

EBYTE E32-900T30D

EBYTE E32-900T30D LoRa Wireless Serial Port Module Instruction Manual

Model: E32-900T30D

Brand: [EBYTE](#)

1. INTRODUCTION

The E32-900T30D is a wireless serial port module (UART) designed for long-distance communication using LoRa spread spectrum technology. It operates within the 862MHz to 931MHz frequency band and provides TTL output. This module is engineered for robust performance in various IoT applications, offering features such as advanced anti-interference capabilities and ultra-low power consumption modes.

Key characteristics include a maximum transmit power of 30dBm, enabling communication distances up to 8km under ideal conditions, and a data transmission rate ranging from 0.3kbps to 19.2kbps. It supports a wide operating voltage of 3.3V to 5.5V and is built to industrial-grade standards, ensuring reliable operation in temperatures from -40°C to +85°C.

2. FEATURES

- Advanced LoRa modulation for extended communication range and enhanced anti-interference.
- Communication distance up to 8km under ideal conditions, surpassing traditional GFSK.
- Supports fixed-point transmission, broadcast transmission, and channel monitoring.
- Incorporates FEC (Forward Error Correction) for improved communication stability.
- Air wake-up functionality for ultra-low power consumption, ideal for battery-powered applications.
- Utilizes an industrial-grade active temperature-compensated crystal oscillator for stability and consistency.
- Maximum transmit power of 30dBm, with multi-level software adjustable power.
- Compatible with 868/915MHz EU general frequency bands.
- Data transmission rates from 0.3kbps to 19.2kbps.
- Operating voltage range of 3.3V to 5.5V (optimal performance at >3.3V).
- Industrial-grade design for long-term use in harsh environments (-40°C to +85°C).
- IPEX/stamp hole interface for flexible antenna connection options.
- Features data encryption and compression for secure and efficient data handling.
- Complies with FCC, CE, and CCC design standards, meeting various RF certification requirements.

3. PRODUCT OVERVIEW

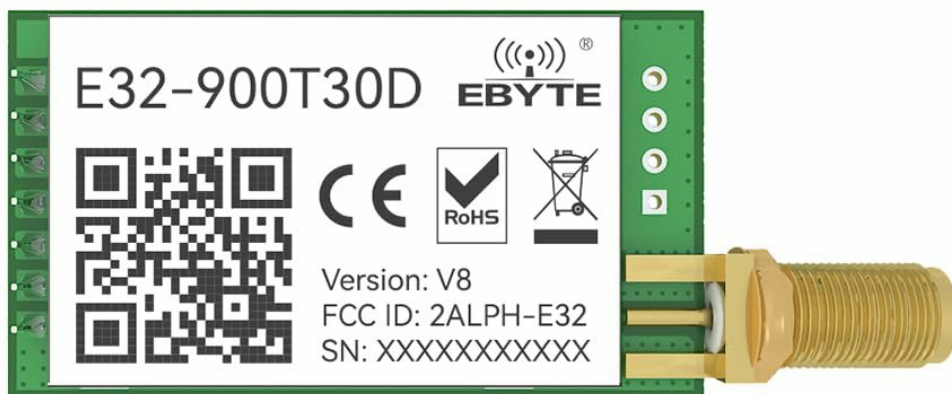


Figure 3.1: Front view of the E32-900T30D LoRa module, showing the model number, EBYTE branding, CE and RoHS certifications, version V8, FCC ID, and serial number placeholder. The SMA-K antenna connector is visible on the right.

