed from the digital out status LED display on the IO Status page.
- High-to-Low Delay: High-to-low delay mode is similar to digital output mode. The only difference is that there will be a certain time delay when the output value changes from "logic high" to "logic low". The delay time can be set by entering its value in the Delay Time box on the Configuration page. The digital output value can be controlled by clicking the DO tab and its current value can be viewed through the digital output status LED display in the IO Status page (see below).



4.2.6.3 COM1 (RS-485 Port)

The WISE-S672/WISE-S617 has one RS-485 port for Modbus gateway functionality; thus, you can use this port to poll data from RS-485 Modbus/RTU slave devices such as the ADAM-4000 series or ADAM-5000/485 series.

Unavailable

Status

Go the **COM1** tab to check the status or to configure the RS-485 Modbus master function. A total of 64 addresses for all Modbus slaves can be mapped as the WISE module I/O. These 64 addresses can be coils or registers; coils will be mapped as extension bits of the WISE module, and registers will be mapped as extension words of the WISE module. In the **COM1** status tab, the bits and words are shown on individual pages.

■ **Channel:** Indicates the number of bits. A maximum 64 bits can be shown here, but you may map only fewer than 64 coils as bits, which makes the empty bits invalid. The same applies to words, which may also have empty channels.

- Value: Indicate the value polling from mapped address.
- **Status:** Indicate the status of each bit or word, if a channel is empty and has not been mapped to a Modbus slave address, its status will be "Unavailable."
- Slave ID: Indicates the Modbus salve ID of RS-485 Modbus slave devices.
- Slave Address: Indicates the address of a bit or word from an RS-485 Modbus slave device.

For a writable bit or word, you can click **Edit** to switch to edit mode; here, you can change the values and then click **Apply** to write the Modbus addresses individually.

Modbus Configuration - Common Settings Tab

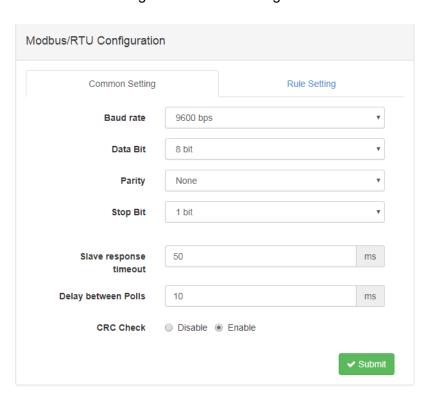
In this tab, you can configure the parameters of the RS-485 port.

Baud Rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

Data Bit: 8Stop Bit: 1, 2

Parity: None, Odd, Even

- Slave Response Timeout: For setting the time for Modbus slaves to reply
- Delay between Polls: For setting the delay time between each Modbus instruction
- CRC Check: For disabling the CRC check to ignore Modbus CRC errors



Modbus Configuration - Rule Setting Tab

In this tab, you can configure the Modbus address of end devices you would like to poll.

- Rule: There is a maximum of 30 rules that each COM port can support. Each rule can be for a different slave device, meaning that there can be a maximum 30 of devices connected to the COM port. Alternatively, you can use all of the rules for polling different addresses on the same slave device.
- Slave ID: Different slave devices in the same RS-485 port have different slave IDs; enter the slave address of the Modbus devices that are connected to the WISE module here.

- **Type:** This device supports Modbus data types: 01 Coil Status (0x), 02 Input Status (1x), 03 Holding Registers (4x), and 04 Input Registers (3x). After one of the types has been configured in the rule, the rule will be enabled and the COM port will start polling after the configuration has been submitted successfully.
- **Start Address:** Enter the first address number that you are going to poll. The address base is 1; if you are going to poll the first address of a holding register (i.e., 40001), then simply enter the number "1" here (you do not need to enter the entire address "40001").
- **Length:** Enter the length of the address that you are going to poll in this rule. For example, if you are going to poll 40001~40008, set the length to "8" Note that since each COM port can poll a maximum of 64 addresses, the maximum length is 64 and the total number of all rules should not exceed 64.
- R/W: Here, you can set whether the address in this rule will be read or written. For coil statuses and holding registers, you can make these addresses readonly or write-only to reduce the polling effort.
- Scan Interval (unit:s): Here, you can set the scan interval for the COM port to poll Modbus slave devices. The COM port will optimize the scan interval according your setting. However, the read scan interval may also depend on factors such as the Baud rate, slave device response time, delay between polls, and so on. See the **Diagnostician** page to check the real response time as a reference for the scan interval value.
- Mapping Channel: When the Modbus address of slave devices has been configured in each rule, these addresses will also be mapped to the WISE module. Coils and registers of Modbus slave devices will be mapped as bits for RESTful web service. There are 64 continuous channels of bits and another 64 continuous channels of words that can be mapped. Please ensure that the channels for each rule do not overlap.
- **Log:** Here, you can set whether the data that have been polled from this rule will be logged in the data logger.
- **Deviation/Change of Status (COS):** When this check box has been set, the difference of polling values between the current poll and the last poll can trigger the deviation/COS (change of state) for push data or log data.
- Rule Status: The web configuration interface will check whether the rule settings have any overlap or conflict. The enabled rules, which are enable the rule by setting the Type value, should have a green icon so that a "Submit" message will be shown for you to confirm submitting the rules.

Note! After you have configured the rules, click Submit to apply them.



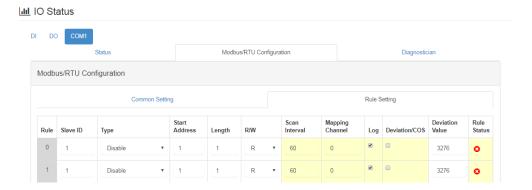
Note!



After you have changed the rule configurations, logged data in the data logger will be cleared to accommodate the new data structure of the data logger under the new configuration.

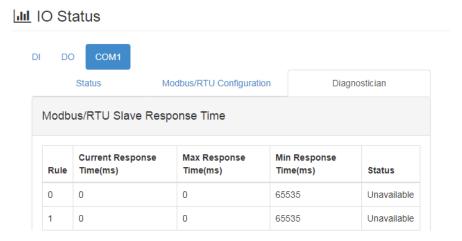
Note! You can hover your mouse over the table title rows to view tooltips.





