

PDDAXLQUE CP24

PDDAXLQUE DX-CP24 Bluetooth to RS485 Serial Adapter User Manual

Model: CP24

1. INTRODUCTION

The PDDAXLQUE DX-CP24 is a Bluetooth to RS485 serial adapter designed to convert wired RS485 interface devices into wireless Bluetooth communication. This module facilitates wireless communication between RS485 devices and platforms such as PCs, iOS, and Android devices. It is suitable for applications requiring RS485 device debugging, parameter setting, and information querying without direct cable connections.

The DX-CP24 features a built-in Bluetooth 5.1 BLE module with a Renesas DA14531 chip and PA Amplifiers, offering a transmission power of up to 13.5dBm. It includes an external rubber stick antenna for stable communication over distances up to 90m with mobile phones, 70m with PCs, and 400m between two DX-CP24 devices. The adapter supports the ModBus protocol and allows for baud rate switching via a button.

2. KEY FEATURES

- Converts RS485 interface devices to wireless Bluetooth communication.
- Supports communication with PC, iOS, and Android devices.
- Integrated Bluetooth 5.1 BLE module (Renesas DA14531 chip + PA Amplifiers).
- Transmission power up to 13.5dBm.
- External rubber stick antenna for extended range.
- Visual communication distances: Mobile phone: 90m, PC: 70m, Device-to-device: 400m.
- Supports ModBus protocol for compatibility with various ModBus devices.
- Button-adjustable baud rates: 2400, 4800, 9600 (default), 19200, 38400, 57600, 115200 bps.
- Compact device size: 60 * 27.8 * 16.4 mm.
- Wide power supply range: DC5-36V.
- Operating temperature: -40 to +85°C.



Figure 1: DX-CP24 Key Features Overview

3. PRODUCT CONTENTS

The DX-CP24 package typically includes the following items:

- DX-CP24 Adapter x1
- Rubber Stick Antenna x1
- RJ45 Plug to 4P 5.0mm Terminal Block x1

CP24 Key Features

1. Renesas DA14531 chip + PA Amplifiers
2. Bluetooth BLE 5.1
3. Support interfaces: RS485
4. Support ModBus protocol
5. Support communication between PC/IOS/Android and RS485 devices
6. Support changing baud rates, baud rates support: 2400, 4800, 9600, 19200, 38400, 57600, 115200
7. External rubber stick antenna, Visual distance for communication with devices: mobile phone: 90m / PC: 70m / device to device: 400m.
8. Support power range: DC5-36V
9. Device Size: 60 * 27.8 * 16.4mm
10. Working temperature: -40 to +85°C

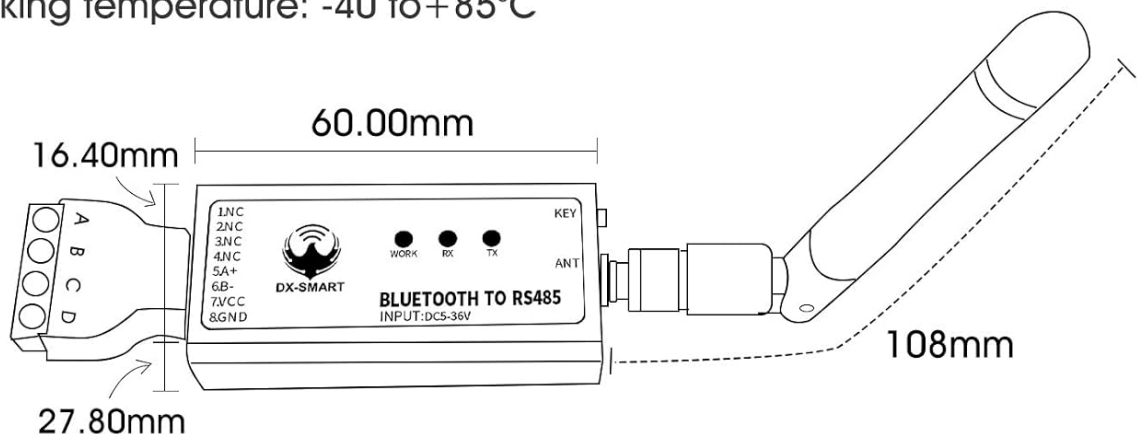


Figure 2: DX-CP24 Product Components

4. HARDWARE DESCRIPTION

The DX-CP24 adapter features several interfaces and indicators for operation and configuration.



