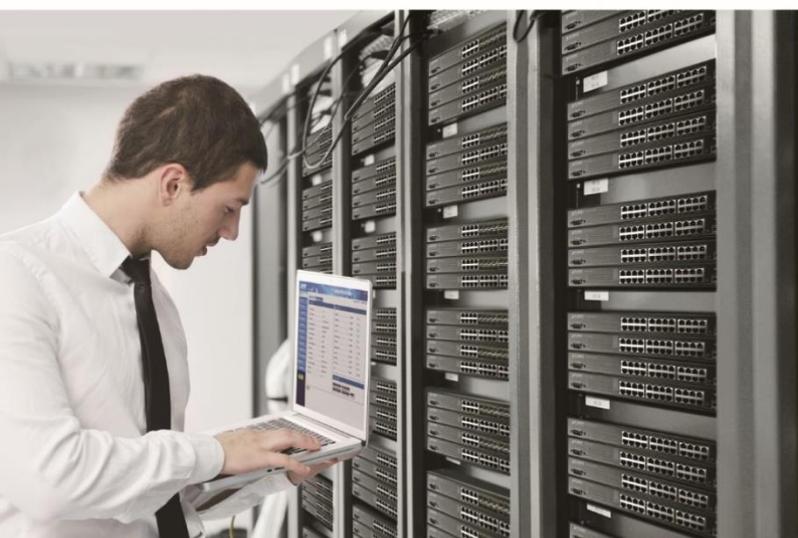




# User's Manual

## LoRa Node Controller

▶ LN1130, LN1140 and LN502



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## **FCC Compliance Statement**

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **CE mark Warning**



The is a class A device. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

### **WEEE**



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

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### **Revision**

User's Manual of PLANET LoRa Node Controller

Model: LN1130, LN1140 and LN502

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Part No. EM-LN-Series\_v1.1

## Table of Contents

Chapter 1. Product Introduction.....	5
1.1 Package Contents.....	5
1.2 Overview.....	6
1.3 Features.....	10
1.4 Product Specifications.....	11
Chapter 2. Hardware Introduction.....	15
2.1 Physical Descriptions.....	15
2.2 Hardware Installation.....	18
2.2.1 LoRa Antenna Installation.....	18
2.2.2 Wiring Power Input.....	19
2.2.3 Mounting Installation.....	20
2.2.3.1 DIN-rail Mounting Installation.....	20
2.2.3.2 Wall-mount Plate Mounting.....	20
2.2.3.3 Side Wall-mount Plate Mounting.....	21
2.2.3.4 Application Wiring.....	22
Chapter 3. Preparation.....	23
3.1 Requirements.....	23
3.2 Managing LoRa Node.....	23
Chapter 4. Operations Management.....	24
4.1 Managing LoRa Node.....	24
4.2 LoRaWAN setting.....	26
4.3 Interface Setting.....	28
4.3.1 RS232 Settings.....	29
4.3.2 RS485 Settings.....	30
4.3.3 DI/DO Settings.....	32
4.4 Maintenance.....	33
4.4.1 Upgrade.....	33
4.4.2 Reset to Factory Default.....	34
Chapter 5. Customer Support.....	35

# Chapter 1. Product Introduction

Thank you for purchasing PLANET LoRa Node Controller, LN series. The descriptions of these models are as follows:

<b>LN1130</b>	Industrial IP30 LoRa Node Controller (Modbus RS232, RS485G)
<b>LN1140</b>	Industrial IP30 LoRa Node Controller (2 DI, 2 DO)
<b>LN502</b>	IP67 Outdoor Solar LoRa Node Controller (RS232, RS485, DI and DO)

“LoRa Node” mentioned in the manual refers to the above models.

## 1.1 Package Contents

The package should contain the following:

	LN1130	LN1140	LN502
LoRa Node Controller	1	1	1
QR Code Sheet	1	1	1
LoRa Antenna	1	1	1
Wall Mounting Kit	1	1	1
Data Cable	-	-	2



If any of the above items are missing, please contact your dealer immediately.

## 1.2 Overview

### Build a Smart IoT Environment with PLANET Industrial LoRa Node Controllers

PLANET LN1130, LN1140, and LN502 Industrial LoRa Node Controllers offer cutting-edge solutions for efficient data acquisition and scalable IoT deployment across diverse applications.

- LN1130 and LN1140: Tailored for flexible and reliable LoRaWAN network deployments, these devices simplify data collection and device management.
  - LN1130: Equipped with RS232 and RS485 interfaces for versatile connectivity.
  - LN1140: Features two digital input and two digital output interfaces, ideal for managing sensors, access control, and security systems.
  - Their robust industrial design and IP30-rated metal casing ensure dependable performance in indoor environments like smart industries and building automation.



- LN502: Designed for outdoor IoT applications, the LN502 is a solar-powered LoRa node controller that supports LoRaWAN Class A, B, and C protocols.
  - Offers RS232, RS485, two digital inputs, and two digital outputs.
  - Provides power output options (3.3V and 5V DC) for connected devices.
  - Built for harsh environments with an IP67-rated enclosure and M12 connectors, ensuring resistance to water, dust, and extreme conditions.
  - Multiple power options include solar power, a rechargeable battery, or an external DC supply (9–48V).
  - This makes it ideal for applications like smart agriculture, cities, and intelligent transportation systems.

Together, these controllers deliver a robust suite of solutions for AIoT applications, enabling seamless integration of legacy assets, energy-efficient operations, and reliable connectivity in both indoor and outdoor environments.

### LoRaWAN-based Controller with Rich Industrial Interfaces

PLANET Industrial LoRa Node Controllers, including the LN1130, LN1140, and LN502, are designed to connect various sensors, meters, and appliances while enabling seamless integration of legacy systems into IoT environments. These controllers bridge Modbus data between serial and Ethernet networks via LoRaWAN and are fully compatible with standard LoRaWAN gateways, including PLANET’s LCG-300 series. With their robust designs and multiple industrial interfaces, they are ideal for large-scale IoT deployments in applications such as building automation, smart metering, and HVAC systems.

LN1130	LN1140	LN502
<ul style="list-style-type: none"> <li>• RS232</li> <li>• RS485</li> </ul>	<ul style="list-style-type: none"> <li>• 2 Digital Input</li> <li>• 2 Digital Output</li> </ul>	<ul style="list-style-type: none"> <li>• RS232</li> <li>• RS485</li> <li>• 2 x Digital Input</li> <li>• 2 x Digital Output</li> <li>• 3.3V and 5V DC output</li> </ul>



LN502

### LoRa and LoRaWAN Wireless Technology

LoRa or long range is a physical proprietary radio communication technique. It is based on spread spectrum modulation techniques derived from chirp spread spectrum (CSS) technology. LoRa is a long range, low power wireless platform that has become the de facto wireless platform of Internet of Things (IoT). LoRaWAN defines the communication protocol and system architecture. The LN1130, LN1140 and LN502, supporting Modbus protocol and serial communication, is ideal for LoRa-enabled devices in the IoT system.

## Multiple LoRa Frequency Bands

PLANET Industrial LoRa Node Controllers support the following license-free sub-gigahertz radio frequency bands:

- **EU868** (863 to 870 MHz) in Europe
- **AU915/AS923-1** (915 to 928 MHz) in South America
- **US915** (902 to 928 MHz) in North America
- **IN865** (865 to 867 MHz) in India
- **AS923** (915 to 928 MHz) in Asia
- **KR920** (920 to 923 MHz) in South Korea
- **RU864** (864 to 870 MHz) in Russia

## Easy Installation in Limited Space

The compact-sized LN1130/LN1140 is specially designed to be installed in a narrow environment, such as wall enclosure. It can be installed by fixed wall mounting or DIN rail, thereby making its usability more flexible and easier in any space-limited location.

### Optional installation method



\* The above pictures are for illustration only.

## Environmentally Hardened Design

The LN1130 and LN1140 feature IP30-rated metal cases, providing strong protection against electromagnetic interference and electrical surges, making them ideal for plant floors and curb-side traffic cabinets. Their ventilated, fanless design ensures noiseless operation, and they perform reliably in temperatures from -40 to 75°C.

The LN502, with its IP67-rated case, is dust- and water-resistant, ideal for harsh outdoor or industrial environments. Its fanless, durable design ensures quiet operation, and it operates in temperatures from -40 to 65°C (without batteries), making it perfect for demanding IoT applications.

## Expanding Capabilities with PLANET Industrial LoRa Node Controllers

The integration of PLANET Industrial LoRa Node Controllers into the NMS-AIoT platform enhances the system's capabilities by enabling seamless connectivity via LoRa, HaLow, wireless, and wired options. This allows PLANET LoRa Node Controllers to contribute to real-time data collection and AI-driven insights for applications in smart cities, agriculture, and industrial environments, strengthening the platform's overall ecosystem.

