

CDBAIRUI E90-DTU(433L30)-V8

CDBAIRUI E90-DTU(433L30)-V8 LoRa 433MHz Wireless Transceiver User Manual

Model: E90-DTU(433L30)-V8 | Brand: CDBAIRUI

1. PRODUCT OVERVIEW

The CDBAIRUI E90-DTU(433L30)-V8 is a 433MHz wireless data transceiver designed for reliable long-range communication. It features standard RS232 and RS485 connectors, operating in half-duplex mode. This device utilizes LoRa technology for extended communication distances and enhanced anti-interference capabilities.

Key features include:

- **LoRa Technology:** Enables longer communication distances and improved power density concentration.
- **FEC Algorithm:** Forward Error Correction proactively corrects interfered data packets, significantly improving reliability and communication range.
- **Data Encryption:** Transmitted data features randomness, enhancing security.
- **Data Compression:** Reduces data transmission time, minimizing interference and improving efficiency.
- **Wide Voltage Supply:** Operates within an 8V to 28V range.
- **Operating Frequency:** 410~441MHz (Default: 433MHz).



Figure 1: Front view of the E90-DTU(433L30)-V8 LoRa Wireless Transceiver, showing RS232, RS485, antenna, and power interfaces.

2. HARDWARE COMPONENTS AND DIMENSIONS

The E90-DTU(433L30)-V8 transceiver is designed for robust performance with clearly labeled interfaces.

The products are all finished with three anti-treatment

Forms a soft rubber after curing, which can effectively protect the product



Figure 2: Detailed view of the hardware interfaces on the E90-DTU(433L30)-V8.

- **Antenna Interface:** SMA-K connector for external antenna connection.
- **Dip Switch (M0, M1):** Used for setting operating modes. Refer to the configuration software for specific mode settings.
- **Power Interface (DC-IN):** Accepts 8V to 28V DC power input.
- **Function Indicators (PWR, TXD, RXD):** LEDs indicating power status, data transmission, and data reception.
- **RS485 Interface (485_A, 485_B, GND, VCC):** Terminal block for RS485 serial communication.
- **RS232 Interface:** DB9 connector for RS232 serial communication.