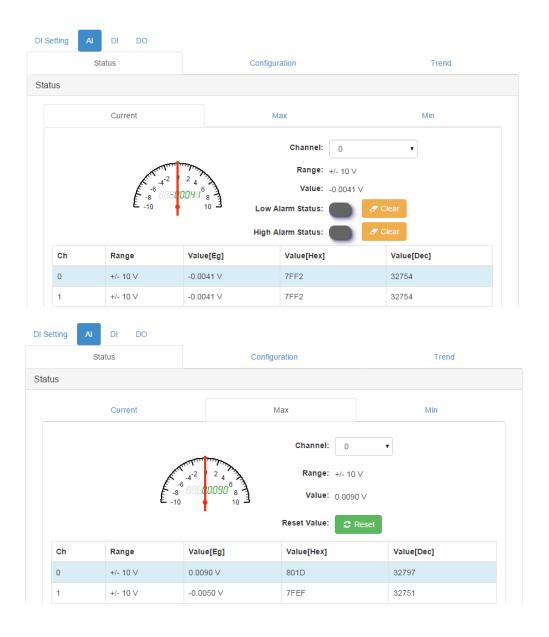
Diagnostician

Since different devices will have different response times, the WISE-4671 provides a diagnostics function for testing the response time of each rule. This is intended to reduce the scan interval. You can refer to the response time on this page when configuring the **Scan Interval** in **Rule Setting** pages. You can reset the test result on this page by clicking **Reset Response Time**.



4.2.6.4 Analog Input

For WISE-4671, users can choose WISE-S614 to support Analog Input. For the Al channel, the Current/Max/Min status will be shown in the status page, which includes the input range. The current status shows the latest Al value, and also the input range. The average value, which will be introduced in following pages, show the average value of selected channels. The Max/Min status shows historical maximum or minimum value, you can reset the value by pressing "Reset".

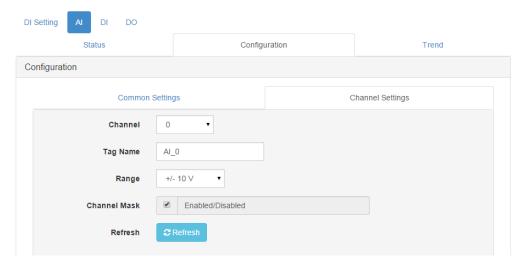


Input Range

For the AI channel which supports more than input range, you can configure the channel setting in "AI/Configuration/Channel Settings".

Channel Mask

You can disable the AI channel to increase the sampling rate of other enabled channels in "Channel Mask".



Scaling Function

There are two types of scaling function for AI channels:

Input Signal Scaling - Scaling the Input Range

This is for scaling the analog input range within the configured input range, so that the Modbus value can fit the entire range. For example, Ch0 of WISE-4012 had been configured with an input range of 0~5V, but the full range of signal from sensors is 1~5V. If users do not use the Input Signal Scaling function, the 1V will be presented as 13107 in Modbus, 5V will be presented as 65535. But after Input Signal Scaling, 1V will be presented as 0 in Modbus, and 5V will still be presented as 65535.

If you would like to apply the function in the previous example, enter 1 in "Low Scaling Value", and enter 5 in "High Scaling Value".

Note!



The function only increases the resolution of Modbus data, but the accuracy still depends on the original input range before scaling. Furthermore, in the previous example, if the 0~10V input range been used for scaling to 1~5V, it may have a lower accuracy compared to using 0~5V.

For values which are going to be configured for scaling the input range, note that the "Low Scaling Value" should be lower than "High Scaling Value".

2. Physical Value Scaling - Scaling the Output Data

Further to scaling the input range of the analog input channel, the output data can also be scaled. After the function has been applied, it would be easier to read the Modbus value in the engineering unit. For example, a temperature sensor output 0~10 V which shows 0~100°C. It would be better to read 0~100 in Modbus with floating data format.

In the previous case, you can configure the "Physical Min Scaling Value" and "Low Scaling Value" as 0, which shows the input voltage 0 V as physical value 0°C; and

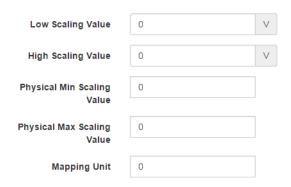
configure the "Physical Max Scaling Value" as 100 and "High Scaling Value" as 10, which shows the input voltage 10V as physical value 100°C.

Note!



The function helps the data be more readable, but the accuracy still depends on the original input range before scaling and also depends on the sensor's accuracy.

For the values which are going to be configured for scaling the output data. For users using RESTful Web API Mapping Unit, can be configured here for further use.



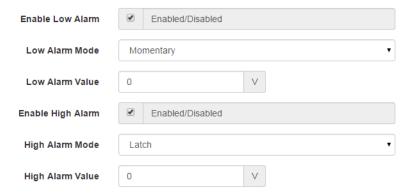
High/Low Alarm

For an AI module with digital or relay output functions featuring a built-in alarm function. When the analog input value is higher than the high alarm value, or lower than the low alarm value, an alarm condition occurs. Then the alarm status will be activated to logic high. The alarm status is shown in the status page of AI as alarm status LED display, when the alarm condition occurs, the Alarm status LED display will be lit.

The specified digital output channel will generate a logic high value if you build the mapping relationship between alarms and DO channel in the DO mapping area. You can map the DO channel referring to Al Alarm section of DO configuration. The High/Low Alarm status LED in Al status page can be cleared by clicking "Clear".

This page is for enabling and configuring the alarm. There are two alarm modes:

- 1. **Latch**: Once the alarm occurs, the alarm status will be activated to logic high level and will keep the value until the alarm is manually cleared. Before the value is cleared, the Alarm status LED will be continuously lit. For an Al module with digital or relay output functions, the specific output channel (chosen in the DO Al Alarm configuration page) will continuously generate logic high value. You can clear the alarm by clicking the "Clear" button in the Al status page.
- 2. Momentary: The alarm status will dynamically change depending on the alarm condition. If the alarm occurs, the alarm status will be logic high. If the alarm condition disappears, the alarm status will be logic low. So not only will the Alarm status LED be lit, in the web page the specific digital output channel value will change depending on the alarm condition. After you choose the alarm mode for high alarm or low alarm, you can define the high alarm value or low alarm value by entering the value in Alarm limit text box.

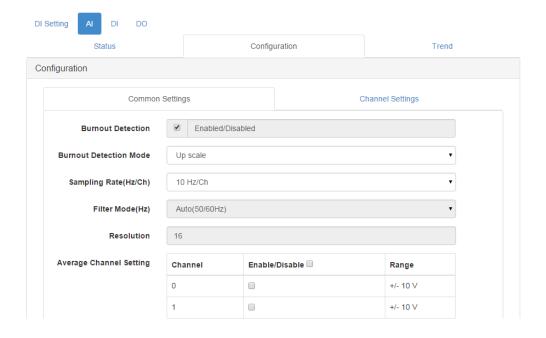


Burnout Detection

The Burnout Detection function, or open-wired function, is designed for 4~20mA input range or temperature input range. For the WISE-4671, the burnout signal is activated when the current is less than 3mA. The Modbus flag indicates that the wire of the sensor connected to the channel has burned out. You can also check the Modbus address of AI Channel Status for detail. When a burnout situation had been detected, the AI value can be shown in "Up scale" which is FFFF(HEX), or "Down scale" which is 0. You can configure this in "Burnout Detection Mode".

