

1.1 correct use

Step one: inFor the PC-side test, the user configures the corresponding parameters on the EZDTU configuration software: "EZDTU ConfigTool" according to the application requirements, and then conducts a functional test.

Step 2: After the function test is completed, the core board can be directly connected to the serial device(serial port level 3.3V), to realize two-way data transparent transmission between the serial port device and the server.

1.2 PC-side test method

1.2.1 hardware wiring

1. Solder the pin header on the core board (the factory default does not solder the pin header). Figure 1.2.1.1 shown.

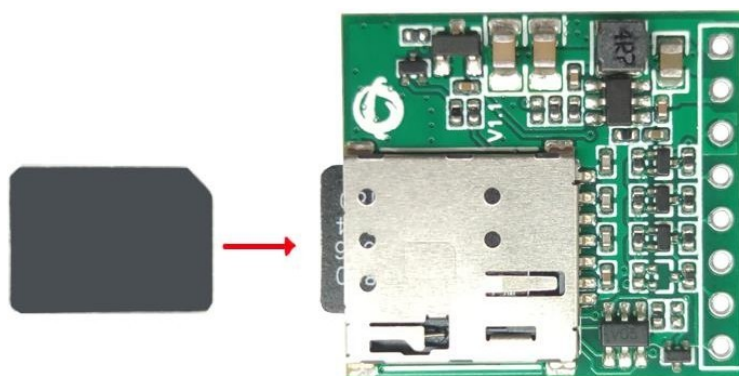
Suggestion: The direction of the pin header is welded towards the surface of the card seat, which is convenient for installing the antenna and checking the status of the indicator light.



Figure1.2.1.1Schematic diagram of pin header welding

2. With the metal side of the Nano card facing the core board and the notch aligned with the card holder, insert it into the self-bouncing Nano deck, then locks automatically. as shown in the picture 1.2.1.2.

Note: The metal side faces the core board. Prohibit live replacementSIM Card.



picture1.2.1.2 Schematic Diagram of SIM Card Installation

3. Connect the antenna to the antenna interface of the core board, and buckle it with a little force after alignment, as shown in the figure 1.2.1.3 shown.

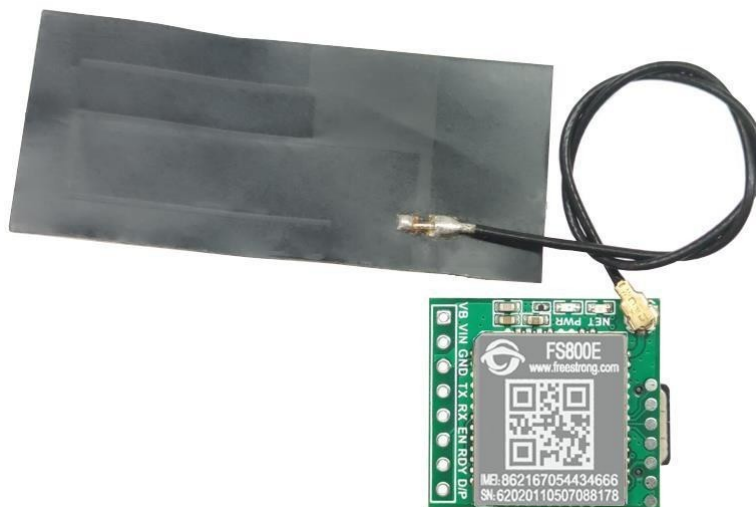


Figure12.1.3Antenna connection diagram

4. Connect the core board to the USB to TTL module, just connectVIN, GND, TX, RX are enough, and the other end is connected to the computer, as shown in Figure



1.2.1.4.

Figure12.1.4Serial communication wiring diagram

Notice

:

- (1) The serial cable needs to be cross-connected, that is, the TX of the core board is connected to the RX of USB to TTL, and the RX of the core board is connected to USB to TTL

TX.

- (2) The peak power of the core board can reach 8W, and the USB of some computersThe power supply capacity cannot meet this requirement. The core board may restart frequently due to insufficient power supply (the serial port keeps outputting power-on information). At this time, it is recommended to use an independent power supply to supply power to the core board. The core board supports 5V~16V power input. " Common ground", that is, the GND of the core board, power supply, and USB to TTL are connected together.

5. After power on, the core board power indicator (red light) and network indicator (blue light) are always on, wait for about 10s, network indicator light

(Blue light) starts to flash, which means that the core board is powered on and parameters can be configured.

