

WISE-4610

Advanced Industrial LoRa/LoRaWAN 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_{DC} 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.

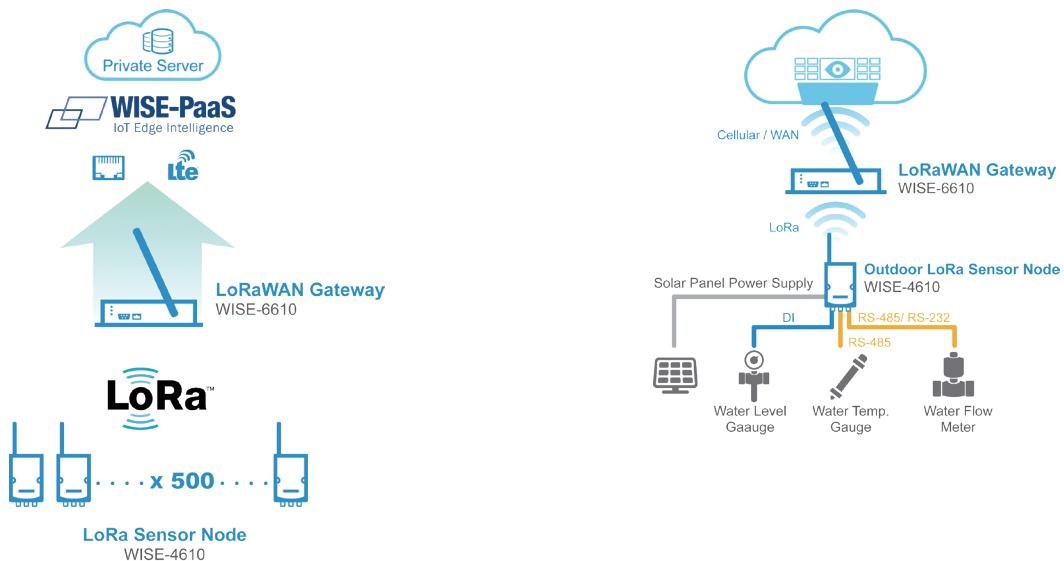


Star Topology

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
- Antenna Type External

GPS¹

- 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
- Antenna Type Internal

General

- Power Input Built-in 4000mA Lithium rechargeable battery pack²
10-50V_{oc} external power
17-21.6V_{oc} Solar Panel
- 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 slack
- Dimension (W x H x D) 82 x 122 x 49 mm (without antenna)

Environment

- Operating Temperature² With battery: 0-60°C
Without battery: -25-70°C
- Operating Humidity 5-95% RH

¹ No GPS version, can be ordered upon request

² 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

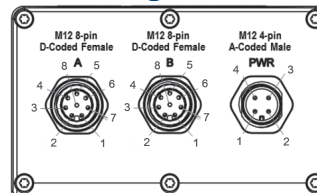
- Channels 4
- Resolution 16-bit
- Sampling Rate 1Hz per channel
- Accuracy ±0.1% of FSR (Voltage)
±0.2% of FSR (Current)
- Input Range ±150mV, ±500mV, ±1 V, ±5V, ±10V, 0 ~ 150mV, 0 ~ 500mV, 0 ~ 1V,
0 ~ 5V, 0 ~ 10V, 0 ~ 20mA, 4 ~ 20mA, ±20mA
- Input Impedance > 2M Ω (Voltage)
240 Ω (External resistor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

- Over Voltage Protection ±35 V_{oc}
- 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
	Pin Number		
A	1	DIO	DIO
	2	DI1	DI1
	3	DI2	DI2
	4	DI3	DI3
	5	NC	DI4
	6	NC	DI5
	7	NC	NC
	8	DI COM	DI COM
B	1	IA0+	DATA1-
	2	IA0-	DATA1+
	3	IA1+	TX
	4	IA1-	RX
	5	IA2+	DATA2-
	6	IA2-	DATA2+
	7	IA3+	NC
	8	IA3-	GND
PWR	1	+VS	+VS
	2	-VS	-VS
	3	SP+	SP+
	4	SP-	

Ordering Information

WISE-4610 Advanced Industrial LoRa/LoRaWAN Module

- WISE-4610-NA Advanced Industrial LoRa/LoRaWAN Module - NA915
- WISE-4610-EA Advanced Industrial LoRa/LoRaWAN Module - EU868
- WISE-4610-JA Advanced Industrial LoRa/LoRaWAN Module - JP923/AS923

WISE-S600 IP65 I/O Module

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

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
- 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)

