E28-2G4TBH-01 Development Board

User Manual

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1. Module Introduction

1.1 Features Introduction



Figure 1 Product appearance

E28-2G4TBH-01 is an entry-level development board equipped with a 2.4GHz high-speed long-distance transmission module-E28-2G4T27SX. This development board features complete high-speed continuous transmission capabilities, and most of the module pins are brought out to header pins, allowing developers to easily connect various peripheral devices via jumpers for convenient testing.

1.2 Parameter Introduction

Serial Number	Parameter name	Parameter value	Notes
1	Support Module	E28-2G4T27SX	Serial port module
2	Module size	80*45mm	-
3	Production process	Lead-free process, machine mounting	Wireless products must be machine-mounted to ensure batch consistency and reliability.
4	Power interface	USB	-
5	Communication interface	TTL	-
6	Operating temperature	-40～+85℃	Industrial grade
7	Operating humidity	10%～90%	Relative humidity, no condensation
8	Storage temperature	-40～+125℃	Industrial grade

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2. Function Overview

2.1 Component Introduction

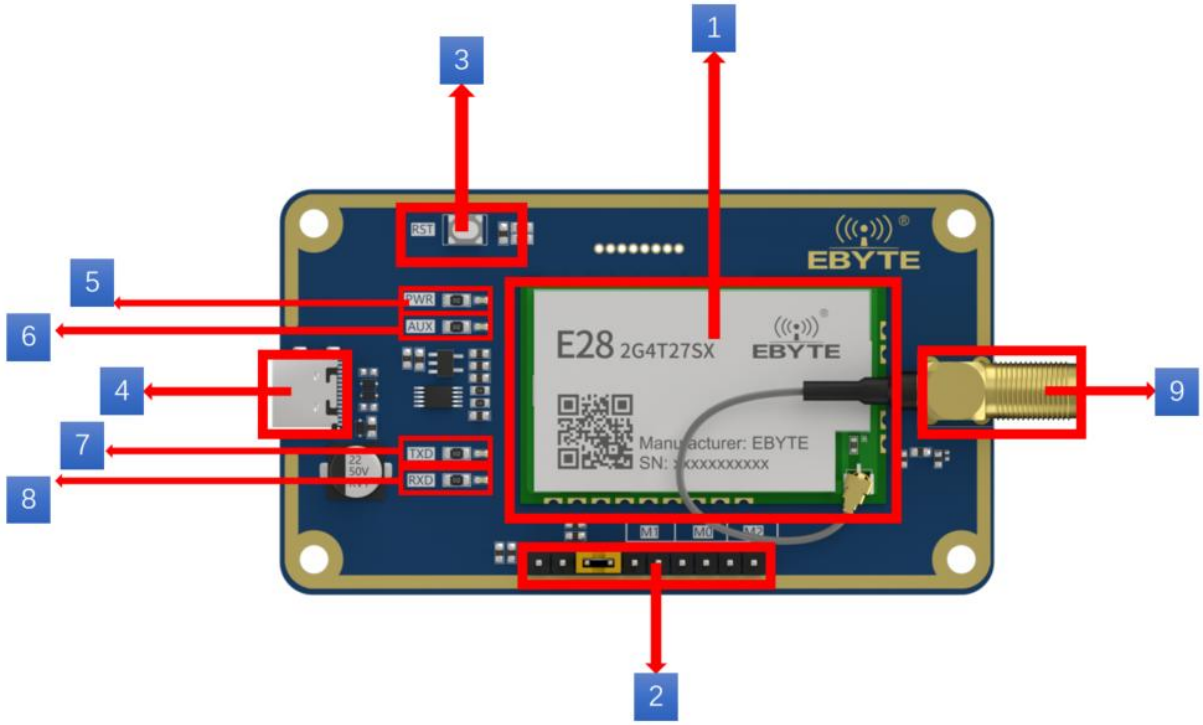


Figure 2 Component Distribution

Serial Number	Main components	Description
1	E28-2G4T27SX	The E28-2G4T27SX is a wireless serial port module (UART) based on the SEMTECH SX1281 RF chip. It features transparent transmission, operates in the 2.4GHz band, and supports three modulation and demodulation technologies: LoRa, FLRC, and GFSK. It has TTL level output and is compatible with 3.3V and 5V I/O port voltages.
2	pin header	All available pins of the module are brought out to the pin headers on the development board. See section 2.2 for pin definition descriptions.
3	Reset button	Reset button.
4	TYPE-C USB interface	USB interface. Can be used as a communication interface between PC and E28-2G4T27SX module.
5	Power indicator light	The indicator light will illuminate after the development board is connected to a USB power source.
6	AUX indicator light	AUX is used for wireless transmit/receive buffer indication and self-test indication.
7	Receiver indicator light	The LED flashes when data is received .
8	Transmission indicator light	The LED flashes when data is transmitted.
9	Antenna Interface	SMA, external thread with internal hole