1.2.2 PC configuration software testing

EZDTU ConfigTool is a PC serial port configuration software running on Windows operating system, users can visually view and configure the parameters of the core board through EZDTU ConfigTool. It is divided into PC serial port parameter area, basic information area, module status area, command button area, serial port data display area and parameter configuration area. The configuration software interface is shown in Figure 1.2.2.1:

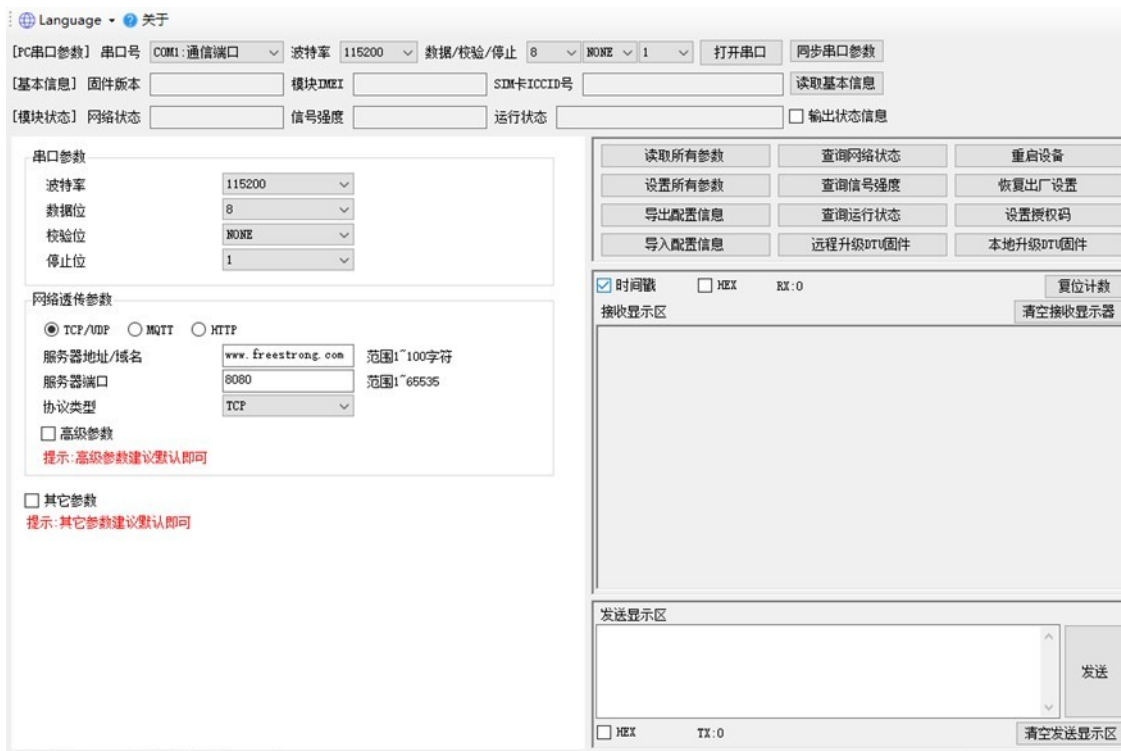


Figure1221PC serial configuration software

After the hardware is connected, the parameters can be configured and debugged according to the following steps:

1. Set the serial port parameters: the serial port number selects the port connected to the core board, The PC serial port parameters must be consistent with the core board serial port parameters, otherwise the configuration tool syntax does not communicate with the core board; the default serial port parameters of the module are: 115200/8/ NONE/ 1, as shown in Figure 1..2.2.2.

Figure1222Example diagram of PC serial port parameter area

Note: When you are not sure about the serial port parameters of the core board, you can click the "Synchronize Serial Port Parameters" button to bit, check bit and stop bit are synchronized to the same configuration of the core board, **This function requires the user to select the corresponding EZDTU serial port number.**

2. Query basic information to ensure that you can read SIM card ICCID number. The basic information includes the firmware version of EZDTU, the IMEI number, ICCID number of SIM card, as shown in Figure 1.2.2.3.



Figure1223Example diagram of basic information area

3. Setting parameters: EZDTU parameters are divided into serial

port parameters, network transparent transmission parameters and other parameters. Serial port parameters: can be configured according to requirements, if there is no requirement, the default is fine;

Network transparent transmission parameters: if you use TCP connection, you only need to fill in the server address and port; Other parameters: If there is no special requirement, keep the default;

Click to set all parameters. When the core board restarts, it will automatically connect to the server according to the set parameters. When connected to the server, the

Data transparent transmission is possible. as shown in the picture 1.2.2.4 shown.

