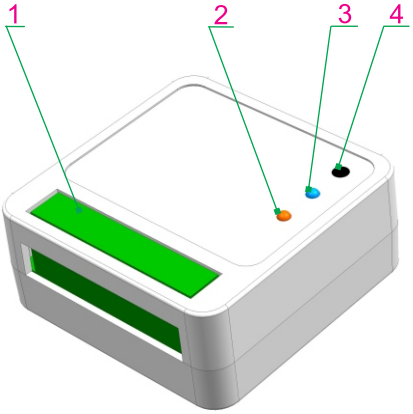
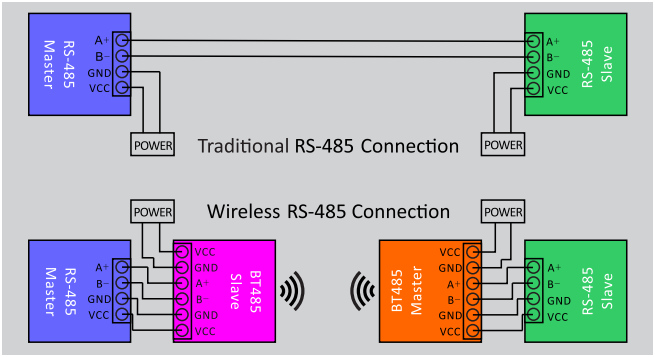


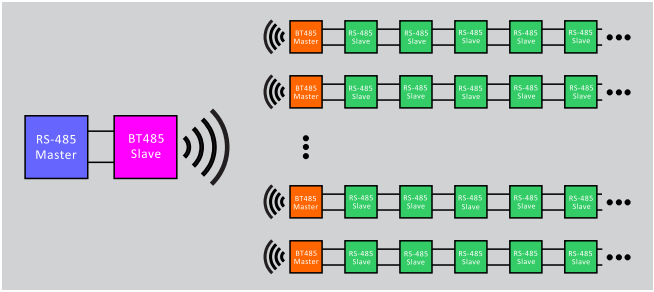
1, RS-485 Connecting Terminal
2, RS-485 TXD/RXD Indicator (Red)
3, Bluetooth Link Indicator (Blue)
4, Restarting Button

1. Introduction

Thank you for purchasing BT485 serial Bluetooth adapter! This product can replace the traditional RS-485 bus within a range of about 100 meters, convert RS-485 connection into a Bluetooth connection, and thus realize wireless RS-485 communication.

BT485 can be set as a Bluetooth master or slave by an Android app, and be used in a pair with one slave and one master, or in a network with one slave and multiple masters. The slave is connected to RS-485 master device, and the master is connected to RS-485 slave device, a BT485 slave can connect to up to 20 BT485 masters at the same time, and further connect up to 255 RS-485 slave devices through the BT485 masters.





Wireless RS-485 Network

2. Product Information

2.1 Key Features

- Adapt to RS-485 physical layer, support Modbus RTU and ASCII protocols.
- Simpler and more flexible networking than traditional wired RS-485 connection.
- The default Bluetooth role is slave, and can be set as a Bluetooth master.
- A Bluetooth slave can be connected to up to 20 Bluetooth masters at the same time.
- Bluetooth pairing encryption can enhance the security of wireless communication.
- Fast and large data transfer ability, the max RS-485 baud rate is up to 921600 bps.
- 10dBm transmiting power, communication distance up to 100 meters in open area.
- Built-in Watchdog, ensure long-term reliable and stable working.
- An Android app is supplied to set the adapter, without sending AT commands.
- 5V~36V wide DC power range, meet almost all power voltage of RS-485 devices.
- Serial TXD/RXD indicator can display the data activity on RS-485 serial port.

