E15-PCIE-T1 User Manual

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The test data obtained in this article are all obtained from Ebyte laboratory testing, and the actual results may be slightly different.

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1. Module introduction

1.1 Feature introduction

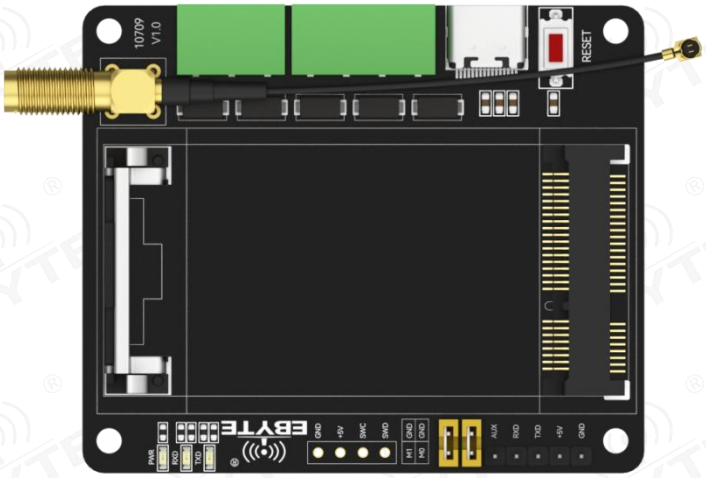


Figure 1 Actual picture of the module

E15-PCIE-T1 is a test board specially developed by Chengdu Ebyte Electronic Technology for the mini PCI-e interface module. It is mainly aimed at the embedded application of the E22 series wireless communication modules launched by our company. It is equipped with ESD protection and supports Multiple systems and multiple baud rates. Developers can easily connect a variety of peripheral devices through jumpers according to actual needs.

1.2 Parameter introduction

serial number	parameter name	Parameter value	Comment
1	Support module	E22-400T33E E22-230T33E E22-400T30E E22-230T30E	LoRa wireless module
2	Test board size	64.5 * 54mm	Error ±0.2mm

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3	Production Process	Lead-free process, machine-mounted	Wireless products must be machine-mounted to ensure batch consistency and reliability.
4	Communication Interface	RS232/RS485/USB	-
5	Operating temperature	-40 ~ +85℃	Industrial grade
6	Working humidity	10%~90%	Relative humidity, no condensation
7	Storage temperature	-40 ~ +125℃	Industrial grade

2.Brief description of functions

2.1 Component introduction

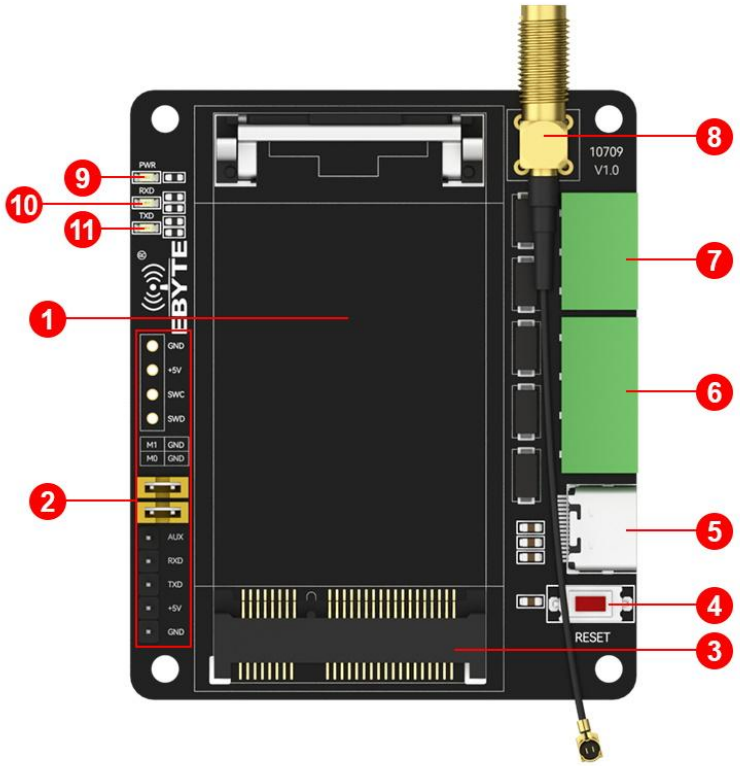


Figure 2 Main component diagram

serial number	Main firmware	introduce
1	E22-400T33E E22-230T33E E22-400T30E E22-230T30E	E22 -PCIE series modules are developed based on SEMTECH high-performance radio frequency chips . Its transmit power is: 30~33 dBm. It has a variety of transmission methods. The working frequency bands are respectively in the 230 frequency