Sampling Rate

For models which support more than one sampling rate, you can configure the sampling rate here. For low sampling rate mode, the AI channel would have better noise rejection ability. For the high sampling rate mode, the noise will allow easier coupling to the signal.



Average Channel Setting

To reduce the data amount, some users don't need the detailed value of each channel but the average value of the selected channel. When the channel is enabled, the values will be averaged in 16-bit integer data, and can be shown or read as another channel.

Calibration

WISE analog input modules support internal reference calibration function, before using the calibration function, you can also try to reset the module to the default factory settings for troubleshooting, or if the calibration process had not succeeded, you can reset the module to the default factory calibration parameters. Click **Calibration** and follow the instructions to calibrate the Al channels.

Average Channel Setting	Channel	Enable/Disable	Range
	0		+/- 10 V
	1		+/- 10 V
	2		+/- 10 V
	3		+/- 10 V
Calibration	Calibration		

Al Trend

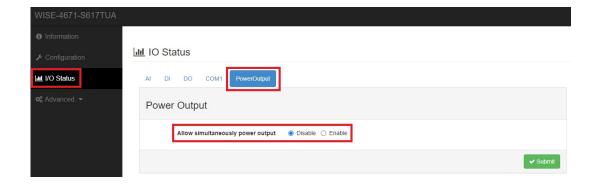
Here you can instantly check the analog input trend of each channel. The function is useful when testing the connection and variety between WISE and sensors.



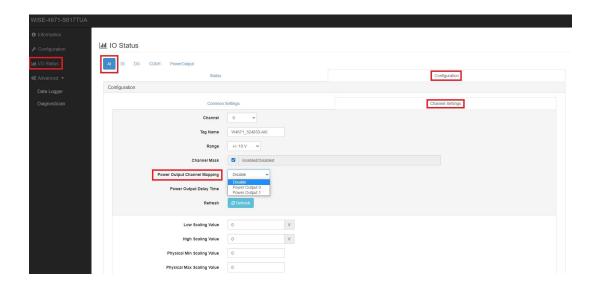
4.2.6.5 Power Output

For WISE-4671, users can choose WISE-S617 or WISE-S617T to support Power Output function to power on the external sensors. WISE-S617 and WISE-S617T have 2 power output pins. Specification as follows.

- 1. Power Current: Total max 80mA
- 2. Power Sequence between 2 pins: Default setting is non-simultaneous
 The power output function on WISE-S617 and WISE-S617T can support max
 80mA power current total. Default setting is non-simultaneous, so each power
 output pin can has max 80mA power current. Simultaneously power output
 means the power current flow can equally share each power output pin at the
 same time.

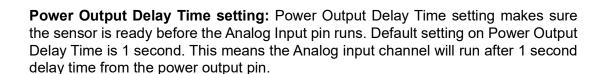


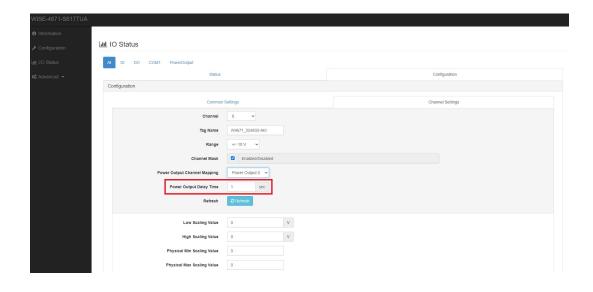
- Configuration settings: The 2 power output pins are binding with Analog input and COM1 function. Users can enable the power output function in Analog input and COM1 configuration pages as follows.
 - Power output with Analog Input configuration page: visit I/O Status > AI > Configuration > Channels Settings > Power Output Channel Mapping.



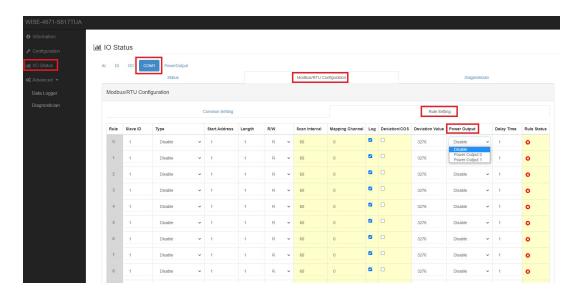
Note!

Please make sure your hardware connection and the selection on power output channel mapping are both correct.



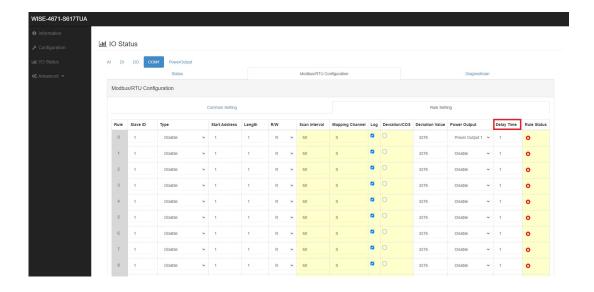


Power output with Analog Input configuration page: visit I/O Status > COM1 > Modbus/RTU Configuration > Rule Settings > Power Output



Note! Please make sure your hardware connection and the selection on power output are both correct.

Delay Time setting: Power Output Delay Time setting makes sure the sensor is ready before the COM1 runs. Default setting on Power Output Delay Time is 1 second, which means the COM1 will run after 1 second delay time from power output pin.



4.2.7 System Configuration

Network Application

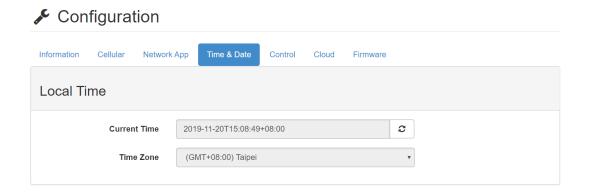
- Host Idle (timeout sec): Decides the availability of the TCP connection between the host controller and WISE. MCU-based WISE modules support four TCP connections at the same time for visiting users. This means WISE can be visited by four TCP hosts at the same time, and is not able to connect to a fifth host. In this case, if one of the hosts stops communicating with the WISE module for longer than the configured host idle time, default 720 seconds, for example, the WISE module will close the TCP connection with the host.
- Communication WDT: After configuring Host Idle time, and will be triggered when all TCP connections are closed. This includes all hosts which visit WISE and also the communication between remote servers like private servers. Once the WDT is enabled, it will trigger systems events like FSV of output channel or system log.
- Communication WDT trigger FSV: Decides whether FSV of output channel will be triggered by communication WDT.
- Reboot Interval: Decides the time interval in minutes to reboot WISE module when WISE module is not able to connect to cellular base station.
- RF Reset Interval: Decides the time interval in minutes to reset the RF module in WISE module when WISE module is not able to connect to cellular base station.

