

PDDAXLQUE LR02 433 475Mhz Set

PDDAXLQUE LR02 433/475Mhz Wireless Transceiver Module Set User Manual

Model: LR02 433 475Mhz Set

1. INTRODUCTION

The PDDAXLQUE LR02 is a low-power LoRa wireless transceiver module designed for transparent data transmission between devices via serial communication. This module operates in the 433/475Mhz frequency band and features a TCXO for stable performance. It is suitable for various applications requiring long-range, low-power wireless communication.

The LR02 module supports multiple AT commands for configuring parameters such as operating mode, frequency, MAC address, bandwidth, spreading factor, and coding rate, simplifying project development without requiring extensive LoRa programming.

This product has obtained CE, FCC, and ROHS certifications, ensuring its safety and reliability.

2. PACKAGE CONTENTS

The LR02 433/475Mhz Set typically includes the following components. For first-time users, a developer toolkit is recommended for easier testing and validation.

LR02 433MHz Developer packages

Suggestion: For first-time use, it is recommended that you purchase a developer toolkit, which can help you quickly test and validate your product.

The product package contains:



Image: Components included in the LR02 433MHz Developer Package. This typically contains two USB cables, two LR02 modules, two glue stick antennas, and two USB to TTL adapter boards.

- LR02 Wireless Transceiver Module (x2)
- Antenna (x2)
- USB to TTL Adapter Board (x2)
- USB Cable (x2)

3. SPECIFICATIONS

The PDDAXLQUE LR02 module features robust specifications for reliable wireless communication:

LR02-433T22D Key Features

- ASR6601 SOC Chip
- 32-bit ARM STAR Core,
Maximum Frequency 48MHz
- Uart Serial Communication
Abundant AT commands
- Support 410~493MHz,
Global Compatibility
- High power PA,
Output power: +22dBm
- Maximum Receiver Sensitivity: -138dBm
- Supports sleep mode, Wake on Air mode
- Line-of-sight distance up to 5km
- Operating voltage: 3.3V-5.5V (typical: 5V)
- Module Size 36(L)x16.5(W)x4(H)mm
- CE, FCC, ROHS certification

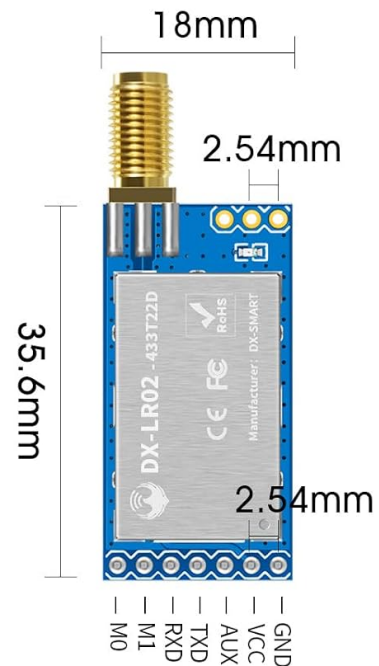


Image: Detailed view of the LR02-433T22D module highlighting key features, dimensions (35.6mm x 18mm), and pinout diagram.

- **Chip:** ASR6601 SOC Chip
- **Core:** 32-bit ARM STAR Core
- **Maximum Frequency:** 48MHz
- **Communication Interface:** UART Serial Communication
- **Supported Frequencies:** 410-493MHz
- **Output Power:** +22dBm
- **Maximum Receiver Sensitivity:** -138dBm
- **Operating Modes:** Supports sleep mode, Wake on Air mode
- **Line-of-Sight Distance:** Up to 5km in open space
- **Operating Voltage:** 3.3V-5.5V (typical: 5V)
- **Module Size:** 36(L) x 16.5(W) x 4(H) mm
- **Certifications:** CE, FCC, ROHS

4. SETUP AND CONNECTION

To begin using the LR02 module, follow these steps for initial setup:

1. **Connect Antenna:** Securely attach the provided antenna to the IPEX connector on the LR02 module.
2. **Connect to Adapter Board:** Insert the LR02 module into the USB to TTL adapter board. Ensure correct orientation based on the pinout.
3. **Connect to Computer:** Use the USB cable to connect the USB to TTL adapter board to your computer.
4. **Driver Installation:** Your operating system may automatically install necessary drivers for the USB to TTL converter. If not, you may need to manually install drivers for the specific chip used in the adapter board (e.g., CP210x, CH340).
5. **Serial Port Identification:** Identify the assigned COM port for the connected device in your computer's device manager.
6. **Serial Terminal Software:** Open a serial terminal program (e.g., PuTTY, Tera Term, Arduino Serial Monitor) and configure it with the correct COM port and a default baud rate of 9600 (8 data bits, no parity, 1 stop bit).

