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# TZ-RD01

(TAG06)

V1.7

---User Manual



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# 1 Product Overview

TZ-RD01 is a card reader that designed to read all kinds of RFID tags in the long range of the radio frequency, using the universal ISM 433MHz ultra low power microwave frequency band remote identification communication equipment. TZ-Tag06 tag using the active way through the wireless transmission of information from the tag, then TZ-RD01 receive information and process through the RS232 and then sent to other devices for data processing applications.

TZ-RD01 card reader uses a 32 bit ARM processor with high performance, wide voltage input port with support, lightning protection, anti-static and shell with dustproof and waterproof protection, which has good stability and high speed data processing capabilities, and can support a variety of data formats, repeated reading technology, dynamic key encryption and authentication, to ensure data security, prevent eavesdropping and crack data link

## 2 Key Functions

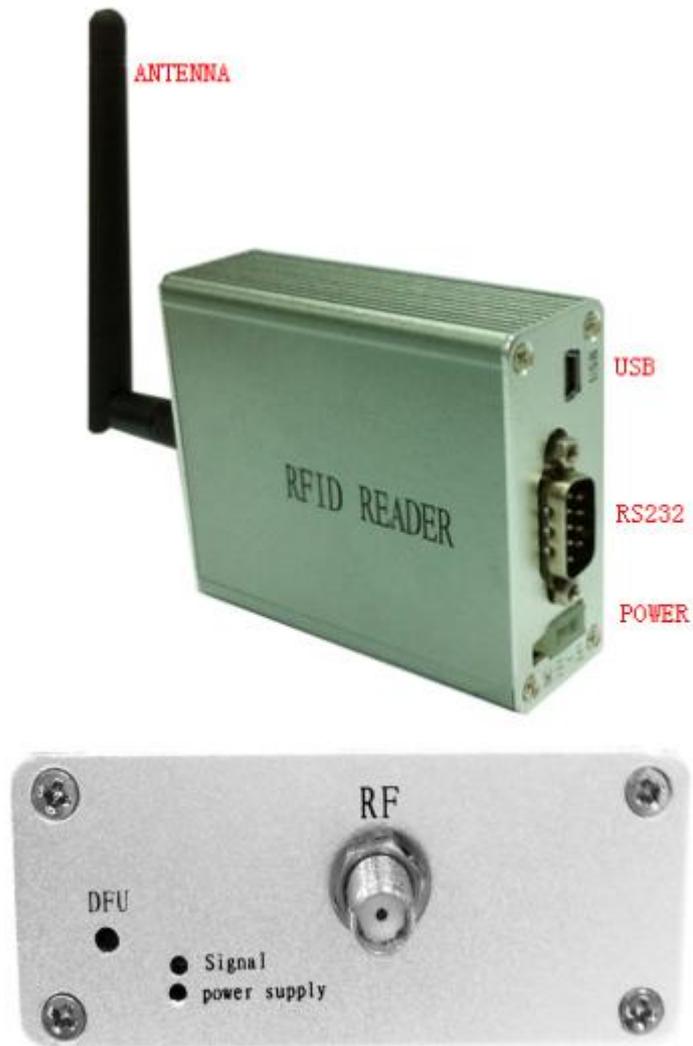
- External special USB configure interface, user can configure RD01 operating module;
- Prevent collision: advanced technology to prevent the collision, can identify 100 units tags per second, at the same time without interference;
- Security: encryption algorithm and certification to ensure data security, to prevent the data link eavesdropping and data to be cracked
- Metal shell, resistance to high pressure;

## 3 Product Specification

RF frequency	433M
Receiving Sensitivity	-104dBm
Tag identification Angle	3D
Interface	RS232
Firmware update	Support
Tag protocol	Private protocol
Supply power	DC9V-24V
Net weight	0.12kg
Operating tem.	-40°C~+60°C

Operating hum.	5% ~ 95% (non-condensing)
IP level	IP55
Dimension	78mm*66mm*26mm

**Extra  
interfaces:**



Interface	Instructions
USB	Use specially designed USB cable connect to PC
RS232	Output the data , For communications and other equipment
POWER	DC9—24V

DFU	Use to update firmware
Signal	Flash one time when receive on Tag
Power supply	the power light, bright when having power supply
RF	RF antenna

## 4 Data Protocol

### 4.1 Contains the TZ-RD01 ID data format

Begin character (7F) + Data length (1byte) + Tag ID (4bytes) + Tag state (1byte) + battery voltage (1byte) + temperature (2byte) + check code + end code (03)

