

EBYTE E07-900M10S

EBYTE E07-900M10S Wireless Module User Manual

TI CC1101 Wireless 868Mhz 915Mhz RF Module

1. INTRODUCTION

This manual provides detailed instructions for the EBYTE E07-900M10S wireless module, based on the TI CC1101 chip. This module operates in the 868MHz and 915MHz frequency bands, offering long-range wireless communication up to 1.5 kilometers. It features an SPI interface and supports both IPEX and stamp hole antenna options, making it suitable for various embedded applications requiring reliable data transmission.

2. PRODUCT OVERVIEW

The E07-900M10S module is designed for robust and efficient wireless communication. Key features include:

- Utilizes TI CC1101 RF transceiver chip.
- Supports 868MHz and 915MHz frequency bands.
- Long communication range up to 1.5 km.
- SPI communication interface.
- Available with IPEX or stamp hole antenna options.
- Independent 64-byte RX FIFO and TX FIFO for efficient data handling.
- Supports RSSI (Received Signal Strength Indicator) function.
- Supports multiple debugging modes including 2FSK, GFSK, 4FSK, OOK, ASK, MSK.
- Supports data transmission rates from 0.6kbps to 500kbps.
- Compact SMD package design.

E07 900M10S



Manufacturer: EBYTE

SN: 18083000001

FCC ID: 2ALPH-E07900M10S

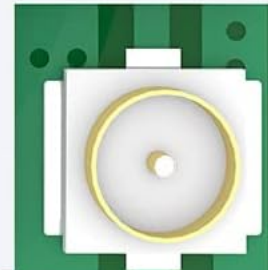


Figure 2.1: Front view of the EBYTE E07-900M10S wireless module, showing the EBYTE logo, model number, FCC ID, and QR code. For more information, visit www.cdebyte.com.