The module supports various baud rates for serial communication, including 1200, 2400, 9600, 19200, 38400, 57600, 115200, and 128000. The default baud rate is 9600.

5. OPERATING INSTRUCTIONS

The LR02 module is configured and operated using AT commands sent via the serial interface. Data transmission can occur in various modes.

5.1 AT Command Mode

To enter AT command mode, send the sequence '+++' (three plus signs) to the module. The module should respond with 'OK' or similar confirmation. To exit AT command mode and return to transparent transmission mode, send '+++' again or reset the module.

AT command set

AT command	Command description	Clarification
AT	Test (Response OK)	For testing the serial port
+++	Enter/exit AT command mode	Power-up defaults to transmission mode
AT+BAUD	Set/query baud rate	Default:4 (9600)
AT+MODE	Set/query operating mode	Default:0 (transparent transmission)
AT+SLEEP	Set/query power consumption mode	Default:2 (high time mode)
AT+CHANNEL	Set/query working channels	Default:00
AT+MAC	Set/query device address	Default:ff ff
AT+POWE	Set/query transmit power	Default:22dB

 For more AT commands, please consult the product information packages.

Professional technical documentation

Professional documentation can help you use the module more easily and conveniently.
If you need more details, please feel free to contact us!



Product Specification



Module Pinout



Module Dimensions



Package Diagram



Hardware Design Reference



Serial Test Tools



AT Command Set



Dedicated Aftermarket

Image: A table listing common AT commands, their descriptions, and clarifications for the LR02 module, including AT, +++, AT+BAUD, AT+MODE, AT+SLEEP, AT+CHANNEL, AT+MAC, and AT+POWE.

Common AT commands include:

- **AT:** Test command (Response: OK)
- **+++:** Enter/exit AT command mode
- **AT+BAUD=[value]:** Set/query serial baud rate (Default: 9600)
- **AT+MODE=[value]:** Set/query operating mode (Default: 0 for transparent transmission)
- **AT+CHANNEL=[value]:** Set/query working channel (Default: 00)
- **AT+MAC=[value]:** Set/query device address (Default: ff ff)
- **AT+POWE=[value]:** Set/query transmit power (Default: 22dB)

For a complete list of AT commands and their detailed usage, refer to the comprehensive technical documentation provided by the manufacturer.

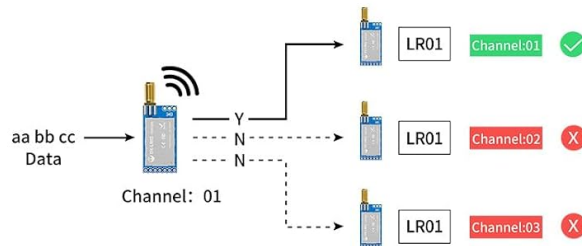
5.2 Communication Modes

The LR02 module supports several communication modes:

Support working mode

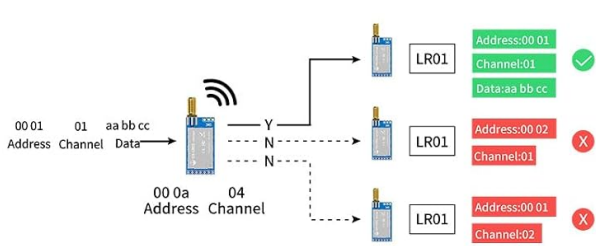
Module and module transparent transmission

This mode requires the same channel as the sender and receiver in order to send data.



