

# UHF RFID Robot Reader AT Command

---

Model : WS-RFIDBY

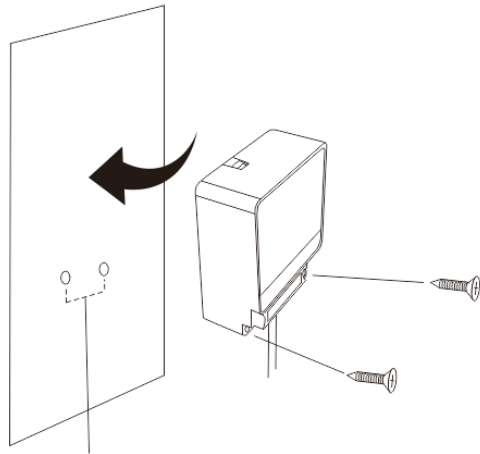
---



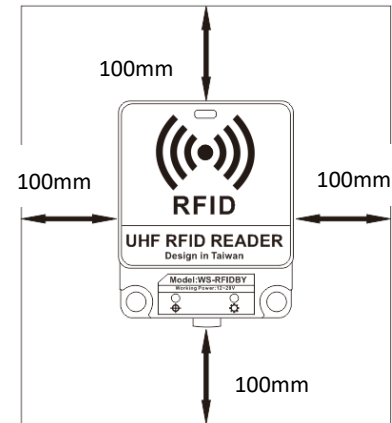
## Version History

Version	Date	Changes
V1.01	11, April, 2017	1 <sup>st</sup> Edition
V1.02	21, August, 2018	2 <sup>st</sup> Edition

## Installation Direction (When Install on the Wall)



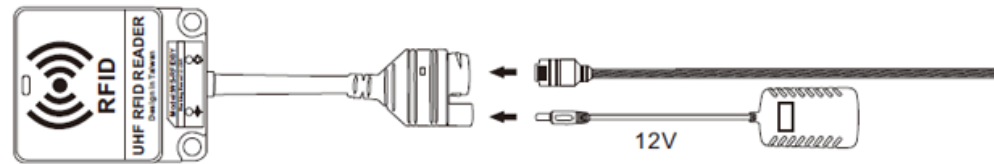
The distance between both screws are 47.5mm.



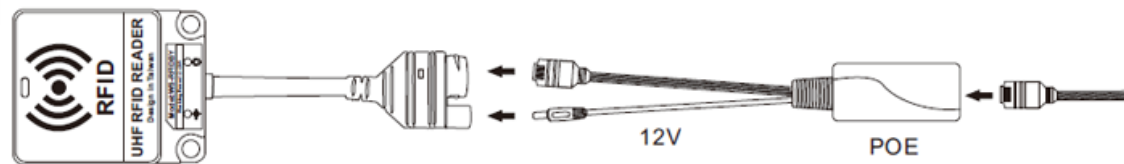
The minimum space room for WS-RFIDBY each side must be 100mm.  
In order to keep the antenna efficiency well.