Configuration Network App Information Cellular Time & Date Control Cloud Firmware **Network Application** Disabled **Communication WDT** trigger FSV HostIdle (Timeout Sec) 720 Communication WDT Disabled Mode Reboot Interval (Min) 10 5 RF Reset Interval (Min)

Time & Date

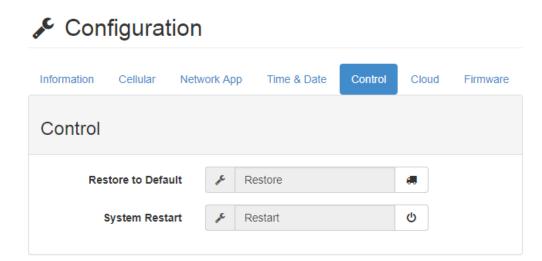
There is an RTC battery inside the WISE module that allows the user to view the current time. And since the cellular device will automatically adjust the time with the NTP server, WISE-4671 is not allowed to set the time zone and adjust the time manually.

✓ Submit



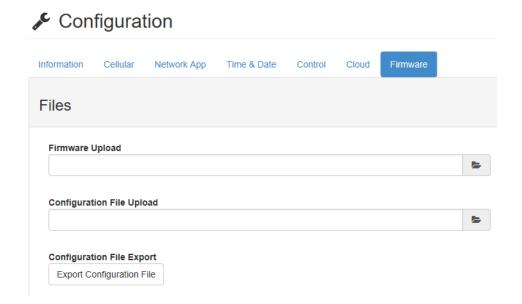
Control

- Restore to Default: The system configuration will be cleared and restored to factory default settings when clicking the icon.
- System Restart: This module's system will reboot when clicking the icon.



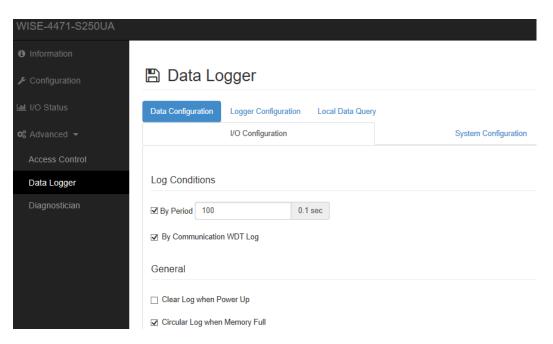
Firmware

To update the firmware, go to the **Firmware** page in **System Configuration** and click the icon of the file you wish to use in the update. You can find the latest official firmware releases on the Advantech support site (http://support.advantech.com/). You can also upload the configuration file or export the configuration file here.



4.2.8 Data Logger

The WISE-4671 series supports data logging. The I/O status can be logged in and queried from the module with up to 10,000 records. WISE-4671 also supports minimum 100,000 program-erase cycle per sector. Before you start the log function, please ensure that the RTC inside the WISE module has the correct time. A battery is used to store the time in the RTC but there may be some discrepancy due to the accuracy of the RTC.



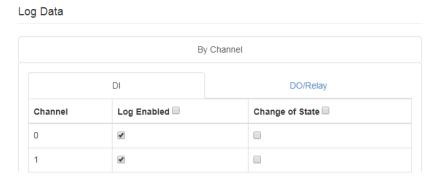
Data Configuration

To choose the method that will be used to log data, go to the **Log Conditions** section in **Data Configuration**. Selecting the **By Period** check box enables periodic logging, and the log period can be set in the following field (increment: 0.1 s; a value of "600" here means that the I/O status will be logged every minute). If you select the **By Communication WDT** check box, the I/O status will be logged once the WDT condition has been met.

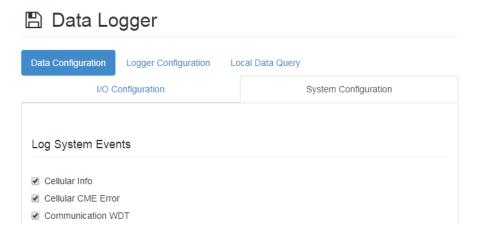
All data can be stored even when the module is powered off. You can clear all data in the logger when powering up the WISE module by selecting the **Clear Log when Power Up** check box. When the memory is full, the logger will stop logging unless you select the **Circular Log when Memory Full** check box, which will cause the module to overwrite the memory.

To set which I/O channel's status will be logged and whether a change of the status will also be logged, go to the **Channel Fields** tab. Note that the log memory will be cleared when any parameters are changed in the **Channel Fields** or in **IO Fields**.

For digital channels, select the **Log Enabled** check box to periodically log the status of the selected channel. Alternatively, select the **Change of State** check box to trigger data logging when a status change occurs.

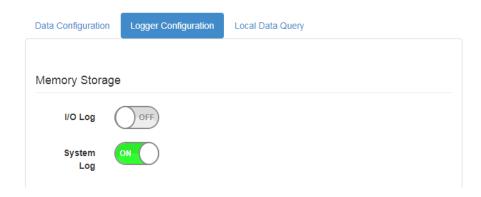


The WISE data logger function can log the I/O status as well as system events for module diagnostics and troubleshooting. You can decide type of system events you would like to log.



Logger Configuration

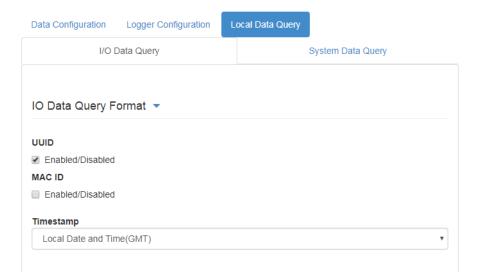
On this page, you can enable the local memory storage function. There are separate switches for enabling the logging of I/O data or system data. Simply turn ON the switches to enable logging.



Local Data Query

You can query data that have been logged in the WISE module. Queries that are output to file will be saved in .Json format. You can visit https://json-csv.com/ to convert the data from .Json to .Csv.

Before performing a query, you can first configure the format of the file. Here, you can choose whether the data will include a UUID or IMEI, and you can also choose the type of time stamp. WISE modules support Local Date and Time (GMT) format will have time stamps like 2015-08-27T15:20:29+08:00, and those that support Coordinated Universal Time (UTC) format will have time stamps such as 1440660089.



