

USER'S MANUAL

JK-W01 WLAN INTERFACE MODULE



Shandong New Beiyang Information Technology Co., Ltd.

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Declaration

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Shandong New Beiyang Information Technology Co., Ltd.

(hereinafter as SNBC) reserve the right to improve products as new technology, components, software, and firmware become available.

If users need the further data about these products, please feel free to contact with SNBC or our distributors.

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Marks means



Warning: Items shall be strictly followed to avoid injury or damage to body and devices.



Caution: Items with important information and prompts for operating the printer.

The quality control system of SNBC has been approved of the

following certification.



(DNV)ISO9001:2000

The environmental control system of SNBC has been approved of the following certification.



(DNV)ISO14001:2004

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General Safety Instruction

Before installing and using the printer, please read the following items carefully:

- 1) Please comply to the cautions in Printer User's Manual, as this interface module belongs to a part of printer;
- 1) Do not put USB device not confirmed by SNBC into USB interface of JK-W01 module;
- 2) Keep this manual carefully in hand for use and reference.

1 Overview

1.1 Product description

JK-W01 module operates with SNBC printer to implement wireless communication functions, such as Wi-Fi communication, 9100 Port printing, printer status back, configuration of interface module and maintenance.

1.2 Main features

1) Features

- Support 802.11b and 802.11g communication
- Support 9100 Port and LPR printing
- Support status back
- Support parameters configuration
- Support firmware update on line
- Support HTTP function

2) Supported protocols

- IP
- ARP
- ICMP
- TCP
- UDP
- DHCP
- TFTP
- HTTP

2 Main specifications

Items		Parameters
Wireless	Wireless protocols	802.11b, 802.11g
	Communication speed	Max. 54Mbps
	Transmission distance	Max.100m without any block (it changes with operation environment)
	Channel	1-14
	Safety	64/128 WEP, WPA
	Network card type	USB2.0
Interface Module	Status monitor	Special configuration tool Browser
	Configuration management	Special configuration tool Browser
	Firmware update	TFTP
	Communication protocols	ARP, RARP, IP, ICMP, TCP, UDP
	Communication mode for print	Port 9100, LPR/LPD
Printer	Status inquiry	Software packages (include DLL and Demo), browser
	Average print speed	Over 50KByte/s

Table 2.1 Specification of JK-W01 module

3 Structure

3.1 Appearance and parts

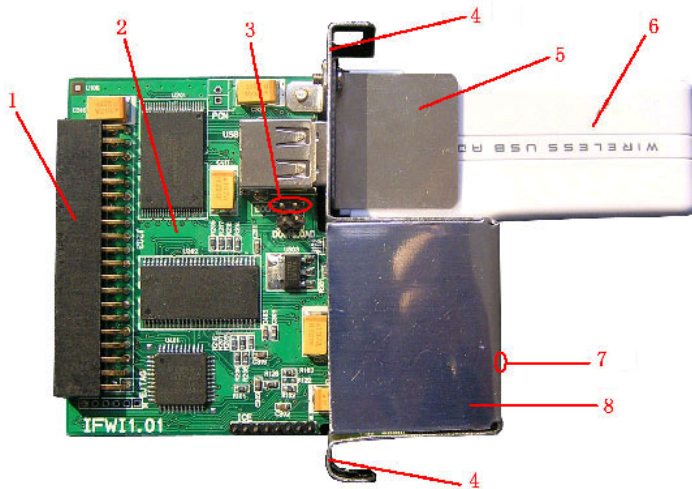


Figure 3.1.1 Top view of JK-W01 module

1-- Socket for connecting the printer	2-- Control board
3-- BOOT jumper	4-- Fixing hole of interface baffle
5-- Protection plate	6-- Wireless network card
7-- Key hole (side)	8-- Interface baffle

3.2 Exterior size and weight

Its exterior size is shown as Figure 3.2.1. The height is 27mm and weight is 93 gram.