The NMS-AIoT platform enables comprehensive integration of diverse devices, such as sensors, RS485/Modbus systems, and PDUs, through flexible connectivity options. This unified architecture supports environmental data collection and AI processing, empowering applications like smart cities, precision agriculture, and intelligent manufacturing.



## 1.3 Features

### Key Features

#### LN1130

- One RS232 serial interface and one RS485 serial interface
- Compliant with standard LoRaWAN gateways and network servers.
- Ultra-wide-distance transmission up to 10km with line of sight
- Wide input voltage range (9 ~ 48 VDC) or 24V AC input
- Industrial metal case design with wide operating temperature range
- Compact size and DIN-rail mounting

#### LN1140

- Two digital input interfaces and two digital output interfaces
- Compliant with standard LoRaWAN gateways and network servers.
- Ultra-wide-distance transmission up to 10km with line of sight
- Wide input voltage range (9 ~ 48 VDC) or 24V AC input
- Industrial metal case design with wide operating temperature range
- Compact size and DIN-rail mounting

#### LN502

- Easy to connect with multiple wired sensors through GPIO/RS232/RS485 interfaces
- Long transmission distance up to 10km with line of sight
- Solar powered and built-in battery
- IP67-rated case and M12 connectors
- Compliant with standard LoRaWAN gateways and network servers.

## 1.4 Product Specifications

<b>Product</b>	LN1130		
<b>Wireless Transmission</b>			
<b>Technology</b>	LoRaWAN		
<b>Antenna Connector</b>	1 × 50 Ω SMA Connector (Center Pin: SMA Female)		
<b>Frequency</b>	IN865, EU868, RU864, US915, AU915, KR920, AS923		
<b>Work Mode</b>	OTAA/ABP Class A/B/C		
<b>Data Interfaces</b>			
<b>Interface Type</b>	6-pin removable terminal block		
<b>Serial Port</b>	RS232	Pin 1	TxD
		Pin 2	RxD
		Pin 3	GND
	RS485	Pin 4	D-(A)
		Pin 5	D+(B)
		Pin 6	GND
	Baud Rate	600~256000 bps (RS232)/600~256000 bps (RS485)	
Protocol	Transparent (RS232), Modbus RTU (RS485)		
<b>Others</b>			
<b>Configuration Port</b>	1 × Micro USB		
<b>LED Indicators</b>	1 × PWR, 1 × LoRa		
<b>Sensor</b>	Buit-in temperature sensor		
<b>Physical Characteristics</b>			
<b>Power Connector</b>	2-pin removable terminal block		
<b>Power Supply</b>	9 ~ 48V DC/ 24V AC		
<b>Ingress Protection</b>	IP30		
<b>Operating Temperature</b>	-40°C to +75°C		
<b>Relative Humidity</b>	5% to 95% (non-condensing)		
<b>Dimensions</b>	33 x 70 x 104 mm		
<b>Installation</b>	DIN-rail or wall mounting		
<b>Standards Conformance</b>			
<b>Regulatory Compliance</b>	CE, FCC		

<b>Product</b>	LN1140		
<b>Wireless Transmission</b>			
<b>Technology</b>	LoRaWAN		
<b>Antenna Connector</b>	1 × 50 Ω SMA Connector (Center Pin: SMA Female)		
<b>Frequency</b>	IN865, EU868, RU864, US915, AU915, KR920, AS923		
<b>Work Mode</b>	OTAA/ABP Class A/B/C		
<b>Data Interfaces</b>			
<b>Interface Type</b>	6-pin Removable Terminal Block		
<b>IO Ports</b>	Digital Input	Pin 1 ( <b>DI 0</b> )	Level 0: <b>-24V~2.1V</b> (±0.1V)
		Pin 2 ( <b>DI 1</b> )	Level 1: <b>2.1V~24V</b> (±0.1V)
	Digital Output	Pin 3 ( <b>DO 0</b> )	Input Load to <b>24V DC</b> , 10mA max. Open collector to 24V DC, 100mA (max.)
		Pin 4 ( <b>DO 1</b> )	
	GND	Pin 5, 6	
<b>Others</b>			
<b>Configuration Port</b>	1 × Micro USB		
<b>LED Indicators</b>	1 × PWR, 1 × LoRa		
<b>Sensor</b>	Built-in temperature sensor		
<b>Physical Characteristics</b>			
<b>Power Connector</b>	2-pin removable terminal block		
<b>Power Supply</b>	9 ~ 48V DC, 24V AC		
<b>Ingress Protection</b>	IP30		
<b>Operating Temperature</b>	-40°C to +75°C		
<b>Relative Humidity</b>	5% to 95% (non-condensing)		
<b>Dimensions</b>	33 x 70 x 104 mm		
<b>Installation</b>	DIN-rail or wall mounting		
<b>Standards Conformance</b>			
<b>Regulatory Compliance</b>	CE, FCC		

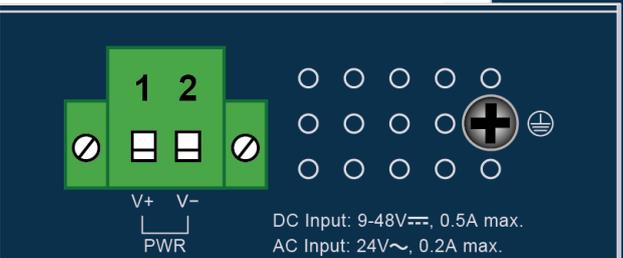
<b>Product</b>	<b>LN502</b>		
<b>Wireless Transmission</b>			
<b>Technology</b>	LoRaWAN		
<b>Antenna</b>	1 × 50 Ω SMA Connector (Center Pin: SMA Female)		
<b>Frequency</b>	IN865, EU868, RU864, US915, AU915, KR920, AS923		
<b>Tx Power</b>	16dBm(868)/20dBm(915)		
<b>Sensitivity</b>	-148dBm		
<b>Work Mode</b>	OTAA/ABP Class A/B/C		
<b>Data Interfaces</b>			
<b>Interface Type</b>	2 x M12 A-Coded Male		
<b>IO</b>	Ports	2 × GPIO	
	Work Mode	Digital input, digital output	
<b>Serial Port</b>	Ports	1 × RS232 or RS485 (Switchable)	
	Baud Rate	600~115200 bps	
	Protocol	Transparent (RS232), Modbus RTU (RS485)	
<b>Power Output</b>	Ports	1 × 3.3 V, 1 × 5 V	
	Power Time	Continuous	
<b>Interface Definition</b>			
<b>PINOUT (J3)</b>	1	Digital Output 1	Black
	2	Digital Input 1	Brown
	3	Digital Input 0	Red
	4	9 – 48V DC in (+)	Orange
	5	GND	Yellow
	6	9 – 48V DC in (-)	Green
	7	Digital Output 0	Blue
	8	GND	Purple
<b>PINOUT (J4)</b>	1	5V DC out	Black
	2	3.3V DC out	Brown
	3	RS232 Tx	Red
	4	RS232 Rx	Orange
	5	GND	Yellow
	6	RS485 A	Green
	7	RS485 B	Blue
	8	GND	Purple
<b>Others</b>			
<b>Configuration Port</b>	1 × Micro USB		
<b>LED Indicators</b>	PC software (via USB Type C or NFC)		
<b>Sensor</b>	Built-in temperature sensor		

<b>Physical Characteristics</b>	
<b>Operating Temperature</b>	-10°C to +65°C -40°C to +65°C (without batteries)
<b>Ingress Protection</b>	IP67
<b>Dimensions</b>	88 x 55.3 x 194.8 mm
<b>Power Connector</b>	1 × M12 A-Coded Male Interface
<b>Power Supply</b>	Solar powered with two 18650 rechargeable batteries for the backup 9-48 VDC External Power
<b>Installation</b>	Wall mounting
<b>Standards Conformance</b>	
<b>Regulatory Compliance</b>	CE, FCC

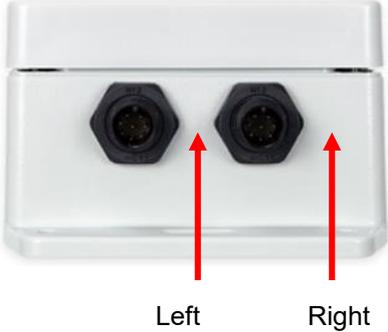
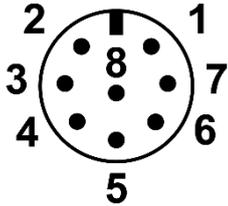
# Chapter 2. Hardware Introduction