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		band and the 400 frequency band . LoRa spread spectrum technology, compatible with 3.3V and 5V IO port voltage, adopts MINI PCI-e standard package, has UART/RS485/RS232/USB communication interface options, and the communication is compatible with E22-T series products, which is convenient for users to develop and use . Supports functions such as air wake-up, wireless configuration, carrier monitoring, automatic relay, communication keys, etc., and also supports subpacket length setting .
2	Pin	All available GPIO pins are routed to the development board's pin headers.
3	PCIE port	Adapted to mini PCI-e interface module.
4	RESET button	Reset button.
5	USB Type-C interface	This interface can be used as the power supply interface of the development board, can burn firmware to the module , can communicate with the module through the USB protocol , and can also be used for JTAG debugging.
6	RS485 interface	-
7	RS232 interface	-
8	SMA	SMA antenna base
9	PWR lamp	Power indicator light, red
10	TX light	Data transmission indicator light,
11	RX light	Data receiving indicator light,

Note: The power supply range refers to the module power supply range . For specific function details , please refer to the E22-400T33E , E22-230T33E, E22-400T30E, and E22-230T30E module user manuals.

2.2 Pin definition

The following figure shows the E15-PCIE-T1 pin definition diagram:

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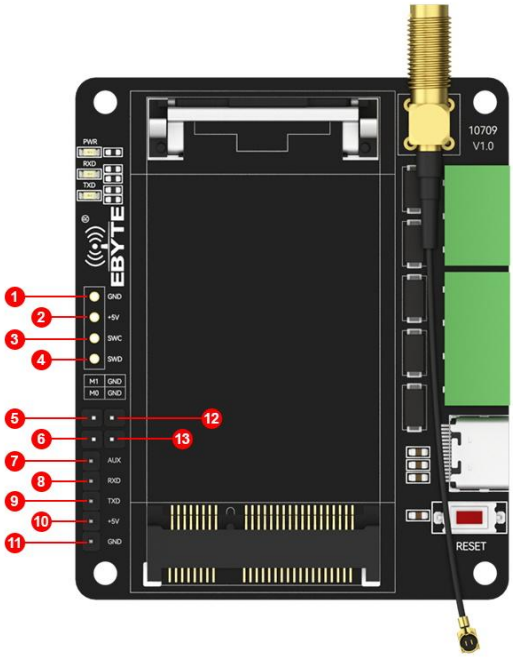


Figure 3 Current test interface diagram

Pin number	Pin name	type	Pin usage
1	GND	-	Power reference ground
2	+5V		Power input 5.0V
3	SWC	input Output	Program download clock interface (the module needs to be reset or fully erased before SWD burning)
4	SWD	input Output	Program download data interface (the module needs to be reset or fully erased before SWD burning)
5	M1	Input (very weak pull-up)	Cooperate with M0 to determine the 4 working modes of the module (cannot be left floating, can be grounded if not used)
6	GND	-	Power reference ground
7	M0	Input (very weak pull-up)	Cooperate with MI to determine the 4 working modes of the module (cannot be left floating, can be grounded if not used)
8	GND	-	Power reference ground
9	AUX	output	Used to indicate the working status of the module, the user wakes up the external M0, and outputs low level during power-on self-test initialization: (can be left floating)
10	RXD	enter	TTL serial port input, connect to external TXD

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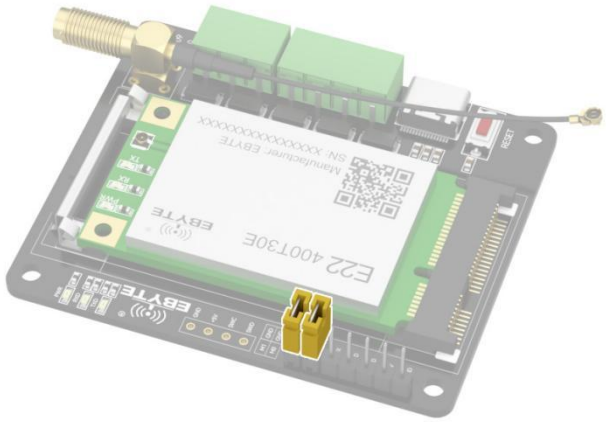
			output pin
11	TxD	output	TTL serial port output, connected to the external RXD input pin
12	+5V		Power input 5.0V
13	GND	-	Power reference ground

Note: 1. P : power supply; I: input; O: output; T: can be set to high impedance.