## WS-RFIDBY-TCP (Network Cable Insertion, Power Insertion)

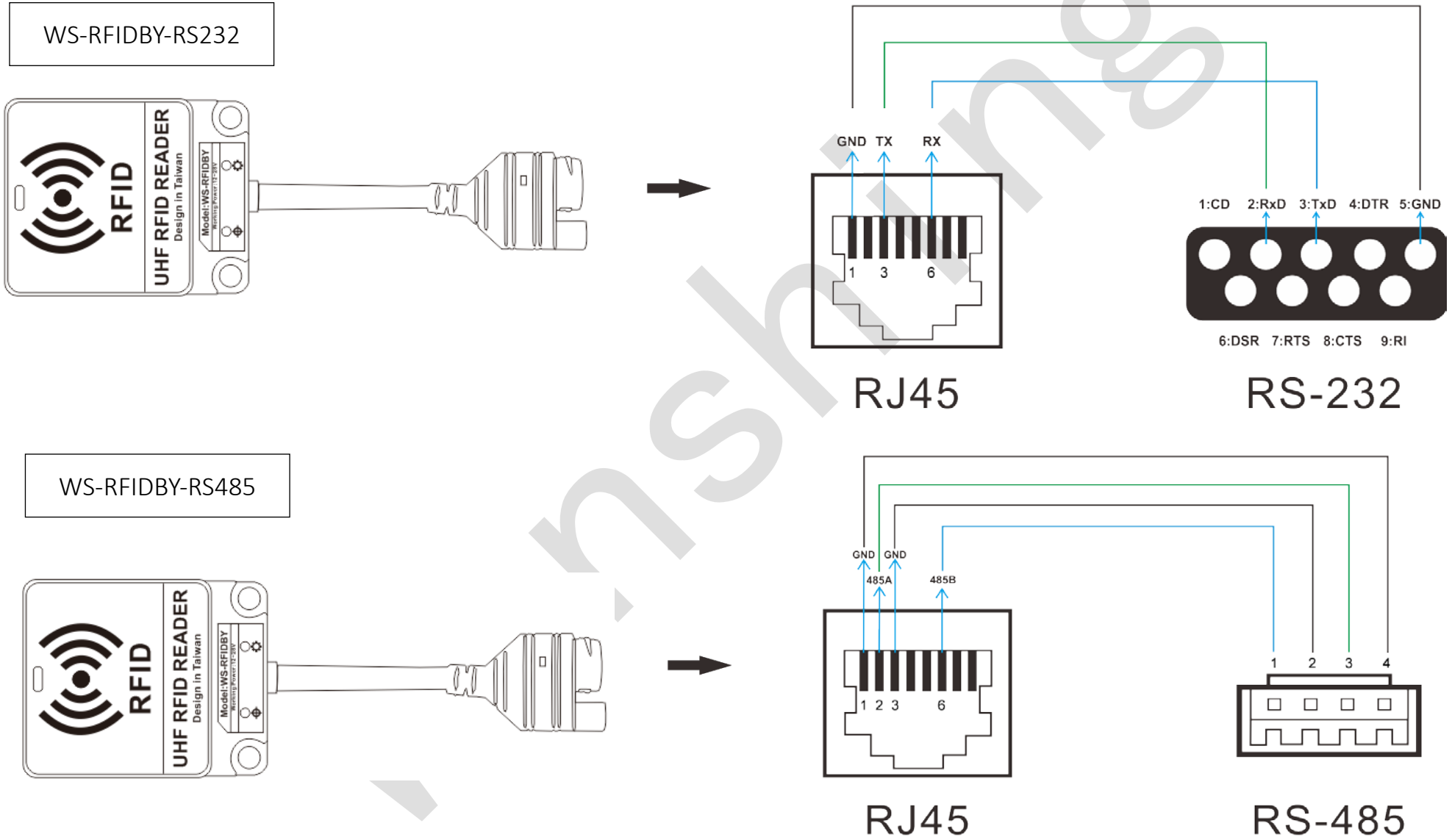
### 1. DC 12V 2A



### 2. POE



# RS-232 and RS-485 Wiring Mode (WS-RFIDBY-RS232 and WS-RFIDBY-RS485)



## Signal Indicating Instruction

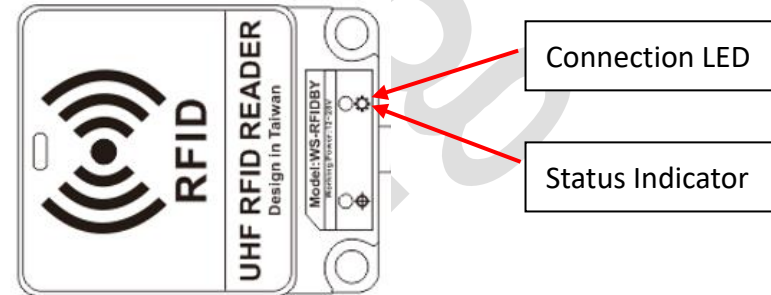
Connection Indicator : Constant light when connected to network

Status indicator : Standby Mode = Green light bright permanency

Reading Tag = Blue light bright permanency 2seconds

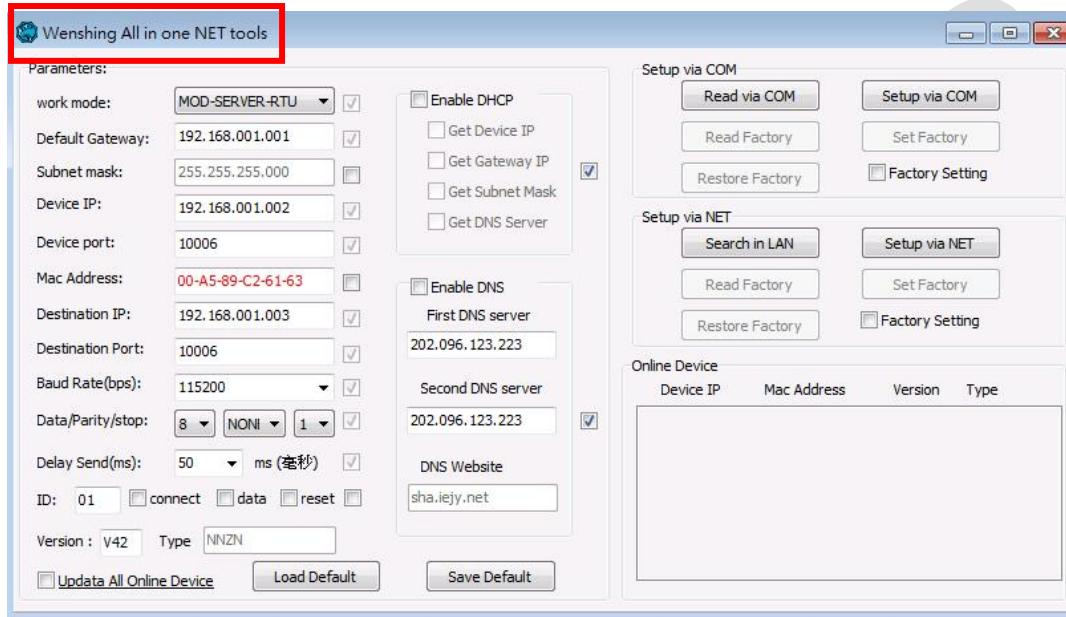
Equipment Malfunction = Red Light bright permanency

Update Mode = Green light shine



## Setting of the Internet (WS-RFIDBY-TCP Only)

1. Please insert the WS-RFIDBY-TCP network line and power line. (connect to computer or LAN)
2. Execute “Wenshing All in one NET tools” , the screen is as follows.



3. Search the equipment in the LAN, click “Search in LAN” button.

The screenshot shows the 'Wenshing All in one NET tools' application window. The interface is divided into several sections:

- Parameters:** A list of configuration fields including work mode (MOD-SERVER-RTU), Default Gateway (192.168.001.001), Subnet mask (255.255.255.000), Device IP (192.168.001.002), Device port (10006), Mac Address (00-A5-89-C2-61-63), Destination IP (192.168.001.003), Destination Port (10006), Baud Rate (115200), Data/Parity/stop (8-NONI-1), Delay Send (50 ms), ID (01), Version (V42), and Type (NNZN).
- Enable DHCP:** A section with checkboxes for 'Enable DHCP', 'Get Device IP', 'Get Gateway IP', 'Get Subnet Mask', and 'Get DNS Server'. The 'Get Gateway IP' checkbox is checked.
- Enable DNS:** A section with checkboxes for 'Enable DNS', 'First DNS server' (202.096.123.223), 'Second DNS server' (202.096.123.223), and 'DNS Website' (sha.iejy.net). The 'Second DNS server' checkbox is checked.
- Setup via COM:** A section with buttons for 'Read via COM', 'Setup via COM', 'Read Factory', 'Set Factory', 'Restore Factory', and 'Factory Setting'.
- Setup via NET:** A section with buttons for 'Search in LAN' (highlighted with a red box), 'Setup via NET', 'Read Factory', 'Set Factory', 'Restore Factory', and 'Factory Setting'.
- Online Device:** A table displaying the results of a search:

Device IP	Mac Address	Version	Type
192.168.003.080	00-A6-9C-A0-0B-08	V20	NNZN-TCP232

At the bottom of the Parameters section, there are checkboxes for 'connect', 'data', and 'reset', and buttons for 'Load Default' and 'Save Default'. A checkbox for 'Update All Online Device' is also present.