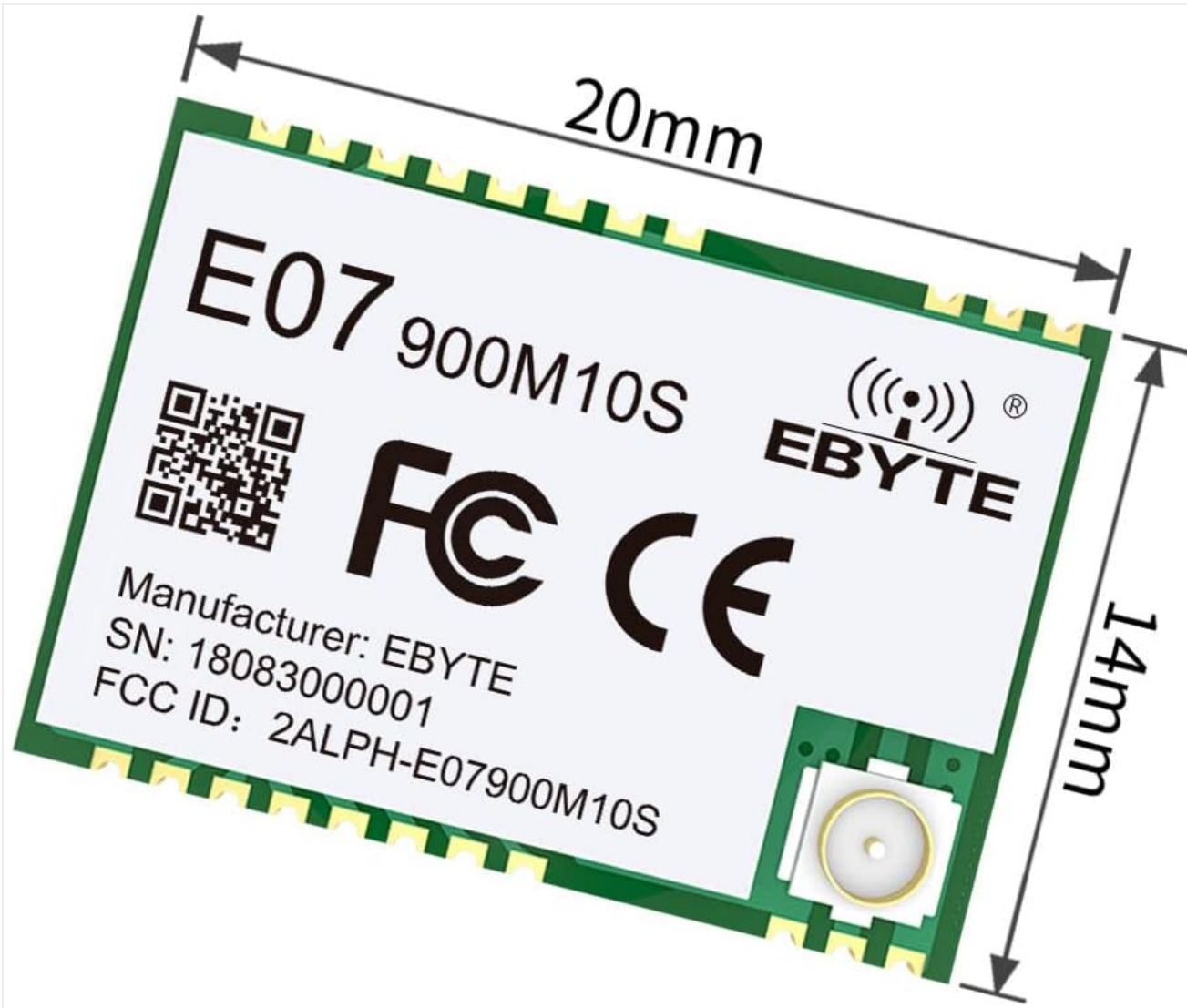


Figure 2.2: Dimensions of the EBYTE E07-900M10S module, measuring 20mm by 14mm. For more information, visit www.cdebyte.com.

Independent 64-byte RX FIFO and TX FIFO



Figure 2.3: Illustration of the independent 64-byte Receive (RX) and Transmit (TX) FIFO buffers, which enhance data handling efficiency.

Support RSSI signal strength indicator function



Figure 2.4: Depiction of the RSSI (Received Signal Strength Indicator) function, allowing evaluation of signal quality and aiding in network optimization.

