

RAK2461 WisNode Bridge IO Lite Datasheet

Overview

Description

The **RAK2461 WisNode Bridge IO Lite** bridges different Digital Inputs, Outputs (Relay), and RS-485 communication to LoRaWAN® for industrial applications. The device relays data using the LoRaWAN network as a means of wirelessly transmitting to and from the end devices.

It is an ideal solution for seamless LoRaWAN communication within industrial environments. Engineered with industrial-grade reliability and based on the RAK3172-T LoRaWAN module, the RAK2461 ensures long-range connectivity, even in extreme temperatures from -20° C to +70° C.

This device can operate on all LoRaWAN bands within the standard parameters set by the LoRa Alliance. It offers versatile mounting options for easy installation in any environment, whether for industrial automation or smart city infrastructure. Together with a [RAK Gateway](#), building a wireless industrial system or extending an existing one can be easy and quick. Moreover, the RAK2461 offers unparalleled performance and durability.

The device comes in two variants:

Model	Variants	Description
RAK2461	RS485-DIx4-DOx1	One RS485 interface, four digital inputs (DI), one digital output (DO)
RAK2461	RS485-DOx4	One RS485 interface, four digital outputs (DO)

Features

- **Regional Parameters Version:** RP002-1.0.3
- **LoRaWAN 1.0.4** protocol stack
- **Class support:** Class C
- One (1) **RS-485 host port**
- Four (4) **Relay NC/NO port** (optional)
- Four (4) **Photocoupler DI ports** and one (1) **Relay NC/NO port** (optional)
- **Power input:** 9 V ~ 24 V
- **Power output:** 9 V ~ 24 V (depending on the input)
- Based on the RAK3172-T module
- Wall and DIN rail mounting

Specifications

Main Specifications

Parameter	Specifications
LoRa Feature	Regional Parameters Version: RP002-1.0.3 Protocol stack: LoRaWAN 1.0.4 Frequency: EU868 / IN865 / RU864 / US915 / AU915 / KR920 / AS923-1 / AS923-2 / AS923-3 / AS923-4 LoRaWAN mode: Class C Tx power: 22 dBm
RS485 Feature	Data rate: 9600 Carrying capacity: Up to 32 devices Protection:

Parameter	Specifications
	18 kV HBM protection 13 kV IEC61000-4-2 contact discharge 4 kV IEC61000-4-4 fast transient burst
Power Supply	9-24 V _{DC} input 5 V for USB Type-C
Input Voltage	9 V ~ 24 V
Output Voltage	9 V ~ 24 V (depending on the input)
Rated Power	DI type: 1 W DO type (Relay): 2 W
Configuration Interface	USB Type-C
LED Indicator	Power LED Data LED
Antenna	RP-SMA external omnidirectional LoRa antenna
Ingress Protection	IP31
Enclosure Material	Metal
Dimensions	93.6 mm × 100.3 mm × 24 mm
Operating Conditions	Operating Temperature: -20° C to +70° C Storage temperature: -20° C to +70° C Operating humidity: 0 - 90% RH Storage humidity: 0 - 90% RH
Installation method	Wall or DIN rail

Hardware

The hardware specification describes the device's interfaces and parameters.

Interfaces

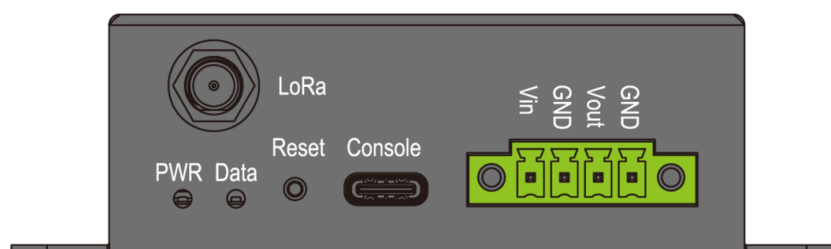


Figure 1: RAK2461 WisNode Bridge IO Lite interfaces top (DO and DI)

Power Interfaces

RAK2461 WisNode Bridge IO can be powered by a DC power supply (9 V ~ 24 V) through the Vin, the voltage must be stable. This power supply is also used to power sensors or devices connected to Vout.

Interfaces	Description
Vin	Stable voltage input: 9 V ~ 24 V
GND	Ground, Vin and GND form a voltage input loop
Vout	Voltage output: 9 V ~ 24 V (depending on the input) Vout output is controlled by MCU
GND	Ground, Vout and GND form a voltage output loop

Console

The USB type-C port of the device is used for configuration. For configuration purposes, the device can also be powered by the Console port. But type-C port will not provide power to sensors or devices connected to the Vout (J4/pin3).

Reset

Press the Reset button to restart the device.

LED Indicators

LEDs	Status Indication Description
PWR	Static on - System works. PWR is controlled by MCU.
Data	Flicker - Data is being transferred Off - No data transmission

LoRa

LoRa antenna interface. RP-SMA external omnidirectional antenna.

Data Interfaces

- **RS-485 interface:** RS-485 master baud rate is 9600. Multiple devices can be connected, but for more than 5 devices the recommended length is 30 m.
- **Relay (DO):** The maximum voltage is 240 V. You can choose between NC and NO based on the use case. (DC - 30 V / 3 A, AC - 250 V / 3 A).
- **Photocoupler (DI):** By default, DI supports Dry Contact. If Wet Contact is required, you can contact RAK technical support. The maximum input voltage should be 5 V and the DI COM should be connected to the negative pole.

RAK2461-RS485-DOx4



Figure 2: RAK2461 WisNode Bridge IO Lite interfaces bottom (RS485-DOx4)

Interfaces	Description
RS485_A	RS485 Data +

Interfaces	Description
RS485_B	RS485 Data -
DO1 / DO2 / DO3 / DO4	NO: Normally Open COM: Common NC: Normally Closed
GND	Ground
12 V_Out	Voltage output: 12 V / 500 mA

RAK2461-RS485-DI4-DOx1

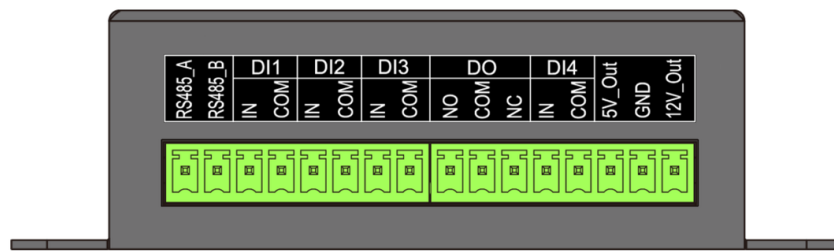


Figure 3: RAK2461 WisNode Bridge IO Lite interfaces bottom (RS485-DI4-DOx1)

Interfaces	Description
RS485_A	RS485 Data +
RS485_B	RS485 Data -
DI1 / DI2 / DI3 / DI4	IN: Signal input COM: Common
DO	NO: Normally Open COM: Common NC: Normally Closed
5 V_Out	Voltage output: 5 V / 500 mA
GND	Ground
12 V_Out	Voltage output: 12 V / 500 mA

Models/Bundles

Model	RS-485	Relay (DO)	Photocoupler (DI)
RAK2461-X01	✓	✓ (4x)	
RAK2461-X11	✓	✓	✓ (4x)

Certification