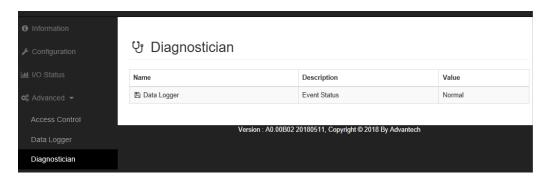
After the data format has been selected, the data can be filtered by selecting **Amount of Latest Data** (to query a certain number of data entries) or **Time Filter** (to query data entries within a specific period of time). To query all data (assuming it is not too large), you can also select **No Filter Enabled**.

Now you can click **Query** to query the data from local memory. Then, the data will be shown in a chart and table. Click **Save** to save the data from the WISE module in .Json format, or click **Clear** to clear all data in local memory.



4.2.9 Diagnostician

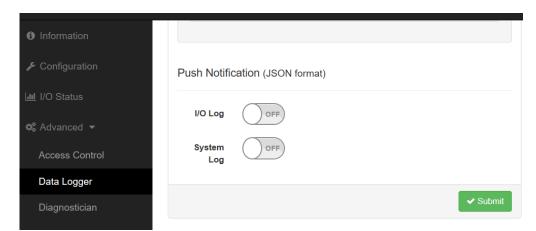
The **Diagnostician** page indicates the operating status of the WISE module. The status of each function is shown on this page for easy troubleshooting.



4.2.10 Push Notification

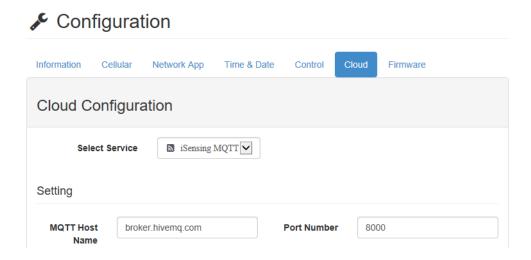
For cloud logger functions such as the **iSensing MQTT** function, data are extracted from the local memory of the WISE module. You can pack data from the WISE data logger into a file and then push the file to a web server whenever the log condition is triggered.

The WISE module will push a notification in .Json format to your MQTT broker. You can switch the **I/O Log** to **ON**, and the WISE module will then start pushing the latest logged data to the MQTT broker.

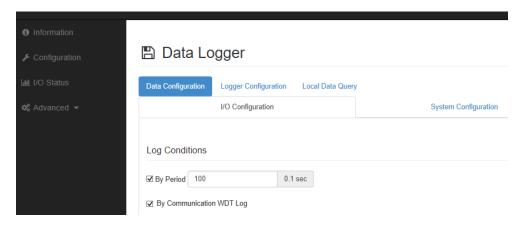


4.2.11 iSensing MQTT

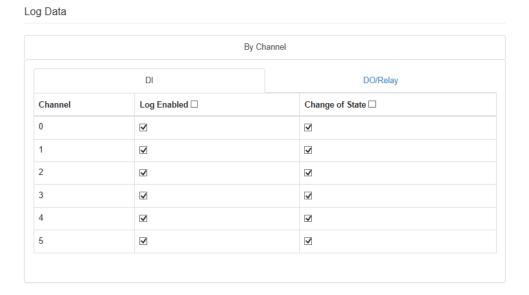
WISE-4671 supports MQTT function, go to **Configuration \ Cloud** and select **iSensing MQTT.** Enter the Host Name of MQTT broker, here we use public broker provided by HiveMQ for demonstration.



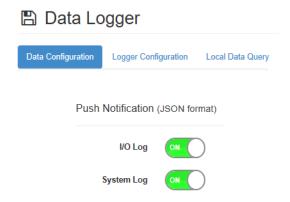
Then go to **Advanced \ Data Logger \ Data Configuration**, user can decide the update period in **Log Conditions**. The minimum update period is 10 second, so user can configure 100 (0.1 sec) as following figure.



Users can decide which channel of data that would like to update periodically, or update by event (Change of State) can also been configured here.



After data update condition been decided by previous step, go to **Logger Configuration** and enable **I/O Log** in **Push Notification**, then WISE will star to update the data.



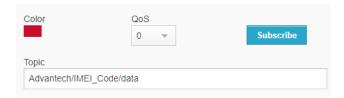
Go to HiveMQ web site http://www.hivemq.com/demos/websocket-client/, enter the Host and Port as following figure, then click **Connect**.



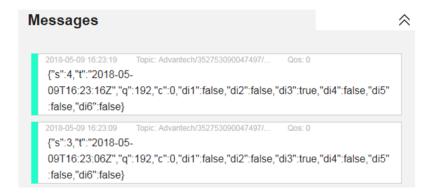
Go to Subscriptions block, and click Add New Topic Subscription.



Enter the topic **Advantech/IMEI_Code/data**, you can find the IMEI code in WISE-Studio in the **Configuration \ Cellular \ Cellular Information** page.



After subscribing to the WISE topic, you will see the data from WISE.



Chapter

Software Specifications

5.1 Connection Setting on WISE-4671

Configure the WISE-4671 module using WISE-Studio through a USB port.

5.1.1 Configure WISE-4671-UA by Using WISE-Studio

5.1.1.1 Minimum System Requirements

The minimum system requirements for WISE-Studio are as follows:

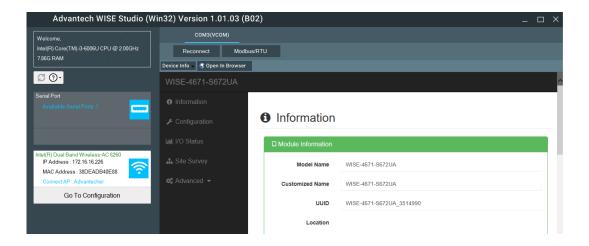
- Microsoft Windows 7 or later
- Microsoft .NET framework 3.5 or later
- Internet Explorer 10 or later

5.1.1.2 Installing WISE-Studio

The latest version of WISE-Studio is available on the Advantech support website http://support.advantech.com/. To install the software, download the installation file and execute it locally.

5.1.1.3 Introduction to WISE-Studio

WISE-Studio is a tool for configuring WISE modules. The software provides a web-based interface that is similar for different models. For WISE modules configured via Ethernet, LAN, or WLAN, WISE-Studio enables communication with the WISE module's internal web server. For modules configured via USB, WISE-Studio executes a web server on the computer installed with the software. The web server then uses the USB interface to communicate with the WISE module. The module information can be accessed via the embedded web page or a web browser.



Communication Box

In this screen, there are several communication interfaces for configuring various WISE modules. The WISE-4671 series uses the USB serial interface for configuration.

Refresh: Pressing this button refreshes the USB serial interface.

USB-Serial: This block is for connecting to a WISE module via USB. The available USB serial port number will be shown here. Click **Go to Configuration** to connect the USB COM port.

USB-Serial Configuration Page

After clicking Go to Configuration, all available USB COM ports will be displayed.