Two Antenna Types Are Available

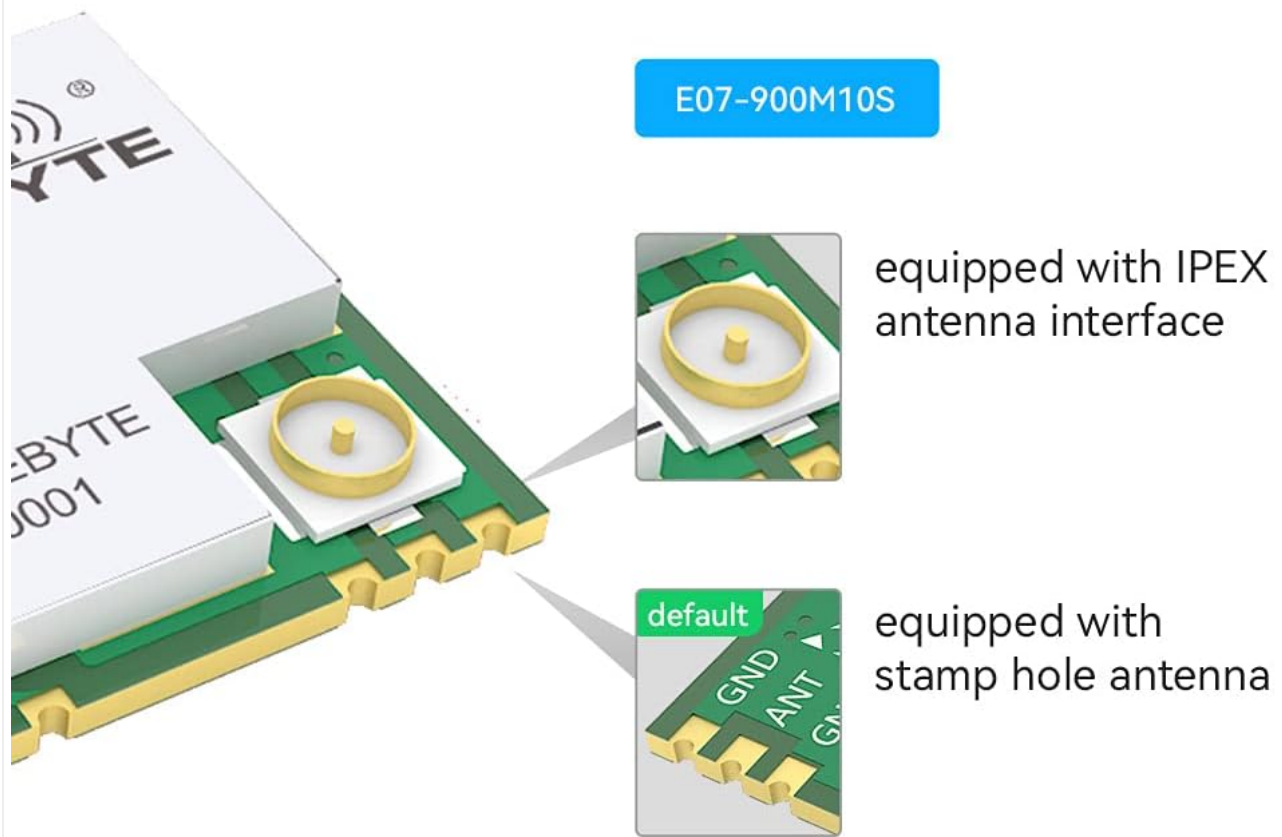


Figure 2.5: The E07-900M10S module supports two antenna types: an IPEX antenna interface for external antennas, suitable for long-distance transmission, and a default stamp hole antenna for integrated solutions.

Application Scenario



Figure 2.6: Examples of application scenarios for the E07-900M10S module, including intelligent control, wireless control, smart home systems, and wireless data transmission.



Figure 2.7: The typical packaging for the EBYTE E07-900M10S wireless module.

3. SPECIFICATIONS

Attribute	Value
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Attribute	Value
Brand	EBYTE
Model	E07-900M10S
Chipset	TI CC1101
Frequency Bands	868MHz, 915MHz
Maximum Range	1.5 Kilometers
Interface	SPI
Antenna Options	IPEX, Stamp Hole
Number of Channels	2
Data Transmission Rate	0.6kbps ~ 500kbps
Package Dimensions	1.97 x 0.39 x 0.2 inches (approx. 50 x 10 x 5 mm)
Item Weight	0.352 ounces (approx. 10 grams)
Date First Available	September 9, 2021

4. SETUP GUIDE

Proper setup is crucial for optimal performance of the E07-900M10S module. Follow these steps for integration:

- Power Supply:** Ensure a stable and clean power supply within the module's specified voltage range. Refer to the module's datasheet for exact voltage requirements.
- Antenna Connection:**
 - If using the **IPEX antenna interface**, connect a compatible 868MHz/915MHz external antenna securely to the IPEX connector.
 - If using the **stamp hole antenna**, ensure proper soldering to the PCB, providing a clear ground plane and optimal antenna trace design.
- SPI Interface Connection:** Connect the module's SPI pins (SCK, MISO, MOSI, CSN, GDO0/GDO2) to your microcontroller or host system. Ensure correct pin mapping and voltage levels.
- Software Configuration:** Implement the necessary SPI communication protocol in your microcontroller's firmware. Configure the CC1101 registers according to your desired operating frequency, data rate, modulation scheme (e.g., 2FSK, GFSK), and power settings. Refer to the TI CC1101 datasheet for detailed register configurations.
- Testing:** Before deployment, perform basic communication tests to verify proper functionality, range, and data integrity.

5. OPERATING INSTRUCTIONS

Once the module is set up, operation involves managing data transmission and reception. The CC1101 chip provides various modes and features for flexible operation:

- **Data Transmission:** To transmit data, write the payload to the module's TX FIFO buffer via SPI. The module will automatically handle the RF transmission based on the configured parameters.
- **Data Reception:** To receive data, configure the module to RX mode. When data is received, it will be stored in the RX FIFO. The GDO0/GDO2 pins can be configured to signal data reception or FIFO status, allowing your microcontroller to read the received data from the RX FIFO.
- **Modulation Schemes:** The module supports various modulation types (2FSK, GFSK, 4FSK, OOK, ASK, MSK). Select the appropriate scheme based on your application's requirements for data rate, range, and robustness.
- **RSSI Monitoring:** Utilize the RSSI function to monitor signal strength. This can be used for link quality assessment, adaptive power control, or network diagnostics.
- **Power Modes:** The CC1101 supports different power modes (e.g., active, idle, sleep) to optimize power consumption. Implement appropriate power management strategies in your firmware.

6. MAINTENANCE

The E07-900M10S module is designed for long-term reliability with minimal maintenance. However, consider the following to ensure continued performance:

- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges. Avoid exposure to extreme temperatures, moisture, or corrosive environments.
- **Physical Inspection:** Periodically inspect the module for any signs of physical damage, loose connections, or corrosion, especially if deployed in harsh environments.
- **Firmware Updates:** If EBYTE releases firmware updates for the module (or if your application's firmware requires updates), ensure proper procedures are followed to avoid damaging the module.
- **Cleaning:** If necessary, gently clean the module's surface with a dry, soft cloth. Avoid using liquids or abrasive cleaners.