- Begin character: 0x7F
- Data length: 1byte , After the data length and before the checksum;
- TZ-RD01 ID: TZ-RD01 ID depends on the command NO.04
- TAG ID: received tag06 ID
- TAG status: 1 byte  
bit7: Battery voltage status, 1-low Voltage, 0- Voltage normal;  
bit6: Temperature status,1- Temperature more than set high and low temperature threshold, 0- Temperature normal.  
bit5-bit0: reserved;
- Battery voltage: 2 byte, Unit: 1mv, 0C 50 means voltage is 3.152V;
- The first bit of temperature means normal/abnormal : 0-normal,1-abnormal;
- The second bit of temperature means positive(+)/negative(-) : 0-positive,1-negative;
- After the third bit of temperature means real temperature, unit 0.1°C;
- For example: 01 64 means +35.6°C, 41 64 means -35.6°C, 80 00 means abnormal;
- check code: 1 byte, and the accumulation of all the data before;
- end code: 0x03.

### 4.2 Doesn't Contains the TZ-RD01 ID data format

Begin character (7F) + Data length (1byte) + Tag state (1byte) + battery voltage (1byte) + temperature (2byte) + check code + end code (03)

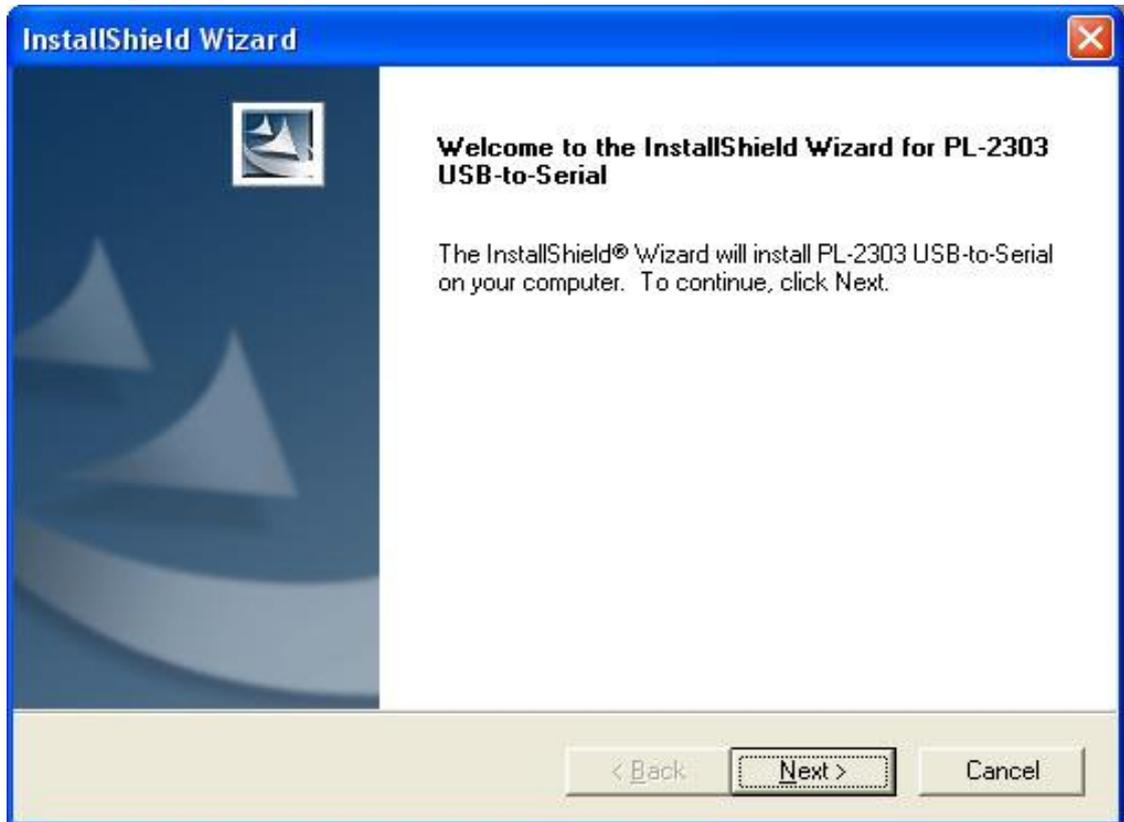
The data shows that same as above;