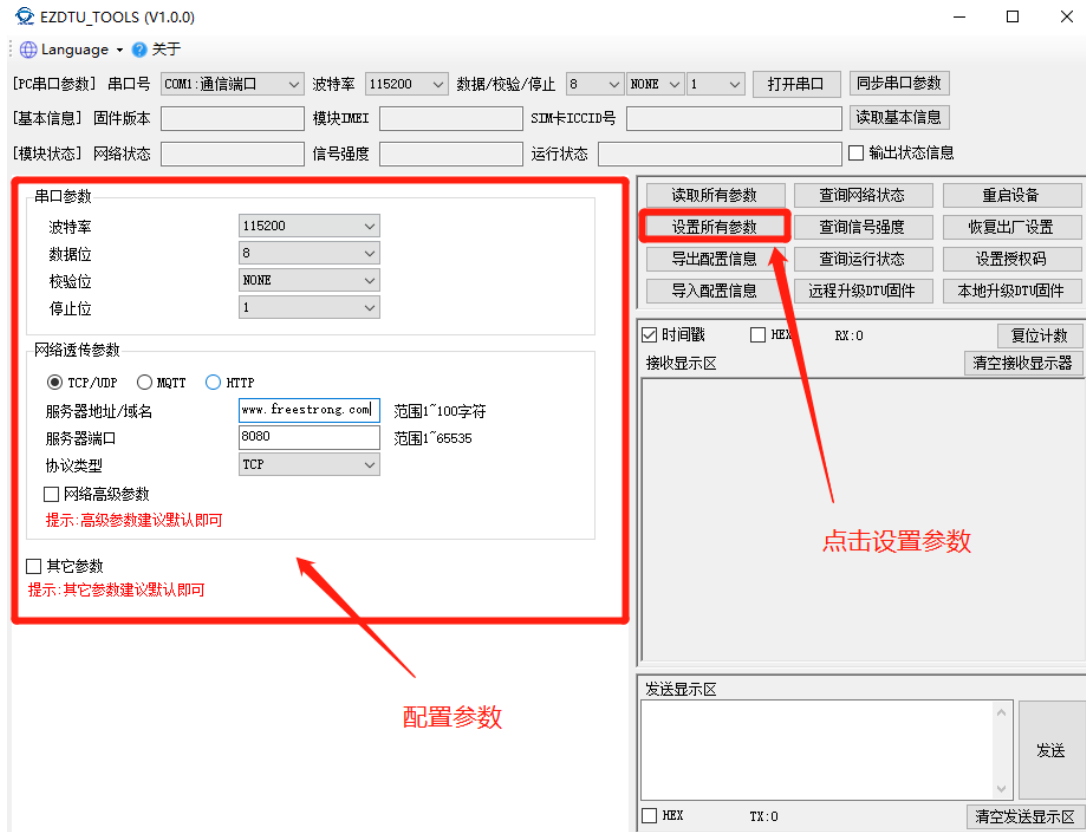


Figure1.2.2.4 Example diagram of parameter configuration area

Note: When the debugging is not smooth, you can check the "output status information" in the configuration to monitor the running status of the core board in real time, which is convenient. Quickly locate problems.

2 product description

2.1 product introduction

The FS-LCore-F800E series is an ultra-small package, feature-rich, The core board designed by 4G Cat.1 communication module FS800E takes "data transmission" as the core and is highly easy to use. It adopts 8PIN pin-type package, and users can easily and quickly integrate it into their own systems. The core board has complete functions and covers most application scenarios.

Built-in EZDTU transparent transmission firmware, bid farewell to complicated AT command operations, only one simple configuration is required to realize two-way data transparent transmission between the serial port and the remote server, support host computer software configuration, serial port command configuration, and platform remote configuration; support TCP, UDP, MQTT, HTTP and other communication protocols commonly used in the Internet of Things; there is an internal exception handling mechanism, which can automatically reconnect when disconnected; at the same time, it also has advanced functions such as heartbeat package, registration package, Keepalive, FOTA upgrade, etc., which greatly improves the user experience. development efficiency and product stability.

