

PDDAXLQUE DX-BT24

PDDAXLQUE DX-BT24 Bluetooth BLE 5.1 UART Serial Transceiver Module User Manual

Model: DX-BT24

1. INTRODUCTION

The PDDAXLQUE DX-BT24 is a low-power Bluetooth 5.1 module designed for wireless serial communication. Based on the DA14531 chipset, it offers ultra-low power consumption, operating at just 19 μ A and hibernating at 2 μ A. This module integrates AT commands and standard UART communication, simplifying its use for various applications without requiring extensive firmware development.

It supports a transmission rate of up to 10 kb/s and a clear-line-of-sight communication distance of up to 180 meters. Multiple UART baud rates are supported, including 2400, 9600, 19200, 38400, 57600, 115200, 230400, 460800, and 921600. The DX-BT24 is suitable for prototyping, educational projects, and commercial products, supporting OEM/ODM customization.

2. KEY FEATURES

- **Bluetooth BLE 5.1:** Utilizes the Renesas DA14531 chipset for efficient wireless communication.
- **Ultra-Low Power Consumption:** Achieves 19 μ A during operation and 2 μ A in hibernation, enabling battery-powered applications.
- **UART Serial Communication:** Facilitates easy data transmission and reception with devices like mobile phones or computers.
- **AT Command Set:** Built-in AT commands allow for configuration of module parameters such as device name, baud rate, UUID, transmission power, and broadcast time.
- **High Transmission Rate:** Supports a maximum transmission rate of 10 KB/s.
- **Extended Communication Range:** Up to 180 meters clear-line-of-sight distance.
- **Multiple Certifications:** BQB, CE, FCC, IC, SRCC, ROHS certified for reliability and safety.
- **Antenna Options:** Supports both onboard and external antennas.
- **Robust Design:** Equipped with an RF shielding cover for strong anti-interference, anti-static, and EMC

BT24 Key Features

- Renesas DA14531 & BLE 5.1
- Communication Distance 90m
- Serial communication data transfer
- Abundant AT commands
- Transmission rate 10K Byte/s
- Power consumption can be as low as 2 μ A
- Optional on-board antenna or external antenna
- Module Size: BT24: 26.6(L) x 12.8 (W) x 2.3(H) mm
BT24-A: 37.5(L) x 15.7 (W) x 4.0(H) mm
- Transmit Power -19.5 ~ +2.5dBm
- Working temperature -40~+85C
- Complete developer profile
- Shield Protection Antistatic & Dustproof
- Support PC, IOS, Android transmission
- BQB,CE,FCC,SRCC,IC certification

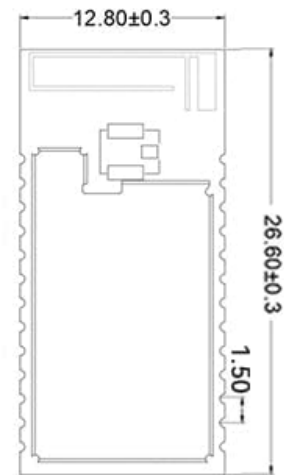


Figure 2.1: DX-BT24 Key Features and Dimensions

3. SETUP AND CONNECTION

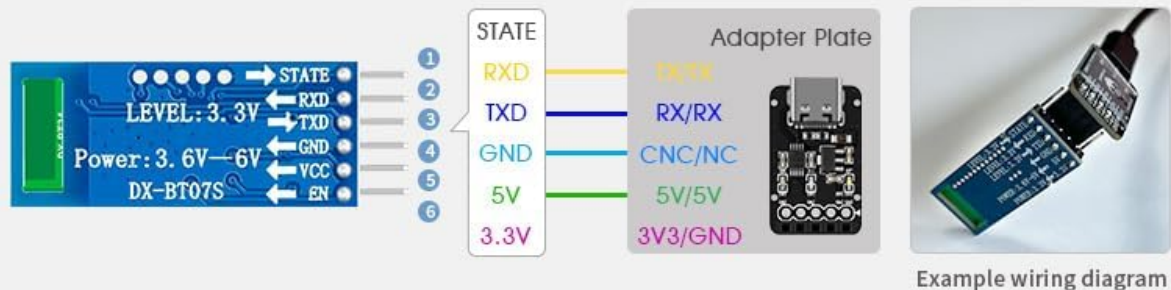
To begin using the DX-BT24 module, follow these general setup guidelines. For initial product validation and testing, purchasing a developer kit is recommended.

