

# WISE-4610

## LoRa/LoRaWAN Outdoor Wireless I/O Module



### Features

- Private LoRa and LoRaWAN selectable
- Longer communication range
- Better penetration through concrete and steel
- Less interference than 2.4GHz spectrum
- Application-ready I/O combination with IP65 enclosure
- Powered by solar rechargeable battery or 10–50V<sub>DC</sub> input
- GPS/Galileo/BeiDou/GLONASS support

### Introduction

LPWAN is a type of wireless telecommunication wide area network designed to allow long range communications at a low data rate among IoT applications, such as sensors operated on a battery. Its benefits is to offer multi-year battery lifetime for sensors/applications to send small amounts of data over long distances a few times per hour suitable for different environments.

Private LoRa and LoRaWAN are one of category of LPWAN which belong to the non-cellular LPWAN wireless communication network protocols enables very long range transmissions with low power consumption, operating in the non-licensed spectrum.

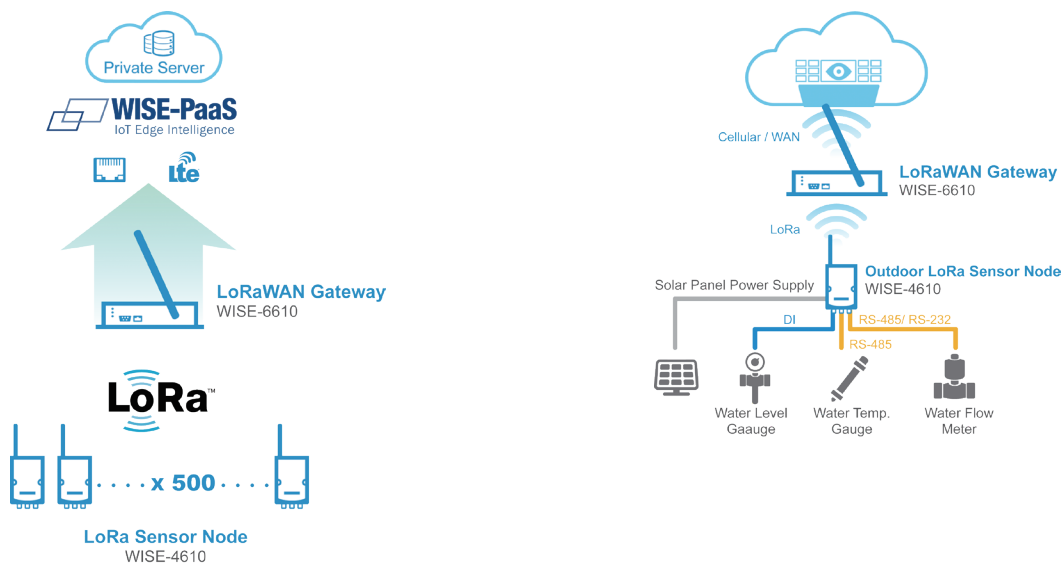


### Star Topology

The LoRaWAN networks in a star topology have gateway relaying the data between the sensor nodes and the network server.

Communication between the sensor nodes and the gateway goes over the wireless channel utilizing the LoRa physical layer, whilst the connection between the gateways and the central server are handled over a backbone IP-based network.

The LoRaWAN end nodes(sensors) typically use Low Power and are battery powered (Class A and Class B). LoRa embedded sensors that run on batteries that lasts from 2–5 years typically. The LoRa sensors can transmit signals over distances from 1km—10km.



## Common Specification

### Wireless Communication

- Standard LoRaWAN or Private LoRa
  - Private LoRa Frequency Range & Region\*
    - EU 863-870 (MHz)
    - US 902-928 (MHz)
    - JP 915-928 (MHz)
  - LoRaWAN Frequency Range & Region\*
    - EU 863-870 (MHz)
    - US 902-928 (MHz)
- \* Other region can be supported upon request
- Spreading Factor 7-12
  - Outdoor Range 5km with line of sight (with 2 dBi Antenna)
  - Transmit Power Up to +18dBm
  - Receiver Sensitivity Up to -136dBm at SF = 12 / 125KHz
  - Data Rate 50 kbps at FSK mode EU868  
21.9 kbps at SF7 mode US915  
5.47 kbps at SF7 mode JP923
  - Topology Star
  - Function End Node