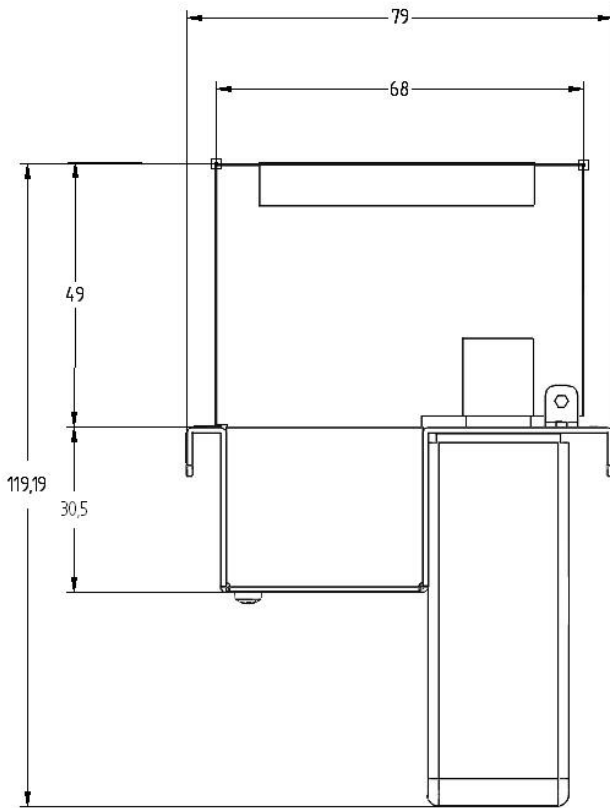


Figure 3.2.1 Exterior size

4 Installation of JK-W01 module

4.1 Unpacking

When opening packages, check if parts are short or damaged. In case of shortage or damage, please contact with SNBC or our distributors.

4.2 Connect JK-W01 module

JK-W01 module shown as figure 4.2.1 shall be connected with communication interface of printer, which could be fixed with screws

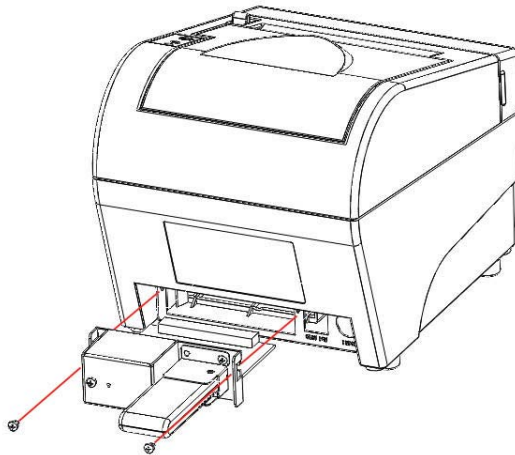


Figure 4.2.1 JK-W01 installation

5 Usage of JK-W01 Module

When use the interface module, user needs to know the parameters of the interface module, like the IP address, SSID, the communication pattern, the channel and so on to set the module. The default parameters of the interface module can gain by print the self-test page.

The host computer can communicate with the interface module by setting its own parameter according to the parameter of the interface module.

After established connections between the host computer and the interface module, user can operate the interface module through software tool configure to configure, update, inquiry, HTTP access etc., Printing function can be realized through driver.

5.1 Print self-test page

After JK-W01 module is installed, refer to User Manual of printer to print a self-test page. The self-test information relative to WLAN Interface is as below:

```

Communication Interface
Interface Type      :Wi-Fi
SSID                :defaultSSID
Mode                :Ad-Hoc
Interface Firmware  :FV1.000
IP Address          :192.168.0.200
MAC Address         :00C002 B7E758
SUBNET Mask         :255.255.255.0
GATEWAY             :192.168.0.1
DHCP                :Disabled
  
```

Figure 5.1.1 Self-test page information

Note:

- Interface Type: the type of WLAN interface fixed as Wi-Fi;
- SSID: shows service zone marks of wireless communication;
- Mode: wireless mode, include Infra (Infrastructure) and Ad-Hoc mode;
- Interface Firmware: shows the firmware version of interface module
- IP Address: shows the currently used IP Address of interface module.
- MAC Address: means MAC Address of interface module
- SUBNET Mask: SUBNET Mask
- GATEWAY: GATEWAY
- DHCP: Shows if configuring parameters as IP Address are obtained by DHCP. Disabled means not in use of DHCP, and Enabled means in use of DHCP mode.

