TZ-RD05

(TAG06B)

---User Manual

1 Product Overview

TZ-RD05 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 2.4G ultra low power microwave frequency band remote identification communication equipment. TZ-Tag06B tag using the active way through the wireless transmission of information from the tag,then TZ-RD05 receive information and process through the RS485, LAN and then sent to other devices for data processing applications.

TZ-RD05 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

- Support RS-485;
- Support LAN;
- One digital output,can control multiple peripherals;
- External special USB configure interface, user can configure RD05 operating module;
- Prevent collision: advanced technology to prevent the collision, can identify more than 100 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
- The installation type suction a top, concise and beautiful

3 Product Specification

RF frequency	433M
Receiving Sensitivity	-104dBm
Tag identification Angle	3D
Interface	RS485/LAN
Firmware update	Support
Tag protocol	Private protocol
Supply power	DC9V-24V
Net weight	0.15kg

Operating tem.	-40°C~+60°C
Operating hum.	5% ~ 95% (non-condensing)
IP level	IP55
Dimension	Cylindrical, diameter 170mm,high 40mm
Installation method	Suction top mounting

Extra interfaces:

LAN light	LAN connecting indicator light
LAN	Use to connecting the net
USB	Use specially designed USB cable connect to PC
Signal	Flash one time when receive on Tag
Power supply	Bright when having power supply
POWER	DC9—24V

Internal interfaces:

 5PIN port, including the RS485 port, export OUT port, upgrade port, and then we will be equipped with a 5PIN interface for the user to use the need

5PIN port

Wire number	Function	Color	note
PIN1	A	black	RS485
PIN2	B	Red	RS485
PIN3	OUT	White	Output port
PIN4	BT_S	Yellow	Upgrade, SOS
PIN5	GND	Orange	GND

4 RS485/LAN Data Protocol

4.1 Contains the TZ-RD05 ID data format

Begin character (7E) + Data length (1byte) + TZ-RD05 ID(3bytes) + Tag ID (4byte) + Tag state (1byte) + battery voltage (2byte) + temperature (2byte) + Humidity (1byte) + Check code(1byte) + end code (03)

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

Begin character (7E) + Data length (1byte) + Tag ID (4byte) + Tag state (1byte) + Battery voltage (2byte) + Temperature (2byte) + Humidity (1byte) + Check code(1byte) + End code (03)

4.3 Contains the TZ-RD05 ID data and RSSI value format

Begin character (7E) + Data length (1byte) + TZ-RD01 ID (3byte) + Tag ID (4byte) + Tag state (1byte) + Battery voltage (2byte) + Temperature (2byte) + Humidity (1byte) + RSSI(1byte) + Check code(1byte) + End code (03)

4.4 Doesn't Contains the TZ-RD05 ID data and Contains RSSI value format

Begin character (7E) + Data length (1byte) +Tag ID (4bytes) + Tag ID (4byte) + Tag state (1byte) + Battery voltage (2byte) + Temperature (2byte) + Humidity (1byte) +RSSI(1byte)+ Check code(1byte) + End code (0S3)

- Begin character: 0x7E
- Data length: 1byte , After the data length and before the check sum;
- TZ-RD01 ID: TZ-RD01 ID depends on the command NO.04

- TAG ID: received tag05/06 ID
- TAG status：1 byte (convert to binary)
  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(convert to decimal)；
- Temperature:2 byte, convert to binary, 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℃(convert to decimal);
  For example: 01 64 means +35.6℃, 41 64 means -35.6℃, 80 00 means abnormal;
- Humidity: 1 byte, unit: %;
- RSSI: 1 byte,unit:-dBm;
- Check code: 1 byte, and the accumulation of all the data before;
- End code: 0x03.

The data sample:

7E0D12345662160179000E1000EC4F7203

7E	Begin character
0D	Data length
123456	TZ-RD05 ID
62160179	Tag ID
00	TAG status
0E10	Battery voltage
00EC	Temperature
4F	Humidity
72	Check code
03	End code

5 Prepare for configuration

5.1 Ethernet usage

Explain: The language of Ethernet conversion module is Chinese, so if you do not understand the language, please contact Tzone technical personnel.

At first connect the machine and router with the cable
Then input 192.168.1.1(base on your gateway)
Input User name and password
User name: admin
Password: admin

Click on the right—DHCP sever--- Client list—find the RD05 IP, and then sign in

Select--- none, remember the IP then open the IE and input the IP

Enter the account number "admin", password "admin".