Figure 3: DX-CP24 Hardware Construction Description

4.1. Interfaces and Indicators

- **A+:** RS485 interface terminal.
- **B-:** RS485 interface terminal.
- **VCC:** Power supply interface (DC5-36V).
- **GND:** Ground interface.
- **WORK:** BLE status indicator. Blinks when Bluetooth is not connected. Stays constantly lit when Bluetooth is connected.
- **RX:** Data receiving indicator light. Blinks when Bluetooth receives data.
- **TX:** Data transmit indicator light. Blinks when Bluetooth sends data.
- **KEY:** Button for switching baud rate and disconnecting Bluetooth.
- **ANT:** External antenna interface.

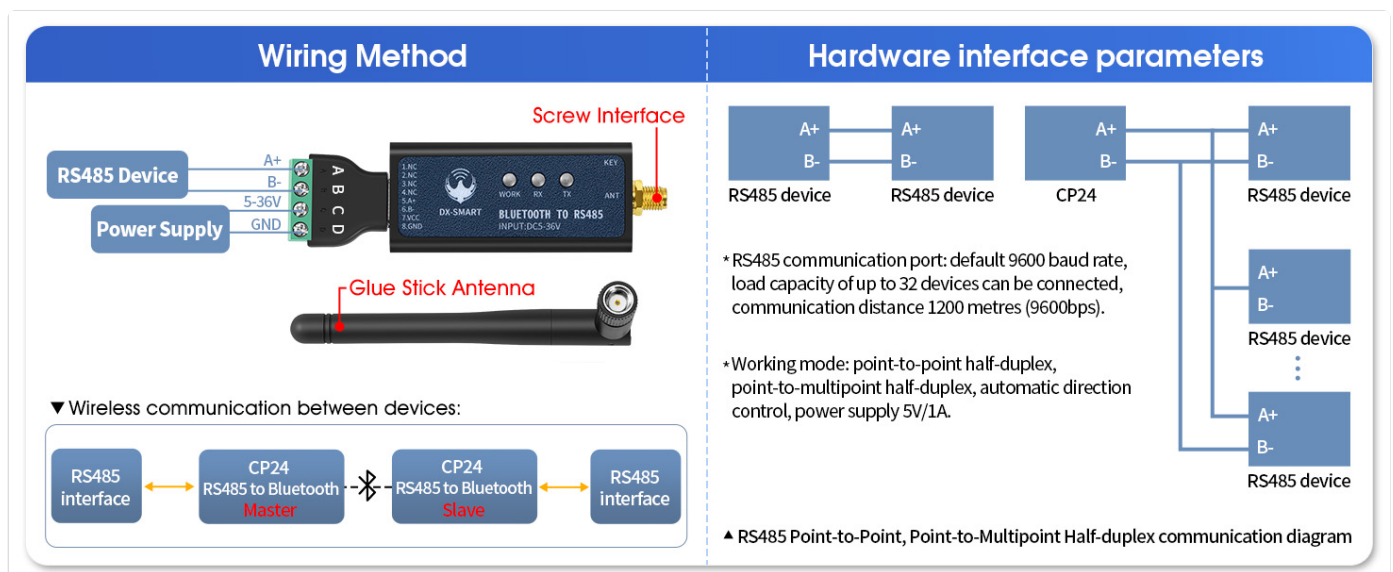


Figure 4: Detailed Description of CP24 Interfaces

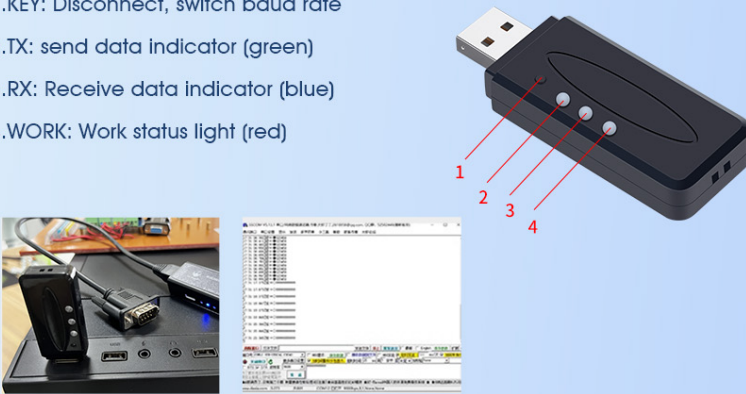
5. SETUP AND INSTALLATION

5.1. Wiring Method

Connect the DX-CP24 to your RS485 device and power supply as shown in the diagram below. Ensure correct polarity for A+, B-, VCC, and GND connections.