## 5 Prepare for configuration

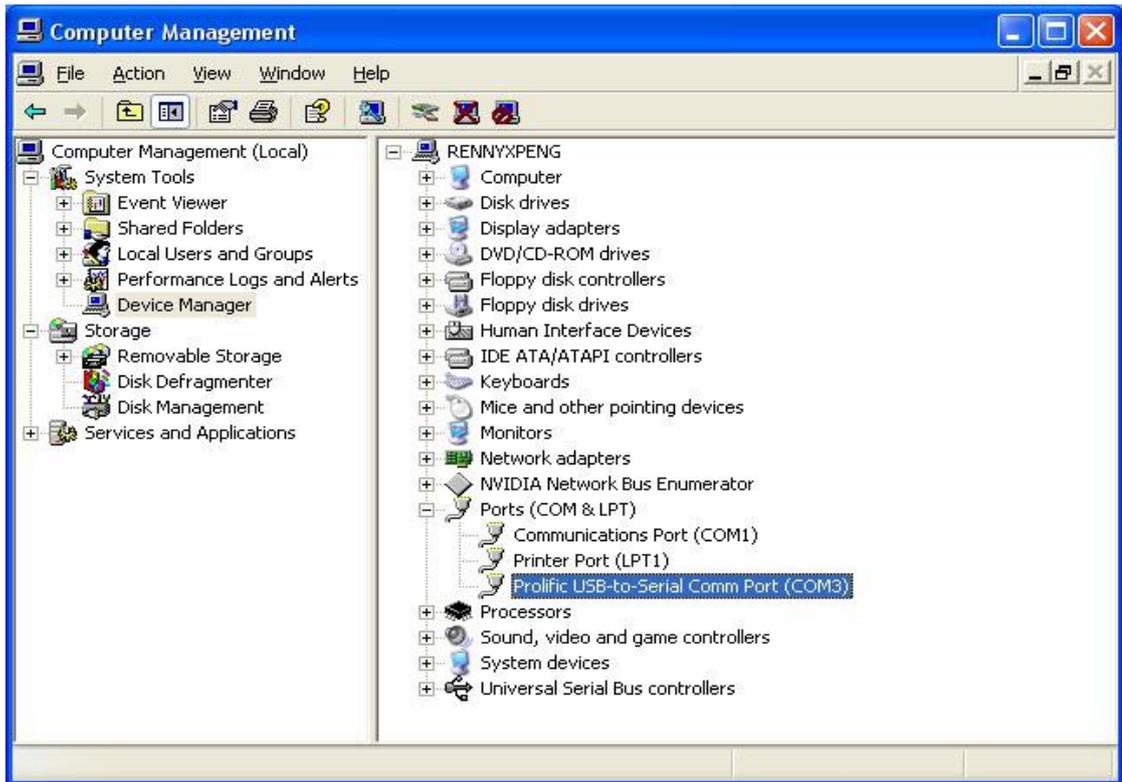
### 5.1 Install PL2303 windows driver

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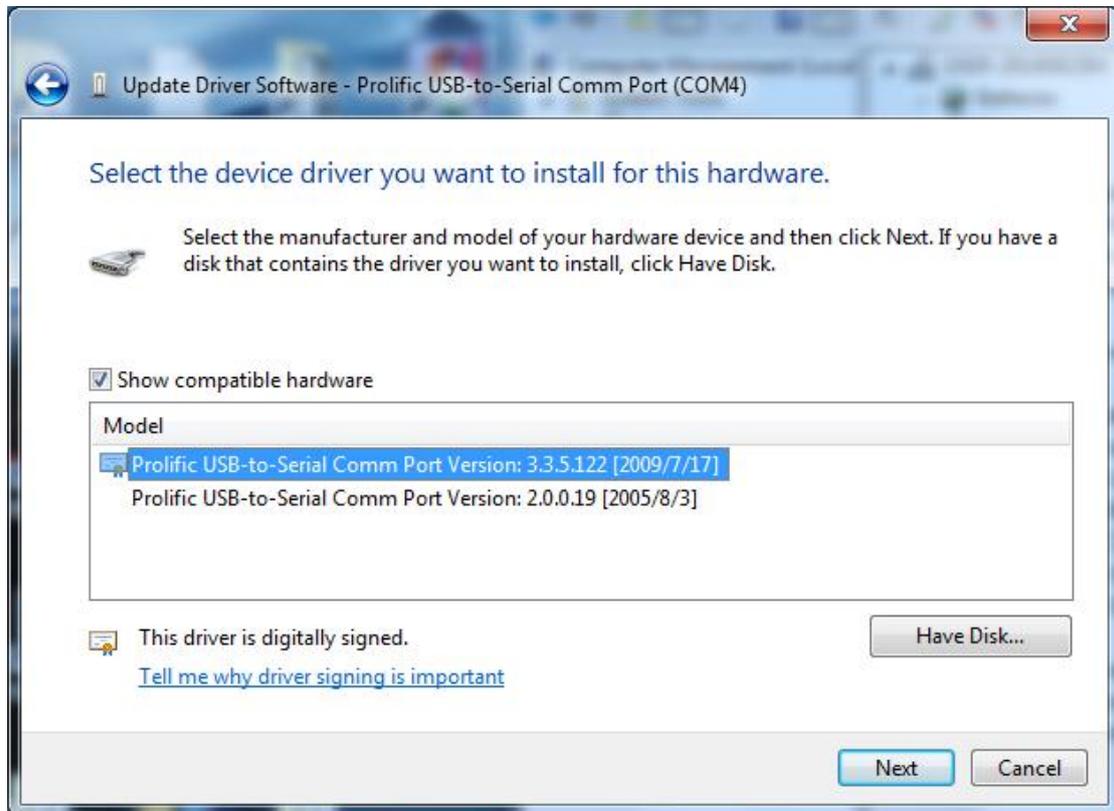
As shown in figure 5-1, the first interface of PL2303 driver. Follow the default steps, it will be successful like figure 5-2. PL2303 driver build in 2009 is suggested, you can get it from the website. There is the vision of PL2303 driver checking way. Device manager---Ports (COM&LPT) ---choose your COM---right-hand button---Update Driver Software---Browse my computer for driver software---pick from a list from device drivers---choose 2009 version. As shown in figure 5-3, I have chosen the version 2009.