2.2 Specifications

- Bluetooth protocol: Version 5.1 BLE
- Selectable RS-485 baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600 bps
- TX power: 10dBm
- RX sensitivity: -98dBm
- Max wireless communication distance: 100 meters (line of sight)
- Default RS-485 communication settings: 115200, N, 8, 1
- Default Bluetooth name: BT485_xxxx (xxxx are last 4 digits of MAC address)
- Default Bluetooth role: Slave
- Default Bluetooth pairing password (If pairing encryption is enabled): 123456
- Accessing password of Android APP setting interface: irxon
- Typical working current: 5 mA
- Working Temperature Range: -20°C~85°C
- Dimension and Weight: 41x41x17mm, 21g

Some specifications can be changed by the Android APP comes with the adapter, please refer to section 4.3 for details.

2.3 Package List

- BT485 Bluetooth Adapter x1
- This User Guides (Electronic edition)

3. Hardware Description

Please refer to panel layout diagram on the first page.

3.1 Restarting Button

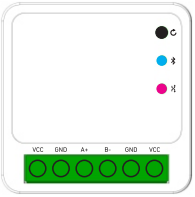
Click the button to restart the adapter if you get into troubles of communucation.

3.2 LED Indicator

• Bluetooth Link Indicator (Blue): When the LED light constantly, it means the Bluetooth is not connected. If Bluetooth is connected to the other BT485 adapter, the LED will be turned off. Please note that the BT485 slave role can be connected to multiple masters, and after being connected to the first master, the LED will be off and no longer lit, but it will not affect the searching and connecting of subsequent masters.

• RS-485 TXD/RXD Indicator (Red) : When bytes pass through RS-485 port, whether it is sending or receiving, the red LED will flash to indicate.

3.3 Pinout of RS-485 Connecting Terminal



Pin	Signal	Description
1	VCC	Power Supply 5V~36V
2	GND	Signal Ground
3	A+	RS-485 TX/RX Data Positive (A, T/R+, D+)
4	B-	RS-485 TX/RX Data Negative (B, T/R-, D-)
5	GND	Internal connected to Pin 2
6	VCC	Internal connected to Pin 1

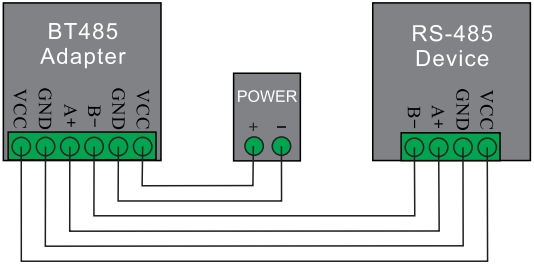
4. Instructions

The BT485 adapter should be used in pairs of one slave and one master, or one slave and multiple masters in a network, please refer to the funtion diagram on page 2.

Please purchase appropriate number of BT485 adapters according to your RS-485 network layout, and follow the steps below to connect and set the adapter, you'll change wired RS-485 communication to wireless or partial wireless RS-485 communication.

4.1 Connecting the Hardware

Connect BT485 adapter to RS-485 device as shown in the figure below. Turn on power, the blue LED will be lit up if the adapter is not connected to other Bluetooth device.

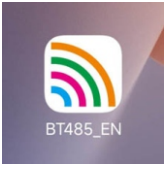


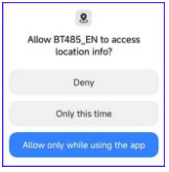
4.2 Installing BT485 Android APP

Please download the app from IRXON website, this is the link: https://www.irxon.com/download/BT485_EN.zip.

You'll get a apk file after extracting the zip file, install the apk file on your Android device, if the system pops up warnings during the installation, please ignore.

After the installation is complete, a BT485 app icon will be added to the screen, as shown in the left picture below.