5.2 Install a Wireless Ethernet Card

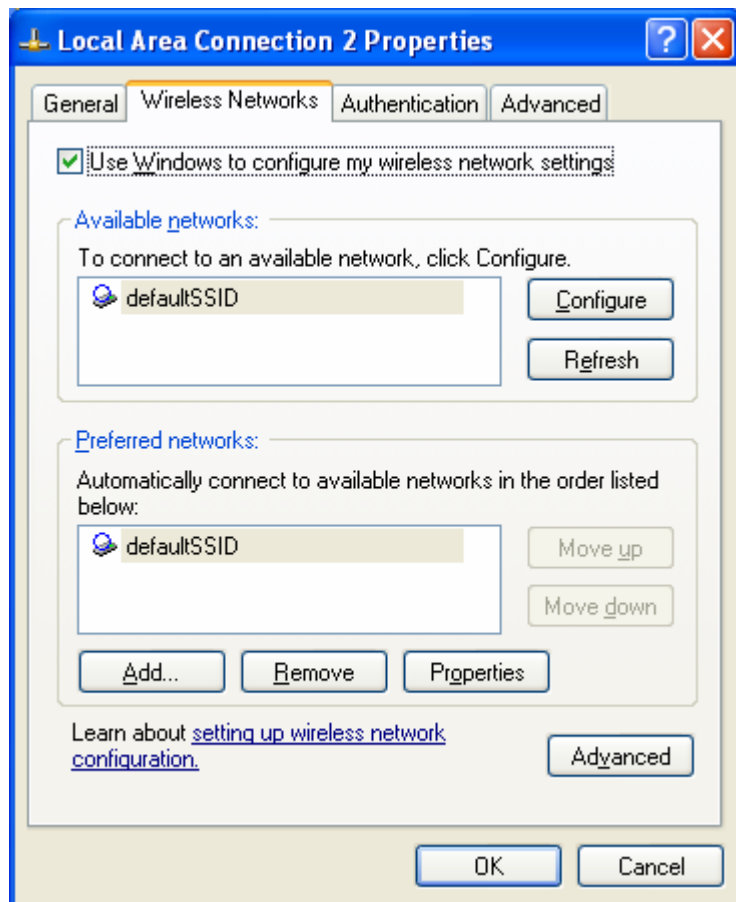
Insert an exterior Wireless Ethernet Card, setup a Wireless Ethernet Card driver or firsthand start-up the Wireless Ethernet Card on the host.

5.3 Wireless configurations of the host

The setting interface of wireless configuration for the host computer vary from system to system, following we will take Windows XP (2002) as an example to explain how to do the configurations.

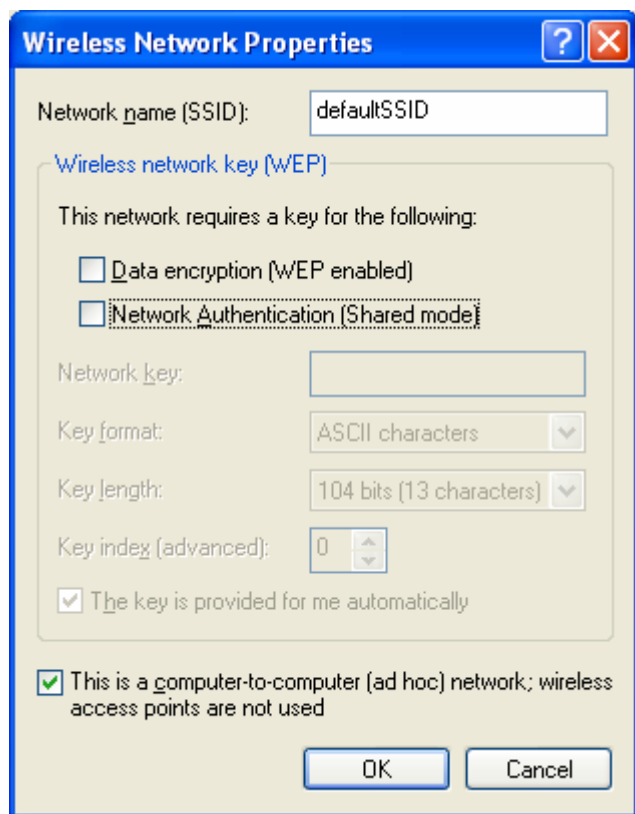
Installation of a SNBC Wireless Ethernet printer.