About the CP11 Adapter

1. KEY: Disconnect, switch baud rate
2. TX: send data indicator (green)
3. RX: Receive data indicator (blue)
4. WORK: Work status light (red)



Plug in CP11 adapter on PC side

Serial Software Interface

01 KEY Button\Baud rate adjustment

KEY function:
Bluetooth connected state: short press once to disconnect the Bluetooth connection.
Bluetooth unconnected status: short press twice to switch baud rate.

Baud rate switching method:
Press the KEY key twice consecutively to switch the baud rate, the number of times the red light blinks represents the baud rate number.
The baud rate is 2400 when the red light blinks once, 4800 when it blinks twice, 9600 when it blinks three times, 19200 when it blinks four times, 38400 when it blinks five times, 57600 when it blinks six times and 115200 when it blinks seven times.

02 TX\RX\WORK Indicators

TX Data Indicator:
Blinking when Bluetooth sends data.

RX Data Indicator:
Blinking when Bluetooth receives data.

WORK status indicator:
Not connected: red light blinks for baud rate number.
Connected: red light is on for a long time.

Figure 5: DX-CP24 Wiring Diagram and Communication Modes

- The RS485 communication port has a default baud rate of 9600 bps.
- It can connect up to 32 devices.
- Communication distance can reach 1200 meters (at 9600bps).
- Working modes include point-to-point half-duplex and point-to-multipoint half-duplex with automatic direction control.
- Power supply: 5V/1A.

5.2. Connecting to a Mobile Phone

To connect the DX-CP24 to a mobile phone (Android/iOS) for wireless communication with RS485 devices:

1. App Download:

- For iOS: Search for "DX-SMART" in the App Store.
- For Android: Download the Android App from the package or from en.szdx-smart.com.

2. Connect the CP24: Connect the DX-CP24 to your RS485 interface device.

3. Open the App: Open the Bluetooth and positioning functions on your mobile phone, then open the DX-SMART App.

4. Search and Connect: In the app, click 'Transmission' and search for Bluetooth devices. Select the DX-CP24 to establish a connection.

5. Once connected, you can control RS485 devices wirelessly.



Figure 6: Mobile Phone Connection Method

RS485 interface device to Bluetooth Wireless Adapter

1. Alternative to traditional cable, simple wiring, labour saving, no need to cut slots, no need to drill holes.
2. Support ModBus protocol, can be composed of ModBus wireless communication network.
3. Supports master-slave connections to allow wireless communication between devices and devices.
4. The DX-CP24 interface allows transparent transmission upon connection, with no setup required.
5. The default baud rate of DX-CP24 is 9600, supporting baud rate switching via button, ranging from 9600 to 115200. Press the KEY button twice to switch the baud rate, with the number of blue LED flashes indicating the baud rate value. Refer to the product manual for details.



RJ45 Plug to 4P 5.0mm Terminal Block(Detachable)

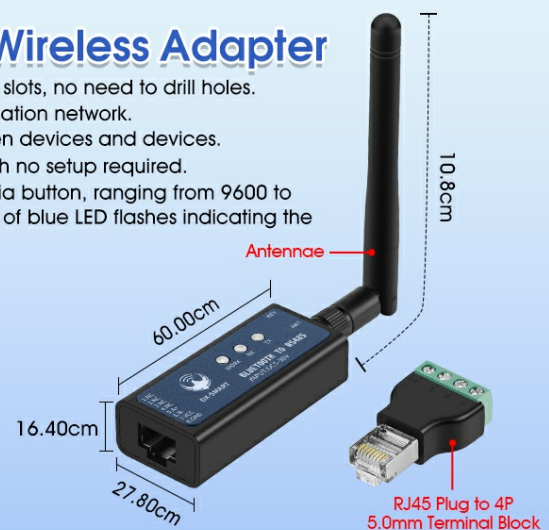


Figure 7: DX-CP24 Mobile Phone Communication Graph

Note: The transmission distance data is based on testing in an unobstructed, open area. Actual distances may vary depending on environmental factors.