### GPS<sup>1</sup>

- GNSS Systems GPS, GLONASS, Galileo, BeiDou, QZSS and SBAS signals
- Max. Update Rate Single GNSS: up to 18 Hz  
Concurrent GNSS: up to 10 Hz
- Accuracy Position: 2.5 m CEP (50% confidence)  
With SBAS: 2.0 m CEP (50% confidence)
- Acquisition Cold starts: 57 s  
Aided starts: 7 s

### General

- Power Input Built-in 4000mA Lithium rechargeable battery pack<sup>2</sup>  
or 10-50V<sub>DC</sub> external power
- Battery Life 6 months (1 hour data update and 1 day GPS update)
- Configuration Interface Micro-B USB
- Connector Power: M12 4-pin code-A male x 1  
I/O: M12 8-pin code-D female x 2
- LED Indicator Status, Error, Tx, Rx, Battery/Signal Level
- Mounting DIN 35 rail, wall, pole, and stack
- Dimension (W x H x D) 82 x 122 x 49 mm (without antenna)

### Environment

- Operating Temperature<sup>2</sup> With battery: 0-60°C  
Without battery: -25-70°C
- Operating Humidity 5-95% RH

<sup>1</sup> No GPS version, can be ordered upon request

<sup>2</sup> No battery version, can be ordered upon request

## WISE-S672 (6DI/2COM ports)

### Serial Port

- Port Number 2
- Type Port 1: RS-485  
Port 2: 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 DCOM
- Supports 200Hz Counter Input (32-bit + 1-bit overflow)
- Keep/Discard Counter Value when Power-off
- Supports Inverted DI Status

## WISE-S614 (4AI/4DI)

### Analog Input

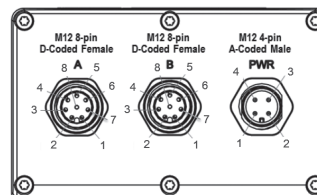
- Channels 4
- Resolution 16-bit
- Sampling Rate 1Hz per channel
- Accuracy ±0.1% of FSR (Voltage)  
±0.2% of FSR (Current)
- Input Range ±150mV, ±500mV, ±1 V, ±5V, ±10V, 0 ~ 150mV, 0 ~ 1V,  
0 ~ 5V, 0 ~ 10V, 0 ~ 20mA, 4 ~ 20mA, ±20mA
- Input Impedance > 2M  $\Omega$  (Voltage)  
240  $\Omega$  (External resistor for current)
- Over Voltage Protection ±35 V<sub>DC</sub>

- Burn-out Detection Yes (4-20mA only)
- Supports Data Scaling and Averaging

### Digital Input

- Channels 4
- Input Type Dry Contact
- Logic Level 0: Open  
1: Close to DCOM
- Supports 200Hz Counter Input (32-bit + 1-bit overflow)
- Keep/Discard Counter Value when Power-off
- Supports Inverted DI Status

## Pin Assignment



	Model Name	WISE-S614	WISE-S672
A	Pin Number		
	1	DIO	DIO
	2	DI1	DI1
	3	DI2	DI2
	4	DI3	DI3
	5	NC	DI4
	6	NC	DI5
	7	NC	NC
B	8	DI COM	DI COM
	1	IA0+	DATA1-
	2	IA0-	DATA1+
	3	IA1+	TX
	4	IA1-	RX
	5	IA2+	DATA2-
	6	IA2-	DATA2+
	7	IA3+	NC
PWR	8	IA3-	GND
	1	+VS	+VS
	2	-VS	-VS
	3	SP+	SP+
	4	SP-	

## Ordering Information

### WISE-4610 Outdoor LoRa/LoRaWAN Module

- WISE-4610-NA LoRa Outdoor WSN - NA915
- WISE-4610-EA LoRa Outdoor WSN - EU868
- WISE-4610-JA LoRa Outdoor WSN - JP923

### WISE-S600 I/O Module

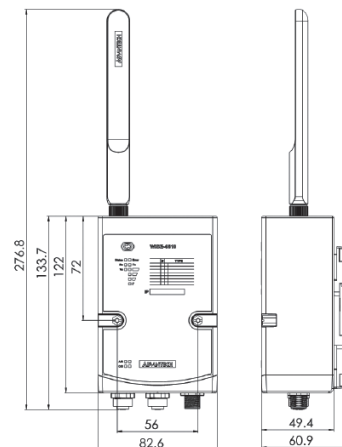
- WISE-S614 4AI/4DI
- WISE-S672 6DI/2COM Ports

### Accessories

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

## Dimensions

Unit: mm



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[WISE-4610-S672NA](#)