2.2 Basic parameters

	product name	4G DTU core board
	Product number	FS-LCore-F800E
	support operators	move4G, China Unicom 4G, China Telecom 4G
hardware interface	Package form	Pin type 8 PIN
	power supply	5V~16V
	led lights	Power indicator light, network indicator light
	SIM interface	Self-bouncing Nano deck
	antenna	IPEX seat (1st generation)
	UART	TTL (default 3.3V, can support 5V) Baud rate (bps): 300, 1200, 2400, 4800, 9600, 115200, 230400, 460800, 921600
Dimensions	Dimensions (L*W*H)	22.00*24.00*12.54mm (including pin height)
	weight	about 3g
temperature range	Operating temperature	-35°C ~ +70°C
	storage	-40°C ~ +85°C

	temperature	
specifications	LTE-TDD	Proportion 1: Maximum 6Mbps(DL)/Maximum 4Mbps(UL) Proportion 2: Maximum 8Mbps(DL)/Maximum 2Mbps(UL)
	LTE-FDD	maximum 10Mbps (DL)/Max. 5Mbps (UL)
Support frequency band	LTE-TDD	B34/B38/B39/B40/B41
	LTE-FDD	B1/B3/B5/B8
Output Power	LTE-TDD	23dBm+1/-3dB
	LTE-FDD	23dBm±2dB
software function	Network protocol	TCP/UDP/MQTT/HTTP
	operating system	Support Windows/Linux/Android

2.3 Pin Description



Figure 23.1 Core board pin distribution chart

pin Number	name	illustrate
1	VB	When VIN is an input, VB outputs 3.8V, which can be suspended; when VB is an input, it is directly connected to the module power supply, and the output Input voltage 3.3~4.3V
2	VIN	Power input positive, support 5~16V input.
3	GND	Power input negative.
4	TX	Master serial port transmit pin, pulled up to 3.3V.
5	RX	Master serial port receive pin, pulled up to 3.3V.
6	EN	The default is EN (core board power enable pin), internally pulled up to VIN. Power off when EN is low (The power is turned off when the external triode drives Module_EN)

Note: VB and VIN cannot be used at the same time. When VB is used to supply power to the core board, the EN pin will be invalid.

2.4 Indicator Status Description

Table 24 Description of Indicator Status

	LED status	Module working status
Power Indicator	always on	Power-on

(red light)	turn off	power down
network light (blue light)	Slow flashing (200 ms on/1800 ms off)	Search status
	Slow flashing (1800 ms on/200 ms off)	standby mode
	Fast flashing (125 ms on/125 ms off)	data transfer mode
	turn off	shutdown

3 application interface

3.1 power supply

The core board has two power supply methods:VIN, VB.

VIN: The power supply range is 5V~16V, the power needs More than 8W, recommended power supply 5V 2A. VB: The power supply range is 3.3V~4.3V, generally used for lithium battery power supply.

Notice:

1. IN and VBThe core board cannot be powered at the same time. When VB is powered, EN is invalid.
2. The actual input voltage must be within the minimum and maximum range.

3.2 switch machine

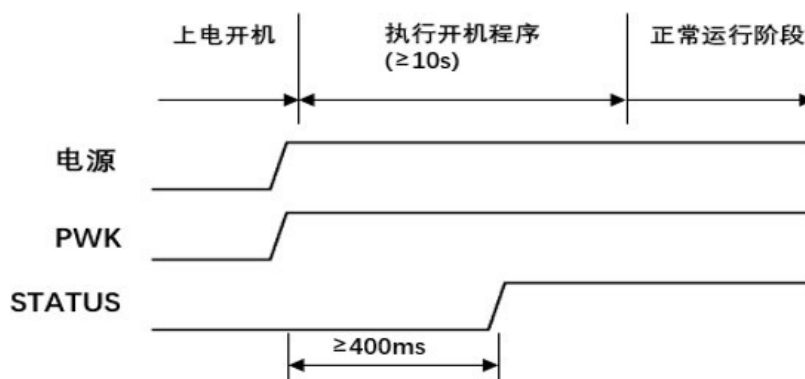
The core board is powered on automatically by default, which is suitable for applications that do not consider shutdown; when the core board is abnormal, the EN pin can be controlledRealize the reset function.

In the application that needs power on and off, you can control the PWK pin to realize the power on and off of the core board. whenWhen PWK fails, the power supply of the core board can be cut off directly by pulling down the EN pin to achieve the purpose of shutdown.

Note: It is not recommended to pass E frequentlyN pin to shut down, frequent power cuts may damage the flash memory (Flash) inside the module, resulting in the core board not booting.