4. After the equipment was being found, the IP address will show up:

Online Device			
Device IP	Mac Address	Version	Type
192.168.003.080	00-A6-9C-A0-0B-08	V20	NNZN-TCP232

5. Read the network setting parameters. After clicked the searched device IP twice, the current settings will be automatically read and displayed on the left side of "Parameters".

The screenshot shows the 'Wenshing All in one NET tools' software interface. The 'Parameters' section on the left is highlighted with a red box and contains the following settings:

- work mode: TCP-CLIENT
- Default Gateway: 192.168.003.250
- Subnet mask: 255.255.255.000
- Device IP: 192.168.003.080
- Device port: 08080
- Mac Address: 00-A6-9C-A0-0B-08
- Destination IP: 192.168.003.100
- Destination Port: 08080
- Baud Rate(bps): 115200
- Data/Parity/stop: 8, NONI, 1
- Delay Send(ms): 50 ms (毫秒)
- ID: 1
- Version: V20, Type: NNZN-TCP232

The 'Online Device' table at the bottom right is also highlighted with a red box and contains the following data:

Device IP	Mac Address	Version	Type
192.168.003.080	00-A6-9C-A0-0B-08	V20	NNZN-TCP232



6. Modify the setting parameter on internet. Find the suitable setting on the left and correct it. Click “Setup via NET” to modify it. (cannot use Port 5978).

Wenshing All in one NET tools

**Parameters:**

work mode: TCP-CLIENT

Default Gateway: 192.168.003.250

Subnet mask: 255.255.255.000

Device IP: 192.168.003.099

Device port: 5678

Mac Address: 00-A6-9C-A0-0B-08

Destination IP: 192.168.003.100

Destination Port: 5678

Baud Rate(bps): 115200

Data/Parity/stop: 8 NONI 1

Delay Send(ms): 50 ms (毫秒)

ID: 1  connect  data  reset

Version: V20 Type: NNZN-TCP232

Update All Online Device

Enable DHCP

Get Device IP

Get Gateway IP

Get Subnet Mask

Get DNS Server

Enable DNS

First DNS server: 000.000.000.000

Second DNS server: 000.000.000.000

DNS Website: eer

Setup via COM

Factory Setting

Setup via NET

Factory Setting

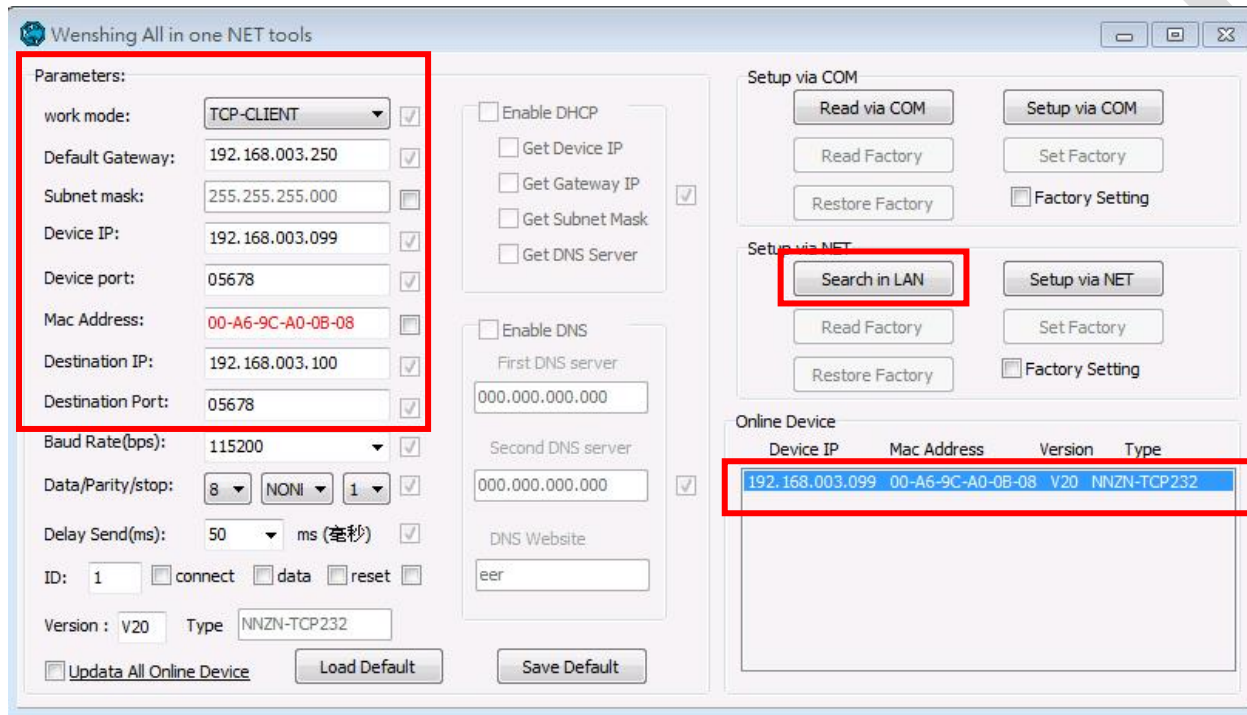
Online Device

Device IP	Mac Address	Version	Type
192.168.003.080	00-A6-9C-A0-0B-08	V20	NNZN-TCP232