Note: For specific function instructions, please refer to the user manual of "E28-2G4T27SX".

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2.2 Pin Definitions and Dimensions

The image below shows the front view of the test board:

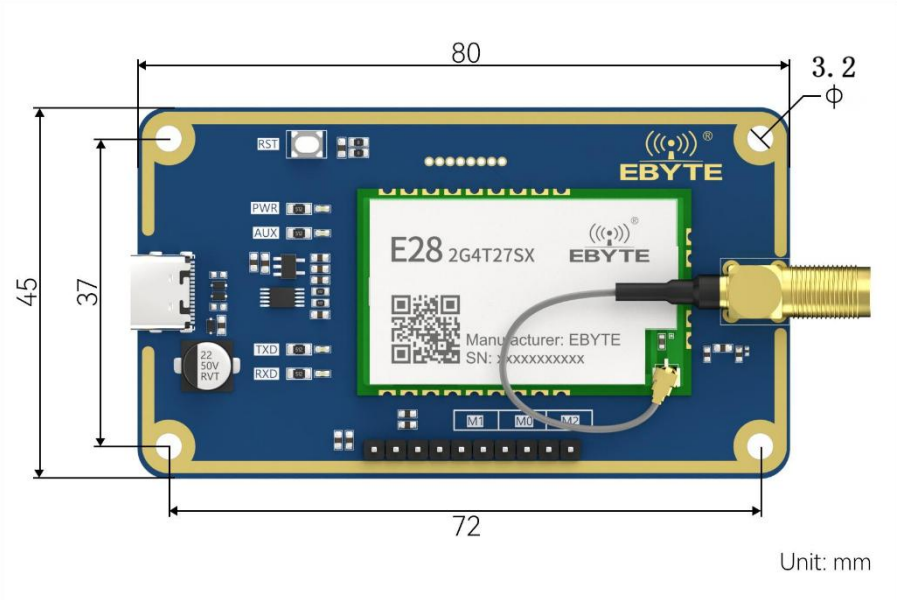


Figure 3 Dimensions

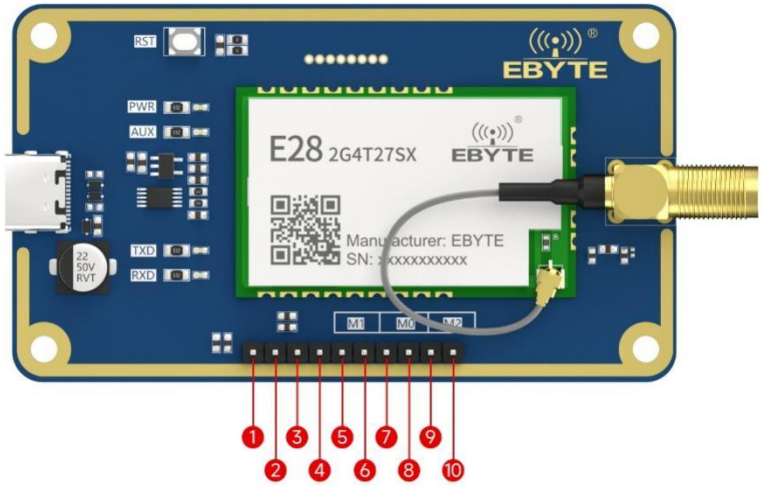


Figure 4 Pinout Diagram

Pin number	Pin Name	type	Pin Applications
1～2	5V	P	5V power supply, factory default jumper cap connection
3-4	NC	-	-
5-6	M1	I	The combined use of M2, M1, and M0 determines the module's eight operating modes. See Chapter Three, Mode Configuration, for details.