For more information, visit the official website: www.cdebyte.com

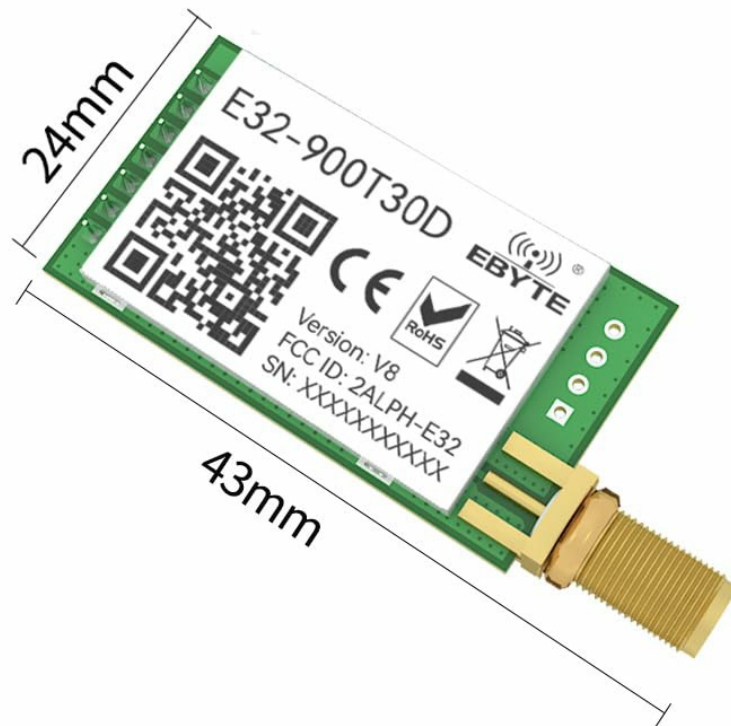


Figure 3.2: E32-900T30D LoRa module with indicated dimensions: 24mm width and 43mm length. This view highlights the compact size of the module.

For more information, visit the official website: www.cdebyte.com

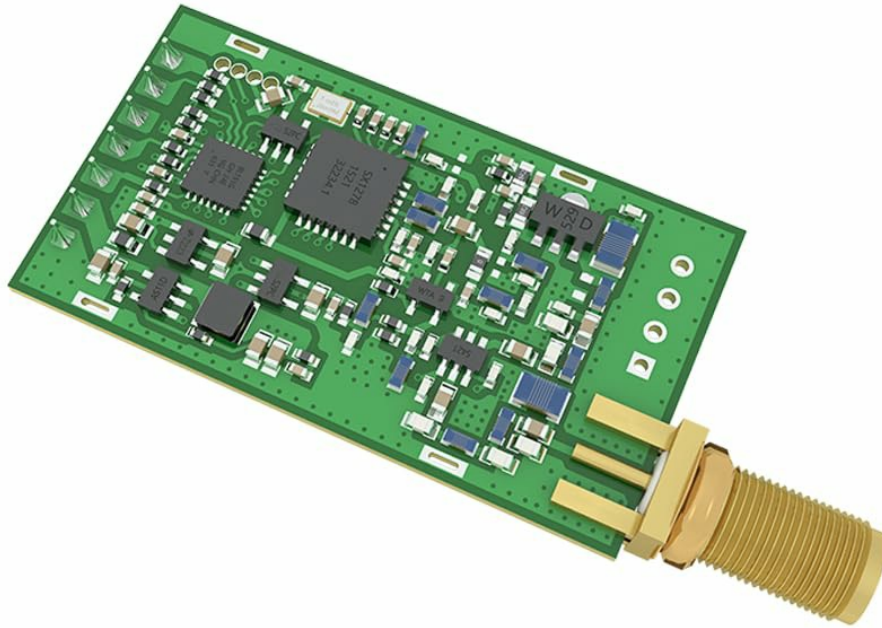


Figure 3.3: Rear view of the E32-900T30D LoRa module, showcasing the printed circuit board (PCB) with various electronic components, including the SX1276 chip, which is central to its LoRa functionality. The SMA-K connector is also visible from this angle.

4. SETUP AND CONNECTION

To set up the E32-900T30D module, follow these general guidelines:

1. **Power Supply:** Connect the module to a stable power supply within the 3.3V to 5.5V range. Ensure the power supply can provide sufficient current for transmission (especially at 30dBm output).
2. **Antenna Connection:** Attach a compatible 868MHz or 915MHz LoRa antenna to the SMA-K connector. Ensure the antenna is securely fastened. For optimal performance, use an antenna designed for the specific frequency band and application.
3. **UART Interface:** Connect the module's UART (Universal Asynchronous Receiver-Transmitter) pins (TXD, RXD, GND) to your microcontroller or host device. Ensure the voltage levels are compatible (TTL).
4. **Configuration:** Configure the module's parameters (e.g., operating frequency, air data rate, transmit power, operating mode) using the appropriate software tool or AT commands, as specified in the detailed datasheet.
5. **Grounding:** Ensure proper grounding of the module and connected devices to prevent noise and ensure stable operation.

