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-4471 series is a 4G cellular based IoT wireless sensor node compliant with LTE Cat. NB1 and Cat. M1 with built in antenna for flexible installation. In addition to offering various I/O types, WISE-4471 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-4471 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/eMTC

WISE-4471 series offer digital I/O, 4-20-mA analog and RS-232/485 interfaces for various applications, quickly providing NB-IoT/eMTC network functions to existing devices and assets.

Upgrade Legacy Equipment though Cloud Management

WISE-4471 series NB-IoT/eMTC 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-4471 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.
## Specification

### Wireless Communication
- **SGPP Standards**: RS-232, Cat. NB1, Cat. M1
- **Frequency Band**: 2, 3, 4, 5, 8, 12, 13, 20, 28
- **Antenna Type**: Internal

### General
- **Power Input**: 10 ~ 50Vdc external power
- **Power Consumption**: 2W
- **Configuration Interface**: Micro-USB
- **SIM**: 3FF/Micro SIM
- **Connector**: WISE-4471-S2m: Plug-in screw terminal block (I/O and power), WISE-4471-S4m: M12 4-pin code-A male x 1 (Power)
- **LED Indicator**: Status, Error, Tx, Rx, Signal Level
- **Port Number**: DIN 35 rail, wall, pole and stack
- **Max. Load Voltage**: 30V (for Resistive Load)
- **Supports 3kHz Frequency Input**: 5 kHz
- **Sampling Rate**: 30 channels
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Supports Keep/Discard Counter Value when Power-off**
- **Supports 200Hz Counter Input (32-bit + 1-bit overflow)**
- **Channels**: 4
- **Type**: Digital Input
- **Input Impedance**: 15 kV ESD
- **Input Type**: Digital Input
- **Channels**: 6
- **Type**: Digital Output (Sink Type)

### WISE-S214 (4AI/4DI)
- **Serial Port**: Modbus/RTU (Total 64 addresses by max. 20 instructions)
- **Port Number**: 1
- **Data Bits**: 7, 8
- **Stop Bits**: 1, 2
- **Baud Rate (bps)**: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protocol**: None, Odd, Even

### WISE-S251 (6DI/1RS-485)
- **Serial Port**: Modbus/RTU (Total 64 addresses by max. 20 instructions)
- **Port Number**: 1
- **Data Bits**: 7, 8
- **Stop Bits**: 1, 2
- **Type**: Digital Input
- **Baud Rate (bps)**: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protocol**: None, Odd, Even

### WISE-S472 (1DI/2COM) IP65
- **Serial Port**: Modbus/RTU (Total 32 address by max. 8 instructions)
- **Port Number**: 2
- **Data Bits**: 7, 8
- **Stop Bits**: 1, 2
- **Type**: Digital Input
- **Parity**: None, Odd, Even
- **Baud Rate (bps)**: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
- **Protocol**: None, Odd, Even

### Environment
- **Operating Temperature**: -20 ~ 60°C
- **Storage Temperature**: -40 ~ 80°C
- **Operating Humidity**: 20 ~ 95% RH
- **Storage Humidity**: 0 ~ 95% RH

### Ordering Information
- **WISE-4471-UA**: Cat. NB1/Cat. M1 Wireless Module
- **WISE-S200 I/O Module**
  - **WISE-S214-A**: 4AI/4DI
  - **WISE-S250-A**: 6DI, 2DO & 1RS-485
  - **WISE-S251-A**: 6DI, 2DO & 1RS-485
- **WISE-S400 IP65 I/O Module**
  - **WISE-S414-A**: 4AI/4DI
  - **WISE-S472-A**: 1DI/2COM IP65

### Accessories
- **PWR-242-AE**: DIN Rail Power Supply (2.1A Output Current)
- **PWR-243-AE**: Panel Mount Power Supply (3A Output Current)
- **PWR-244-AE**: Panel Mount Power Supply (4.2A Output Current)
- **1654011516-01**: M12 Connector 8P Male
- **1655005903-01**: M12 Connector 4P Female
- **1700028162-01**: PWR-242-AE 58 M12 code-A 4-pin cable for power wiring
- **1700028163-01**: PWR-243-AE 2M M12 code-D 8-pin male cable for I/O wiring
- **1700028164-01**: PWR-244-AE 2M M12 code-D 8-pin male cable for I/O wiring

### Dimensions

<table>
<thead>
<tr>
<th>Dimension (W x H x D)</th>
<th>70 x 112 x 38 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Kit</td>
<td>Status, Error, Tx, Rx, Signal Level</td>
</tr>
<tr>
<td>LED Indicator</td>
<td>Status, Error, Tx, Rx, Signal Level</td>
</tr>
<tr>
<td>Power Input</td>
<td>10 ~ 50Vdc external power</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>2W</td>
</tr>
<tr>
<td>Configuration Interface</td>
<td>Micro-USB</td>
</tr>
<tr>
<td>SIM</td>
<td>3FF/Micro SIM</td>
</tr>
<tr>
<td>Connector</td>
<td>WISE-4471-S2m: Plug-in screw terminal block (I/O and power), WISE-4471-S4m: M12 4-pin code-A male x 1 (Power)</td>
</tr>
<tr>
<td>LED Indicator</td>
<td>Status, Error, Tx, Rx, Signal Level</td>
</tr>
<tr>
<td>Port Number</td>
<td>DIN 35 rail, wall, pole and stack</td>
</tr>
<tr>
<td>Max. Load Voltage</td>
<td>30V (for Resistive Load)</td>
</tr>
<tr>
<td>Supports 3kHz Frequency Input</td>
<td>5 kHz</td>
</tr>
<tr>
<td>Supports 200Hz Counter Input (32-bit + 1-bit overflow)</td>
<td>5 kHz</td>
</tr>
<tr>
<td>Supports Keep/Discard Counter Value when Power-off</td>
<td>5 kHz</td>
</tr>
<tr>
<td>Supports Inverted DI Status</td>
<td>5 kHz</td>
</tr>
<tr>
<td>Channels</td>
<td>6</td>
</tr>
<tr>
<td>Type</td>
<td>Digital Input</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>15 kV ESD</td>
</tr>
<tr>
<td>Baud Rate (bps)</td>
<td>1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200</td>
</tr>
<tr>
<td>Protocol</td>
<td>None, Odd, Even</td>
</tr>
</tbody>
</table>

**Certification**
- CE, FCC, CE, FCC, CE, FCC

**Dimension (W x H x D)**
- 70 x 112 x 38 mm

**Unit: mm**