3.1 Pinout and Power Supply

The DX-BT24 module typically requires a 3.3V power supply. Refer to the specific pinout diagram for your module variant (e.g., DX-BT24-A) to ensure correct connections for VCC, GND, RXD, and TXD.

BT24 development kit demonstration

It is recommended that you purchase the developer kit for the first time to facilitate quick product validation and testing.



*Please note

Button: Low Power Mode - Wake Up;
Normal Operating Mode - Disconnect

Lamp Status:

- Not connected: 1s high 1s low
- Connected: 3s high 50ms low
- Low Power/Hibernation Mode: Always Low

- 1 LINK-STATUS-Status Indicator Pin
High - Connected
Low - not connected
- 2 RXD
- 3 TXD
- 4 GND
- 5 Power supply 5V
- 6 Power supply 3.3V

Figure 3.1: DX-BT24 Pinout and Example Wiring Diagram

3.2 Serial Communication Connection

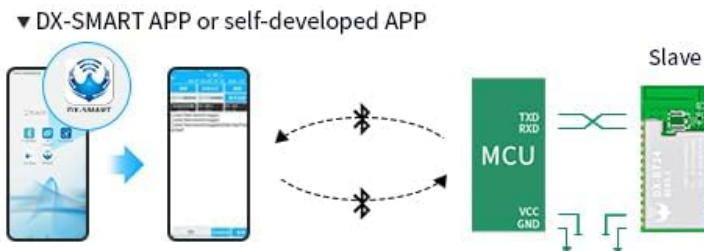
Connect the module's TXD pin to the RXD pin of your microcontroller (MCU) or serial adapter, and the module's RXD pin to the TXD pin of your MCU or serial adapter. Ensure a common ground (GND) connection.

- Module TXD → MCU RXD
- Module RXD → MCU TXD
- Module GND → MCU GND
- Module VCC → 3.3V Power Supply

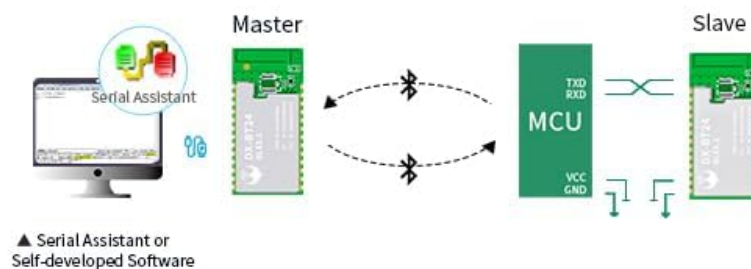
Application of direct serial communication

- BT24 module can be connected to communicate with phone, computers, devices.

1. The phone APP communicates with each other and the device through the Bluetooth module:



2. The computer software communicates with the device through the Bluetooth module:



3. Devices communicate with each other via Bluetooth module:

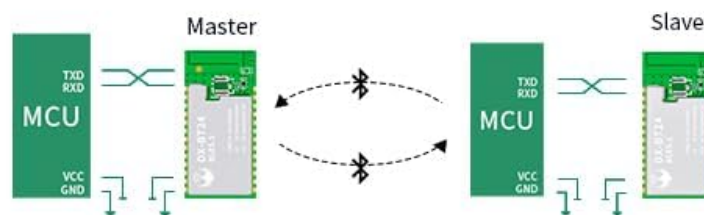


Figure 3.2: Application of Direct Serial Communication

4. OPERATING INSTRUCTIONS

4.1 UART Communication

The DX-BT24 module communicates via UART serial port. Data sent to the module's RXD pin will be transmitted wirelessly, and data received wirelessly will be output through the module's TXD pin. Ensure your host device (MCU, computer, or mobile phone via adapter) is configured to the correct baud rate.