## 2.1 Physical Descriptions

- LN1130/LN1140

	LN1130	LN1140																												
Front View																														
	<table border="1"> <thead> <tr> <th>PIN</th> <th>Definition</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TxD</td> <td rowspan="3">RS232</td> </tr> <tr> <td>2</td> <td>RxD</td> </tr> <tr> <td>3</td> <td>GND</td> </tr> <tr> <td>4</td> <td>D-(A)</td> <td rowspan="3">RS485</td> </tr> <tr> <td>5</td> <td>D+(B)</td> </tr> <tr> <td>6</td> <td>GND</td> </tr> </tbody> </table>	PIN	Definition	Description	1	TxD	RS232	2	RxD	3	GND	4	D-(A)	RS485	5	D+(B)	6	GND	<table border="1"> <thead> <tr> <th>Definition</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>DI0</td> <td rowspan="2">DI</td> </tr> <tr> <td>DI1</td> </tr> <tr> <td>DO0</td> <td rowspan="2">DO</td> </tr> <tr> <td>DO1</td> </tr> <tr> <td>GND</td> <td rowspan="2">Ground</td> </tr> <tr> <td>GND</td> </tr> </tbody> </table>	Definition	Description	DI0	DI	DI1	DO0	DO	DO1	GND	Ground	GND
PIN	Definition	Description																												
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Definition	Description																													
DI0	DI																													
DI1																														
DO0	DO																													
DO1																														
GND	Ground																													
GND																														
Top View	 <p>DC Input: 9-48V<math>\overline{\text{=}}</math>, 0.5A max. AC Input: 24V<math>\sim</math>, 0.2A max.</p>																													

• LN502

LN502		
<b>Bottom View</b>		
<b>PIN</b>	<b>Definition</b>	<b>Definition</b>
1	Digital Output 1	5V DC out
2	Digital Input 1	3.3V DC out
3	Digital Input 0	RS232 Tx
4	9 – 48V DC in (+)	RS232 Rx
5	GND	GND
6	9 – 48V DC in (-)	RS485 A
7	Digital Output 0	RS485 B
8	GND	GND
<b>PINOUT</b>		

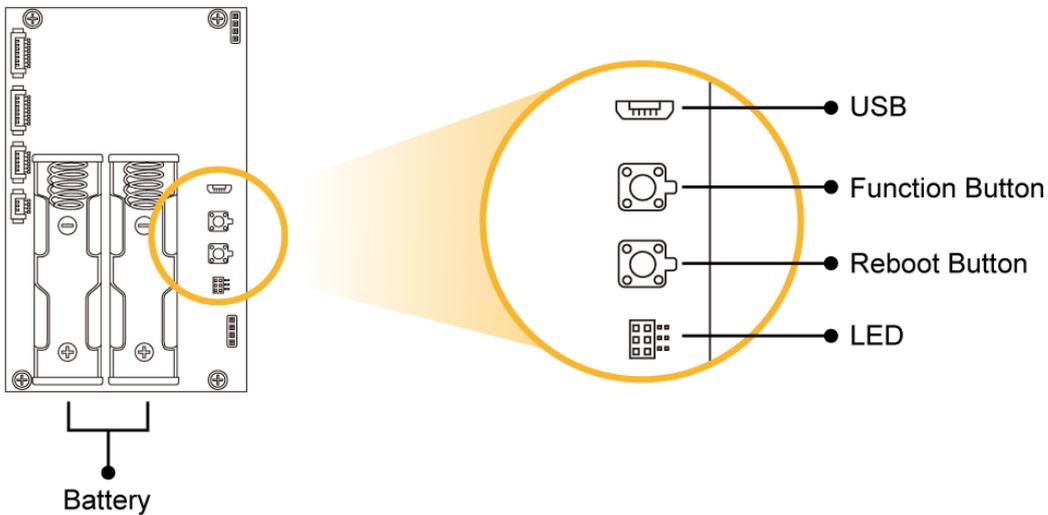
**LED Definition:**

- LN1130/LN1140



LED	Color	Function	
PWR	Green	Lights	Power is activated.
		Off	Power is inactivated.
LoRa	Green	Lights	LoRa module is connected and ready.
		Blinks	LoRa module is sending or receiving.
		Off	LoRa module is not able to connect.

- LN502



**Button:**

Function	Action	LED Indication
Check LoRa Connection Status	Press and release the function button.	Fast Blink (connected)
		Slow Blink (not connected)
Reset	Press and hold the function button for more than 5 seconds.	Fast Blink
Reboot	Press and release the reboot button.	Blink

## 2.2 Hardware Installation

Refer to the illustration and follow the simple steps below to quickly install your **LoRa Node**.

### 2.2.1 LoRa Antenna Installation

**Step 1:** Rotate the antenna into the antenna connector accordingly.

**Step 2:** The external LoRa antenna should be positioned vertically for a good signal.

- LN1130/LN1140



- LN502



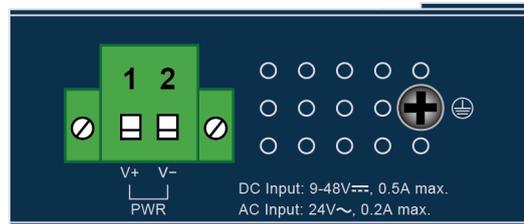
## 2.2.2 Wiring Power Input

The 2-contact terminal block connector on the top panel of **LoRa Node** is used for one DC power input or one AC power input for LN1130 and LN1140. Please follow the steps below to insert the power wire.

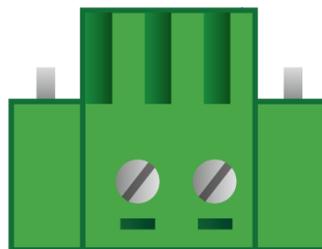


When performing any of the procedures like inserting the wires or tightening the wire-clamp screws, make sure the power is OFF to prevent from getting an electric shock.

Insert positive and negative DC power wires into contacts 1 and 2 for POWER.



Tighten the wire-clamp screws for preventing the wires from loosening.



1      2  
Power 1  
V+    V-



The DC power input range is 9-48V DC or 24V AC.  
The device provides input voltage polarity protection.



For industrial applications, it's suggested not to release the metal case and use an independent power supply.

## 2.2.3 Mounting Installation

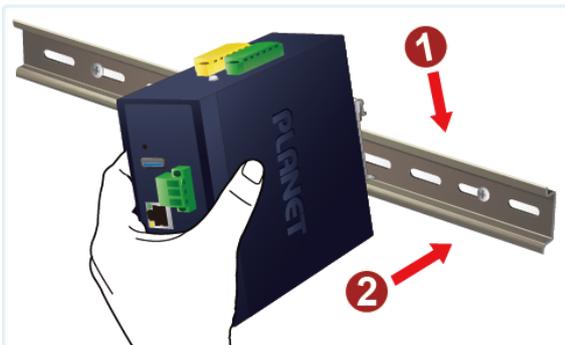
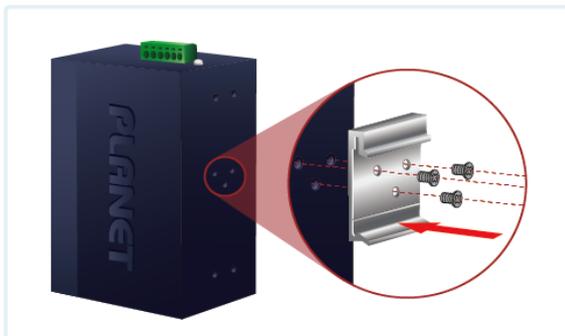
This section describes the functionalities of the Industrial **LoRa Node** and guides you to installing it on the DIN-rail and wall. Please read this chapter completely before continuing.

- **LN1130/LN1140**

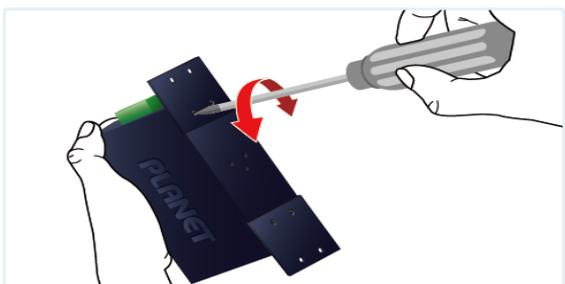


This following pictures show the user how to install the device, and the device is not LN1130 or LN1140.