Ours Server IP :120.25.96.177

Port :54931

Baud rate :9600

Working parameters

Equipment coding:	MINIEUB
User Name:	admin
Password:	admin
Work mode:	TCP Client ▼
Server IP or Domain:	120.25.96.177 (For TCP Client)
Remote Port:	54931 (Available Range:1-65535)
Local Port:	6000 (Available Range:1-65535)
Baud rate:	9600 ▼
Timeout:	1 (Available Range:1-1000ms)
Enabled Handshake:	☐ Enabled
Enable Heartbeat:	☐ Enabled
Heartbeat Data:	00,11,22,33,44,55,66,77
Heartbeat interval:	5 (Available Range:1-100s)

Network parameters

MAC Address:	00:1B:FB:A3:00:00 (Each MAC address must be unique When multiple devices prsent in network)
IP Address:	192.168.1.100 ☑ Enabled DHCP
Subnet Mask:	255.255.255.0
Gateway:	192.168.1.1
Primary DNS Server:	202.96.134.33
Secondary DNS Server:	202.96.128.86

Apply Setting | Restore Setting

According to icon configuration, the default gateway is 192.168.1.1, if the gateway is different, the corresponding configuration also need to change.

5.2 Install PL2303 windows driver

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.
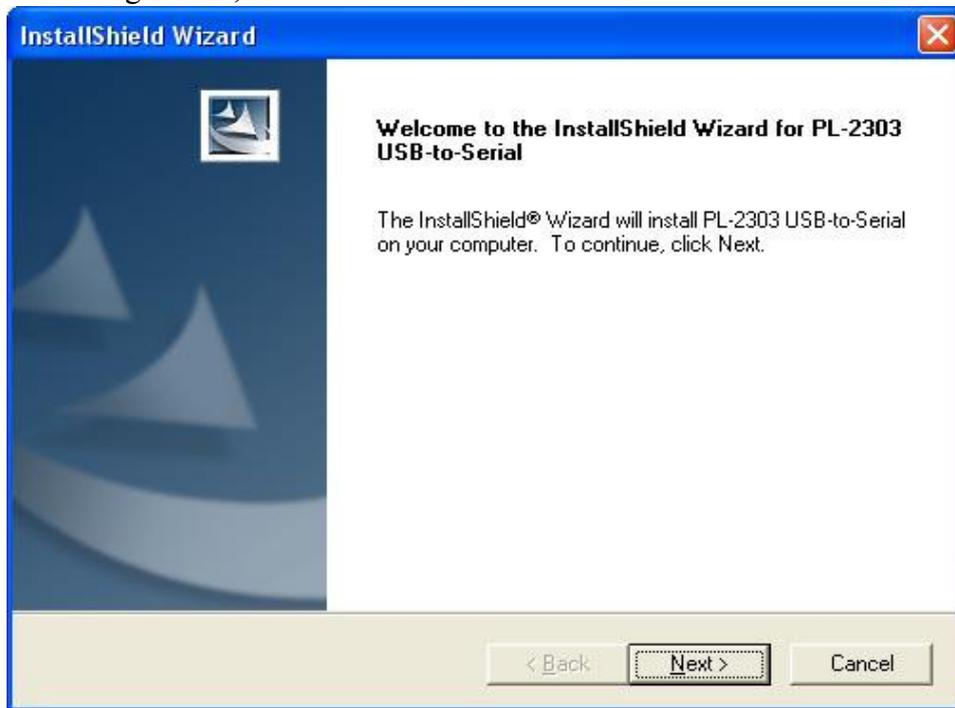
Figure 5-1 PL2303 driver installing
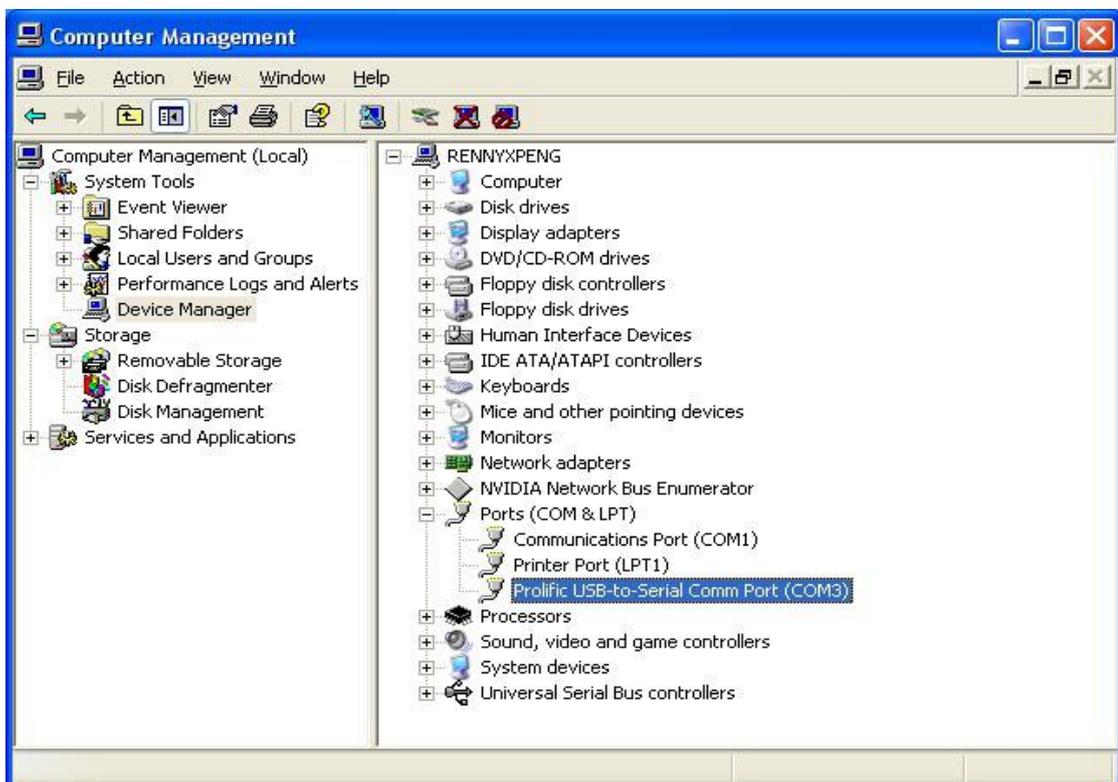
Figure 5-2 PL2303 Checking driver
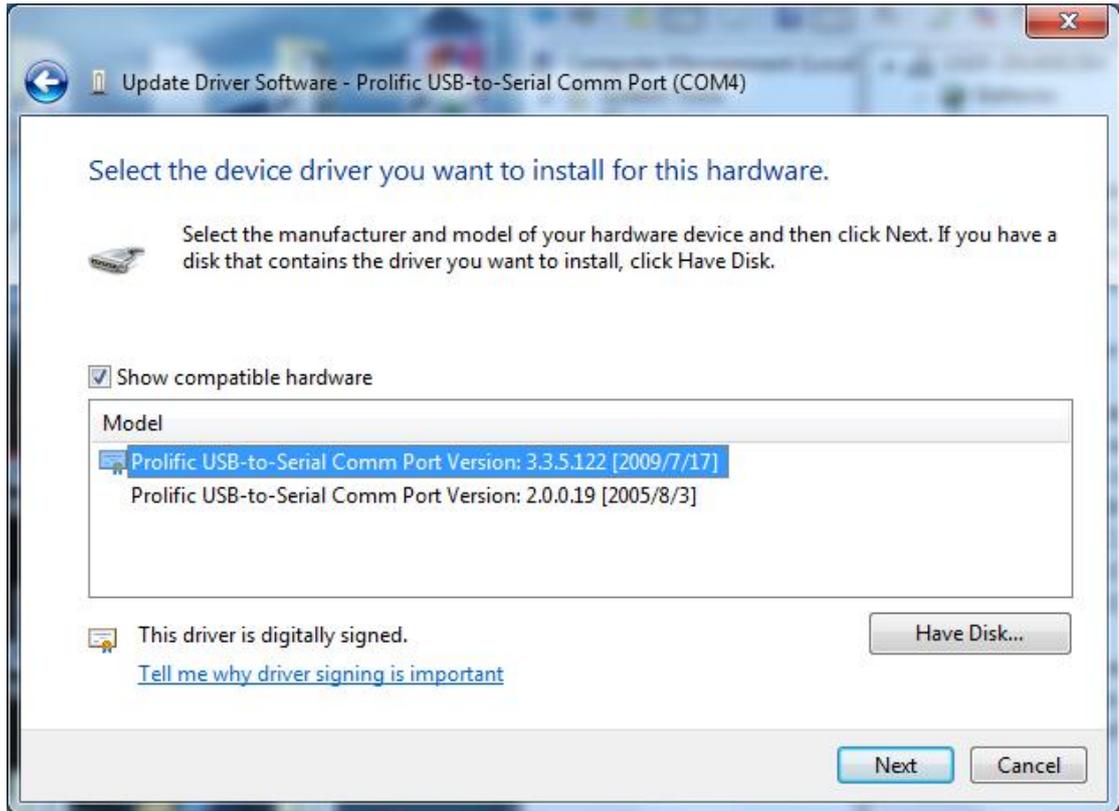
Figure 5-3 PL2303 choose version 2009/7/17