**Figure 5-1 PL2303 driver installing**



**Figure 5-2 PL2303 Checking driver**



**Figure 5-3 PL2303 choose version 2009/7/17**

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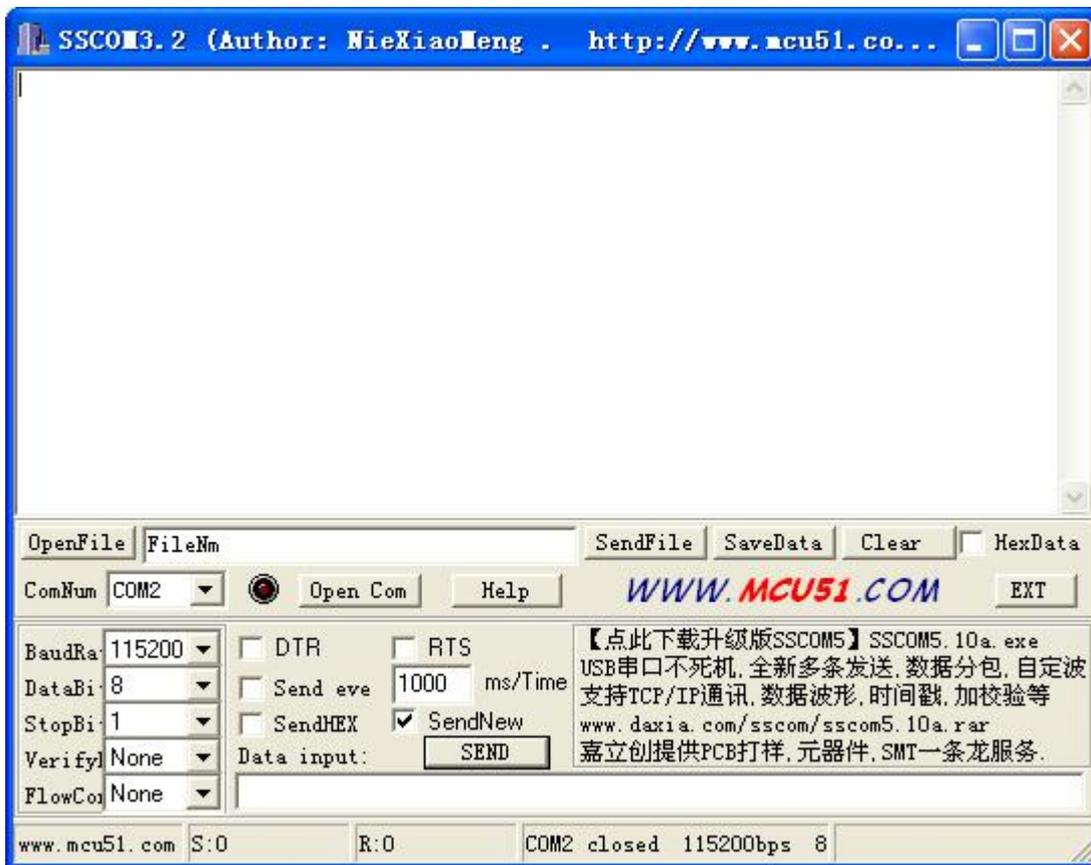
## 5.2 Install sscom32

Please download from the Internet or contact sales download sscom32 serial port tools, and installed on the computer.

## 5.3 Configure sscom32

After completing the above steps will USB configure cable inserted into the computer USB port, and then open the sscom32, choose the corresponding COM port, baud rate is 115200, data bits is 8, stop bit is 1, parity None, flow control None and then click open the serial port.