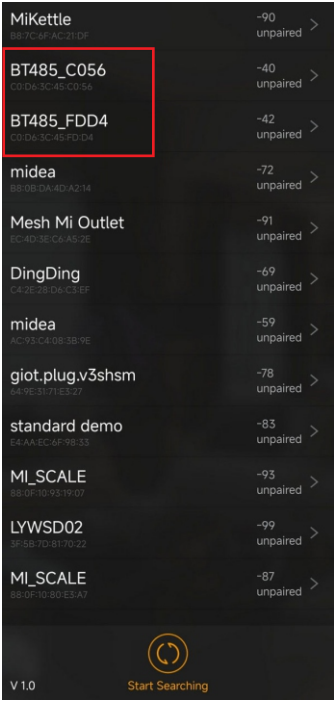


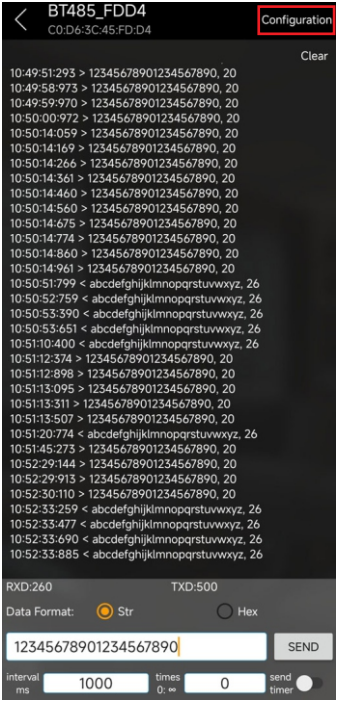


When you run the app for the first time, it will ask for location permission, please select "Allow only while using the app", as shown in the right picture above.

Open the app, it will automatically search for Bluetooth devices, you can tap the round button at the bottom to stop the search. As shown in the left picture below, two BT485 adapters were found.

Tap on the found BT485 adapter, a new interface will appear, as shown in the right picture below, where you can test bluetooth communication. Tapping "Configuration" in the upper right corner will enter configuration interface. The first access to the interface requires a password verification, and the default access password are 5 letters: "irxon".





4.3 Configuration

In configuration interface of the app, please set BT485 adapters as described below.

• Set the adapter which connected to RS-485 master device as a Bluetooth slave, and set the baud rate the same as RS-485 master device. Record 12-Digit address of the slave adapter, the address will be used in next step. As shown in the left screenshot below.

• Set the adapter which connected to RS-485 slave device as the Bluetooth master, and set the baud rate the same as RS-485 slave device. Enter the Bluetooth slave MAC address recorded in the previous step in the Binding slave address box. As shown in the right screenshot below.

• There is only one BT485 Bluetooth slave in wireless RS-485 network, but there can be up to 20 Bluetooth masters. Just add the masters to network one by one by repeating the Bluetooth master configuration step.

4.4 Wireless RS-485 Communication

After configuration is completed and the adapter is restarted, the BT485 Bluetooth master will automatically search for and connect to its binding BT485 Bluetooth slave, the blue LED on the adapter will be turned off when the Bluetooth connection is built, and it's ready for wireless RS-485 communication.

In the above two screenshots of configuration, BT485_FDD4 is actually connected to a PC via USB to RS-485 cable and the computer act as a RS-485 master. BT485_C056 adapter

is actually connected to a 4-Digit 7-Segment LED Display and the LED display act as RS-485 slave. After the two BT485 adapters are connected via Bluetooth, it is like connecting an invisible RS-485 cable between the PC and the LED display.

Open a serial communication program on the computer, such as SSCOM5.13, and send a Modbus_RTU instruction: 7F 06 00 00 22 B8, the LED display will show 8888 on the screen. The first digit 7F of the instruction is the RS-485 address of the LED display, the second digit 06 is function code, which means writing a single register, the third and fourth digits 00 00 are the register address, and the fifth and sixth digits 22 B8 are hex value to be written, which is 8888 in decimal.

The instruction sending interface is shown in the screen shot below:

4.5 Pairing Encryption

In order to improve the security of wireless communication, it is recommended to enable pairing encryption. All of the BT485 masters and the slave need to be enabled pairing encryption and use the same pairing password in the configuration interface of BT485 app. The default pairing password is 123456, if you want to change, please record the new password to avoid forgetting it.