5.3 Install sscom32

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

5.4 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
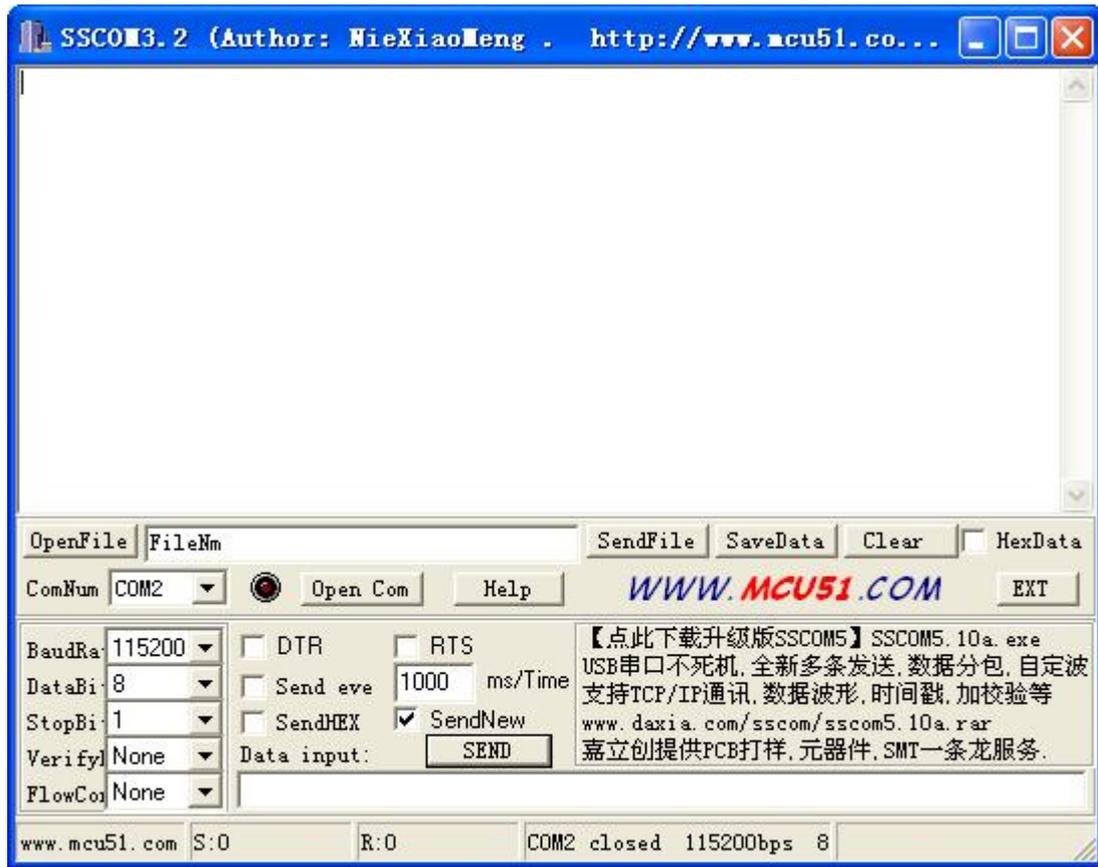
5.5 ASCII commands to configure RD05

After completing the above steps to RD05 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-RD05 unify commands

NO.	Instruction	Format	Note
FFF	Enter configure mode	FFF	the instruction can work, after entering the configuration mode; And then have to send command in 10s after entering the configuration mode, otherwise it will exit the configuration mode
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 RD05's ID	*04,X#	X: 0-No,default 1-Yes
06	Set the print mode	*06,X#	X: 0-hex (default) 1-ASCII
12	R485 setting	*12,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	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 RD05+ 03 (HEX) For example:AA123403(HEX)
14	Output working mode setting	@14,X,Y,Z#	X:connect time, unit 1s,[0,60]; Y:disconnect time, unit 1s,[0,60]; Z:duration, unit s, [1-999],999 Indicates that the action has been continuous
21	Whether to enable the RSSI values	*21,X#	X-0, Disable(default); X-1, Enable;
	Query command	#D5X	X: command's NO. For example, *D51 can query the

			NO.01
	Check all configuration	#DE	
	Check the firmware version	#DA	
	Go to factory setting	#DO	
	Restart the device	#DR	
	Out configuration mode	#DQ	