Note: if users to set the parameters of RS232, please also set the response parameters in sscom32



## 5.4 ASCII commands to configure RD01

After completing the above steps to RD01 on electricity, then send the FFF make machines to enter configuration mode, according to the instruction table 5.1 set up machine, set up after the completion of the send #DQ make machine to exit the configuration mode, when the reader receives the TAG information, RS232 and USB port can output the corresponding information

**Table 5.1 TZ-RD01 unify commands**

NO.	Instruction	Format	Note
00	Set again the stress time	*00,X#	X: [0 , 3600], unit 1S, 1 is default, 0 will disable this function
01	Set ID	*01,X#	X:6bits, range [A-F] and [0-9]
04	Set the serial data contain RD01's ID	*04,X#	X: 0-No,default 1-Yes
06	Set the print mode	*06,X#	X: 0-hex (default) 1-ASCII
11	RS232 setting	*11,A,B,C,D#	A:baud,[600,128000] 115200 (default) ; B:digital bits 0-8bit (default) , 1-9bit; C:stop bits 0-0.5bit, 1-1bit (default) , 2-1.5bit, 3-2bit D:parity bits, 0-none (default) , 1-Even, 2-Odd
13	RS232 data mode setting	*13,X#	X:0- active mode (default) 1- Passive mode About passive mode: need upper computer send command to read data. Reading command is, AA+ ID of RD01+ 03 (HEX) For example:AA123403(HEX)
	Query command	#D5X	X: command's NO. For example, *D51 can query the NO.01
	Check all configuration	#DE	
	Check the firmware	#DA	

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	version		
	Go to factory setting	#DO	
	Restart the device	#DR	
	Out configuration mode	#DQ	

## 6 Update TZ-RD01 firmware

At the beginning of updating firmware, you must let the RD01 into update mode.

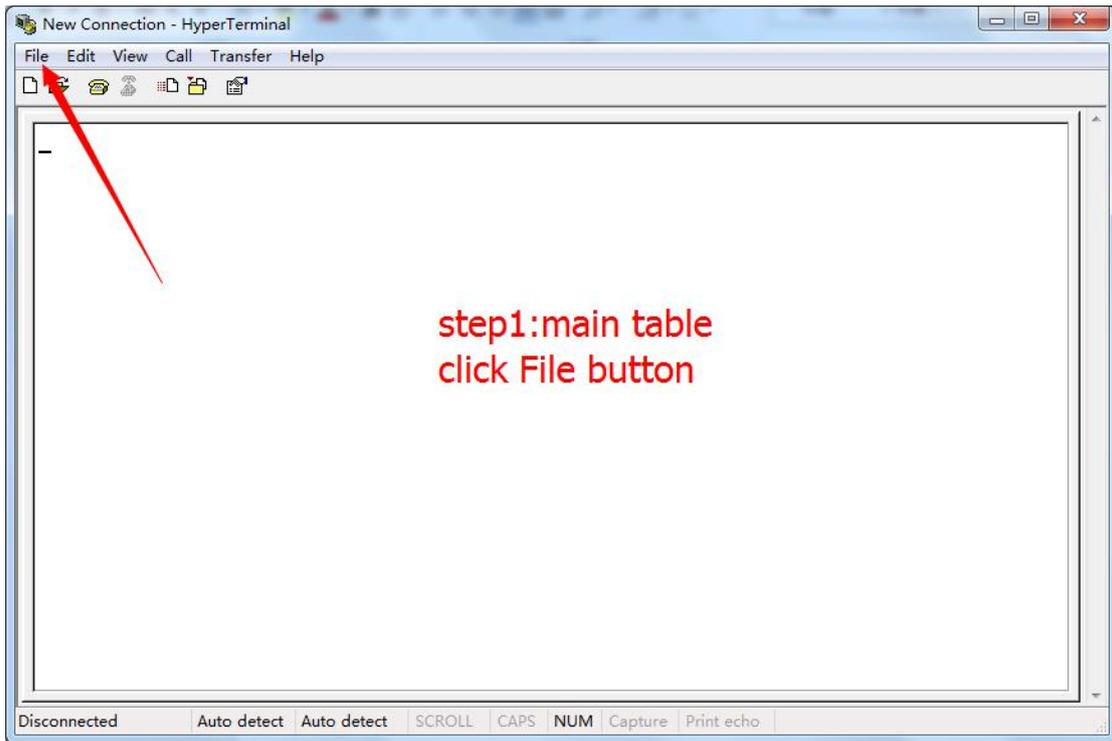
1. Cut off the power of RD01;
2. Push the DFU button;
3. Give RD01 supply power again;
4. If all the LED is bright, it is successful, and then do follow the document bellow.