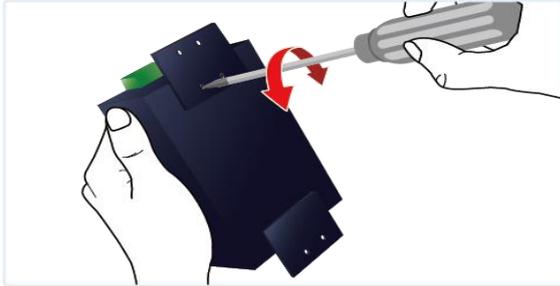
### 2.2.3.1 DIN-rail Mounting Installation



### 2.2.3.2 Wall-mount Plate Mounting



### 2.2.3.3 Side Wall-mount Plate Mounting

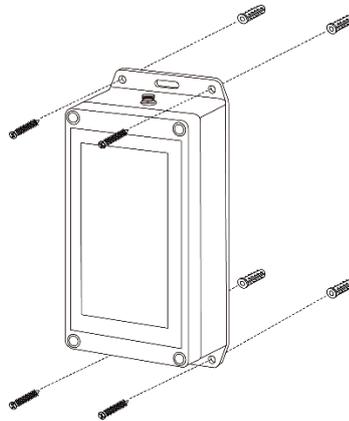


**Caution:**

You must use the screws supplied with the wall-mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

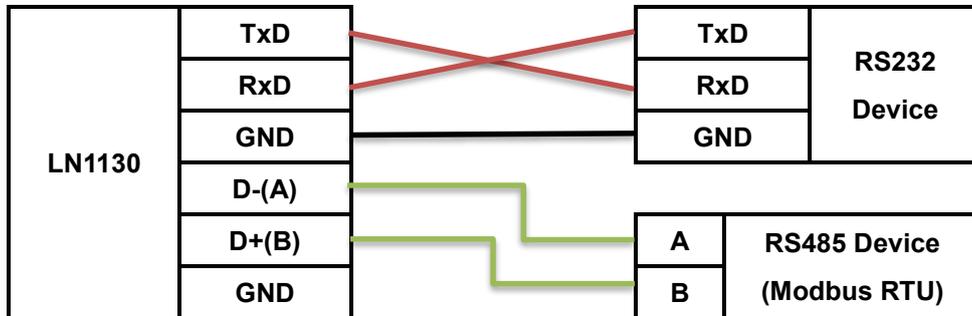
- **LN502**

Mark the four holes on the wall you prefer to place the device and drill the marked four holes for the wall plugs (anchors). Then place the device over the holes with the wall plugs inside, and tighten it with the screws to finish the job.



### 2.2.3.4 Application Wiring

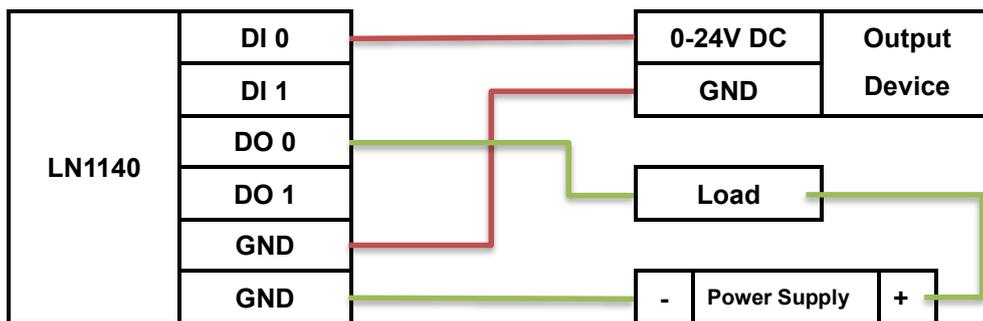
- RS232 & RS485:



1. Read the sensor and controller manuals before installing the RS485 Modbus sensor. Understand the wiring and communication requirements, such as termination resistors or baud rates.
2. Make sure the sensor's voltage and communication settings (baud rate, stop bits, parity) match the LoRa Node controller (e.g., LN502). Incompatibility may cause issues or damage.
3. Check if the wiring follows the RS485 A(-)/B(+) standard. If it doesn't work, try swapping the A and B wires, as standards may vary by manufacturer.



- Digital Input and Digital Output:



## Chapter 3. Preparation

Before accessing the LoRa node controllers, user has to install utility tool for operation.

### 3.1 Requirements

- Workstations running Windows 10/11.
- **Micro USB** cable

### 3.2 Managing LoRa Node

Download PLANET LoRa Node Controller Tool software from Planet web site.

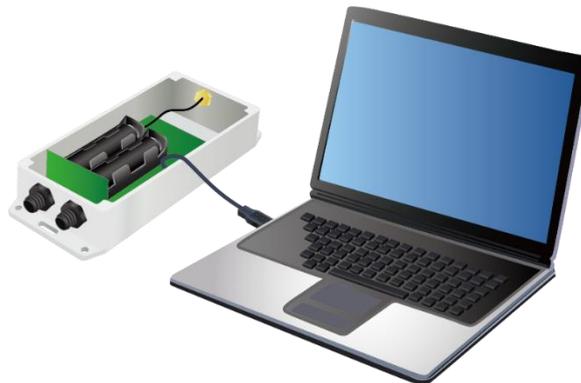
<https://www.planet.com.tw/en/support/downloads?&method=keyword&keyword=LN&view=6#list>

Power on the **LoRa Node** device and then connect it to computer via **micro USB port**.

- **LN1130/LN1140**



- **LN502**



The box of the LN1130/LN1140/LN502 does not contain any USB cable.

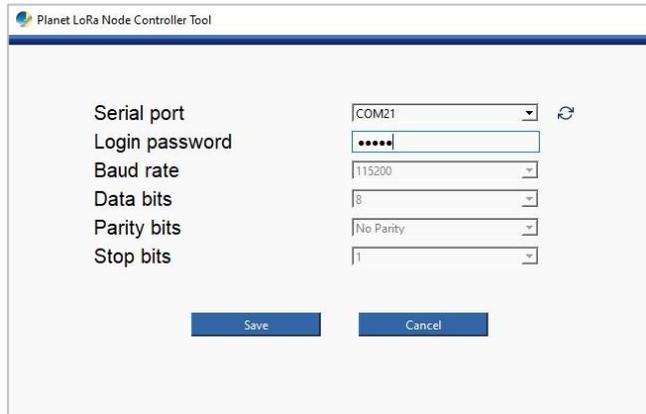
Open the Tool and select “**Serial port**”, and then enter password to log in Utility. (Default password: **admin**)

# Chapter 4. Operations Management

This chapter provides operations details of the LoRa node controller.

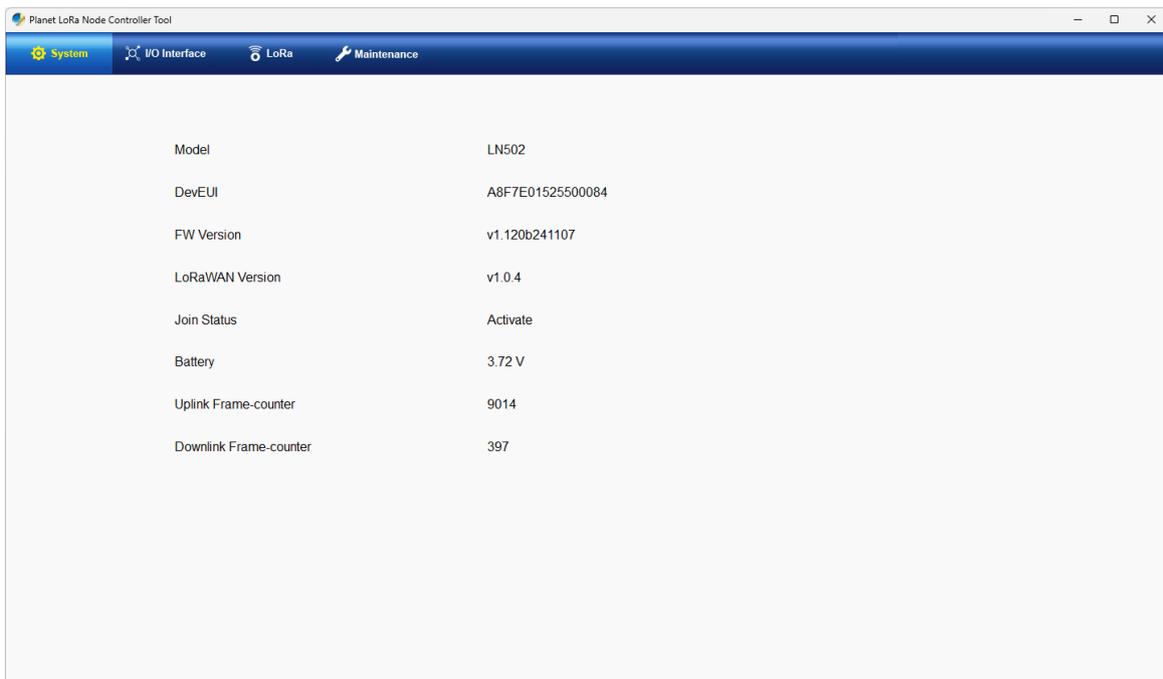
## 4.1 Managing LoRa Node

Open the Tool and select “**Serial port**”, and then enter password to log in Utility. (Default password: **admin**)



For security reason, please change and memorize the new password after this first setup.

