WISE-4671

Advanced Industrial Cat. NB1/ Cat. M1 Wireless I/O Module

Features

- Global coverage of Cat. NB1 and Cat. M1 frequency bands
- Application-ready I/O combination with optional IP65 I/O
- Wide voltage power input with 10 ~ 50V_{DC}
- Data buffered function with time stamp prevents data loss
- Fast and easy deployment to reduce operation cost
- Supports direct cloud service for IoT integration
- Support MQTT, CoAP & LwM2M protocol
- GPS/Galileo/BeiDou/GLONASS support

Introduction

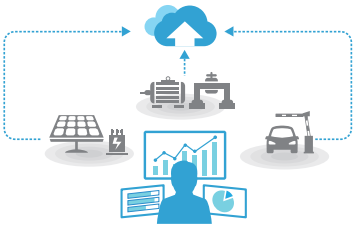
NB-IoT and LTE Cat M1 are new wireless technologies included in the 5G evolution of cellular technology standards defined by the 3rd Generation Partnership Project (3GPP). NB-IoT and LTE Cat M1 feature low power consumption and utilize LTE networks based on licensed spectrum bands. These technologies 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.

Features

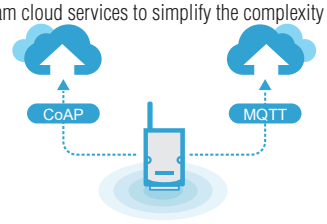
Automatic Connection with Cloud

By utilizing leading IoT messaging protocols such as MQTT and CoAP, WISE-4671 series easily integrates with popular cloud services, reducing setup complexity and accelerating implementation.



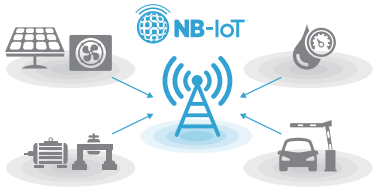
Open Connectivity for Cloud and System

WISE-4671 series support CoAP and MQTT communication protocols while continually integrating mainstream cloud services to simplify the complexity of data integration.



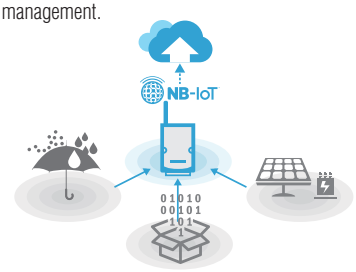
Legacy and Existing Devices to NB-IoT/LTE-M

WISE-4671 series offer digital I/O, 4~20-mA analog and RS-232/485 interfaces for various applications, quickly providing NB-IoT/LTE-M network functions to existing devices and assets.



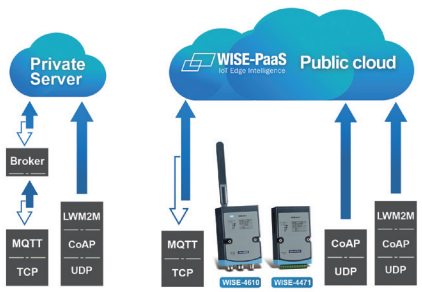
Upgrade Legacy Equipment though Cloud Management

WISE-4671 series NB-IoT/LTE-M sensor nodes are suitable for data collection from widely distributed assets. No complicated programming, setup, or registration are required for a fast introduction into IoT applications such as smart cities, smart water/electricity meters, and remote facility management.



Device to Cloud System Architecture

WISE-4671 series wireless sensor nodes support the open communication protocols MQTT, CoAP, and LwM2M. Users can transmit data to specific public cloud services or existing private cloud platforms by publish/subscribe or push.



Last updated: 31-May-2024

Specification

Wireless Communication

- **3GPP Standards** R.13, Cat. NB1/ Cat. M1
- **Frequency Band** B2, B3, B4, B8, B12, B13, B20, B28
- **Antenna Type** External

GPS

- **GNSS Systems** GPS, GLONASS, Galileo, BeiDou and QZSS signals
- **Max. Update Rate** Every 15 seconds
- **Accuracy** Position: 2.5 m Typ.
- **Acquisition** Cold starts: 31s Typ.
- **Antenna Type** Internal

General

- **Power Input**
  - Built-in 4100mAh Lithium rechargeable battery pack 10~50V_{DC}
  - external power
  - 17-21V_{DC} Solar Panel
- **Power Consumption** Non-battery Charging: 1.4W @ 12V_{DC}
When Battery Charging: 11W @ 24V_{DC}
- **Configuration Interface** Micro-B USB
- **SIM** 4FF/Nano SIM
- **Connector** Power: M12 4-pin code-A male x 1
I/O: M12 8-pin code-A female x 2
- **LED Indicator** Status, Error, Tx, Rx, Signal Level, Battery Level
- **Mounting** DIN 35 rail, wall, and pole
- **Dimension (W x H x D)** 82 x 122 x 49 mm (without antenna)
- **Certification** CE, FCC, PTCRB, AT&T, Verizon