Choose the COM port to configure and click **Connect** to open the **Configuration** page. Users can also click **Open in Browser** to use your default browser to configure the WISE module (IE is the default browser embedded in WISE-Studio).

5.1.1.4 Information Page

Module Information

This page displays the name of the module and related information. Click **Go to Configuration** to view or change the settings.

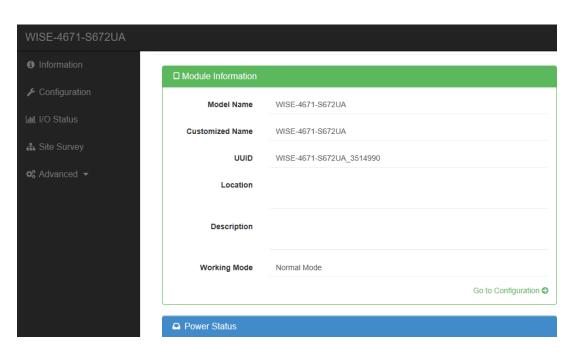
Model Name: Model of WISE module

Customized Name/UUID: Refer to the model name and UUID of the module.

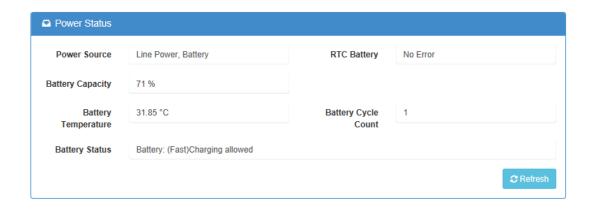
The default UUID is a combination of the model name and IMEI. Users can modify this value.

Location Information: The module location is provided here.

Description: Any comments about the module can be displayed here.



Power Status displays the power source and battery status.



Device Information lists the module firmware and web page version.



5.1.1.5 Connecting to a Cellular Network

Enter the PIN Code

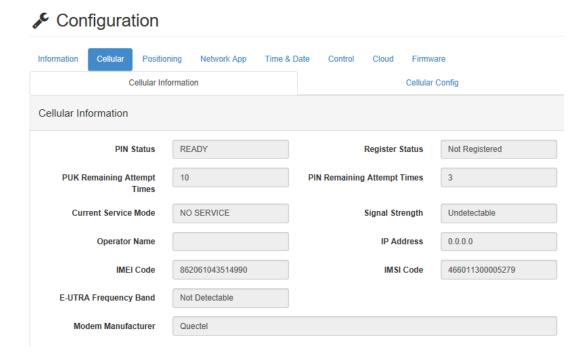
First, insert a SIM card into the WISE module, and then go to the Configuration page and click the Cellular tab. Enter the PIN of the SIM card in the PIN Authentication dialog box. Selecting the Auto Write PIN Code check box will save the PIN code to the WISE module.

Cellular Information

After the PIN code has been entered, information on the cellular network will be available in the Cellular tab:

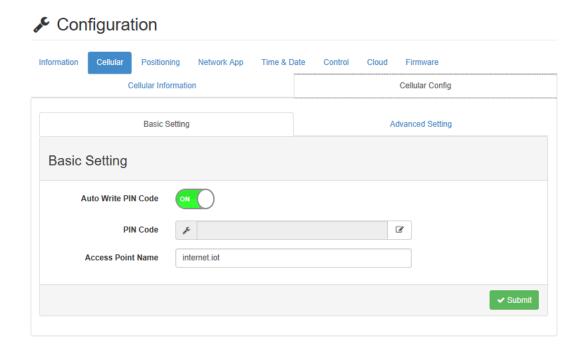
- PIN Status: The PIN code status of the SIM card.
- Register Status: Registration status with the cellular network operator.
- Current Service Mode: Network device mode (e.g., LTE CAT-NB1).
- Signal Strength: Indicates reference signal receiving power (RSRP) of the cellular network.
- IP Address: IP address assigned by the cellular network.
- Operator Name: Name of the cellular network operator.
- Modem Manufacturer: Manufacturer of the RF module.
- IMEI Code: International Mobile Equipment Identity of the modem.
- IMSI Code: International Mobile Subscriber Identity of the SIM card.

Use WISE-Studio to obtain data of the WISE-4671 node for configuring the WISE-3610 gateway.



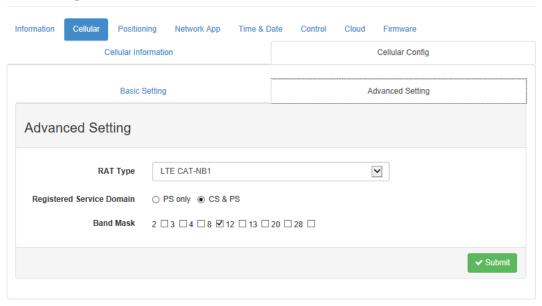
Cellular Configuration

- Basic setting
 - After the SIM card has been inserted into the WISE module, it can be configured in this page:
 - Auto Write PIN Code: Enables the PIN code to be saved to the WISE module.
 - PIN Code: Configure or modify the PIN code here.
 - Access Point Name (APN): Configure the APN of the cellular network provider



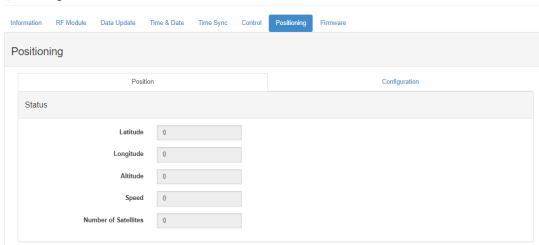
- Advanced Setting
 - RAT Type: Select the operating mode category.
 - Band Mask: Select the specific band by shortening the connection time.

Configuration



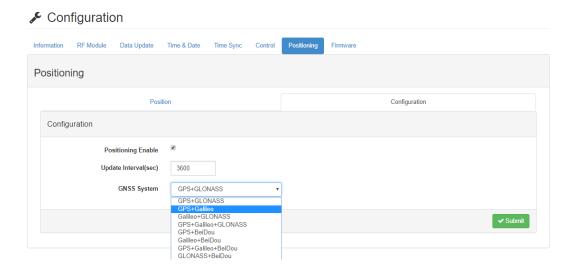
On this page, users can obtain the WISE module coordinates.

Configuration



The WISE-4671 module is equipped with GPS. The options on this page allow users to enable/disable GPS positioning. To save power, GPS is disabled by default. Moreover, users can configure the specific update interval.

As shown below, the **GNSS System** field features a dropdown menu with different GPS system combination options. Users can select the system combination according to their usage requirements.