7. TROUBLESHOOTING

If you encounter issues with the E07-900M10S module, consider the following troubleshooting steps:

- **No Communication (SPI):**
 - Verify SPI pin connections (SCK, MISO, MOSI, CSN) and ensure they are correctly mapped to your microcontroller.
 - Check power supply voltage and stability.
 - Confirm SPI clock speed and mode are compatible with the CC1101.
 - Ensure the CSN pin is correctly toggled for each SPI transaction.
- **Poor RF Performance/Range:**
 - Check antenna connection and ensure it is appropriate for the operating frequency.
 - Verify antenna placement; avoid obstructions or metallic enclosures that can block RF signals.
 - Confirm RF parameters (frequency, power output, modulation) are correctly configured in the firmware.
 - Check for local interference sources.
 - Ensure the ground plane for the module is adequate, especially for stamp hole antenna usage.
- **Data Corruption/Loss:**

- Verify data rates are within the module's supported range and match between transmitting and receiving modules.
 - Check for FIFO overflow/underflow conditions.
 - Ensure proper error checking (e.g., CRC) is implemented in your communication protocol.
- **Module Not Responding:**
- Power cycle the module.
 - Check for short circuits or incorrect wiring.
 - Ensure the module is not overheating.

For more in-depth technical support, refer to the official EBYTE documentation or the Texas Instruments CC1101 datasheet.

8. WARRANTY AND SUPPORT


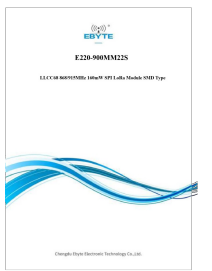
EBYTE products are manufactured to high quality standards. For specific warranty information regarding your E07-900M10S module, please refer to the warranty policy provided at the time of purchase or visit the official EBYTE website.


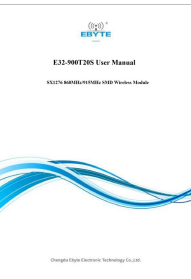
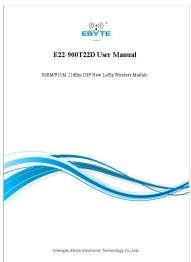
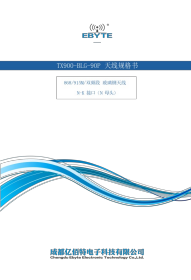
For technical support, documentation, and additional resources, please visit the official EBYTE website: www.cdebyte.com.

Manufacturer: EBYTE

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Related Documents - E07-900M10S

	<p>EBYTE E07-900M10S CC1101 904-925MHz 10dBm SPI Wireless Module User Manual</p> <p>User manual for the EBYTE E07-900M10S wireless module, a 410-450MHz RF transceiver based on the CC1101 chip. It supports 904-925MHz operation, 10dBm transmission power, and SPI communication. The manual details specifications, features, applications, hardware design, programming, troubleshooting, and FCC compliance.</p>
	<p>EBYTE E220-900MM22S LoRa Module User Manual</p> <p>Comprehensive user manual for the EBYTE E220-900MM22S LoRa module, covering specifications, hardware design, software operation, FAQ, production guidance, and antenna recommendations.</p>

	<p>E01-ML01SP4 2.4GHz Wireless Transceiver Module Datasheet</p> <p>Technical datasheet for the Ebyte E01-ML01SP4, a small-size SMD 2.4GHz wireless transceiver module based on Nordic nRF24L01P with power amplifier and improved sensitivity, featuring SPI interface and IPEX connector. Includes electrical parameters, pin definitions, usage guidelines, and OEM integration requirements.</p>
	<p>E32-900T20S SMD Wireless Module User Manual</p> <p>User manual for the EBYTE E32-900T20S, an 868MHz/915MHz SMD wireless module utilizing LoRa technology. Covers specifications, operation, commands, and hardware design.</p>
	<p>E22-900T22D LoRa Wireless Module User Manual EBYTE</p> <p>Comprehensive user manual for the EBYTE E22-900T22D LoRa wireless module, detailing specifications, features, applications, and operational guidance for 868/915MHz communication.</p>
	<p>EBYTE TX900-BLG-90P 868/915MHz Dual-Band Fiberglass Antenna Datasheet</p> <p>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.</p>