5.3. Connecting to a Computer (PC)

For computer communication, a separate CP11 Bluetooth adapter is required (often included in a computer package version of the product). The CP11 acts as a USB to Bluetooth serial adapter.



Figure 8: CP11 USB to Bluetooth Serial Adapter Converter

1. **Install Drivers:** Download the datasheet and install the "CH341" driver from the official website onto your computer.
2. **Connect CP11:** Plug the CP11 adapter into a computer USB port.
3. **Connect CP24:** Plug the DX-CP24 adapter into your RS485 device.
4. **Open Serial Port Software:** Open your serial port software and select the COM port corresponding to the CP11 adapter. Set the default parameter configuration to 9600bps/8/n/1.
5. The CP11 adapter will actively search for the DX-CP24 Bluetooth converter. Once connected (indicated by a blue light), data can be exchanged.



Figure 9: Computer Debugging Setup with CP11

Your browser does not support the video tag.

Video 1: Unboxing and Setup of DX-CP24 Bluetooth to RS485 Serial Adapter. This video demonstrates the contents of the package and initial setup steps for both smartphone and computer control, including connecting the CP11 adapter to a computer and the CP24 adapter to an RS485 device.

6. OPERATION

6.1. Baud Rate Adjustment

The DX-CP24 supports adjustable baud rates. The default baud rate is 9600 bps. To change the baud rate:

- **Short press the KEY button twice** to switch the baud rate.
- The number of blue light flashes from the WORK indicator represents the current baud rate:
 - One flash: 2400 bps
 - Two flashes: 4800 bps

- Three flashes: 9600 bps (Default)
 - Four flashes: 19200 bps
 - Five flashes: 38400 bps
 - Six flashes: 57600 bps
 - Seven flashes: 115200 bps
- The default setting is 9600bps with 8 data bits, no parity, and 1 stop bit (9600bps/8/n/1).

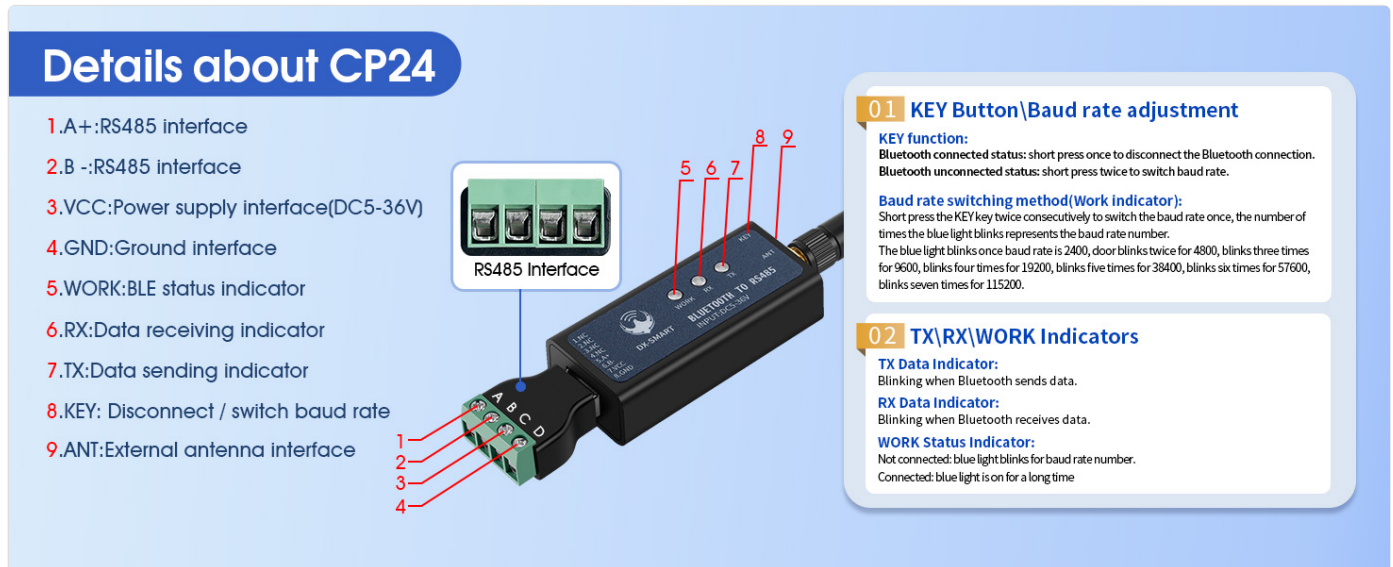


Figure 10: Baud Rate Adjustment via KEY Button

6.2. Wireless Communication Between Devices

The DX-CP24 can establish wireless communication between two RS485 devices by configuring one as a Master and the other as a Slave.