Refer to the official EBYTE datasheet for detailed pinout diagrams and electrical characteristics.

5. OPERATING MODES

The E32-900T30D module supports multiple operating modes to optimize performance and power consumption for different application scenarios:

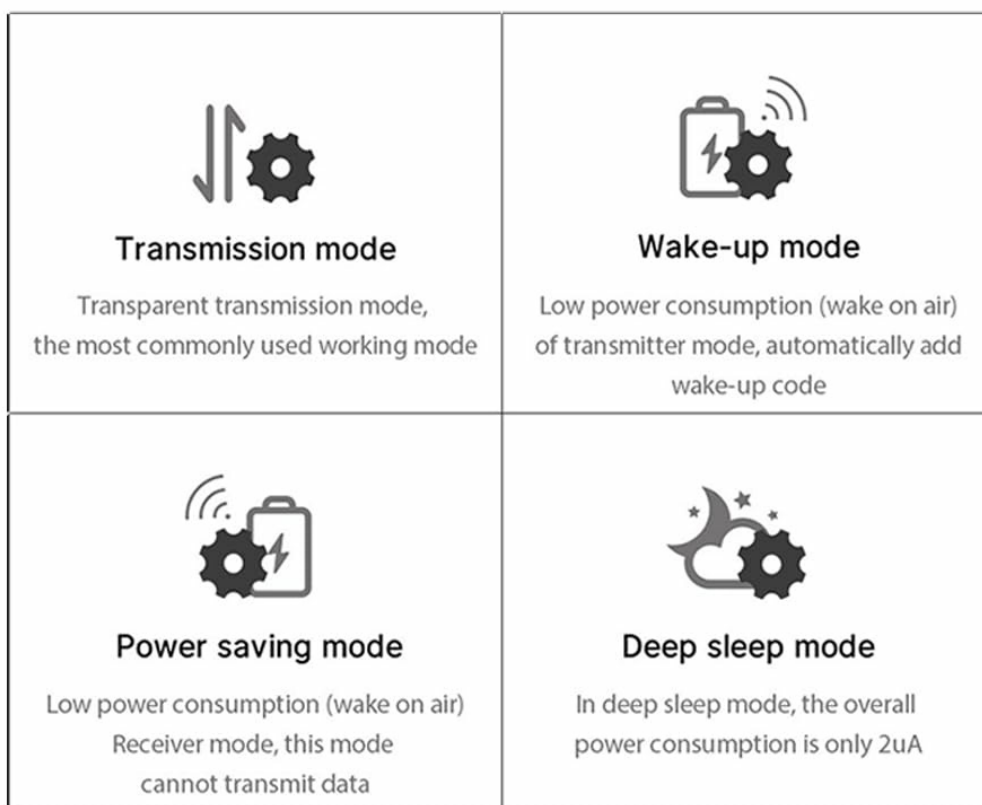


Figure 5.1: Diagram illustrating the four primary operating modes of the E32-900T30D module: Transmission mode, Wake-up mode, Power saving mode, and Deep sleep mode.

- **Transmission Mode:** This is the transparent transmission mode, which is the most commonly used working mode. In this mode, data received via UART is directly transmitted wirelessly.
- **Wake-up Mode:** Also known as "wake on air" for the transmitter. In this mode, the transmitter automatically adds a wake-up code before sending data, allowing the receiver to wake up from a low-power state.
- **Power Saving Mode:** This is a "wake on air" receiver mode. The module operates in a low-power state, periodically listening for wake-up codes. In this mode, the module cannot transmit data.
- **Deep Sleep Mode:** In this mode, the module enters an ultra-low power state, with an overall power consumption of only 2uA. This mode is suitable for applications requiring minimal power draw when inactive.