7. If the modification is successful, the following prompt will be displayed.



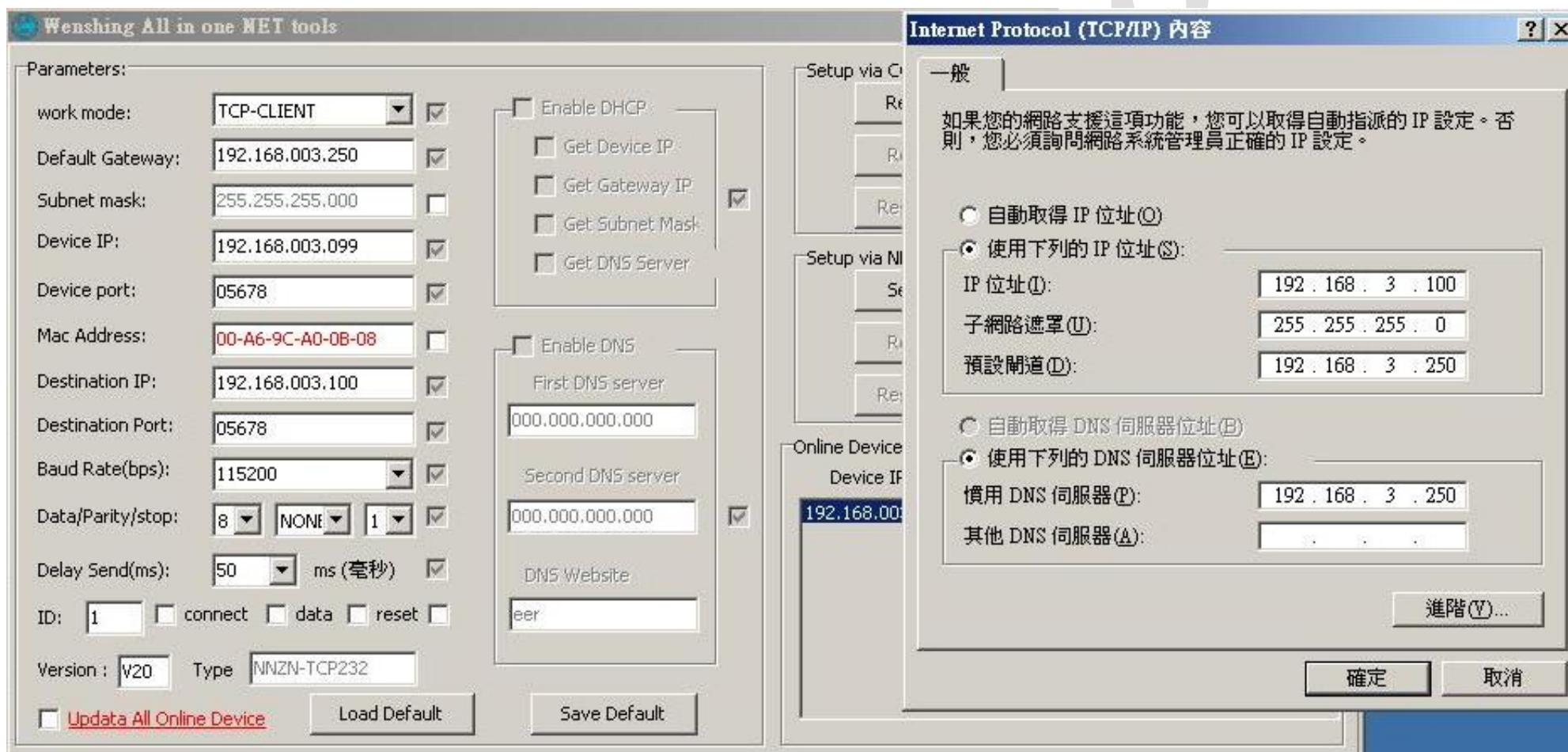
8. Restarted, put off the power line and plug in again. Click the "Search in LAN" button twice and you can find the IP of the equipment. Ensure the internet setting is correct or not.