Module and module fixed-point transmission

Communicate with modules with specified addresses and channels
Data transmission format (hexadecimal):
receiving address+receiving channel+data



Modules and module broadcast transmission

Communicate with designated channel modules

Data transmission format (hexadecimal): receiver channel+data

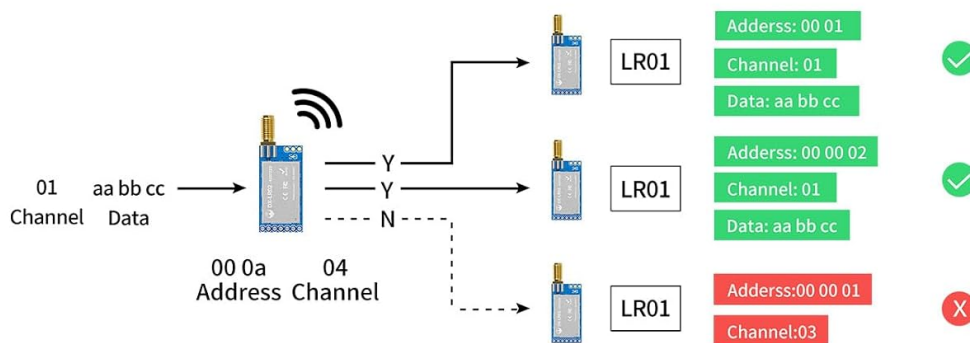


Image: Visual representation of the three primary working modes for the LR02 module: transparent transmission (requires same channel), fixed-point transmission (communicates with specified address and channel), and broadcast transmission (communicates with designated channel modules).

- **Transparent Transmission:** In this mode, data sent to one module is transparently transmitted to all other similarly configured modules on the same channel. No addressing is required.
- **Fixed-Point Transmission:** Allows communication with modules that have specified addresses and channels. Data is transmitted with a format including receiver address and channel.
- **Broadcast Transmission:** Communicates with all modules on a designated channel. Data transmission format includes the receiver channel.

5.3 Communication Distance

The LR02 module offers a significant communication range. In open space, the actual measured communication distance can reach up to 5km, making it suitable for applications requiring extended wireless coverage.