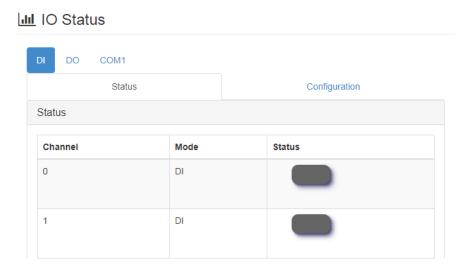


5.1.1.6 I/O Status Configuration

Digital Input

Status

The value of all digital input channels can be determined from the LED indicators on the DI tab (green LED = logic high; grey LED = logic low).



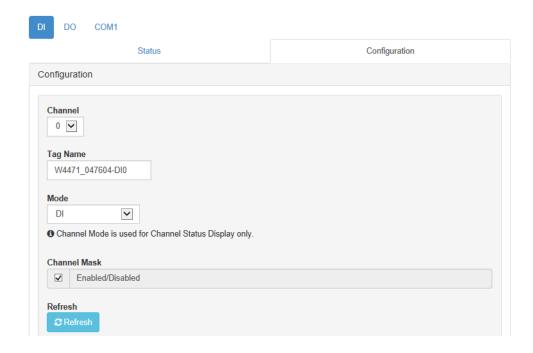
Configuration

The digital input channels support several operation modes and can be configured from this page.

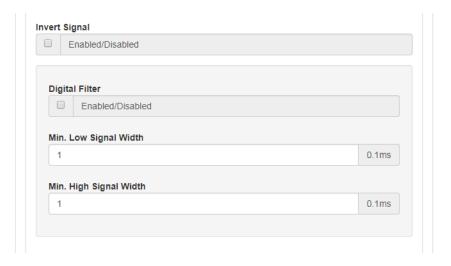
- Channel: Select the channel to be configured.
- Tag Name: Each channel can be given a name for identification.
- **Mode:** This item allows users to configure the operating mode for each channel. Channels can also be disabled/enabled to improve the overall performance.

After a channel has been configured, click **Submit** at the bottom of this page to implement the changes.

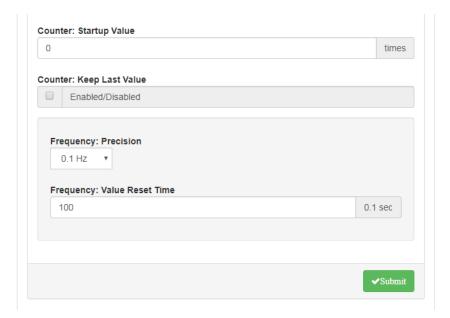
- Channel Mask: Each channel can be disabled individually to reduce data communication traffic.
- **Refresh:** This item allows users to refresh the system configuration settings.



- Invert Signal: WISE digital input channels support inverted digital input status. To enable/disable this function, click the Invert Signal check box on the Configuration page.
- **Digital Filter:** Digital input channels have a digital filter that can remove high-frequency noise. The filter can be enabled/disabled by clicking the **Digital Filter** check box. When the filter is enabled, the minimum acceptable signal width can be defined in the **Min. Low Signal Width** and **Min. High Signal Width** fields (increment: 0.1 ms).

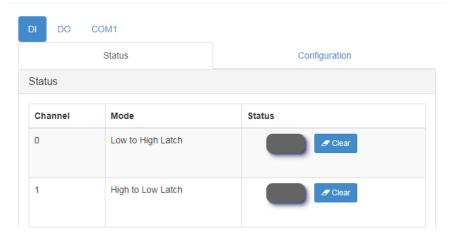


- Counter: When counter mode is selected for a given channel, the number of pulses in the digital signal from that channel are counted and recorded to the register. On the **Status** page, the current count value of the selected channel is displayed in the **Counter Value** field. The counter can be started/stopped by pressing **Start/Stop**. The counter can be reset (the value stored in the register will be reset to the default, which is zero) by clicking **Reset**. The predefined startup value is the value shown in the **Counter value** field. When this is reset, either by pressing **Reset** on the **Status** page or by issuing a command, the default settings will be restored (the default value for this field is zero). If **Keep Last Value** is enabled, the last counter value will be retained in the register when the module is powered OFF. When the module is powered ON, the counter will continue to count from that value. When this function is disabled, powering off the module will cause the counter to be reset and the count value in the register to be reset to zero.
- Frequency: For pure digital input channels, WISE modules support frequency mode, which calculates the frequency of the digital input signal of the selected channel. The frequency value will be displayed in the Frequency value field on the DI Status page. The Precision settings can be configured to specify the frequency for different input ranges. The Value Reset Time function allows users to specify when the frequency value is reset to zero if the pulse bandwidth is greater than expected.



- Low-to-High Latch: Under low-to-high latch mode, once a digital input channel detects that the logic level has changed from low to high, the logic status will remain as "logic high" until the latch is cleared manually, which will return the logic status to "logic low". The logic status can be determined via the latch status LED included on the IO Status page. Clear the latch by clicking Clear.
- **High-to-Low Latch:** Under high-to-low latch mode, once a digital input channel detects that the logic level has changed from high to low, the logic status will remain as "logic low" until the latch is cleared manually, which will return the logic status to "logic high". The logic status can be determined via the latch status LED included on the **IO Status** page. Clear the latch by clicking **Clear**.

III IO Status



COM1 (RS-485 Port)

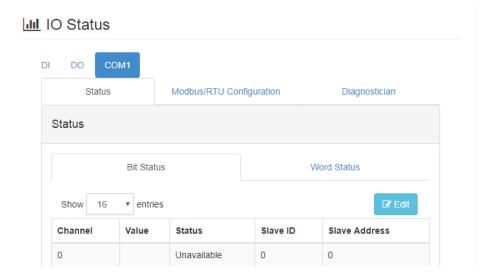
WISE-4671 features one RS-485 port for Modbus gateway functionality. This port can be used to poll data from RS-485 Modbus/RTU slave devices, such as Advantech's ADAM-4000 or ADAM-5000/485 series devices.

Status

Navigate to the **COM1** tab to check the status or configure the RS-485 Modbus master function. A total of 32 Modbus slave addresses can be mapped as the WISE module I/O. These 32 addresses can be coils or registers; coils will be mapped as extension bits of the WISE module, and registers will be mapped as extension words of the WISE module. In the **COM1** status tab, the bits and words are shown on individual pages.

- **Channel:** Indicates the number of bits. A maximum of 32 bits can be displayed, but less than 32 coils can be mapped as bits. The empty bits are invalid. The same applies to words, which may also have empty channels.
- Value: This shows the value polled from mapped addresses.
- **Status:** This shows the status of each bit or word. If a channel is empty or has not been mapped to a Modbus slave address, the status will be "Unavailable".
- Slave ID: This is the Modbus slave ID of RS-485 Modbus slave devices.
- Slave Address: This is the address of a bit or word from an RS-485 Modbus slave device.