Step 1: Right click “My Network Places” property, choose "Wireless Networks".

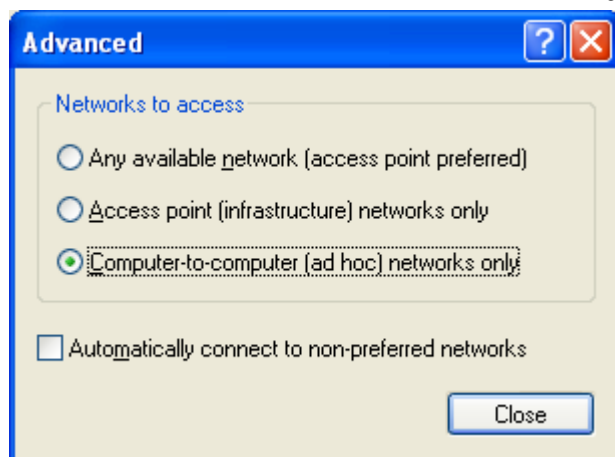


Step 2: Choose "Use Windows to configure my wireless network settings". Click “Add...” button and open “Wireless Network Properties” page, input the default SSID “defaultSSID”, then choose “This is a computer to computer (ad hoc) network.”. Click“OK”

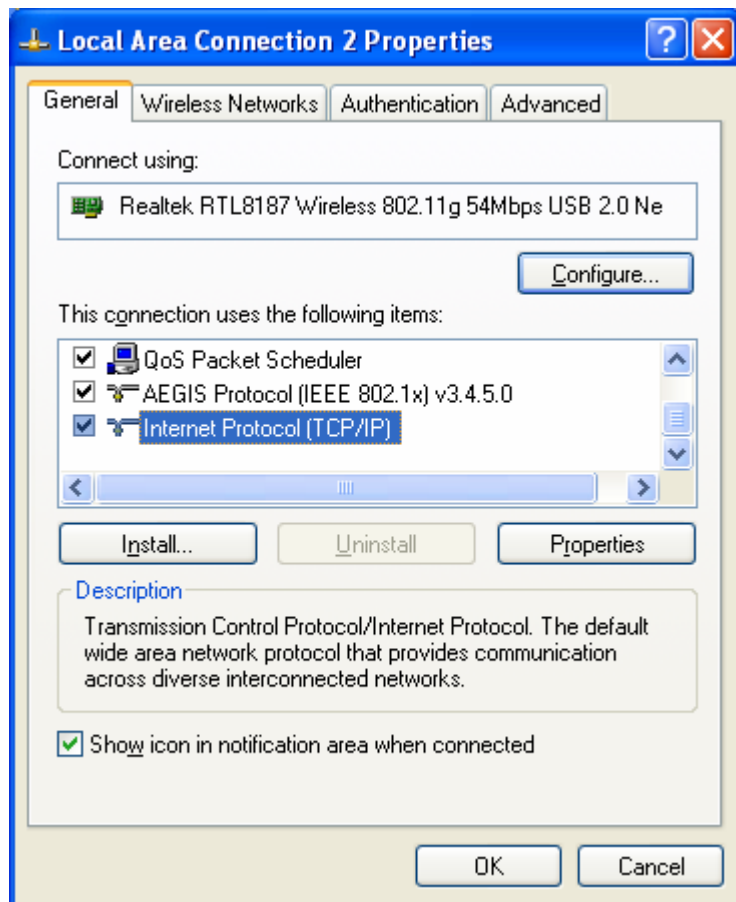
button.