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Pin number	Pin Name	type	Pin Applications
7-8	M0	I	The combined use of M2, M1, and M0 determines the module's eight operating modes. See Chapter Three, Mode Configuration, for details.
9-10	M2	I	The combined use of M2, M1, and M0 determines the module's eight operating modes. See Chapter Three, Mode Configuration, for details.

Note: 1. P: Power supply; I: Input; O: Output; T: Can be set to high impedance.

2. Power supply is via TYPE-C USB interface (default).

3. Mode Switching Guide

The operating mode of the control module can be customized according to the characteristics of the product being used. The following section explains the five operating modes set by pins M0 and M1, as detailed in the table below:

Mode (0-3)	M2	M1	M0	Mode Introduction	Remark
0 Transmission Mode	1	0	0	Serial port enabled, wireless enabled, continuous transparent transmission.	Airspeed supports manual configuration and adaptive automatic adjustment based on baud rate; in continuous transmission mode, the baud rates of both parties must be consistent.
1 RSSI mode	1	0	1	Serial port enabled, wireless enabled, RSSI function enabled.	The module outputs RSSI intensity values via serial port every 100ms.
2 Reservation Mode	1	1	0	reserve	-
3 Configuration Mode	1	1	1	Serial port enabled, wireless disabled, for parameter configuration.	Fixed baud rate 9600 8N1
4. Low power consumption	0	x	x	Low power mode, with the lowest power consumption.	When M2 is set to high , it is in normal working condition. When M2 is set to low , it is in a low power consumption state.

3.1 Mode Switching Steps

- Transmission Mode (Mode 0 , jumper cap inserted at M1, M0): In this mode, data transparent transmission is possible; that is, the receiver will receive the same data sent by the sender. In normal mode, as long as the airspeed, address, and channel of the two modules are consistent, normal transparent transmission can be achieved. In continuous transmission mode, the baud rates of the two modules must be the same to ensure data transparent transmission. Continuous transmission mode supports continuous transmission of large files at baud rates of 1200-115200.

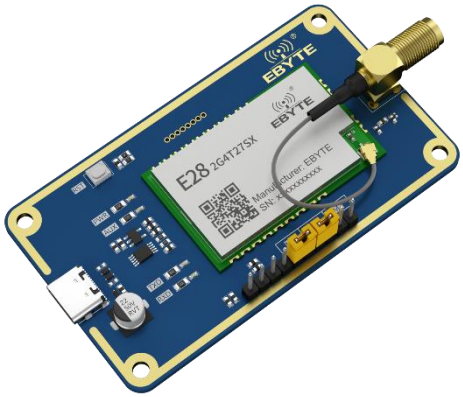


Figure 5 Mode 0

- RSSI Mode (Mode 1, jumper cap in M1): In this mode, the module outputs the RSSI value of the current 2.4GHz signal in the air every 100ms to detect the channel quality. The output value is in hexadecimal two's complement format.

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Figure 6 Mode 1

- Reserved mode (Mode 2, jumper cap inserted at M0): This mode has no other functions at present, but the functions are reserved.



Figure 7 Mode 2

- Configuration Mode (Mode 3, M2, M1, M0 without jumper caps): In this mode, the baud rate is fixed at 9600, 8N1. Refer to the command format settings of the module's user manual for the corresponding parameters.

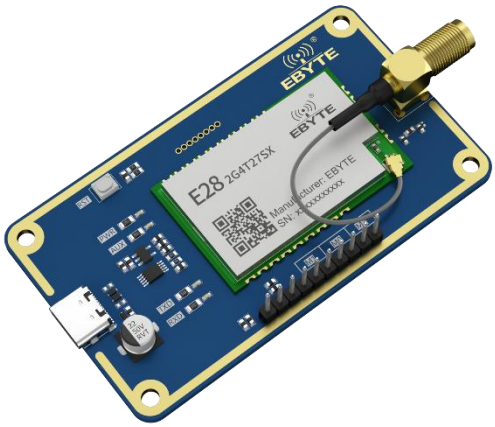


Figure 8 Mode 3

- Low power mode (mode 4, jumper cap inserted at M2, M1 and M0 not set for now): This mode is a low power operating state.

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Figure 9 Mode 4

4. Version Information

Version	Revision Date	Revision Notes	maintainer
1.0	2025-12-29	Initial version	Hao

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