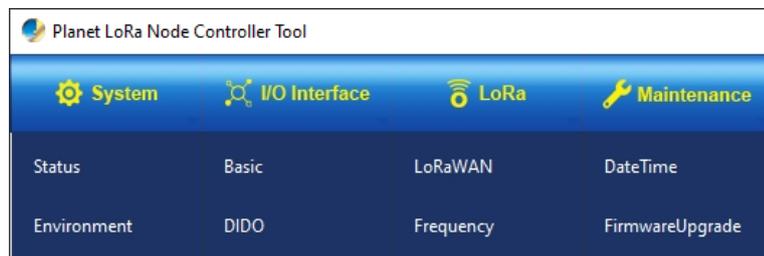
After entering the password, the main screen appears as shown below.



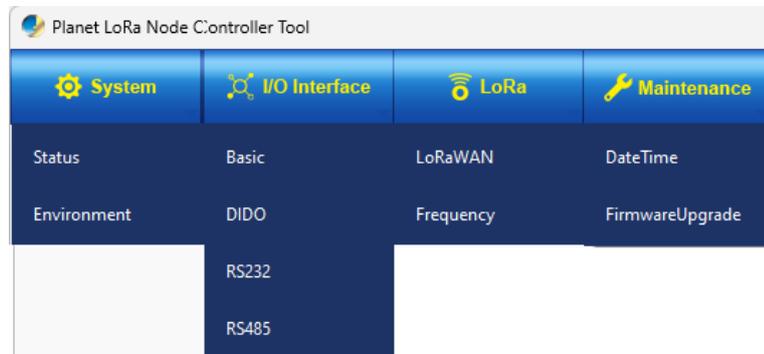
The function menu on the top of the tool lets you access all the commands and configuration the LoRa Node Controller provides.



**LN1130 Function Menu**



**LN1140 Function Menu**



**LN502 Function Menu**

Now, you can use the LoRa Node Controller Tool software to continue the LoRa Node Controller management.

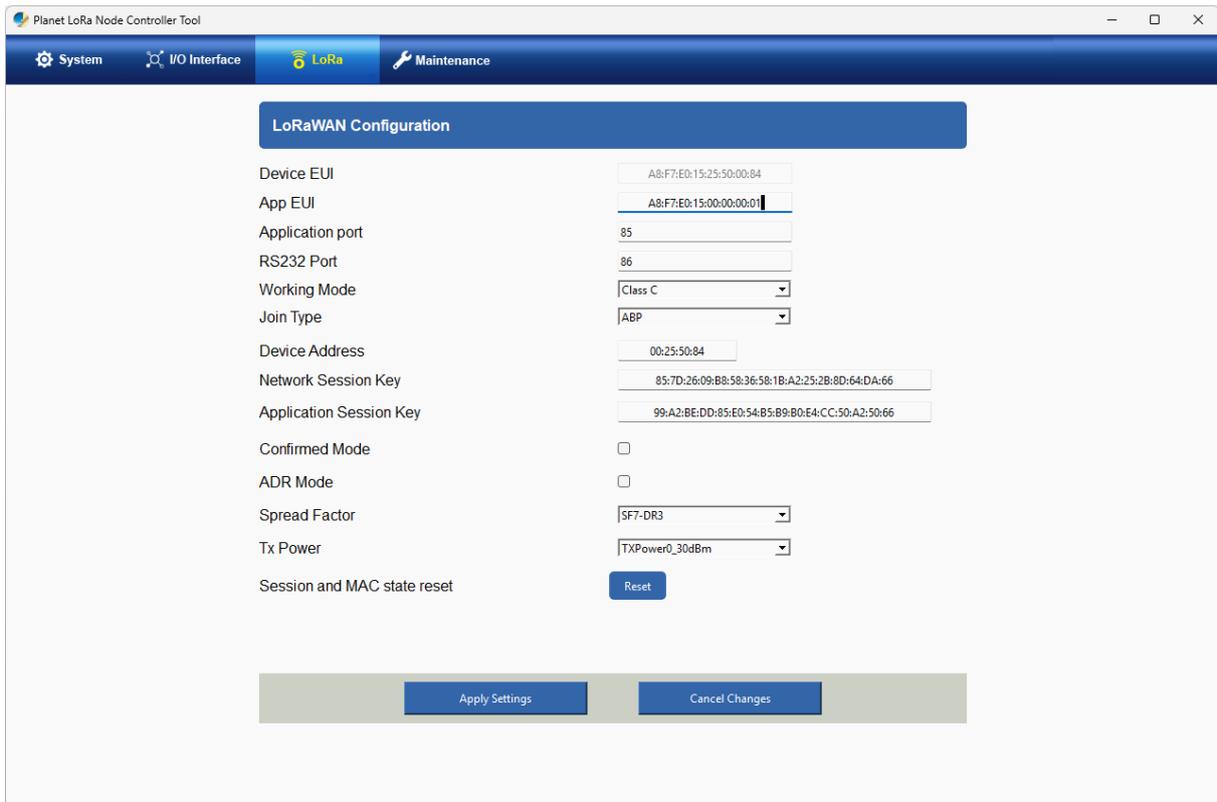
Please select the correct Frequency for LoRaWAN by country or in a location you stay before doing the LoRaWAN setting.

## 4.2 LoRaWAN setting

LoRaWAN setting is used for configuring the transmission parameters in LoRaWAN ® network.

### Basic LoRaWAN Settings:

Go to “LoRa > LoRaWAN” of PLANET LoRa Node Controller Tool to configure join type, App EUI, Application Key and other information. You can also keep all settings by default.



The screenshot shows the 'LoRaWAN Configuration' window in the Planet LoRa Node Controller Tool. The interface includes a navigation bar with 'System', 'I/O Interface', 'LoRa', and 'Maintenance' tabs. The 'LoRa' tab is active, displaying the configuration page. The page contains the following settings:

- Device EUI: A8:F7:E0:15:25:50:00:84
- App EUI: A8:F7:E0:15:00:00:00:01
- Application port: 85
- RS232 Port: 86
- Working Mode: Class C
- Join Type: ABP
- Device Address: 00:25:50:84
- Network Session Key: 85:7D:26:09:B8:36:58:1B:A2:25:28:8D:64:DA:66
- Application Session Key: 99:A2:BE:DD:85:E0:54:85:B9:B0:E4:CC:50:A2:50:66
- Confirmed Mode:
- ADR Mode:
- Spread Factor: SF7-DR3
- Tx Power: TXPower0\_30dBm
- Session and MAC state reset: Reset button