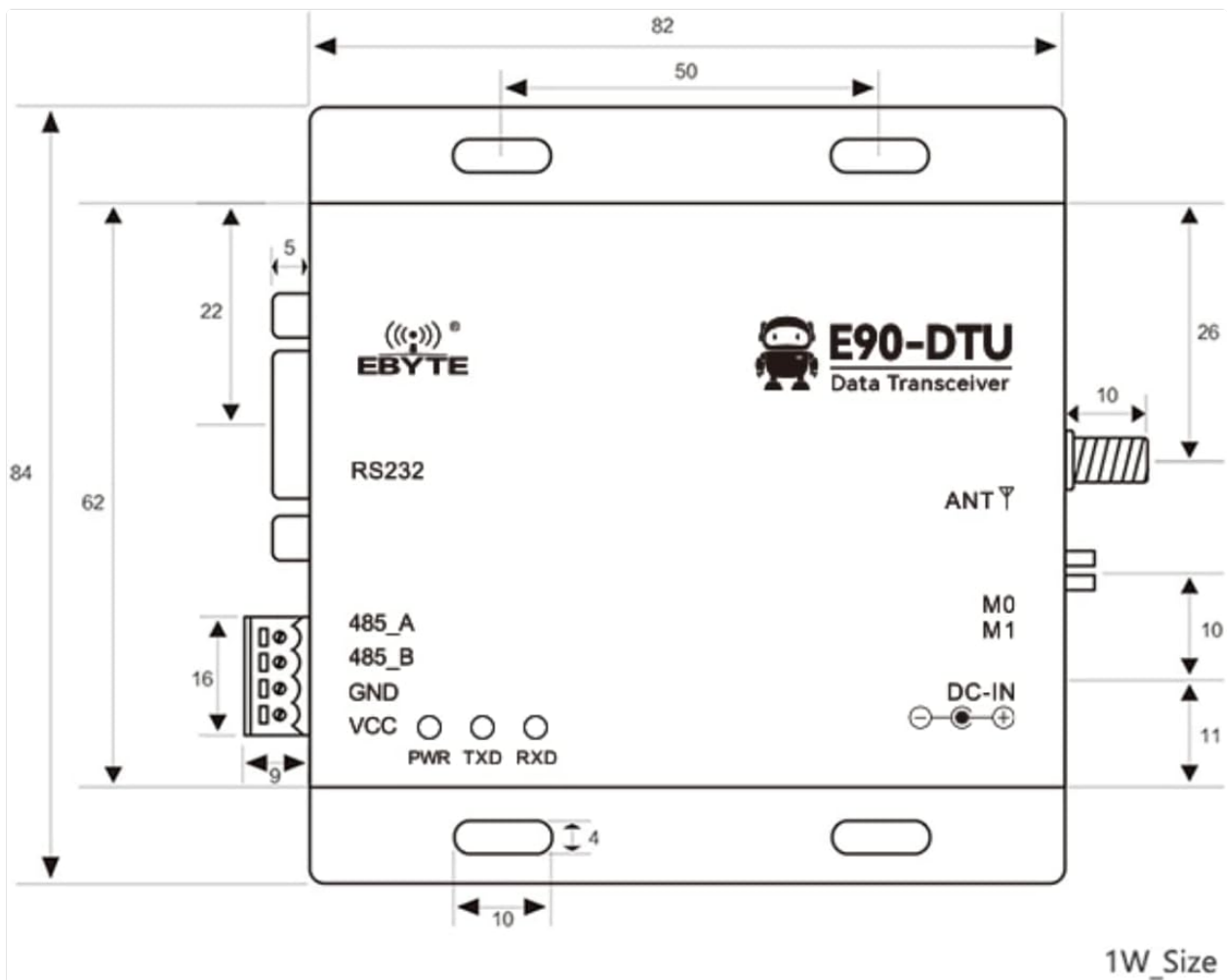


Figure 3: Top-down dimensional drawing of the E90-DTU(433L30)-V8, showing key measurements for installation planning.

3. INITIAL SETUP

1. **Antenna Connection:** Connect a compatible 433MHz antenna to the SMA-K antenna interface. Ensure the connection is secure.
2. **Power Supply:** Connect a DC power source (8V to 28V) to the DC-IN port. Observe polarity (+ and -). The PWR LED should illuminate.
3. **Data Interface Connection:**
 - **RS232:** Connect your RS232 device (e.g., PC, PLC) to the DB9 port using a standard RS232 cable.
 - **RS485:** Connect your RS485 device to the terminal block, ensuring correct A and B line connections.
4. **Configuration (Optional but Recommended):** For optimal performance and specific application requirements, use the provided configuration software to set parameters such as operating frequency, air data rate, serial port baud rate, and power output.

4. OPERATING INSTRUCTIONS

The E90-DTU(433L30)-V8 functions as a wireless bridge for RS232/RS485 serial data, enabling communication between devices over a wireless link.