1. Connect the first CP24 (Master) to RS485 device 1.
2. Connect the second CP24 (Slave) to RS485 device 2.
3. The CP24 Master will actively search for CP24 Slaves and connect to them.
4. After connection, data interaction can be carried out wirelessly between the two RS485 devices.



Figure 11: Device-to-Device Wireless Communication

7. APPLICATION SCENARIOS

The DX-CP24 adapter can be used in various industrial and personal applications to enable wireless control and monitoring of RS485 devices.



Figure 12: Bluetooth-RS485 Conversion Applications

- **PLC Program Update:** Update PLC programs wirelessly via PC.
- **Inverter Equipment Control:** Set inverter parameters using a mobile phone.
- **Lift Controller Settings:** Adjust lift parameters via computer.
- **Servo Motor Control:** Set servo motor parameters using mobile phones.
- **Textile Machine Control:** Set parameters for textile machinery via computer.
- **Touch Screen Control:** Interface with touch panels to control PLCs.

8. SPECIFICATIONS

Feature	Detail
Model Number	CP24
Bluetooth Version	Bluetooth 5.1 BLE
Chipset	Renesas DA14531 + PA Amplifiers
Transmission Power	Up to 13.5dBm
Communication Distance (Mobile Phone)	90m (visual distance)
Communication Distance (PC)	70m (visual distance)
Communication Distance (Device to Device)	400m (visual distance)
Supported Protocols	ModBus protocol
Baud Rates	2400, 4800, 9600 (default), 19200, 38400, 57600, 115200 bps
Default Baud Rate Parameters	9600bps/8/n/1 (baud rate/data bit/no parity/stop bit)
Power Supply Range	DC5-36V
Operating Temperature	-40 to +85°C
Device Dimensions	60 x 27.8 x 16.4 mm
Item Weight	4.3 ounces
Hardware Interface	RS485, USB Type C (for CP11 adapter)
Compatible Devices	Desktop, Smartphone, various RS485 devices
Minimum Required OS Version	Android 10.0, Windows 7, iOS 8

9. TROUBLESHOOTING

If you encounter issues with your DX-CP24 adapter, consider the following troubleshooting steps:

- **No Connection/Device Not Found:**

- Ensure the DX-CP24 is properly powered (DC5-36V).
- Verify that Bluetooth is enabled on your mobile phone or that the CP11 adapter is correctly installed and recognized by your PC.
- Check the distance between the adapter and the controlling device. Ensure it is within the specified communication range and free from excessive obstructions.
- For PC connections, confirm that the CH341 driver is installed and the correct COM port is selected in your serial software.
- Restart the DX-CP24 adapter and your controlling device.

- **Communication Errors/Incorrect Data:**

- Verify that the baud rate of the DX-CP24 matches the baud rate of your RS485 device and your controlling software (PC/App). Adjust the DX-CP24 baud rate using the KEY button as described in Section 6.1.
- Check the RS485 wiring (A+, B-, VCC, GND) for correct connections and polarity.
- Ensure that the ModBus protocol settings (if applicable) are correctly configured on both the DX-CP24 and the RS485 device.
- Confirm that the RS485 device is functioning correctly independently of the Bluetooth adapter.

- **Indicator Lights Not Functioning:**

- If the WORK indicator is not lit, check the power supply connection.
- If RX/TX lights are not blinking during data transfer, verify the connection and communication settings.

10. MAINTENANCE

To ensure the longevity and optimal performance of your DX-CP24 Bluetooth to RS485 Serial Adapter:

- Keep the device clean and free from dust and moisture.
- Avoid exposing the device to extreme temperatures or direct sunlight.
- Handle the antenna and connectors with care to prevent damage.
- Store the device in a dry, cool place when not in use.

11. WARRANTY AND SUPPORT

For warranty information or technical support, please refer to the documentation provided with your purchase or contact the manufacturer directly. As a manufacturer, PDDAXLQUE is committed to assisting users with any issues encountered and offers OEM/ODM services.

Contact information can typically be found on the product packaging or the official PDDAXLQUE website.