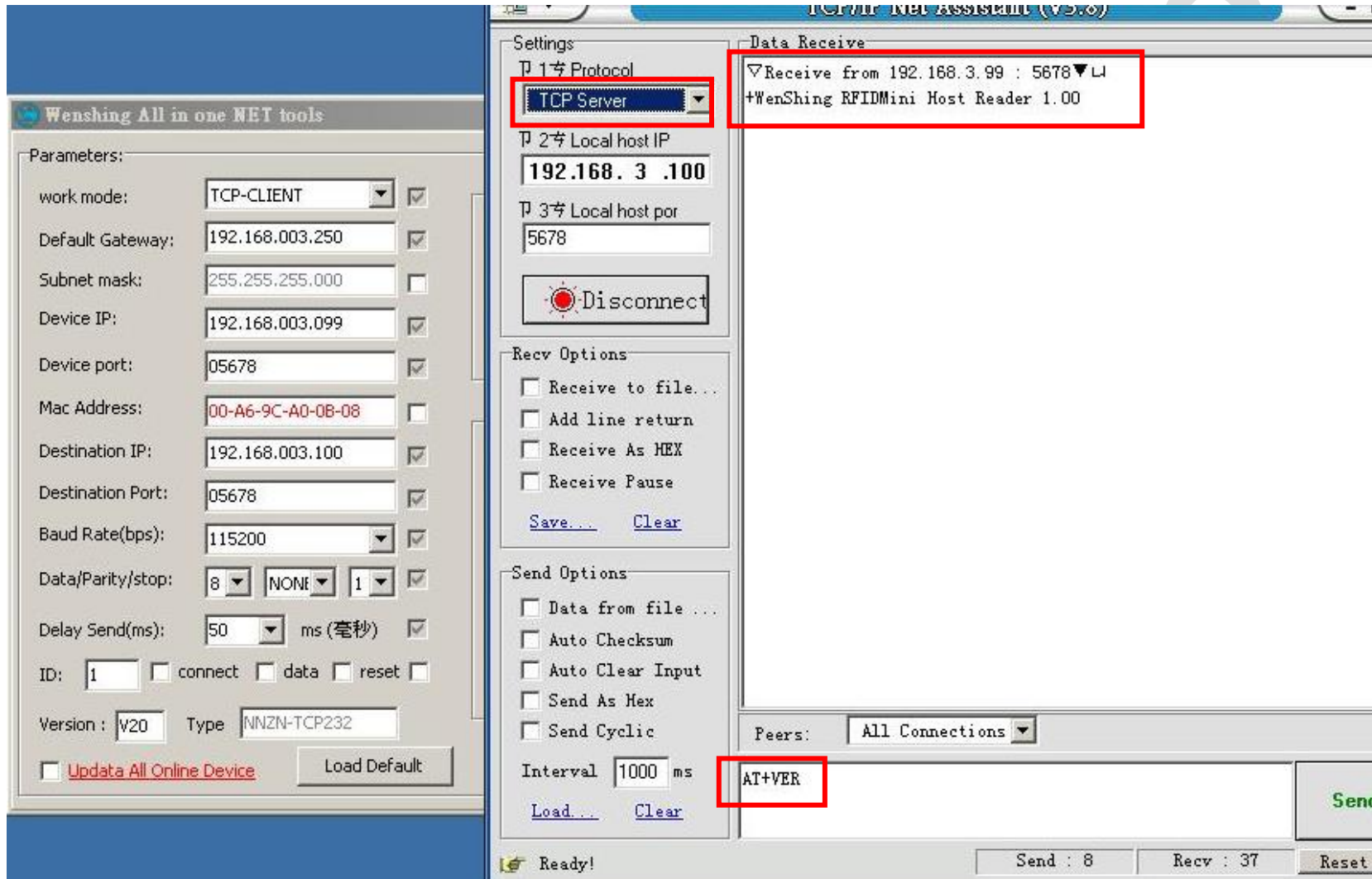


## PC Wired Network Setting Method ( WS-RFIDBY-TCP Only)

1. Setting the PC internet parameter. Modify the settings corresponding to the PC according to the set parameters.



2. Test on the communication, PC execute "TCP Server" software and set the appropriate port. Send the AT command to test the communication is correct or not. (cannot use Port 5978).



## Output Data Format

Byte1 = 0x53 Suggesting output data is TAG TID ; Data format reference as below :

Byte 0	Byte 1	Byte 2	Byte 3~N	Byte N+1
0x02	0x53	Length of data being read	Tag TID	0x03

Byte1 =0x54 Suggesting output data is TAG EPC ; Data format reference as below :

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4~6	Byte 7	Byte 8~9	Byte 10~N	Byte N+1
0x02	0x54	Length of data being read	RSSI value being received	Frequency being received and Antenna port	PC+EPC Length	PC (Tag assortment)	Tag EPC	0x03

Byte 4 is frequency low byte

Byte 5 is frequency middle byte

Byte 6 is frequency high byte and antenna port

When bit 7=1 the frequency value is 0E, bit 7=0 the frequency value is 0D

Bit 0~5 is received antenna port , antenna 1=0 0000 、 antenna 2=0 0001 、 antenna 3=0 0010 、 antenna 4=0 0011

## AT Command

" Newline" for each command (Attention: You must stop the scan before sending all instructions.)

In the command, 0001 represents the ID address of the device. The ID can be used to set the data of the specified device or specify the device to return the data. The parameters range from 0001 to 9999.

	AT COMMAND	RFID Reader Return	Function Explanation
1	AT+0000-FindDeviceID		Search all of the device's ID address in LAN.
		+0000-FindDeviceID:0001	0001 represents the ID address.
2	AT+0001-DeviceID:0002		Modify the ID address of device.
		+0001-DeviceID:0002	Command successful.
3	AT+0001-Scan:0		Setting the model status: 1 =scan, 0= stop scanning. Default = 1
		+0001-Scan:0	Instruction successful.
4	AT+0001-VER		Read the version of device.
		+WenShing RFIDBY4 Reader 0.01	Device name and firmware version
5	AT+0001-BuzzTime:3		Buzz sound number control. Buzz sounds 3 times when this command is given. If it is to be sounded twice, the command is "AT+0001-BuzzTime: 2". Parameter 1 range is 1~9
		+0001-BuzzTime:3	Command successful. Buzzer will ring for three times.
6	AT+0001-BuzzONOFF:0		Set the buzzer switch when Buzz reads the tag. =0 – turn off the notification of sound. =1 – turn on the notification of sound.
		+0001-BuzzONOFF:0	Command successful.

7	AT+0001-Reset		Reset the system.
		+0001-Reset	Command successful.
8	AT+0001-SetPower:30dBm		Set the output power, range is from 19dbm to 30dbm.
		+0001-SetPower:30dBm	Command successful.
9	AT+0001-Mode:S0		<p>S0: Scan multiple Tags, as long as the RFID scans to the Tag and it will respond. (Usually, it be used on test environment.)</p> <p>S1: Scan multiple Tags, after scanning the TAG, the Tag will take about 1 second to respond again. Usually, it be used a lot in inventory, lane, and logistics.</p> <p>S2: Scan multiple Tags, after the Tags are scanned. The Tags need to leave the receiving range for a period of time and return within the range then Tags will be responding. Usually, it be used a lot in racing and logistics.</p> <p>S3: Scan multiple Tags, after the Tags are scanned. The Tags need to leave the receiving range for a period of time and return within the range then Tags will be responding. Usually, it be used a lot in racing and logistics.</p> <p>Default = S1</p>
		+0001-Mode:S0	Command successful.
10	AT+0001-SetQuery:SL=0,SS=0,TG=0,Q4		<p>Parameter SL: 0</p> <p>Parameter SS: 0=S0 1=S1 2=S2 3=S3</p> <p>S0: Scan multiple Tags, as long as the RFID scans to the Tag and it will respond. (Usually, it be used on test environment.)</p> <p>S1: Scan multiple Tags, after scanning the TAG, the Tag will take about 1 second to respond again. Usually, it be used a lot in inventory, lane, and logistics.</p> <p>S2: Scan multiple Tags, after the Tags are scanned. The Tags need to leave the receiving range for a period of time and return within the range then Tags will be responding. Usually, it be used a lot in racing and logistics.</p> <p>S3: Scan multiple Tags, after the Tags are scanned. The Tags need to leave the receiving range for a period of time and return within the range then</p>