4.2 AT Command Usage

The module features a comprehensive set of AT commands for configuration. These commands allow you to query and modify various parameters without needing to develop custom Bluetooth firmware. Examples include:

- **Set Device Name:** Change the broadcast name of the module.
- **Set Baud Rate:** Adjust the UART communication speed.
- **Set UUID:** Configure the service and characteristic UUIDs for BLE communication.

- **Set Transmission Power:** Adjust the signal strength.
- **Set Broadcast Time:** Control the advertising interval.
- **Command Disconnection/Restart:** Control module state.

A detailed AT command set is available in the technical documentation provided by PDDAXLQUE. Access these resources via the product guide links.

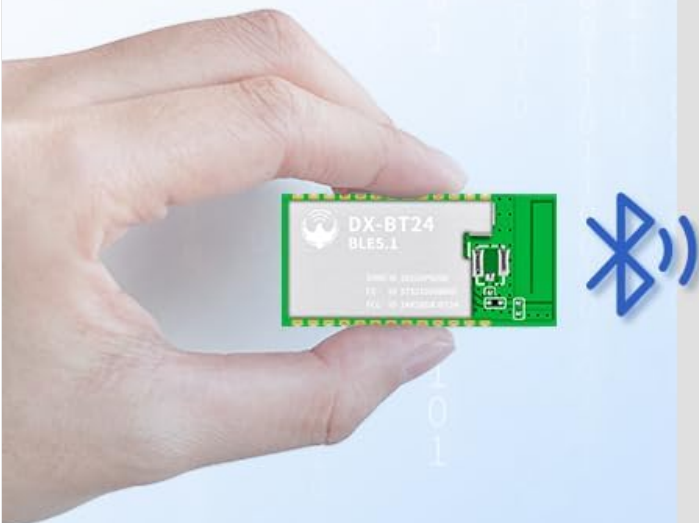
4.3 BLE Connection Note

Important:

The DX-BT24 Bluetooth module supports the BLE protocol. It cannot be directly searched and connected using your phone's standard Bluetooth settings. You must use a dedicated application (either your own developed APP or a test APP provided by PDDAXLQUE) to search for and connect to the module. Similarly, direct connection from a computer or notebook's built-in Bluetooth is not supported. For computer communication, you will need to use a master module or a CP11 adapter in conjunction with serial port software.

Free APP and SDK

- The DX-SMART app supports searching and connecting modules. The APP supports changing parameters, searching BLE, sending and receiving data, helping you use and verify products faster
- Note: DX-BT24 is a BLE protocol and cannot be searched and connected through the phone's built-in Bluetooth. It requires the use of self-developed applications or DX-SMART applications. You cannot search and connect through the built-in Bluetooth of your PC or laptop. You need to use our master module or CP11 adapter to communicate with the module.
- Free Android and iOS SDK provide, Supporting Customization and development services.





Home page



Set parameters



SEARCH BLE



Transparent transmission

Figure 4.1: DX-SMART App Interface for Module Interaction

5. APPLICATION SCENARIOS

The DX-BT24 module is versatile and can be integrated into various applications requiring low-power Bluetooth communication. Common application scenarios include:

- Bluetooth Keys
- Industrial Equipment Control
- Electric Vehicle Battery Management
- Smart Home Control
- Medical Devices
- Bluetooth Printers
- Bluetooth Remote Control Toys
- Shared Products

Your browser does not support the video tag.

Video 5.1: Overview of DX-BT24 Low Power Small Size Bluetooth Module, showcasing its features and potential applications.

6. MAINTENANCE

The DX-BT24 module is designed for robust operation. To ensure its longevity and optimal performance:

- **Handle with Care:** Avoid physical shock or excessive force.
- **Environmental Conditions:** Operate within the specified temperature range (-40°C to +85°C) and avoid high humidity or corrosive environments.
- **Power Supply:** Provide a stable and clean power supply within the recommended voltage range.
- **Cleaning:** If necessary, gently clean the module with a dry, soft cloth. Avoid using liquids or harsh chemicals.
- **Firmware Updates:** Periodically check for official firmware updates from PDDAXLQUE to enhance performance or address issues.