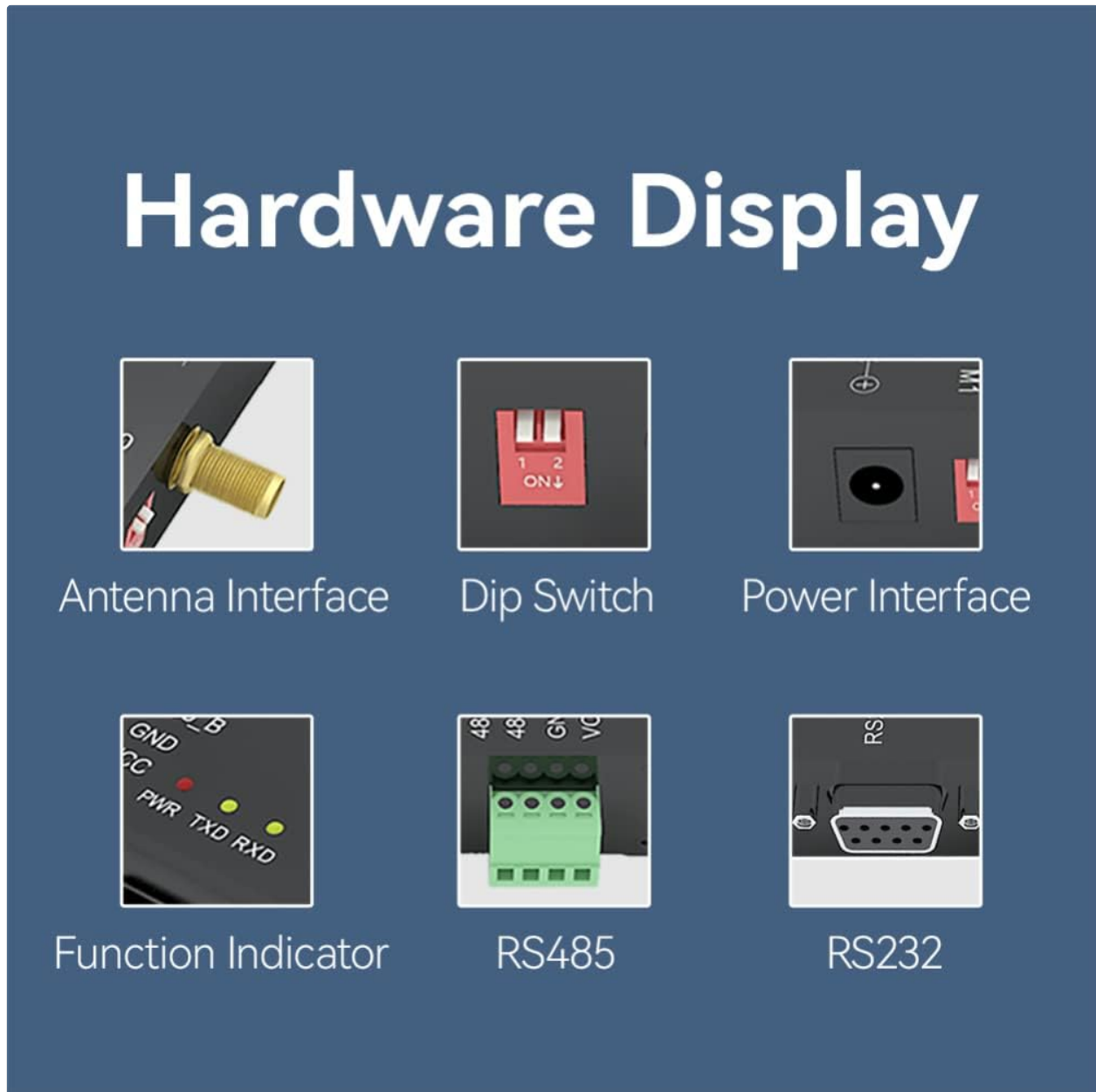


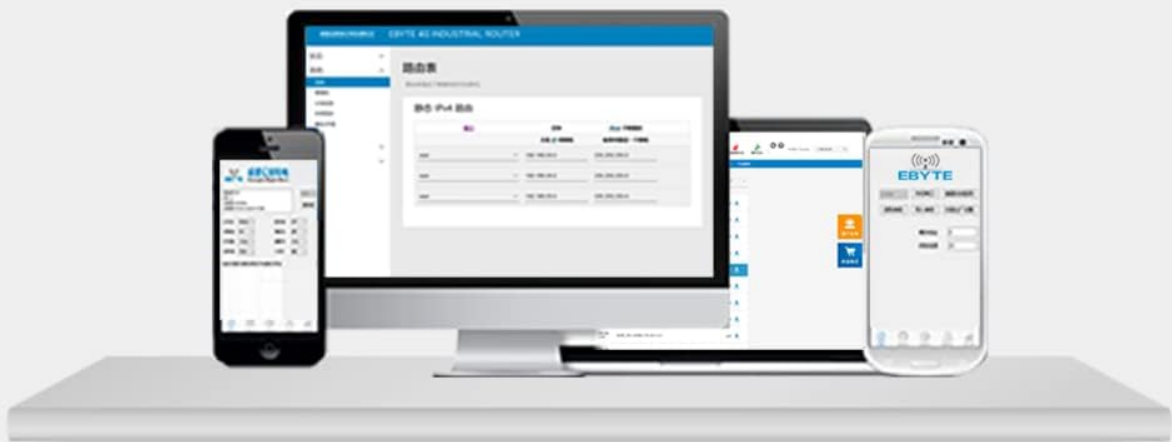
Figure 4: Diagram illustrating the basic wireless communication function between two E90-DTU units connecting a PC to a serial device.

- **Transparent Transmission:** The module operates in a transparent transmission mode, meaning it transmits data exactly as it receives it from the serial port, without modification.
- **Half-Duplex Communication:** Data can be transmitted in both directions, but not simultaneously. The module manages the switching between transmit and receive modes automatically.
- **Operating Modes:** The M0 and M1 pins (controlled by dip switches or software) define the operating mode (e.g., normal transmission, configuration mode, sleep mode). Ensure both transceivers in a pair are set to compatible modes for communication.
- **Communication Range:** Under ideal conditions, the device can achieve a range of up to 8km. Actual range may vary based on environmental factors, antenna quality, and power settings.