### **Firmware update method of TZone products**

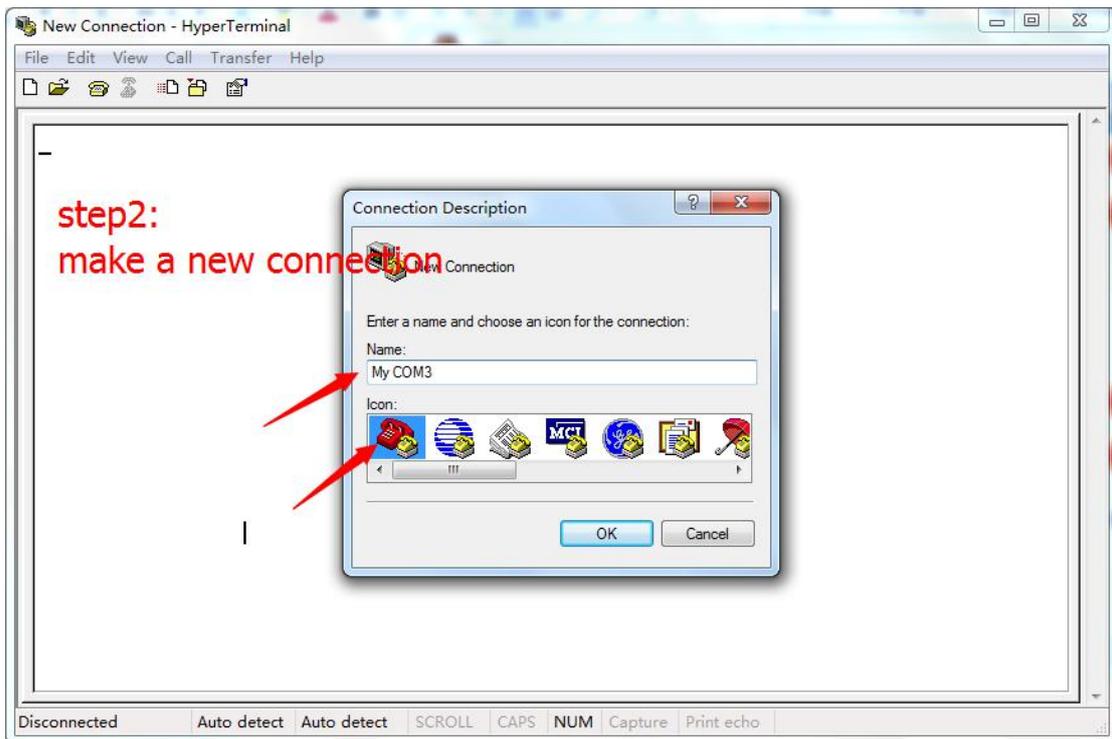
Make sure RD01 has been into update mode.

Hypertrm.exe is need, comes with Windows XP, or download from the website.

- 1) As Figure 1-1, is the main board of Hypertrm.exe;
- 2) Figure 1-2, do file---new connection to create n new connection;
- 3) Figure 1-3, choose the COM you have used, mine is COM3;
- 4) Figure 1-4, do as the figure shown;
- 5) And then File---Save to save the new connection;
- 6) Next time, File---Open can open the connection;
- 7) Hold the DFU, then connect the power supply, LED lights have been on;
- 8) Click keyboard “1” button, you may see like Figure 1-5;
- 9) Do as Figure 1-6, steps 1-2-3-4 to finish update firmware;
- 10) There appears successfully.