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)

WISE-S614 (4AI/4DI)

Analog Input

- **Channels** 4
- **Resolution** 16-bit
- **Sampling Rate** 1Hz 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 Ω (Voltage)
240 Ω (External resistor for current)
- **Isolation Voltage** 2000 V_{DC}
- **Common Mode Voltage** 350 V_{DC}
- **Drift** Unipolar ±100ppm
Bipolar ±50ppm
- **Burn-out Detection** Yes (4~20mA only)
- **Supports Data Scaling and Averaging**

Digital Input

- **Channels** 4
- **Input Type** Dry Contact (Wet Contact by request)
- **Logic Level** 0: Open
1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Keep/Discard Counter Value when Power-off**
- **Supports Inverted DI Status**

WISE-S615 (4 RTD)

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

WISE-S617 (2AI/2DI/1DO/1RS-485)

Digital Input

- **Channel** 2
- **Logic Level (Dry Contact)** 0: Open
1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Non-isolation**
- **Supports 32-bit counter input function (maximum signal frequency: 200 Hz)**
- **Supports keep/discard counter value when power OFF**
- **Supports frequency input function (maximum signal frequency: 200 Hz)**
- **Supports inverted digital input status**

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 Ω (Voltage)
120 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**

Digital Output

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

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)

WISE-S672 (6DI/1RS-485/1RS-485 or RS-232)

COM Port

- **Port Number** 2
- **Type** COM1: RS-485
COM1: RS-485/232
- **Serial Signal** RS-485: DATA+, DATA-
RS-232: Tx, Rx, GND
- **Data Bits** 7, 8
- **Stop Bits** 1, 2
- **Parity** None, Odd, Even
- **Baud Rate (bps)** 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protection** 15 kV ESD
- **Protocol** Modbus/RTU (Total 32 address)

Digital Input

- **Channels** 6
- **Input Type** Dry Contact
- **Logic Level** 0: Open
1: Close to DI COM
- **Compatibility** 3.3V/TTL
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Keep/Discard Counter Value when Power-off**
- **Supports Inverted DI Status**

Ordering Information

Advanced Industrial Cat. NB1/Cat. M1 Module

- **WISE-4671-UA** Advanced Industrial Cat. NB1/ Cat. M1 Wireless Module

WISE-S600 IP65 I/O Module with M12 Connectors

- **WISE-S614-A** 4AI/4DI
- **WISE-S615-A** 4RTD
- **WISE-S617-A** 2AI/2DI/1DO/1RS-485 w/ 2ch 12V_{DC} power output
- **WISE-S672-A** 6DI/1RS-485/1RS-485 or RS-232

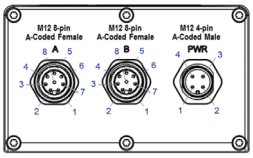
WISE-S600T I/O Module with Terminal Block

- **WISE-S614T-A** 4AI/4DI
- **WISE-S617T-A** 2AI/2DI/1DO/1RS-485 w/ 2ch 12V_{DC} power output

Accessories

- **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
- **• 96PSD-A30W24-DS** DIN Rail Power Supply (1.25A Output Current)
- **• BB-RPS-V2-WR2-US** Power Supply, 12V/1A, US plug
- **• BB-RPS-V2-WR2-EU** Power Supply, 12V/1A, EU plug

Pin Assignment



	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
A	1	White	DI0	RTD2+	AI0+	DI0
	2	Brown	DI1	RTD2-	AI0-	DI1
	3	Green	DI2	RTD2 COM	+12V Out0	DI2
	4	Yellow	DI3	NC	+12V Out GND	DI3
	5	Gray	NC	RTD3+	AI1+	DI4
	6	Pink	NC	RTD3-	AI1-	DI5
	7	Blue	NC	RTD3 COM	+12V Out1	NC
	8	Red	DI COM	NC	+12V Out GND	DI COM
B	1	White	AI0+	RTD0+	DI0	RS-485 D1-
	2	Brown	AI0-	RTD0-	DI1	RS-485 D1+
	3	Green	AI1+	RTD0 COM	DI COM	RS-232 TX
	4	Yellow	AI1-	NC	DO0	RS-232 RX
	5	Gray	AI2+	RTD1+	DO GND	RS-485 D2-
	6	Pink	AI2-	RTD1-	RS-485 D+	RS-485 D2+
	7	Blue	AI3+	RTD1 COM	RS-485 D-	NC
	8	Red	AI3-	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

Dimensions

Unit: mm