6 Update TZ-RD05 firmware

1) Install USB cable driver

    A. At the first, install the Driver for "USB Converter"
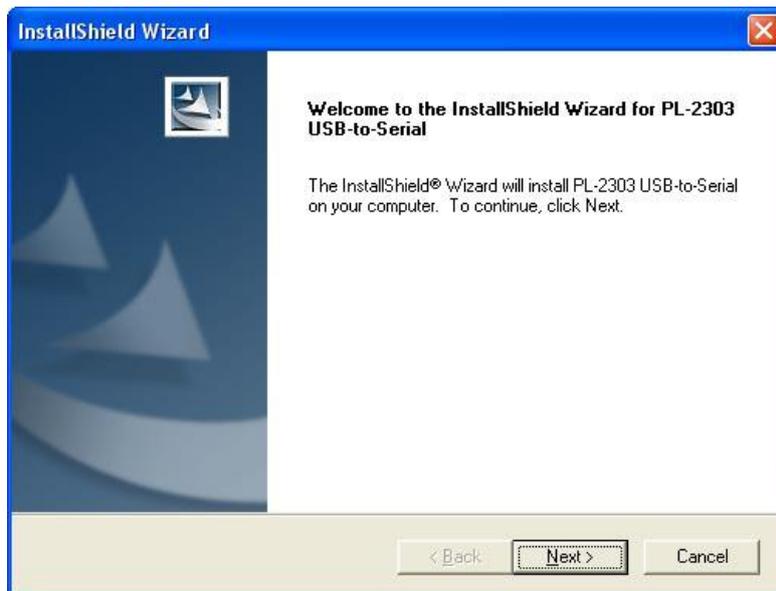
    B. Connect the RD05 unit to PC through USB cable, View the com port that the cable used
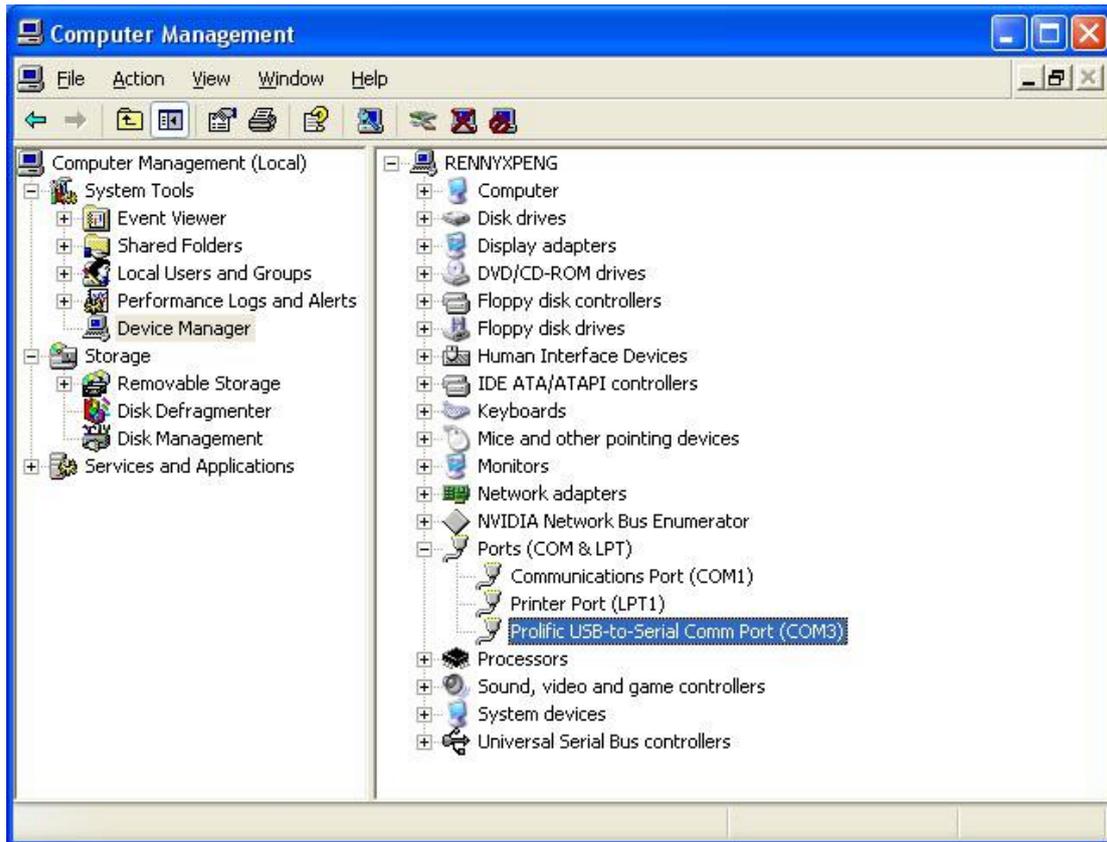
2) Turn on RD05 device
3) Build a New Hyper terminal connect, fill the name, example as IAP_DL
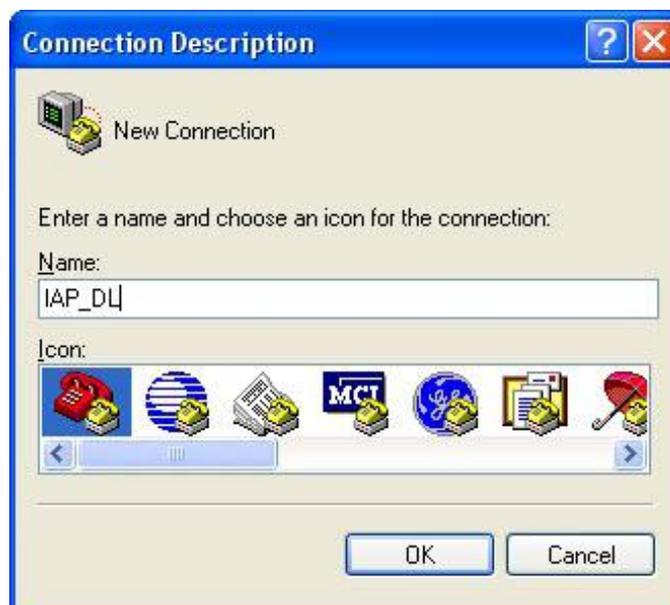
4）Choose the Com Port that the USB Cable used