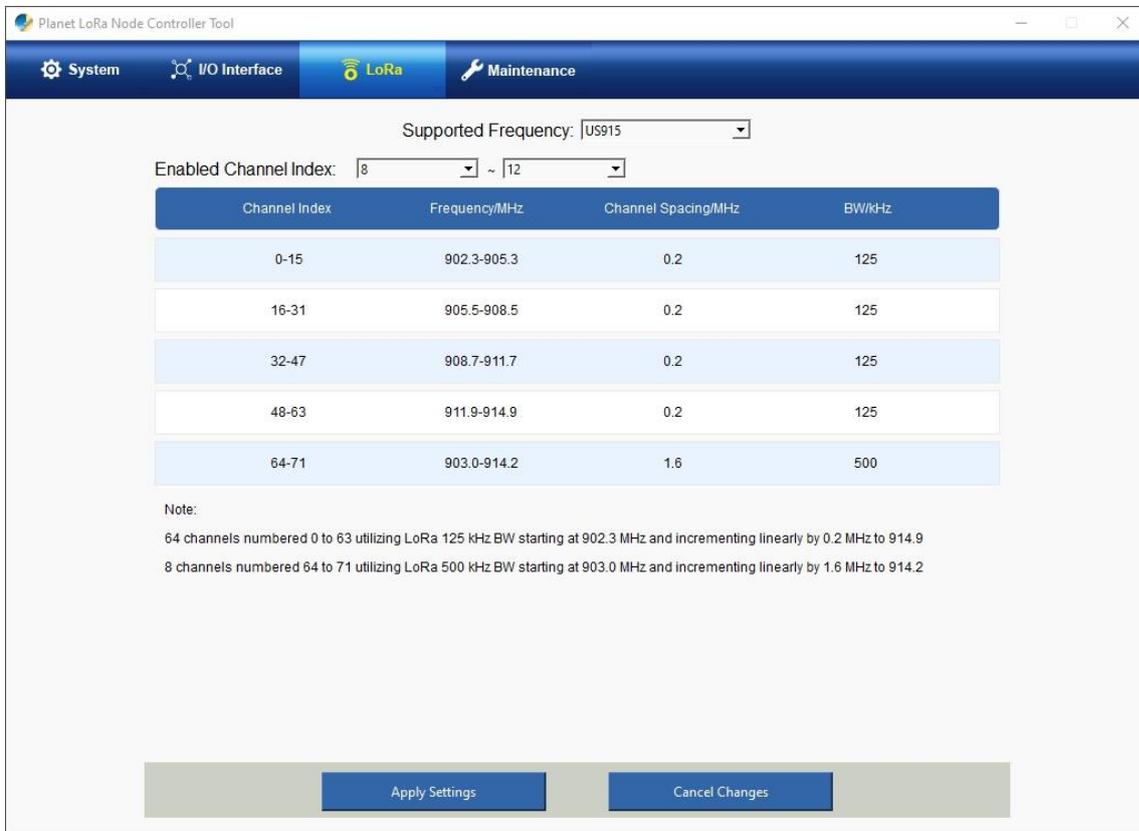
At the bottom of the configuration area, there are two buttons: 'Apply Settings' and 'Cancel Changes'.

Object	Description
<b>Device EUI</b>	Unique ID of the device can be found on the label.
<b>App EUI</b>	LN1130: Default App EUI is A8:F7:E0:11:00:00:00:01 LN1140: Default App EUI is A8:F7:E0:12:00:00:00:01 LN502: Default App EUI is A8:F7:E0:15:00:00:00:01
<b>Application Port</b>	The port is used for sending and receiving data; default port is 85. Note: RS232 data will be transmitted via another port.
<b>RS232 Port</b>	The port is used for RS232 data transmission. The default port is 86.
<b>Working Mode</b>	Class A, Class B and Class C are available.
<b>Join Type</b>	OTAA and ABP modes are available.

<b>Application Key</b>	Appkey for OTAA mode
<b>Device Address</b>	DevAddr for ABP mode
<b>Network Session Key</b>	NwkSKey for ABP mode
<b>Application Session Key</b>	AppSKey for ABP mode
<b>Confirmed Mode</b>	If the device does not receive ACK packet from network server, it will resend data 3 times at most.
<b>ADR Mode</b>	Allow network server to adjust data rate of the device.
<b>Spread Factor</b>	If ADR is disabled, the device will send data via this spread factor.
<b>Tx Power</b>	Tx power of the device
<b>Session and MAC state reset</b>	To reset the frame-counter

### LoRaWAN Frequency Settings:

Go to “LoRa > Frequency” of PLANET LoRa Node Controller Tool to select supported frequency and select channels to send uplinks. Make sure the channels match the LoRaWAN gateway.



Planet LoRa Node Controller Tool

System I/O Interface **LoRa** Maintenance

Supported Frequency: US915

Enabled Channel Index: 8 ~ 12

Channel Index	Frequency/MHz	Channel Spacing/MHz	BW/kHz
0-15	902.3-905.3	0.2	125
16-31	905.5-908.5	0.2	125
32-47	908.7-911.7	0.2	125
48-63	911.9-914.9	0.2	125
64-71	903.0-914.2	1.6	500

Note:  
64 channels numbered 0 to 63 utilizing LoRa 125 kHz BW starting at 902.3 MHz and incrementing linearly by 0.2 MHz to 914.9  
8 channels numbered 64 to 71 utilizing LoRa 500 kHz BW starting at 903.0 MHz and incrementing linearly by 1.6 MHz to 914.2

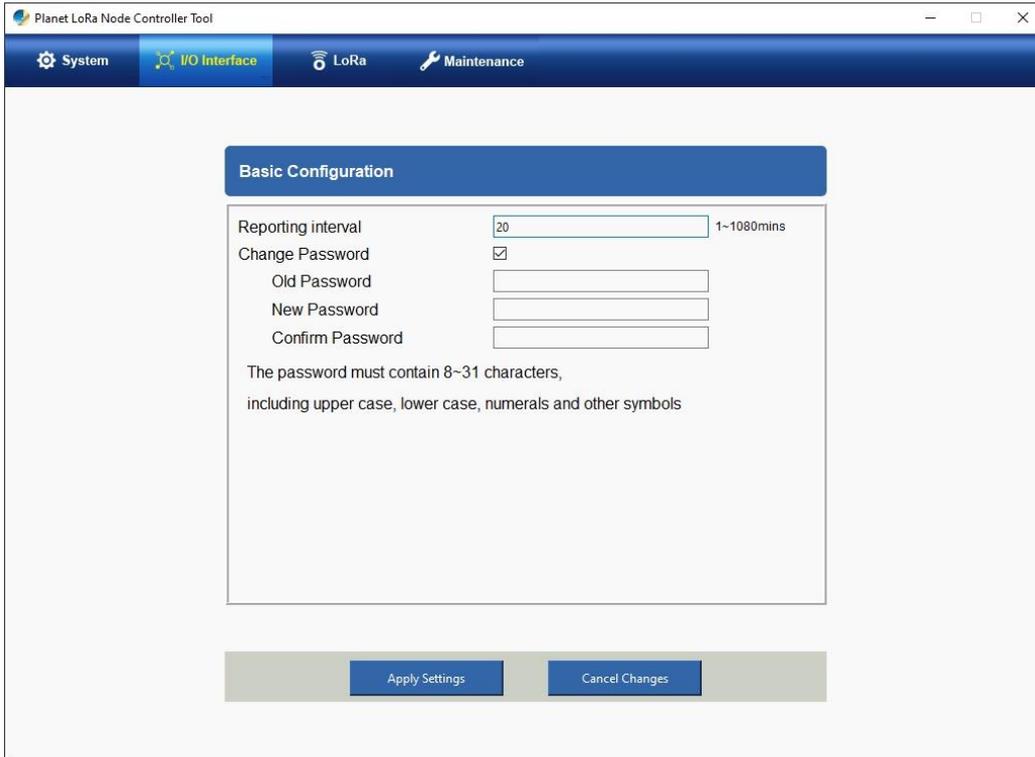
Apply Settings Cancel Changes

If frequency is one of AU915/US915, you can enter the index of the channel that you want to enable in the selection box, making them separate by commas.

### 4.3 Interface Setting

The LN series supports data collection by multiple interfaces including serial ports or digital input and output. Besides, they can also power the terminal devices by power output interfaces. Basic settings are as follows:

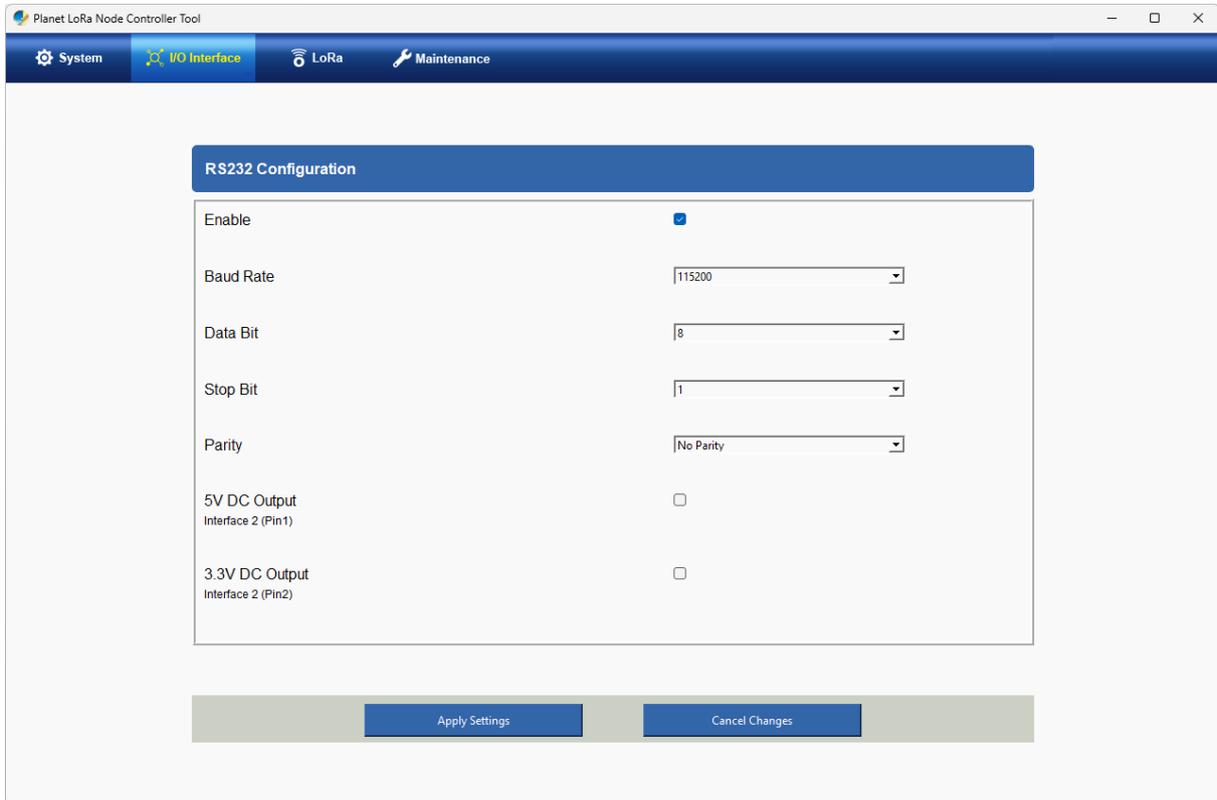
Go to “**General > Basic**” of PLANET LoRa Node Controller Tool to change the reporting interval.