**Figure 1-1 main board**



**Figure 1-2 create a new connection**

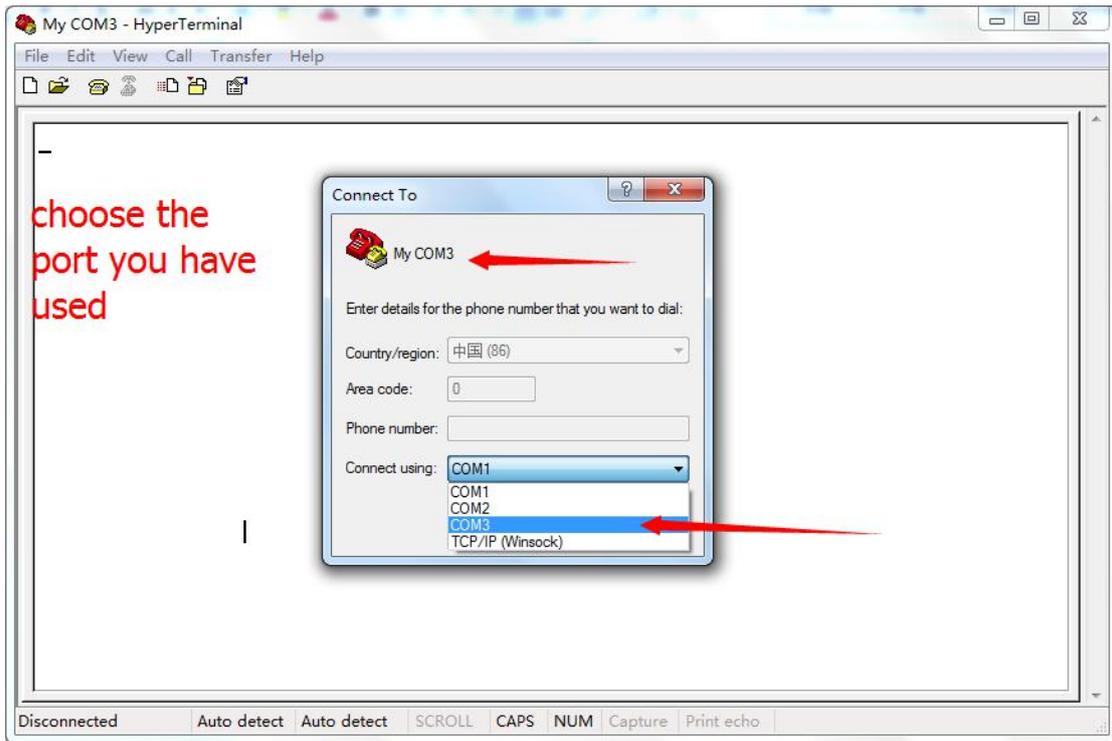


Figure 1-3 choose the COM that has been used

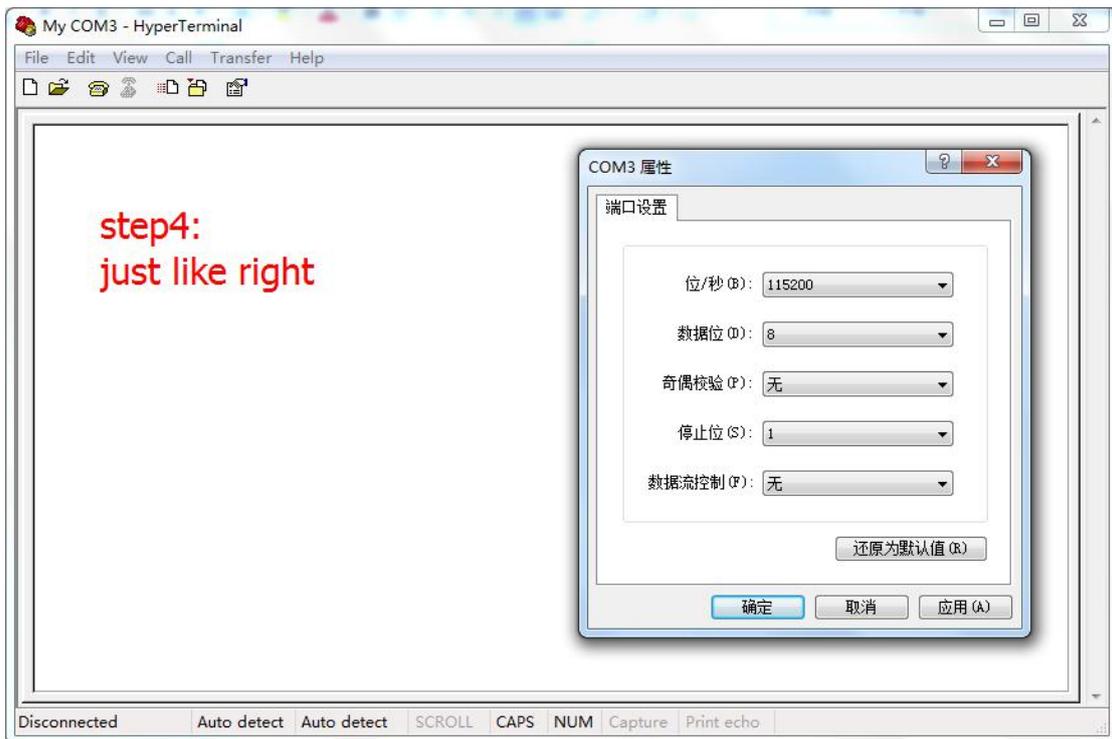