5) Setup all the option as shown in the following picture
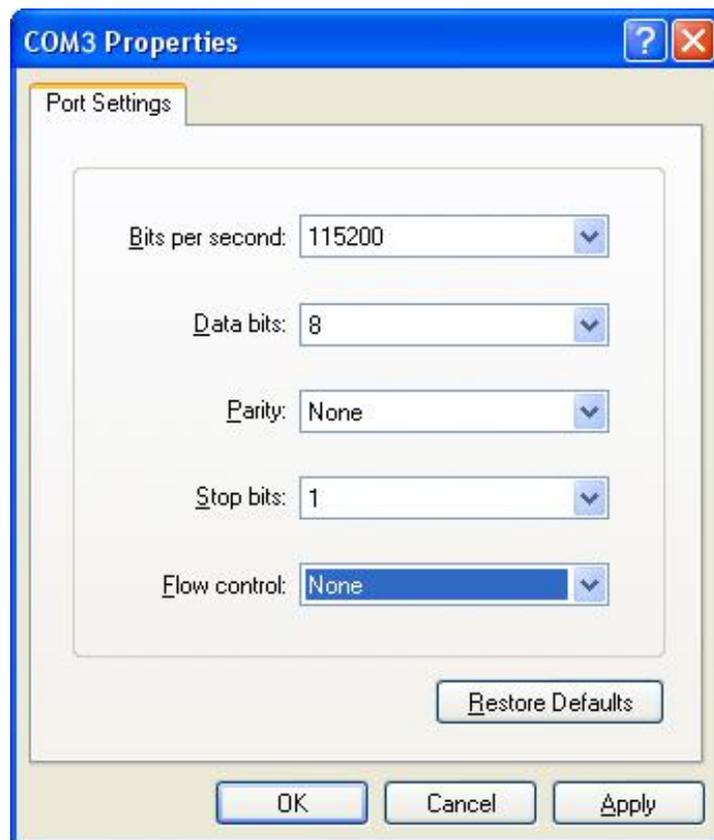
6) Into Configure Mode
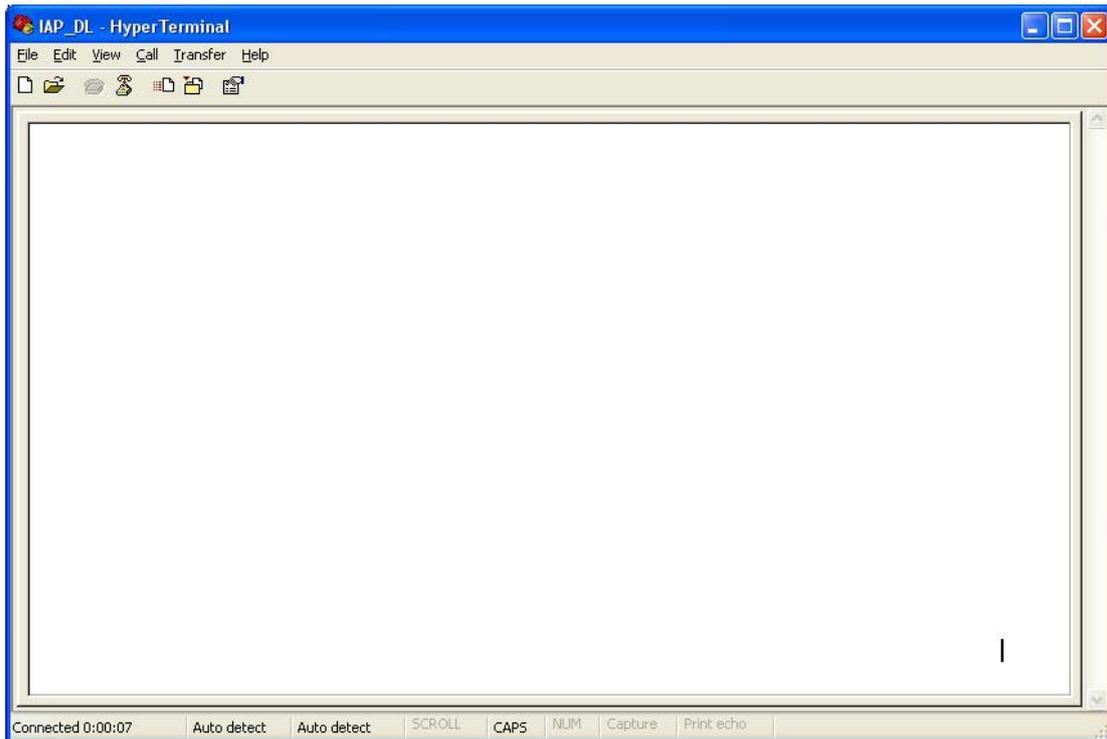
7) Turn Off RD05 device