3.2.1 PWK on/off

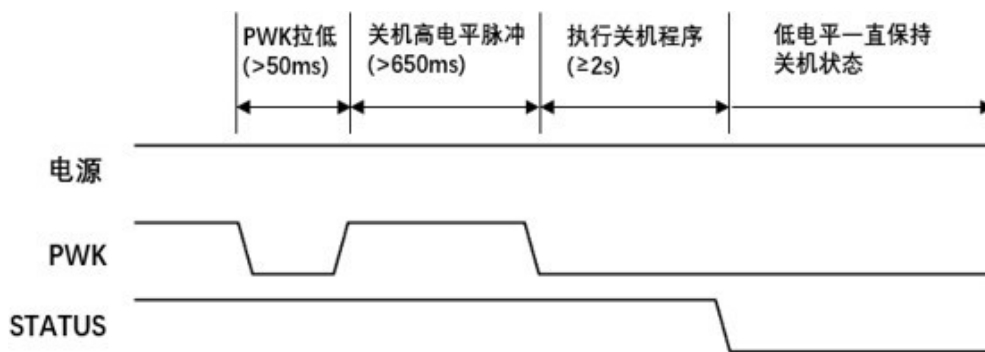
Power on: The core board is automatically powered on by default, and the boot sequence is shown in the figureAs shown in 3.2.1.1:



picture3.2.1.1 PWK power-on sequence diagram

Shutdown: In the power-on state, pull downAfter the PWK pin is greater than 50ms, pull it high for more than 650ms and the core board enters the shutdown procedure. At this time, pull the PWK pin low and keep it for more than 2S to ensure the complete execution of the shutdown procedure. After the shutdown program is executed, please ensure that PWK is always in a low-level

state, otherwise the module will be turned on again. The shutdown sequence is shown in Figure 3.2.1.2:



picture3.2.1.2 PWK shutdown sequence diagram

Note: when After PWK pin fails to shut down, you can control EN to directly cut off the power to shut down.

3.2.2 EN power on/off

Power on: EN It is internally pulled up to VIN, that is, the power supply of the core board is enabled, and it is powered on by default.

Shutdown: EN power enable control has two states:

Power supply VCC When it is equal to 5V, EN can be directly connected to the GPIO of the MCU (open-drain mode). When the EN pin is pulled low, the power supply of the core board is disconnected, and the module is powered off;

When the power supply VCC is higher than 5V, an external triode drive must be added EN, as shown in Figure 3.2.2.1, when Module_EN is at a high level, the power supply of the core board is disconnected, and the module is powered off.

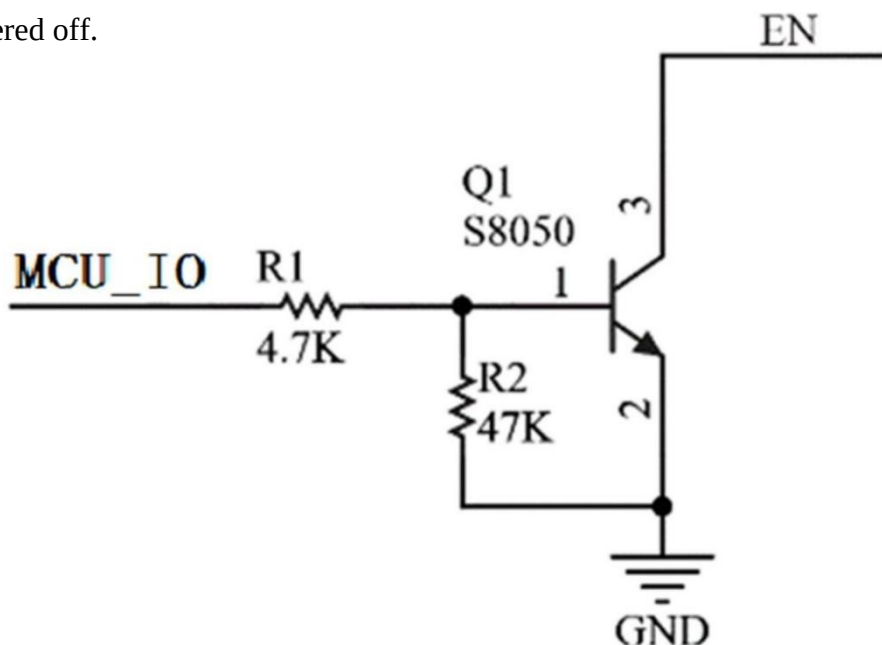


Figure3221 Transistor drive EN Reference Design Schematic

3.3 TTL serial port

The core board serial port level is 3.3V TTL, can be directly connected to the single-chip microcomputer whose serial port level is 3.3V. Support 300 bps, 1200 bps, 2400 bps, 4800 bps, 9600 bps, 115200 bps, 230400 bps, 460800 bps and 921600 bps baud rate, the default baud rate is 115200 bps