Figure 1-4 configure parameter

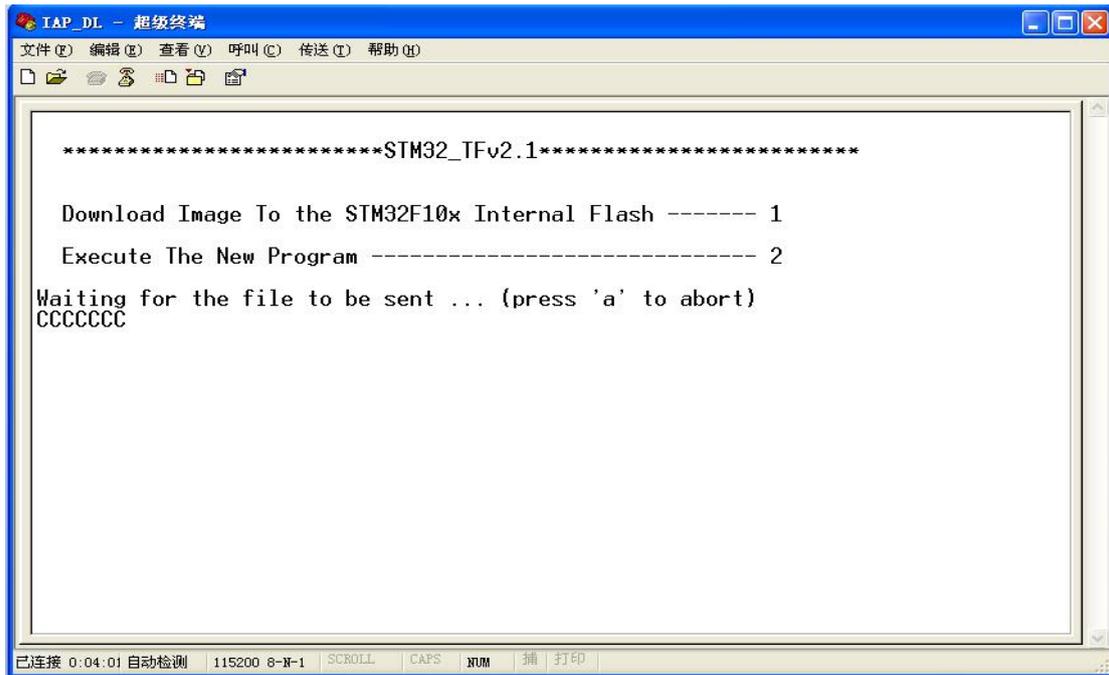


Figure 1-5 waiting for updating

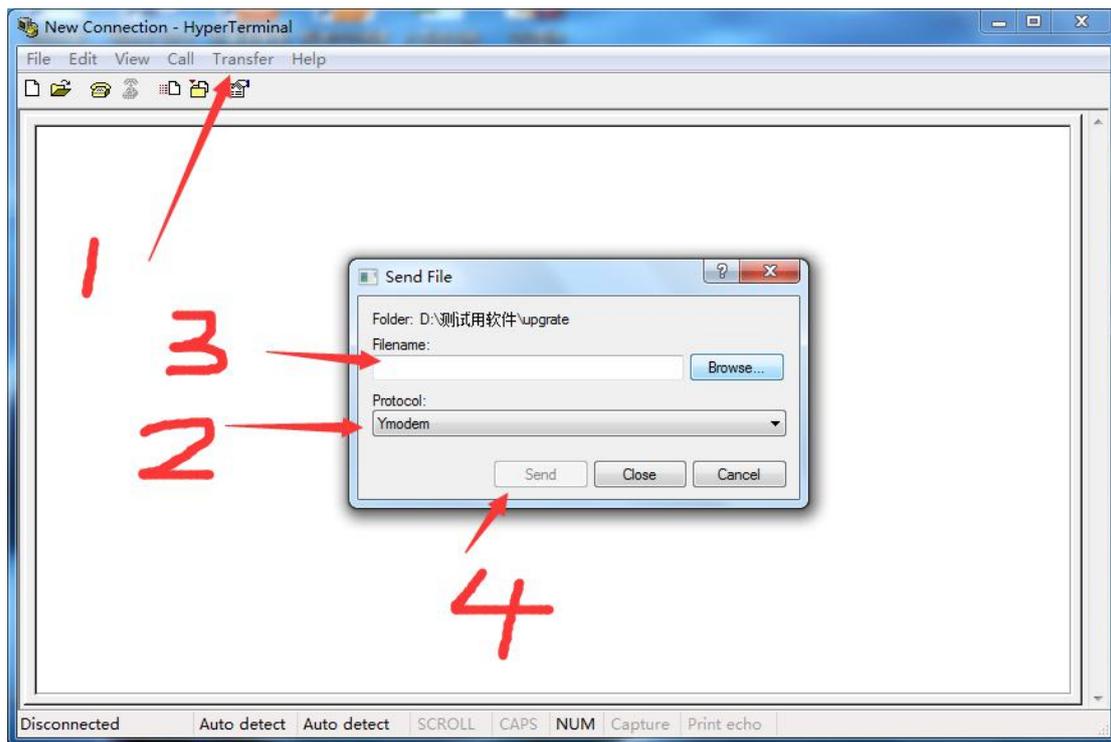


Figure 1-6 choose the right firmware