①Connect BT_S and GND and Turn on Power , Device all indicator will keep light at same time, (all of the device's indicator will be keep light for a moment)Hyper terminal will display the interface like the picture follow
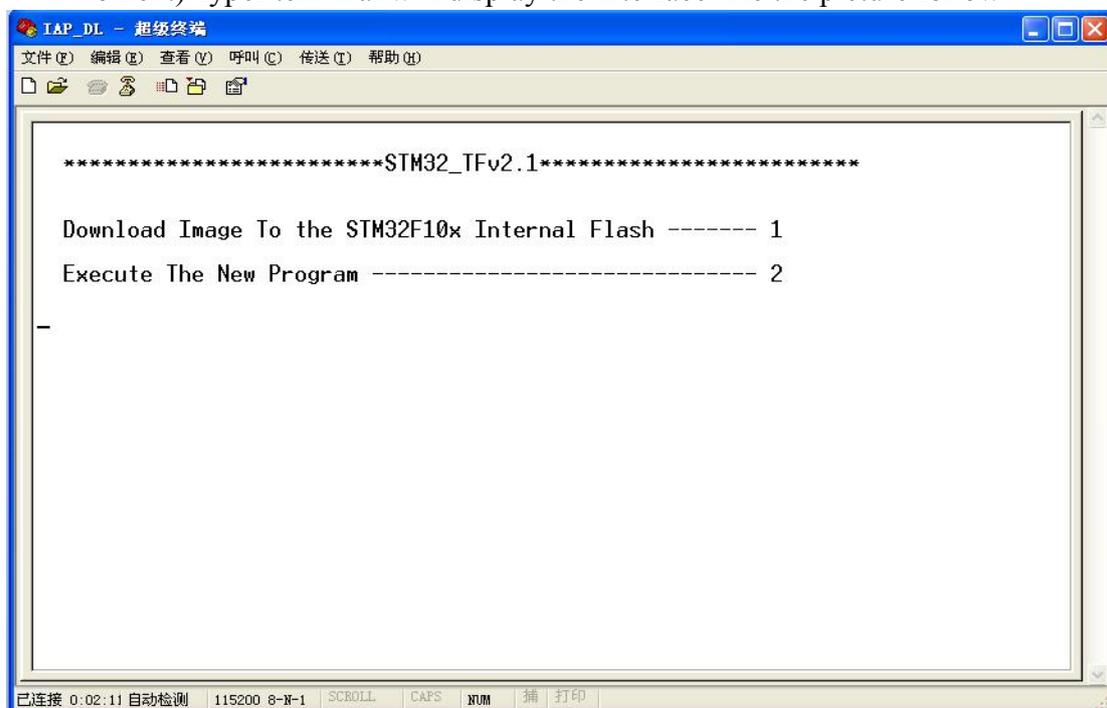
② Press Keypad 1, Hyper terminal will display(waiting for the file to be sent ...CCCCC).

③ Then choose Send file(Send-> Send File) at soon as possible, because the update mode will keep for 92 seconds, if out of this time update will not be process succeed.