			Tags will be responding. Usually, it be used a lot in racing and logistics. Default = S1. Parameter TG: 0. Parameter Q: Range is from Q0~Q7, you need to set it bigger. When scan multiple Tags simultaneously.
		+0001-SetQuery:SL=0,SS=0,TG=0,Q4	Command successful.
11	AT+0001-ReadDeviceMessage		Read the setting of parameter.
		+0001-ReadDeviceMessage	Command successful.
		+Sel=0	Default = 0
		+Session=1	Default = 1
		<del>+Target=A</del>	<del>Default = A</del>
		+Qbegin=4	Default = 4
		<del>+WorkingArea=2</del>	<del>working frequency=2</del>
12	AT+0001- Read:1,00,00000000,08,201309248 726030001020022		Read the information of specific Tags. parameter1: =0 – Read Tag’s coding area. =1 – Read Tag’s EPC area. (Parameter 2 needs to use 02). =2 – Read Tag’s TID area (Read Only) =3 – Read Tag’s user area. Parameter 2: Reads the number of characters filled in Parameter 4 starting at address 00(1Word=2byte). Range is form 00~FF. parameter 3: 00000000: Access password parameter. parameter 4: 08 for reading how many words ( unit is Hex). parameter 5: EPC number.



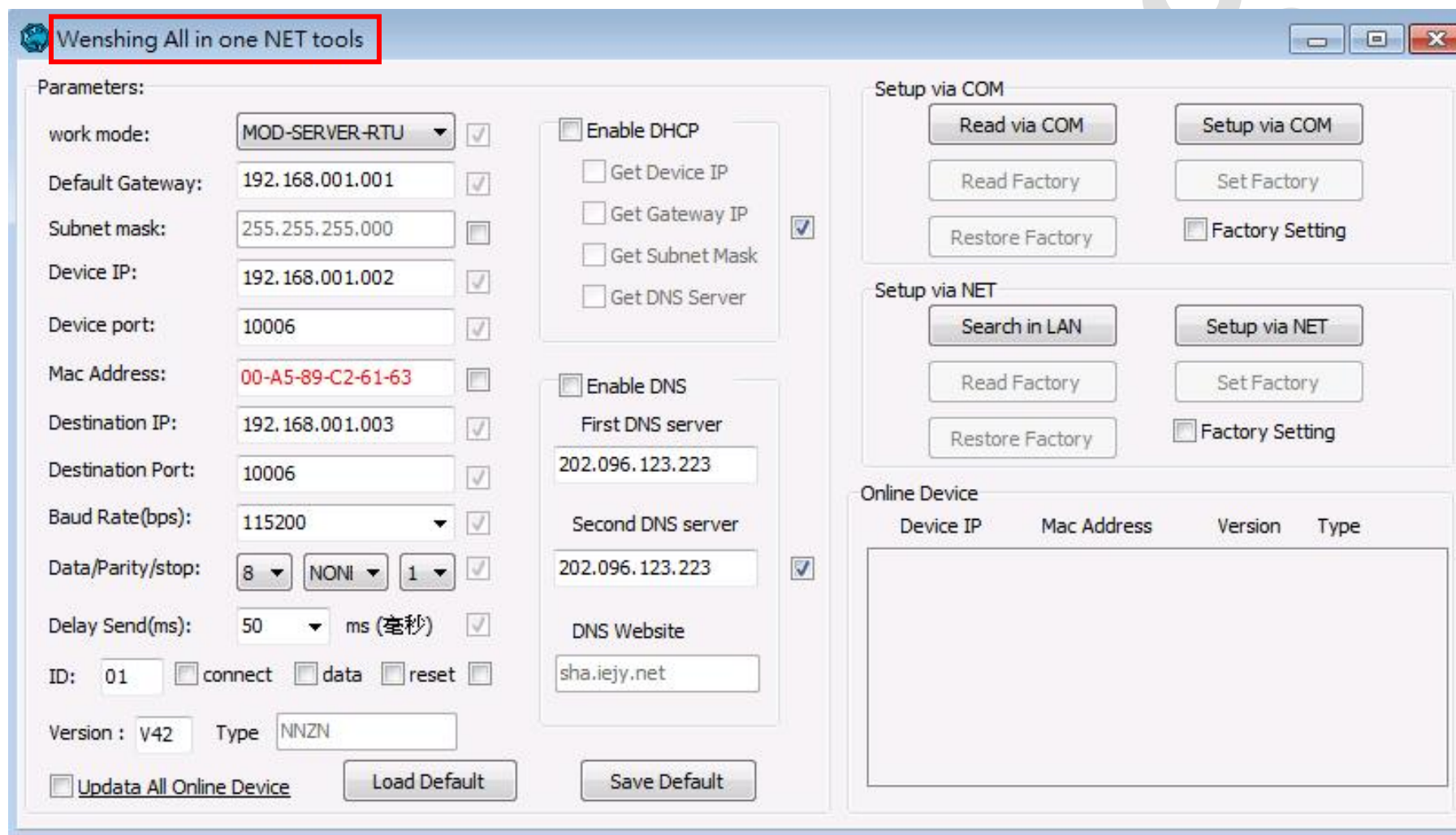
		<pre>+0001- Read:1,00,00000000,08,2013092487 26030001020022&lt;00&gt; →2DF135172013092487260300010 20022 or +0001- Read:1,00,00000000,08,2013092487 26030001020022&lt;09&gt;</pre>	<pre>&lt;00&gt;: Tag is correct. &lt;09&gt;: Tag is no longer exist. &lt;A3&gt;: Parameter 4 is out of storage zone.</pre>
13	<pre>AT+0001- Write:3,00,00000000,20130924872 6030001020022,098765432109876 54321</pre>		<p>Write in the information of specific Tags.  Parameter 1: 3– Write in the user’s area of Tag.  =0 – Write in password’s area of Tag.  =1 – Write in EPC area of Tag. (Parameter 2 needs to use 02 when the EPC length is not changed.)  =2 – TID area is read-only. Written is unavailable.  =3 – write access to Tag area from the user part.  To modify the length of the EPC, parameter 2 must be written from 01.  When modified to 12 bits, location of 01 will be filled into 3400.  When modified to 14 bits, location of 01 will be filled into 3800.  When modified to 16 bits, location of 01 will be filled into 4000.  The following example are modified from 12 bits to 16 bits.  AT+0001-  Write:1,01,00000000,20131124872501000102000A,4000AA13112487250  1000102BBBB01020304  +0001-  Write:1,01,00000000,20131124872501000102000A,4000AA13112487250  1000102BBBB01020304&lt;00&gt;  The following example are modified from 16 bits to 12 bits.  AT+0001-  Write:1,01,00000000,AA131124872501000102BBBB01020304,300020131  124872501000102000A  +0001-</p>