Drone measured communication distance

- ASR6601 Chip
- Visible distance up to 5km in the open

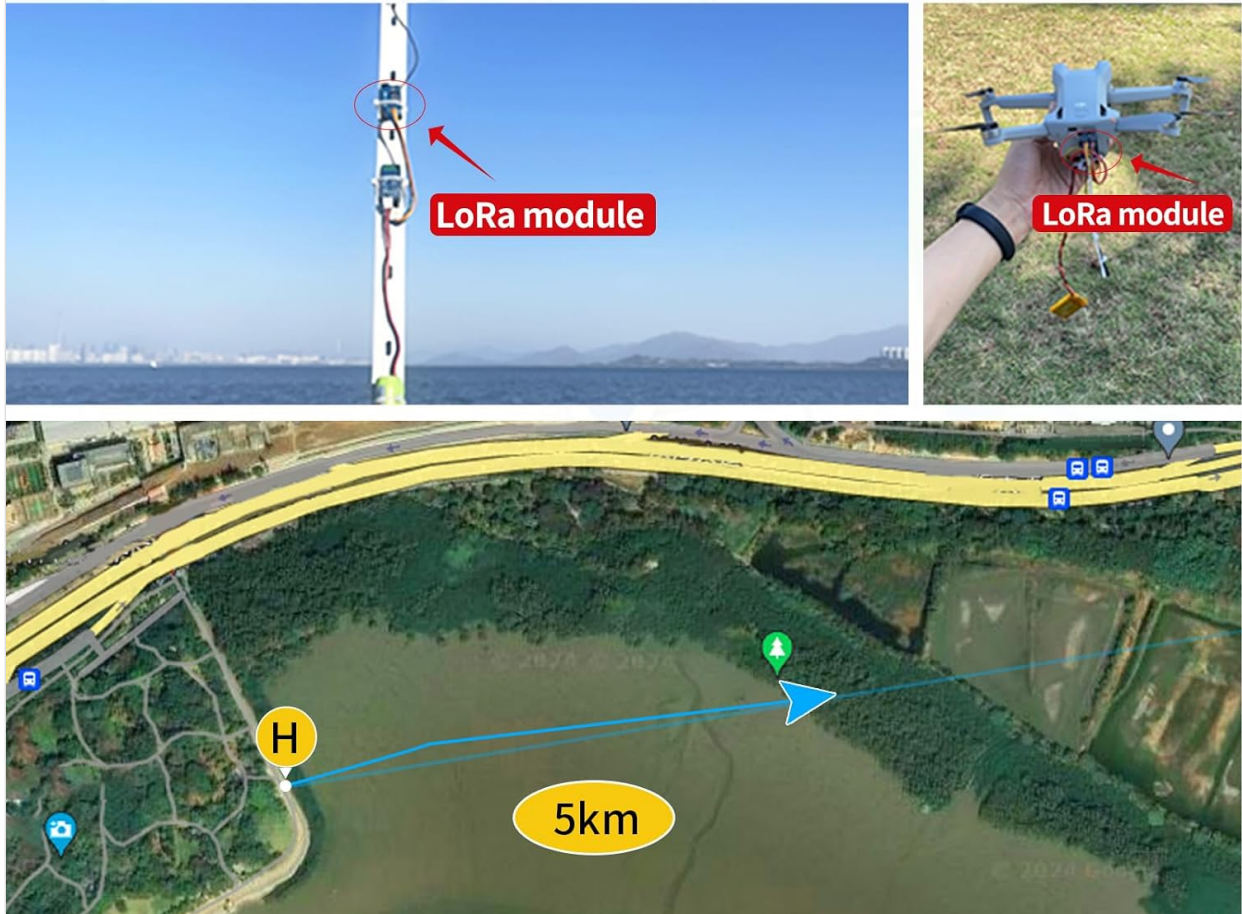


Image: An aerial view demonstrating a drone-measured communication distance of up to 5km for the LR02 module in an open environment.

6. MAINTENANCE

To ensure the longevity and optimal performance of your LR02 wireless transceiver module, consider the following maintenance guidelines:

- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges. Avoid exposure to extreme temperatures, direct sunlight, or high moisture environments.
- **Physical Handling:** Handle the module with care to prevent physical damage. Avoid bending or stressing the antenna connector or module pins.
- **Cleaning:** If necessary, gently clean the module with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Antenna Connection:** Ensure the antenna is always securely connected during operation to prevent damage to the RF circuitry. Never operate the module without an antenna attached.

7. TROUBLESHOOTING

If you encounter issues with your LR02 module, refer to the following common troubleshooting steps:

- **Module Not Responding:**

- Verify that the module is correctly powered (3.3V-5.5V).
- Check all serial connections (TX, RX, GND) between the module, adapter board, and computer.
- Ensure the correct COM port is selected in your serial terminal software.
- Confirm the baud rate setting in your serial terminal matches the module's baud rate (default 9600).
- Try sending the 'AT' command. If no response, try sending '+++' to enter AT command mode.

- **Communication Errors:**

- Ensure both transmitting and receiving modules are configured to the same frequency and channel.
- Check for environmental interference.
- Verify antenna connections on both modules.
- If using fixed-point transmission, ensure the receiver address is correctly set.

- **Unexpected Behavior:**

- A common issue is being stuck in AT command mode. If you are trying to transmit data and receive an error, send '+++' to toggle out of AT command mode.
- Refer to the detailed AT command documentation for specific command syntax and expected responses.

If problems persist after following these steps, please contact technical support.

8. TECHNICAL SUPPORT AND WARRANTY

PDDAXLQUE is committed to providing comprehensive technical support for its products. As a manufacturer, we offer OEM and ODM services and stand by the capabilities and technology of our modules.

For technical assistance, documentation, AT command sets, module footprints, reference design schematics, and development/test tools, please refer to the product information packages. We strongly recommend purchasing a development kit with your initial order to facilitate quick verification of module functionality and accelerate product development.

If you encounter any issues or require further assistance, please contact us directly through the provided support channels. You can typically find service support information via the 'User Guide' or 'Product Information' sections on our official platforms or product listings.

Information regarding specific warranty terms and conditions can be found in the product packaging or by contacting customer support.