8) Choose the firmware that you want to Update；
   Protocol Choose: Ymodem
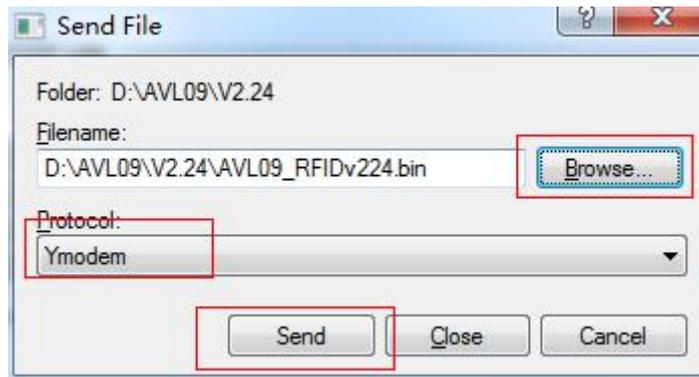
9) Press Send button, Will display a New Windows that show the update process.
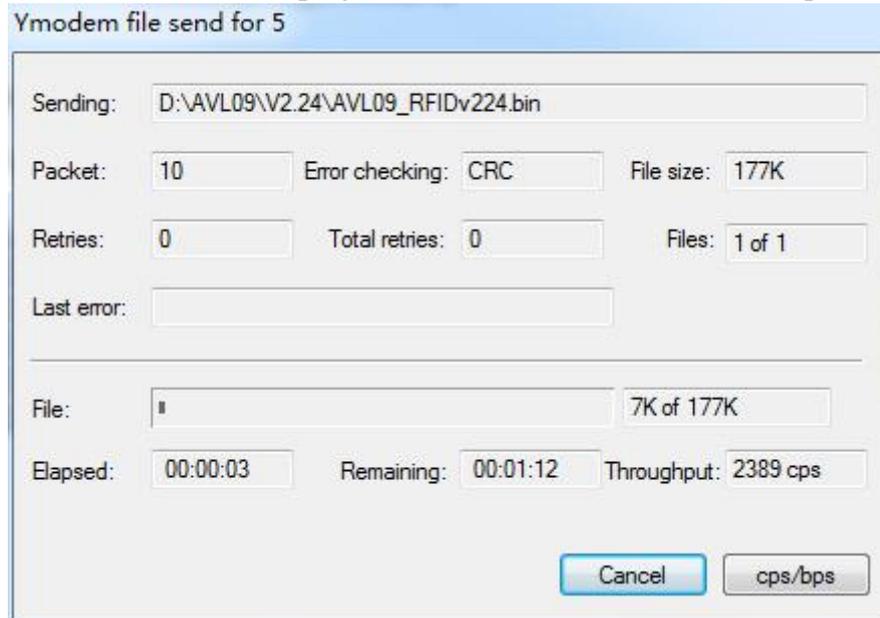
10) When finish update, will appear "Programming Completed Successfully!", then press Keypad 2.

```
T_com3 - HyperTerminal
File  Edit  View  Call  Transfer  Help

Waiting for the file to be sent ... (press 'a' to abort)
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

 Programming Completed Successfully!
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 Nam_
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Connected 0:00:55   Auto detect   115200 8-N-1   SCROLL   CAPS   NUM   Capture   Print echo
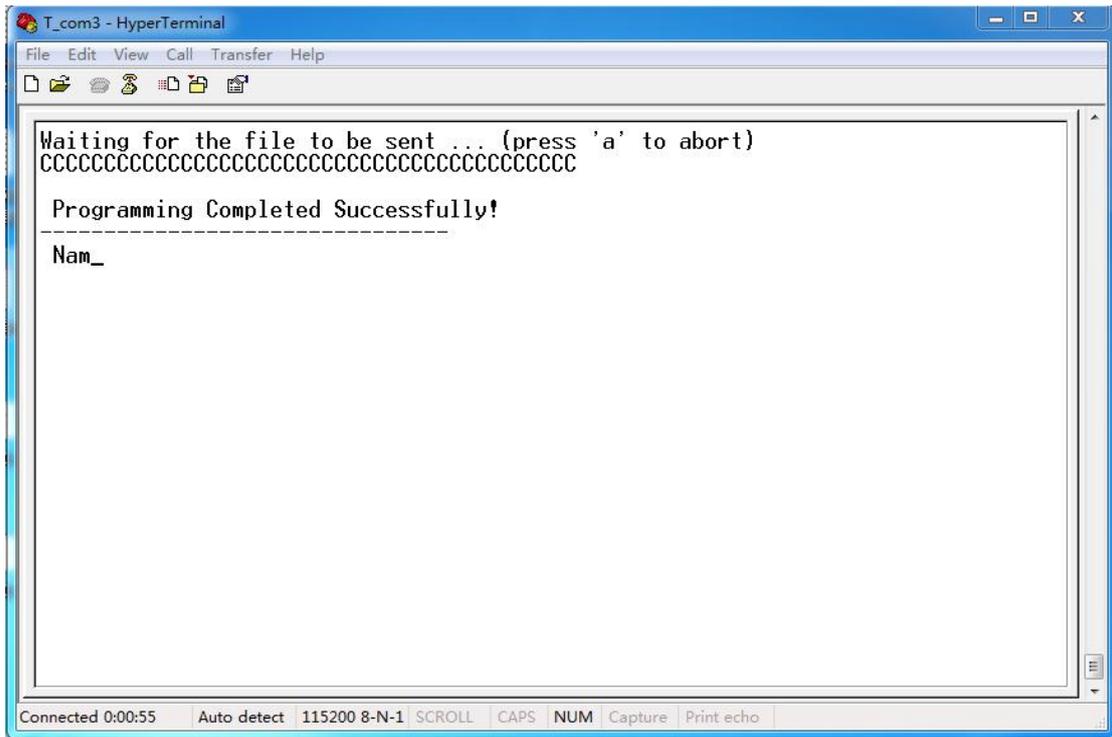
11) Turn On RD05 again.(at this times the firmware will load the parameter to the unit). Then the firmware updates finished.