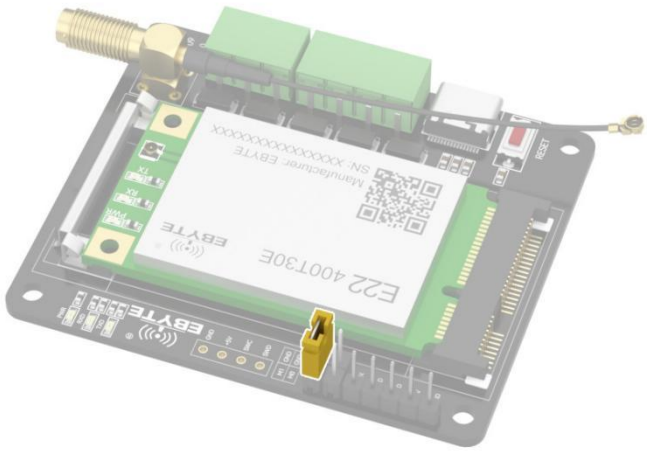
3. Working mode

Customize the working mode of the control module according to the characteristics of the product used. The following explains how to use pins M 0 and M 1 The four working mode conditions of the setting are detailed as shown in the figure below :

- Normal mode (mode 0 , short-circuit circuit breaker is plugged in) : serial port is turned on, wireless is turned on, transparent transmission , supports special command over-the-air configuration.



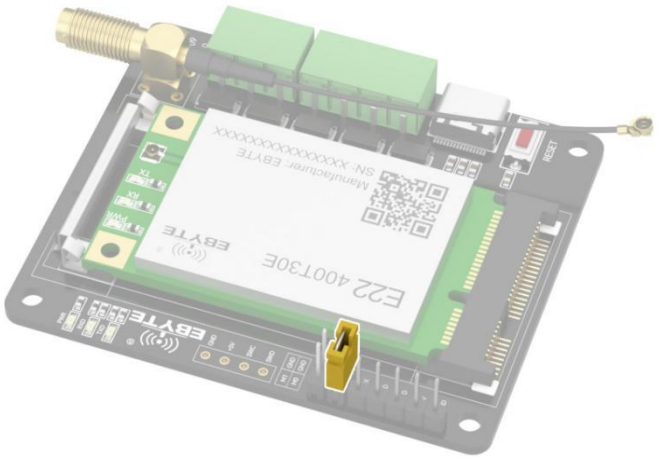
- WOR mode (mode 1 , remove M0 short-circuit capacitor) : can be defined as WOR sender and WOR receiver , and supports over-the-air wake-up.



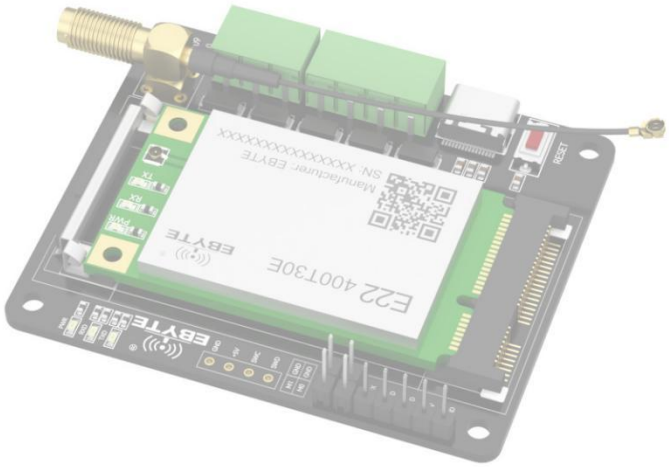
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- Configuration mode (mode 2 , remove the M1 short-circuit cap) : The user can access the register through the serial port to control the working status of the module.



- Deep sleep (mode 3, all short-circuit capacitors removed) : the module enters sleep mode.



4. Parameter configuration

step	operate	Detailed description
1	install driver	Please install the USB adapter board driver (CH340X) in the data package first.
2	Remove the jumper	Remove the jumper caps at M0 and M1 on the adapter board, as shown in the figure below; the power jumper cap can be selected to 3.3V or 5V.
3	Connecting Modules	Insert the module into the 7PIN socket of the adapter board with the antenna end facing outward; then insert the adapter board into the computer USB port.

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4	Open serial port	Open our company's parameter configuration software, select the corresponding serial port and click "Open Serial Port";
5	Enter the interface	Click "Read module parameters", the interface is as shown below; If the read fails, check if the module is in mode 3, or if the breakout board driver is installed.
6	Write parameters	To change the corresponding configuration as needed, please adjust the parameters that need to be modified; click the "Write" button to write the new parameters to the module.
7	complete operation	If you need to reconfigure, please follow "Step 5"; if the configuration is completed, please click "Close Serial Port" and then remove the module.
8	Command configuration	The microcontroller can use commands to configure module parameters. For detailed configuration, see the "Instruction Format-Parameter Setting Instructions" above.

5. Version information

Version	Revision date	Revision Notes	Maintenance man
1.0	2024-4-10	initial version	Hao

6.About us

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