7. TROUBLESHOOTING

If you encounter issues with your DX-BT24 module, consider the following common troubleshooting steps:

- **Module Not Discoverable by Phone:** Remember that the DX-BT24 supports the BLE protocol and requires a specific application (DX-SMART APP or a custom-developed APP) for discovery and connection. It will not appear in your phone's standard Bluetooth device list.
- **Module Not Discoverable by Computer:** Direct connection via a computer's built-in Bluetooth is not supported. Use a master module or a CP11 adapter with serial port software for communication.
- **Communication Errors:** Verify that the UART baud rates on both the module and your host device are correctly matched. Check wiring connections (TXD-RXD, RXD-TXD, GND).
- **Power Issues:** Ensure the module is receiving adequate and stable power (3.3V). Check power supply connections.
- **Range Issues:** Ensure there are no significant obstructions between the module and the communicating device. External interference can also affect range.

For persistent issues, refer to the comprehensive technical documentation or contact technical support.

8. SPECIFICATIONS

Feature	Description
Model Number	DX-BT24
Brand	PDDAXLQUE
Hardware Interface	Bluetooth
Data Link Protocol	Bluetooth BLE 5.1
Data Transfer Rate	Up to 10 Kbps
Power Consumption (Operating)	19 μ A
Power Consumption (Hibernation)	2 μ A
Communication Distance	Up to 180 m (clear line of sight)
UART Baud Rates	2400, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600
Operating Temperature	-40°C to +85°C
Compatible Devices	Laptop, Smartphone (via specific APP/adapter)
Minimum Required OS Version	Android 10.0, Windows 7, iOS 8
Certifications	BQB, CE, FCC, IC, SRCC, ROHS
Manufacturer	DX-SMART

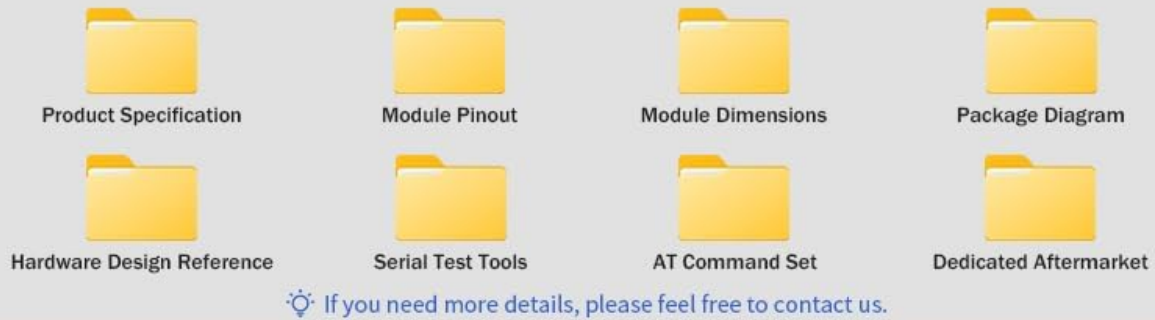
9. TECHNICAL SUPPORT

PDDAXLQUE provides comprehensive technical support for the DX-BT24 module. This includes technical documentation, AT command sets, module footprints, reference design schematics, and development/test tools. We recommend purchasing a development kit for quick verification and accelerated product development.

If you encounter any problems or require assistance, please contact us through the User Guide → Product Information → Service Support section. As a manufacturer, we support OEM and ODM services and are committed to resolving any issues you may face.

Professional technical documentation

Professional documentation can help you use the module more easily and conveniently



WE ARE FACTORY



[Technical Support & Customized Service]

We are a manufacturer, Not a trader. This is a product we developed and designed ourselves. Please believe in our ability and technology.

We can help you solve the problems you meet, and also support OEM and ODM services (Including customized logo, customized program, customized appearance, etc.).

Figure 9.1: Available Technical Documentation and Support Resources

10. WARRANTY INFORMATION

PDDAXLQUE products are manufactured to high-quality standards. Specific warranty details, including duration and coverage, are typically provided with your purchase documentation. Please retain your proof of purchase for any warranty claims.

For information regarding returns or replacements, please refer to the seller's return policy or contact PDDAXLQUE customer service.