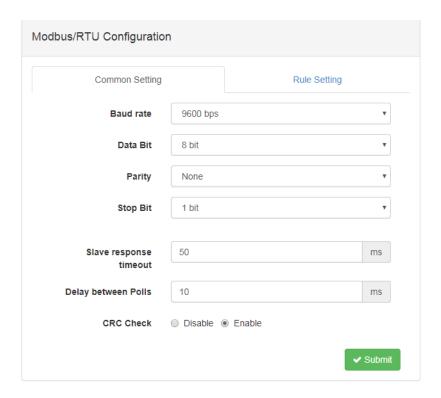
For a writable bit or word, users can click **Edit** to switch to edit mode to change the value. Then click **Apply** to write the Modbus addresses individually.



Modbus Configuration - Common Settings Tab

The options on this tab allow users to configure the RS-485 port parameters.

- **Baud Rate:** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
- Data Bit: 7, 8Stop Bit: 1, 2
- Parity: None, Odd, Even
- Slave Response Timeout: This item allows users to specify the response time for Modbus slaves
- **Delay Between Polls:** This item allows users to set the delay time between each Modbus instruction
- CRC Check: This item allows users to set the CRC check to ignore Modbus CRC errors



Modbus Configuration - Rule Setting Tab

The items on this tab allow users to configure the Modbus address of end devices to be polled.

- Rule: Each COM port can support a maximum of 8 rules. Each rule can be for a different slave device. This means a maximum 8 of devices can be connected to the COM port. Alternatively, all the rules can be used for polling different addresses on the same slave device.
- Slave ID: Each slave device connected to the RS-485 port has a unique slave ID. This item is the slave address of the Modbus devices connected to the WISE module.
- **Type:** This device supports Modbus data types: 01 Coil Status (0x), 02 Input Status (1x), 03 Holding Registers (4x), and 04 Input Registers (3x). After one of the types has been configured in the rule, the rule will be enabled and the COM port will start polling after the configuration has been implemented.
- **Start Address:** Enter the first address number to be polled. The address base is 1. To poll the first address of a holding register (i.e., 40001), simply input the number "1" (users do not need to input the entire address "40001").
- **Length:** Input the length of the address to be polled in this rule. For example, to poll 40001 ~ 40008, set the length as "8". Because each COM port can poll a maximum of 32 addresses, the maximum length is 32, and the total number of all rules should not exceed 32.
- R/W: This item allows users to set whether the address in this rule is read or written. For coil statuses and holding registers, users can configure these addresses as read-only or write-only to reduce the polling effort.
- Scan Interval (unit: s): This item allows users to set the scan interval for the COM port to poll Modbus slave devices. The COM port optimizes the scan interval according to the setting configuration. However, the read scan interval may depend on factors such as the Baud rate, slave device response time, and delay between polls. See the Diagnostician page to check the real response time as a reference for the scan interval value.

- Mapping Channel: When the Modbus address of slave devices is configured in each rule, these addresses are also mapped to the WISE module. the coils and registers of Modbus slave devices are mapped as bits for RESTful web service. There are 32 continuous channels of bits and another 32 continuous channels of words that can be mapped. Ensure that the channels for each rule do not overlap.
- **Log:** This item allows users to set whether the data polled from this rule is logged in the data logger.
- **Deviation/Change of Status (COS):** When this item is enabled, the difference between the current poll and last poll values can trigger a deviation/COS (change of state) for push data or log data.
- Rule Status: The web configuration interface will check whether the rule settings have any overlap or conflict. Rules can be enabled/disabled by setting the Type value. Enabled rules will be denoted with a green icon. The system will prompt users to confirm the submission of rules.

Note! After configuring the rules, click Submit to implement them.



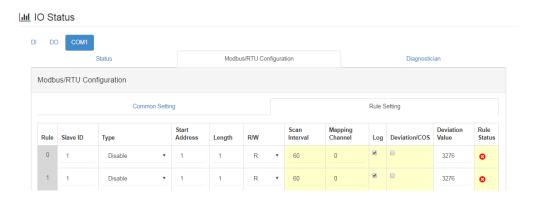
Note!



After changing the rule configurations, the data logger is cleared of all data to accommodate the new data structure under the new configuration.

Note! Move the mouse cursor over the table title rows to view tips.





Diagnostician

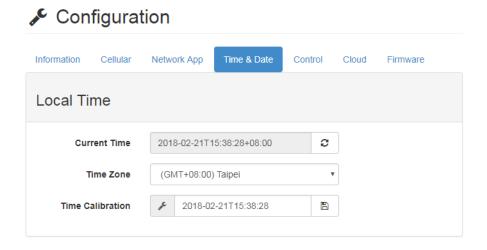
Because every device has a different response time, the WISE-4671 module supports a diagnostics function for testing the response time of each rule. This is intended to reduce the scan interval. Users can refer to the response time shown on this page when configuring the **Scan Interval** in the **Rule Setting** pages. The test results shown on this page can be reset by clicking **Reset Response Time**.

III IO Status DI DO Modbus/RTU Configuration Diagnostician Modbus/RTU Slave Response Time Max Response **Current Response** Min Response Rule Time(ms) Time(ms) Time(ms) Status 0 0 0 65535 Unavailable 65535 Unavailable

5.1.1.7 System Configuration

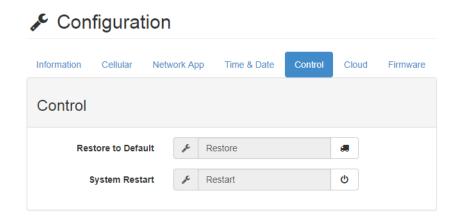
Time & Date

WISE modules have a built-in RTC that allows users to view the current time, set the time zone, and adjust the time by pressing **Click Me** to read the time from host devices.



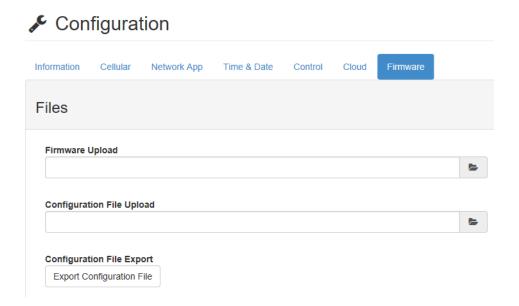
Control

- **Restore to Default:** This item allows users to clear the system configuration and restore all default settings.
- System Restart: This item reboots the module for a system restart.



Firmware

To update the firmware, go to the **Firmware** page in **System Configuration** and click the update file. The latest official firmware releases are available on the Advantech support website (http://support.advantech.com/). Users can also upload or export the configuration file.





www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

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