Object	Description
<b>Reporting Interval</b>	Reporting interval of transmitting data to network server. Default: 20 mins, Range: 1-1080 mins. Note: RS232 transmission will not follow the reporting interval.
<b>Change Password</b>	Change the password for PLANET LoRa Node Controller Tool to read/write this device.

### 4.3.1 RS232 Settings

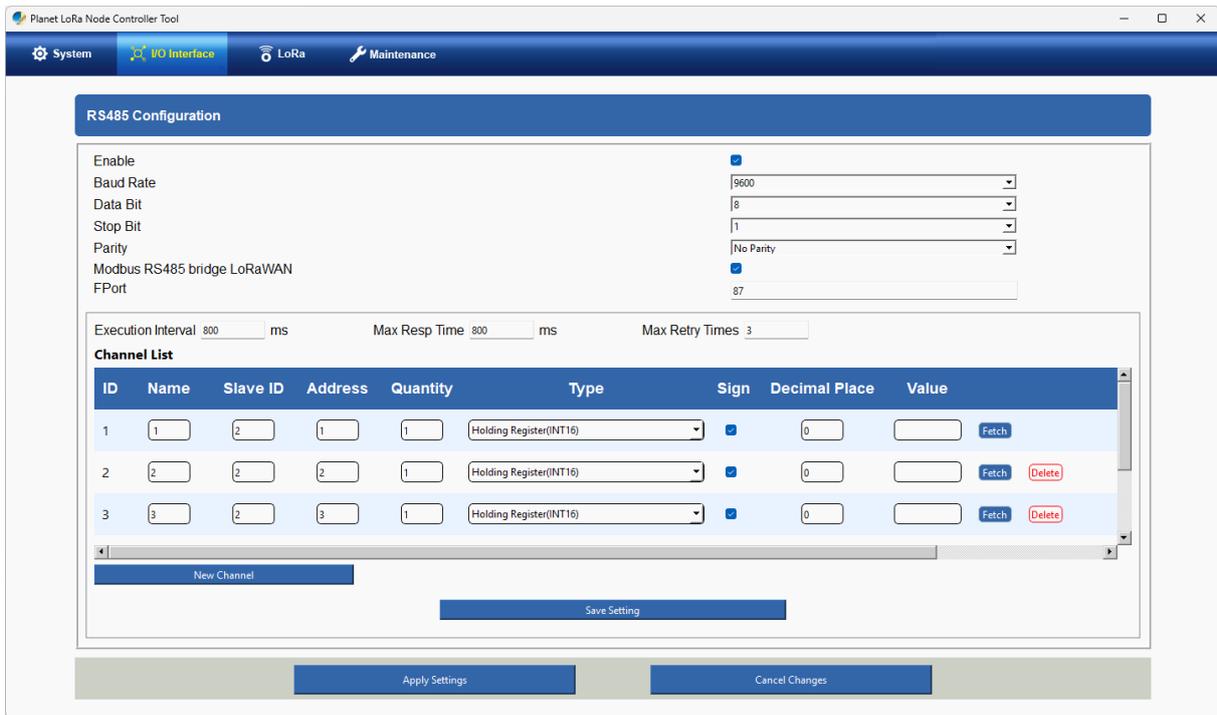
1. Connect RS232 device to RS232 port on the interface of LN1130 or LN502.
2. Go to “**I/O Interface > RS232**” of PLANET LoRa Node Controller Tool to enable RS232 and configure serial port settings. Serial port settings should be the same as RS232 terminal devices.



Object	Description
<b>Enabled</b>	Active RS232 function
<b>Baud Rate</b>	600/1200/2400/4800/9600/19200/38400/57600/115200/128000/256000 are available.
<b>Data Bit</b>	7 bit and 8 bit are available.
<b>Stop Bit</b>	1 bit and 2 bit are available.
<b>Parity</b>	None, Odd and Even are available.
<b>5V DC Output</b>	Output 5V DC power (LN502 Only)
<b>3.3V DC Output</b>	Output 3.3V DC power (LN502 Only)

### 4.3.2 RS485 Settings

1. Connect RS485 device to RS485 port on the interface of LN1130 or LN502.
2. Go to “I/O Interface > RS485” of PLANET LoRa Node Controller Tool to enable RS485 and configure serial port settings. Serial port settings should be the same as RS485 terminal devices.



The screenshot shows the 'RS485 Configuration' window in the PLANET LoRa Node Controller Tool. The window has a navigation bar with 'System', 'I/O Interface', 'LoRa', and 'Maintenance' tabs. The 'I/O Interface' tab is active. The configuration area includes the following settings:

- Enable:
- Baud Rate: 9600
- Data Bit: 8
- Stop Bit: 1
- Parity: No Parity
- Modbus RS485 bridge LoRaWAN:
- FPort: 87
- Execution Interval: 800 ms
- Max Resp Time: 800 ms
- Max Retry Times: 3

Below these settings is a 'Channel List' table with the following columns: ID, Name, Slave ID, Address, Quantity, Type, Sign, Decimal Place, and Value. The table contains three entries, all of which are 'Holding Register(INT16)' type with a quantity of 1 and a sign of '+'.

ID	Name	Slave ID	Address	Quantity	Type	Sign	Decimal Place	Value
1		2	1	1	Holding Register(INT16)	+	0	
2		2	2	1	Holding Register(INT16)	+	0	
3		2	3	1	Holding Register(INT16)	+	0	

Buttons for 'New Channel', 'Save Setting', 'Apply Settings', and 'Cancel Changes' are visible at the bottom of the configuration area.