6. SPECIFICATIONS

Parameter	Value
Frequency Range	862MHz ~ 931MHz
Transmit Power	30dBm (Max), multi-level adjustable
Communication Distance	Up to 8km (ideal conditions)
Module Dimensions	24mm x 43mm
Interface	UART (TTL)
Data Rate	0.3kbps ~ 19.2kbps

Parameter	Value
Supply Voltage	3.3V ~ 5.5V
Operating Temperature	-40°C ~ +85°C
Antenna Interface	SMA-K / Stamp Hole
Modulation	LoRa Spread Spectrum
Item Model Number	E32-900T30D
Manufacturer	EBYTE

7. APPLICATIONS

The E32-900T30D module is suitable for a wide range of IoT and wireless communication applications due to its robust features and long-range capabilities. Potential application scenarios include:



Figure 7.1: Visual representation of various application scenarios for the E32-900T30D module, including smart agriculture, wireless remote control, industrial scenes, and smart wearables.

- Home security alarm systems and remote keyless entry.
- Smart home and industrial sensor networks.
- Wireless alarm security systems.
- Building automation solutions.
- Wireless industrial-grade remote control systems.
- Health care products requiring wireless data transmission.

- Advanced Meter Reading Architecture (AMI).
- Automotive industry applications.
- Utility meters and IoT renovation projects.

8. TROUBLESHOOTING

If you encounter issues with your E32-900T30D module, consider the following troubleshooting steps:

- **No Communication:**
 - Verify power supply voltage and stability.
 - Check UART connections (TXD to RXD, RXD to TXD, GND to GND) and baud rate settings.
 - Ensure the module is in the correct operating mode for communication (e.g., Transmission Mode).
 - Confirm antenna is properly connected and suitable for the frequency band.
- **Poor Range/Signal:**
 - Check antenna type and placement. Obstructions (walls, metal) significantly reduce range.
 - Ensure transmit power is set to the desired level (30dBm for maximum range).
 - Verify frequency channel settings match between modules.
 - Minimize interference from other wireless devices.
- **Module Not Responding:**
 - Cycle power to the module.
 - Check for short circuits or incorrect wiring.
 - Ensure the module is not in Deep Sleep mode if you expect it to respond.
- **Data Corruption:**
 - Verify matching air data rates and UART baud rates on both ends.
 - Check for excessive noise on the power supply or data lines.
 - Ensure FEC (Forward Error Correction) is enabled if communication stability is critical.

For persistent issues, consult the detailed product datasheet or contact EBYTE technical support.

9. WARRANTY AND SUPPORT

EBYTE products are designed for reliability and performance. For specific warranty information, please refer to the terms and conditions provided at the time of purchase or visit the official EBYTE website. General support and technical documentation can be found on the manufacturer's website.

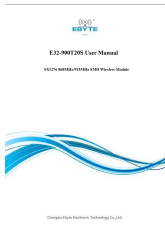
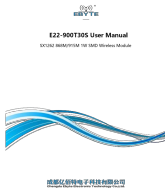
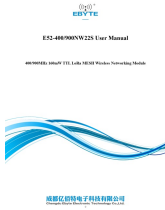
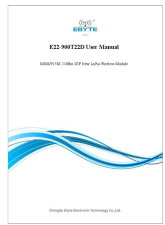
Official Website: www.cdebyte.com

For technical assistance, product inquiries, or to report issues, please contact EBYTE customer support through the channels provided on their official website.

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Related Documents - E32-900T30D

	E32-868T20D User Manual: SX1276 868MHz 100mW DIP Wireless Module Comprehensive user manual for the EBYTE E32-868T20D wireless serial port module. Details include its SX1276 LoRa technology, 868MHz frequency, 100mW transmission power, DIP package, specifications, operating modes, command formats, hardware design considerations, and frequently asked questions. Suitable for IoT and industrial applications.
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	E32-900T20S SMD Wireless Module User Manual User manual for the EBYTE E32-900T20S, an 868MHz/915MHz SMD wireless module utilizing LoRa technology. Covers specifications, operation, commands, and hardware design.
	E22-900T30S User Manual - EBYTE SX1262 Wireless Module User manual for the EBYTE E22-900T30S wireless module, featuring SX1262 LoRa technology for 868M/915MHz bands. Covers specifications, features, applications, operation modes, hardware design, and troubleshooting.
	EBYTE E52-400/900NW22S LoRa MESH Wireless Networking Module User Manual Comprehensive user manual for the EBYTE E52-400/900NW22S LoRa MESH wireless networking module, operating on 400/900MHz bands with 160mW power. Covers specifications, AT commands, hardware design, and application scenarios.
	EBYTE TX900-BLG-90P 868/915MHz Dual-Band Fiberglass Antenna Datasheet Detailed specifications, introduction, and technical characteristics for the EBYTE TX900-BLG-90P dual-band fiberglass antenna operating at 868/915MHz with N-K connector. Includes electrical and physical parameters, VSWR, and Smith chart data.
	E22-900T22D LoRa Wireless Module User Manual Comprehensive user manual for the EBYTE E22-900T22D LoRa wireless module, detailing specifications, features, applications, configuration, and hardware design for 868MHz/915MHz communication.