For detailed configuration of operating parameters, refer to the Function Configuration Software section.

available free

Function Configuration Software



Visit the official website for download

Figure 5: Comparison of traditional wired PLC communication with a wireless setup using E90-DTU units.

5. MAINTENANCE AND CARE

To ensure the longevity and optimal performance of your E90-DTU(433L30)-V8 transceiver, follow these maintenance guidelines:

- **Environmental Protection:** The product features a 'three anti-treatment' (dust-proof, heat resistant, moisture proof, acid and alkali resistant) for enhanced durability. However, avoid exposing the device to extreme temperatures, high humidity, or corrosive environments beyond its specified operating conditions.
- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Do not use liquid cleaners or solvents.
- **Connections:** Periodically check all cable connections (power, antenna, serial) to ensure they are secure and free from damage.
- **Firmware Updates:** Check the manufacturer's official website for any available firmware updates that may improve performance or add new features.

Basic Function

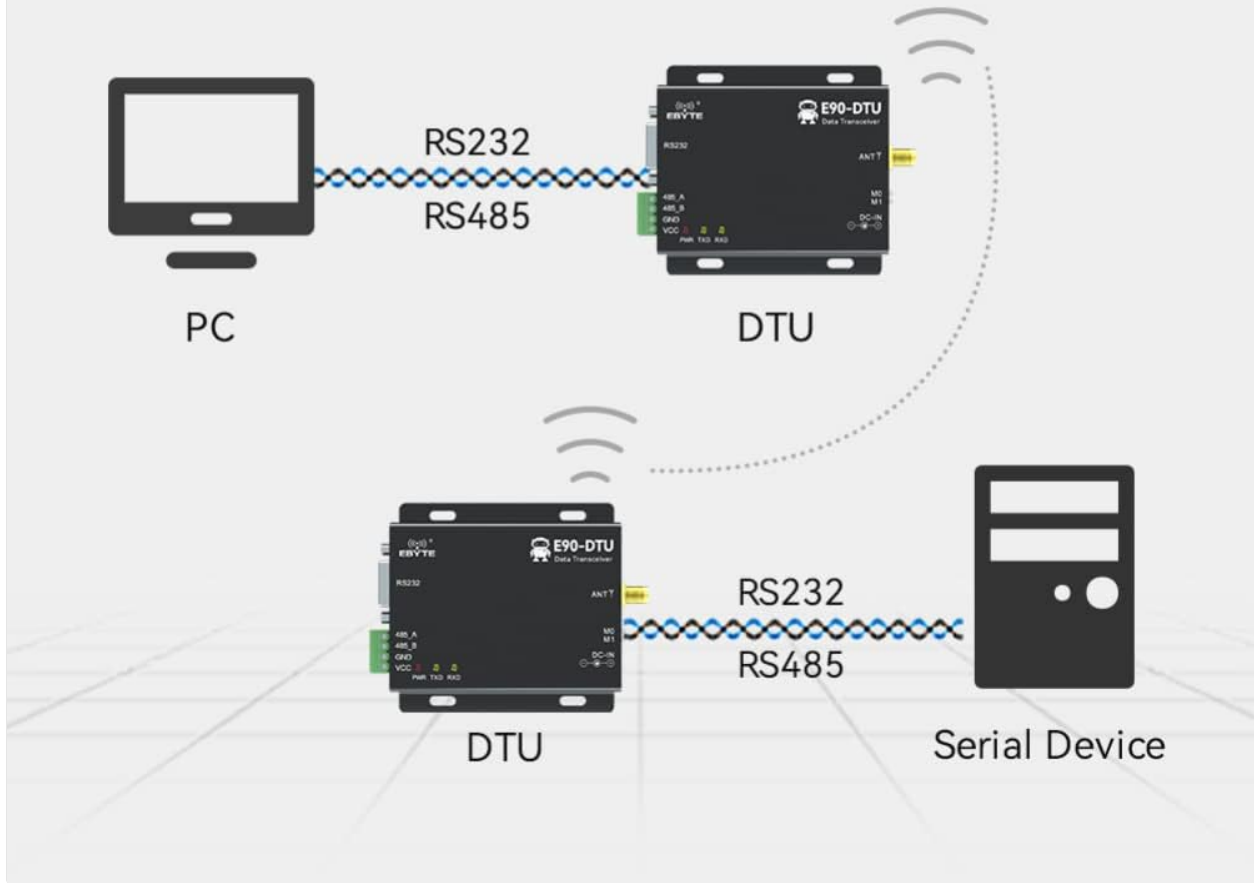


Figure 6: Illustration of the protective 'three anti-treatment' applied to the internal PCB for durability against environmental factors.