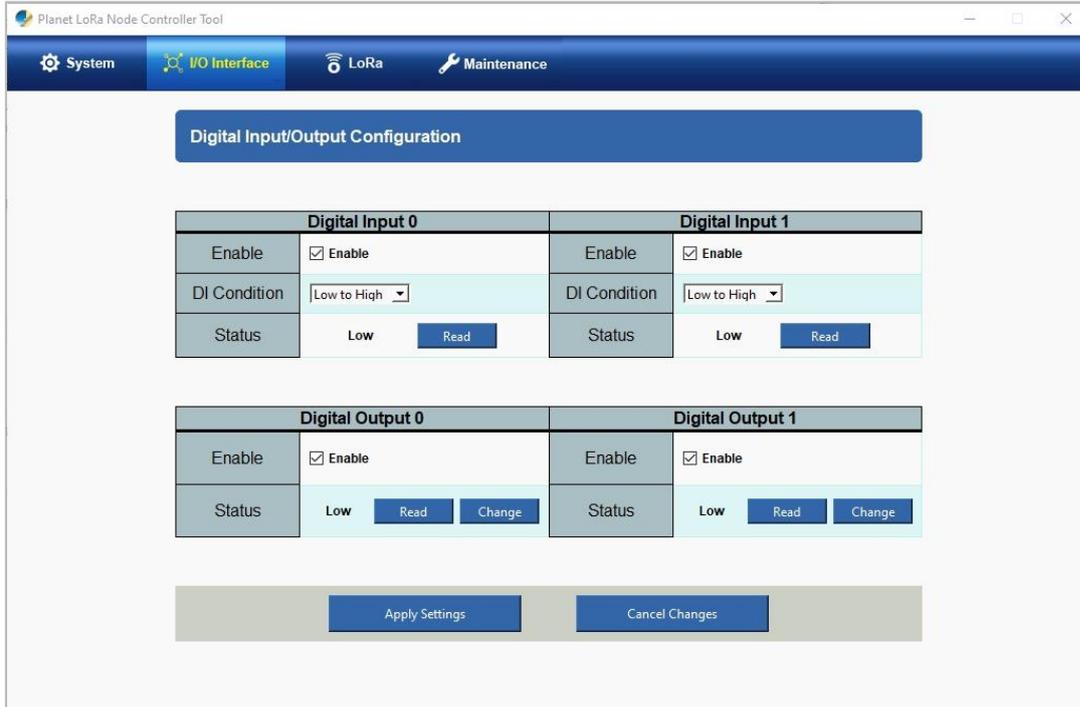
Object	Description
<b>Enabled</b>	Active RS485 function
<b>Baud Rate</b>	600/1200/2400/4800/9600/19200/38400/57600/115200/128000/256000 are available.
<b>Data Bit</b>	7 bit and 8 bit are available.
<b>Stop Bit</b>	1 bit and 2 bit are available.
<b>Parity</b>	None, Odd and Even are available.
<b>Modbus RS485 Bridge LoRaWAN</b>	If transparent mode is enabled, LN501 will convert Modbus RTU commands from network server to RS485 terminal devices and send Modbus reply originally back to network server.
<b>Port</b>	The port is used for RS485 transmission port.
<b>Execution Interval Time</b>	Sets the time interval (in milliseconds) for data reading execution.
<b>Max. Response Time</b>	Specifies the maximum wait time (in milliseconds) for the device to respond.

<b>Max. Retry Times</b>	Determines the maximum number of retries when data reading fails.
<b>Channel Name</b>	Defines the name of the channel for identification.
<b>Slave ID</b>	Specifies the unique ID of the Modbus slave device.
<b>Address</b>	Sets the starting address of the Modbus register for data reading or writing.
<b>Quantity</b>	Specifies the number of data points (registers) to read or write.
<b>Type</b>	Defines the type of data, such as holding registers or input registers.
<b>Sign</b>	Indicates whether the data is signed (positive or negative).
<b>Decimal Place</b>	Determines the number of decimal places for displaying data.
<b>Value</b>	Displays the data value read from or written to the register.
<b>Fetch</b>	Manually triggers the data fetching operation.
<b>Delete</b>	Deletes the current read/write configuration.

 <b>Note</b>	<p>When you use power output to power RS485 Modbus slave devices, it only supplies power when reporting interval is coming. It's suggested to power slave devices with external power during the PoC test.</p>
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### 4.3.3 DI/DO Settings

1. Connect DI/DO device to I/O port on the interface of LN1140 or LN502.
2. Go to “I/O Interface > DIDO” of PLANET LoRa Node Controller Tool to enable RS232 and configure serial port settings. Serial port settings should be the same as RS232 terminal devices.

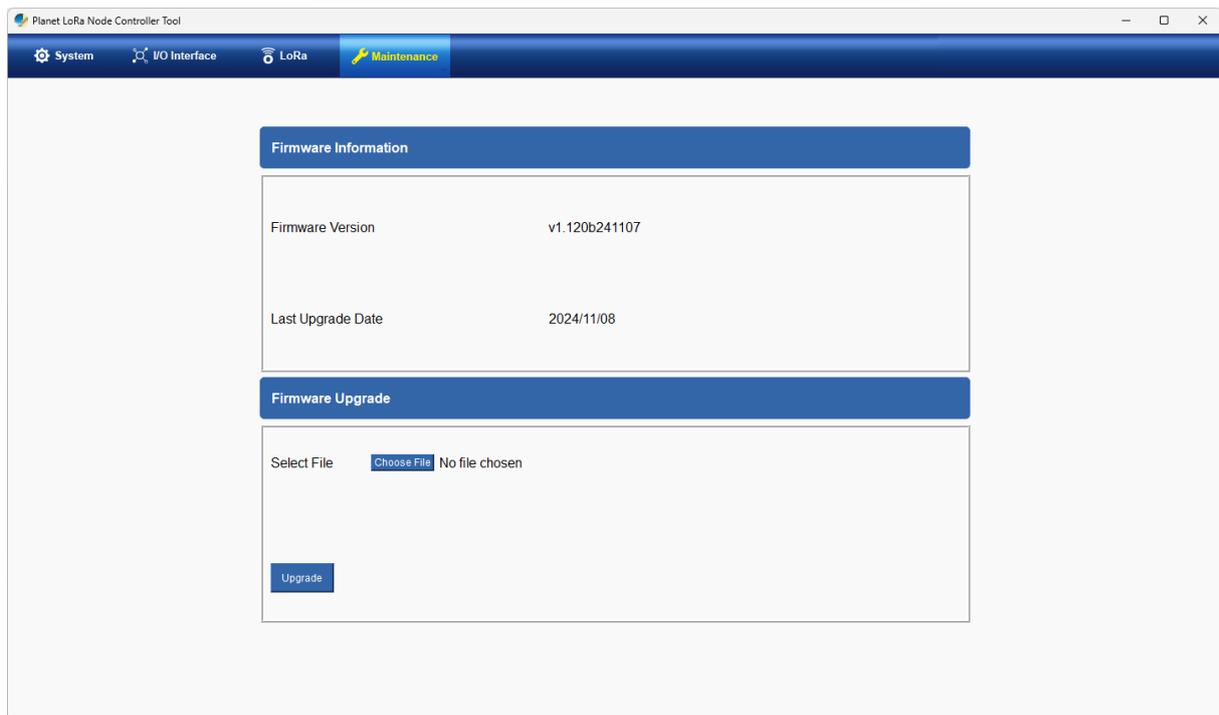


Object	Description
<b>Enabled</b>	Activate digital input / output function
<b>Condition</b>	<p><b>As Digital Input:</b> Allows user to select</p> <ul style="list-style-type: none"> <li>• High to Low</li> <li>• Low to High</li> <li>• Trigger.</li> </ul> <p>This means a signal received by system is from High to Low, from Low to High or the status changed. It will trigger an action that logs a customize message or issue the message from the switch.</p> <p><b>As Digital Output:</b> Allows user to select High to Low or Low to High. This means that when the switch is power-failed or port-failed, then system will issue a High or Low signal to an external device such as an alarm.</p>
<b>Status</b>	Click the <b>Read</b> button to show the current DI/DO status.

## 4.4 Maintenance

### 4.4.1 Upgrade

Go to “**Maintenance > Firmware Upgrade**” of PLANET LoRa Node Controller Tool, click “Choose File and Upgrade” to import firmware and upgrade the device



### 4.4.2 Reset to Factory Default

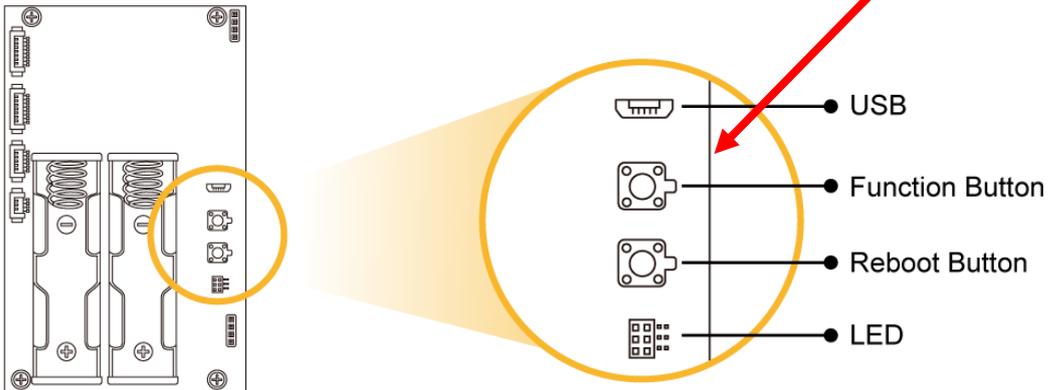
Please select one of following methods to reset device:

Hardware reset: Hold on the Reset button for more than 5s.

- LN1130/LN1140



- LN502



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## Chapter 5. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource and User's Manual on PLANET Web site first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQs:

<https://www.planet.com.tw/en/support/faq>

Switch support team mail address:

[support@planet.com.tw](mailto:support@planet.com.tw)

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