Documents - EBYTE – E32-900T30D



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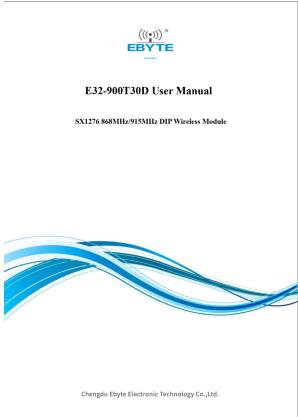


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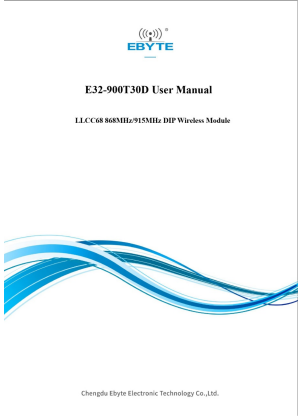


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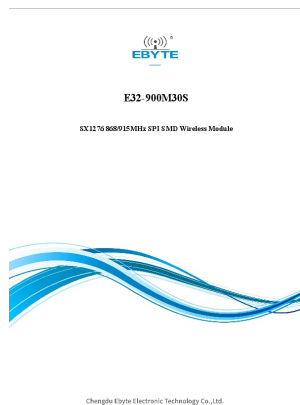
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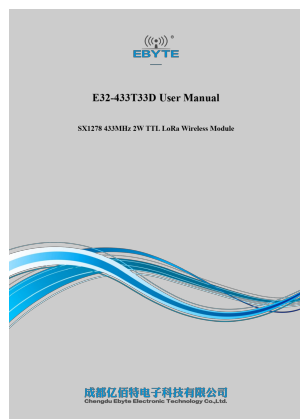
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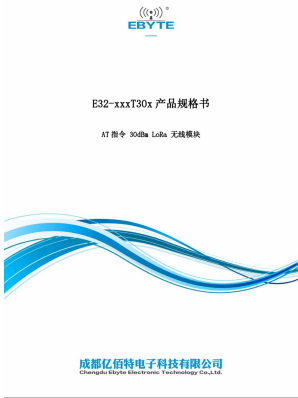
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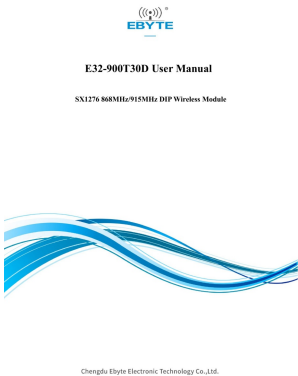
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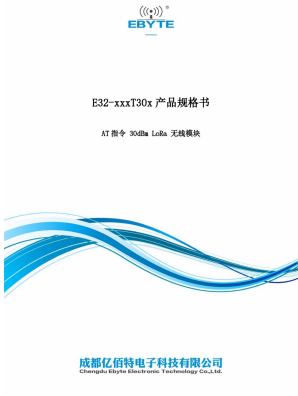
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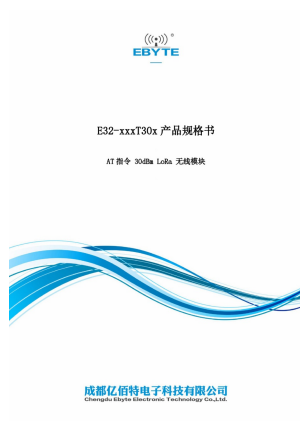
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