6. TROUBLESHOOTING

If you encounter issues with your E90-DTU(433L30)-V8, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Device does not power on (PWR LED off)	No power supply; incorrect voltage; faulty power cable.	Check power adapter and cable. Ensure voltage is within 8V-28V DC and polarity is correct.

Problem	Possible Cause	Solution
No data transmission/reception (TXD/RXD LEDs inactive)	Incorrect serial port settings; incompatible operating modes; antenna issue; out of range.	Verify serial port baud rate, parity, and stop bits match connected device. Ensure M0/M1 settings are identical on both transceivers. Check antenna connection. Reduce distance between units.
Limited communication range	Poor antenna placement; environmental interference; low power output setting.	Ensure antenna is clear of obstructions. Adjust antenna position. Check for sources of interference. Increase transmit power using configuration software (within legal limits).
Data errors or corruption	High interference; incorrect air data rate; serial port mismatch.	Verify air data rate and serial port settings. Ensure FEC is enabled. Consider changing operating frequency if interference is severe.

If the problem persists, consult the official product documentation or contact technical support.

7. TECHNICAL SPECIFICATIONS

Feature	Specification
Model Name	E90-DTU(433L30)-V8
Brand	CDBAIRUI
Operating Frequency	410~441MHz (Default: 433MHz)
Transmit Power	Up to 30dBm (1W)
Communication Distance	Up to 8km (line of sight, optimal conditions)
Interfaces	RS232 (DB9), RS485 (Terminal Block)
Power Supply	8V to 28V DC
Operating Mode	Half-duplex, transparent transmission
Technology	LoRa Spread Spectrum
Features	FEC Algorithm, Data Encryption, Data Compression
Compatible Devices	Industrial Automation Equipment, IoT Devices, Networking Devices

8. APPLICATIONS

The E90-DTU(433L30)-V8 LoRa Wireless Transceiver is suitable for a wide range of applications requiring reliable long-range wireless serial communication:

PLC wireless upgrade

Wireless communication (support N nodes) replaces the traditional wired communication (maximum support 32 nodes)

Traditional communication



wireless communication



Figure 7: Examples of application areas for the E90-DTU(433L30)-V8.

- Smart Home Systems
- Agricultural Monitoring and Control
- Intelligent Warehouse Management
- Industrial Automation and Control
- Device Management and Remote Control
- General Wireless Data Transmission

9. FUNCTION CONFIGURATION SOFTWARE

The E90-DTU(433L30)-V8 can be configured using dedicated software provided by the manufacturer. This software allows users to customize various parameters to suit their specific application needs.

Applications



Smart home



Agricultural application



Intelligent warehouse



Industrial applications



Device management



Wireless data

Figure 8: Example interface of the Function Configuration Software, available for download.

The configuration software typically allows adjustment of:

- Operating frequency
- Air data rate
- Serial port baud rate, parity, and stop bits
- Transmit power level
- Operating modes (e.g., transparent, fixed-point)
- Encryption settings

Please visit the official CDBAIRUI website for the latest version of the configuration software and detailed instructions on its use.

10. WARRANTY INFORMATION

CDBAIRUI products are typically covered by a manufacturer's warranty against defects in materials and workmanship. The specific terms and duration of the warranty may vary by region and purchase location. For detailed warranty information, please refer to the documentation included with your product or visit the official CDBAIRUI website. Keep your proof of purchase for warranty claims.

11. SUPPORT AND CONTACT

For technical assistance, troubleshooting, or further inquiries regarding your CDBAIRUI E90-DTU(433L30)-V8, please utilize the following resources:

- **Official Website:** Visit the CDBAIRUI official website for product documentation, FAQs, and software downloads.
- **Online Manual:** A detailed PDF user manual is available at <https://www.cdebyte.com/pdf-down.aspx?id=1405>.
- **Customer Service:** Refer to the contact information provided on the CDBAIRUI website for direct customer support.