			<p>Write:1,01,00000000,AA131124872501000102BBBB01020304,300020131124872501000102000A&lt;00&gt;</p> <p>Parameter 2: 00- Writes from address 00 and all data is in words.</p> <p>Parameter 3: 00000000: Access password.</p> <p>Parameter 4: EPC number.</p> <p>Parameter 5: The data to be written must be the multiple of 2 Bytes.</p>
	<p>AT+0001-</p> <p>Write:3,00,00000000,201309248726030001020022,09876543210987654321&lt;00&gt;</p>		<p>&lt;00&gt;: Represent the writing is correct.</p> <p>&lt;10&gt;: Represent the Tag is no longer exist or EPC number is not corrected.</p>

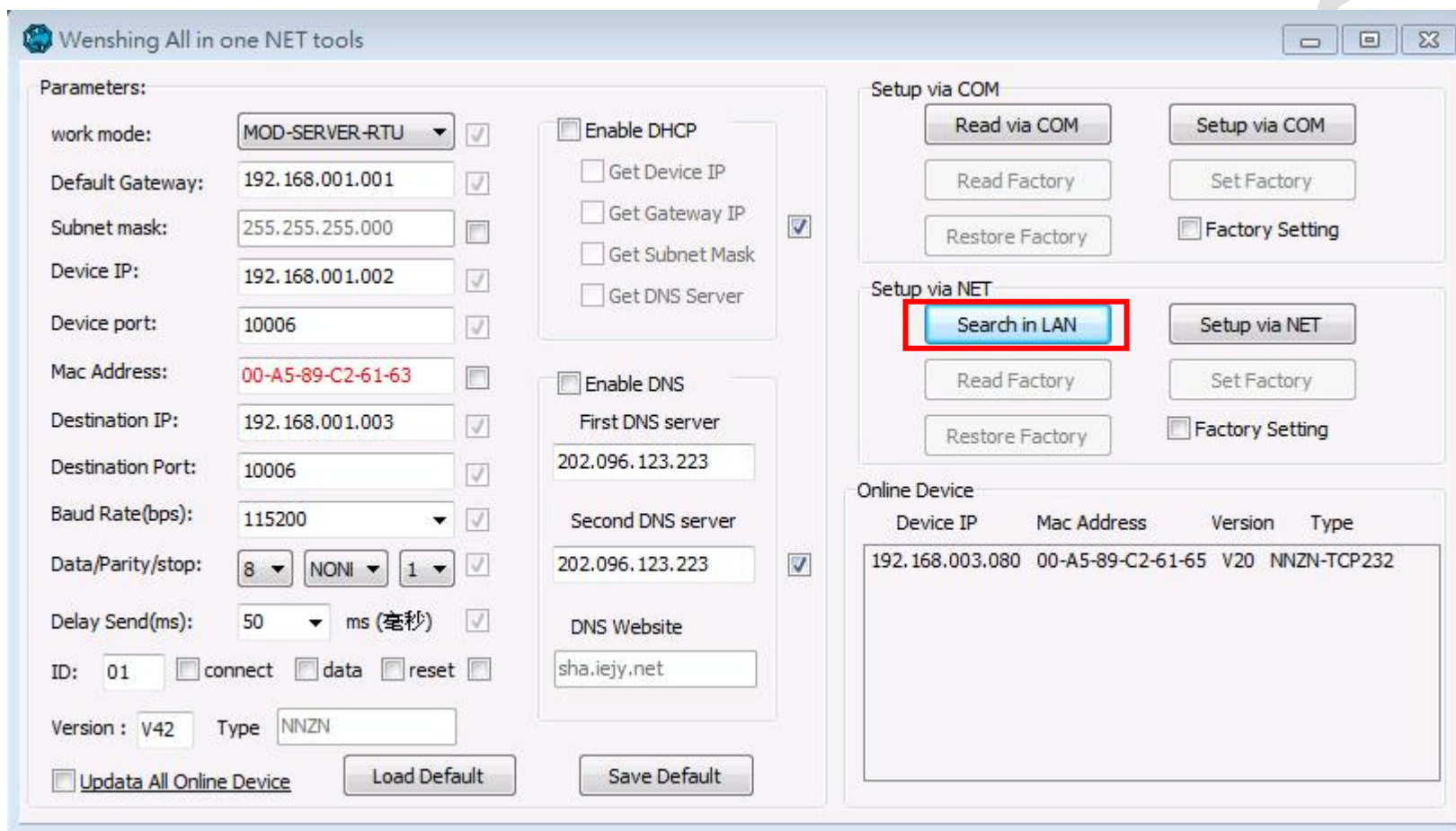
Wenshing

## Internet Update

1. Execute "Wenshing All in one NET tools", the screen is as follows.



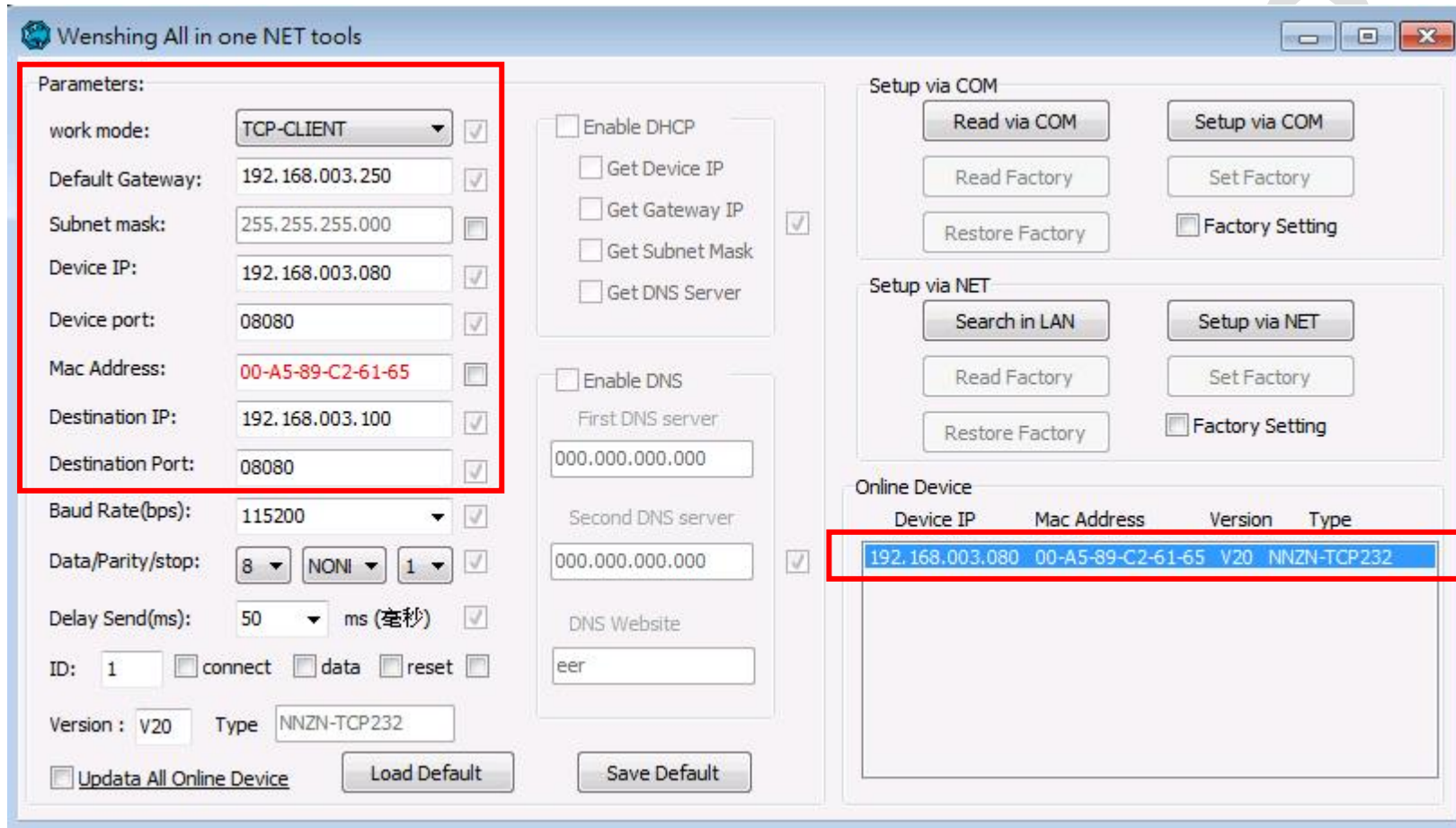
- Search for devices in the LAN and click the button of “Search in LAN.”



- After searching for the device and the IP address of the device will be displayed below.

Device IP	Mac Address	Version	Type
192.168.003.080	00-A5-89-C2-61-65	V20	NNZN-TCP232

4. Read the network setting parameters and click on the searched device IP twice to automatically read the current settings. Then it will display the “Parameters” on the left side.



5. Modify the working mode, IP location, Device port of the update host, and modify it by using “Setup via NET.”

Wenshing All in one NET tools

Parameters:

work mode: UDP-CLIENT

Default Gateway: 192.168.003.250

Subnet mask: 255.255.255.000

Device IP: 192.168.003.080

Device port: 5978

Mac Address: 00-AC-FB-16-71-55

Destination IP: 60.251.71.55

Destination Port: 5978

Baud Rate(bps): 115200

Data/Parity/stop: 8 NONI 1

Delay Send(ms): 50 ms (毫秒)

ID: 1  connect  data  reset

Version: V22 Type NNZN-TCP232

Update All Online Device

Enable DHCP

Get Device IP

Get Gateway IP

Get Subnet Mask

Get DNS Server

Enable DNS

First DNS server: 000.000.000.000

Second DNS server: 000.000.000.000

DNS Website: eer

Setup via COM

Read via COM

Read Factory

Restore Factory  Factory Setting

Setup via NET

Search in LAN

Read Factory

Restore Factory  Factory Setting

Online Device

Device IP	Mac Address	Version	Type
192.168.003.080	00-AC-FB-16-71-55	V22	NNZN-TCP232

6. If the modification is successful, the following prompt will be displayed.

All in one net tools

192.168.3.80 Set up complete and automatic restart



**WENSHING®©**

7. Restart, remove the WS-RFIDBY device and plug it in again. When the update begins, the lights are alternately changed by green, red and blue, and there is an audible prompt. After the update is successful, it will restart and enter the standby state.
8. Use “Wenshing All in one NET tools” to modify the appropriate network settings, refer to PC wired network settings.

Wenshing