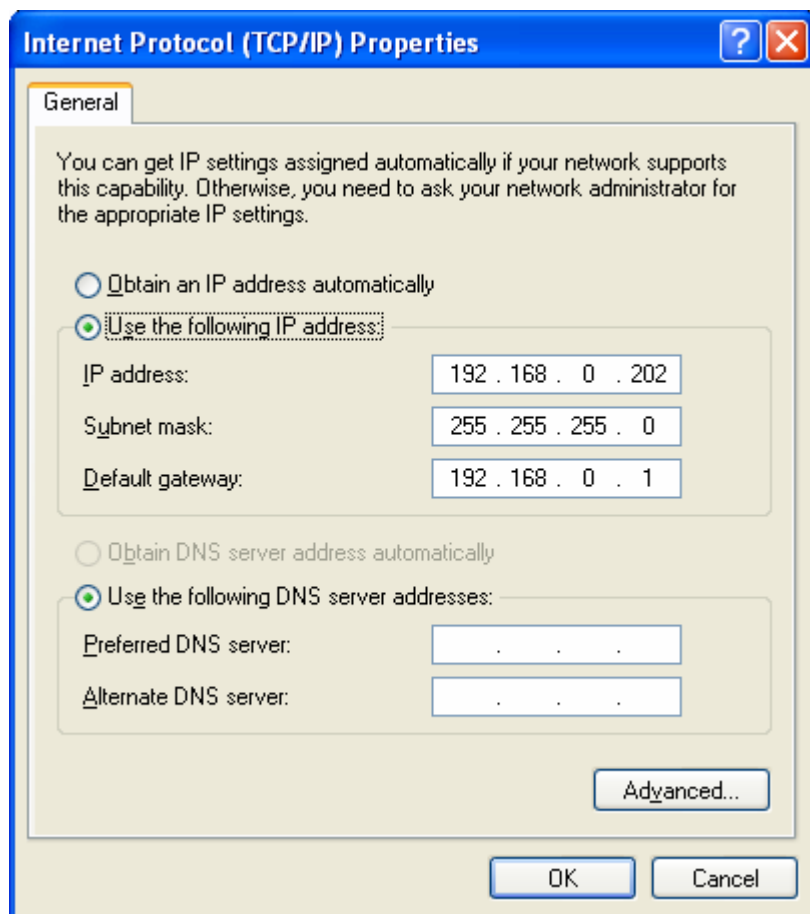
Step 3: Return to the Properties page, click “Advanced” button, then choose “Computer-to-computer (ad hoc) networks only”, then click “Close”.



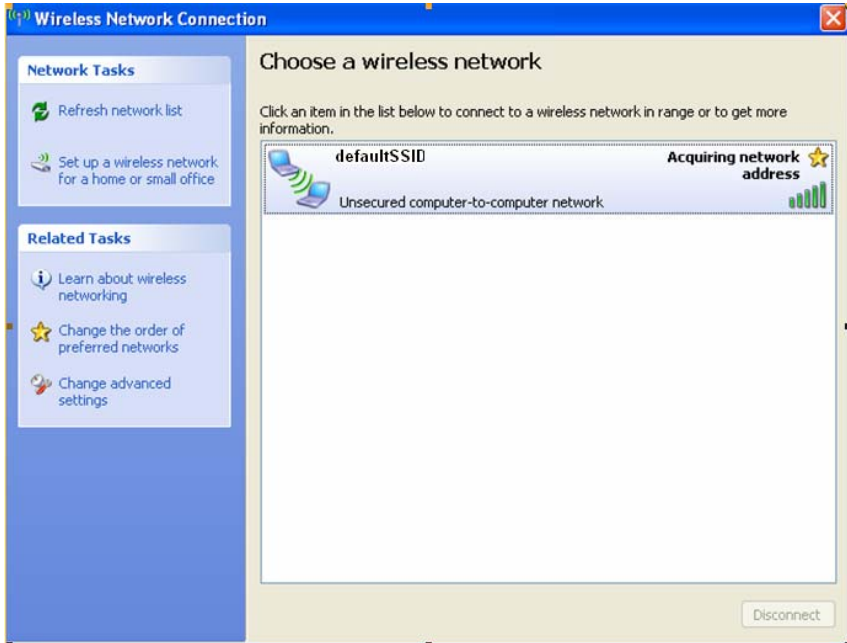
Step 4: Return to the Properties page, choose “General” column and double click “Internet Protocol (TCP/IP)” to open “Internet Protocol (TCP/IP) Properties” interface to set Wireless Ethernet Card parameters.



According to the information on the test-page, set the host computer and the printer to the same net segment, as shown in the figure below:



Step 5: Right click “Wireless network connection” to choose “view available wireless networks” option, the system will show all the defaultSSID network, if no information in the list, click “Refresh network list” to refresh. Then click “Connect” to finish connection.



5.4 Device search and parameter configuration

The tool of BYNetWinConfig.exe could search and connect to JK-W01 module in network and configure it with web parameter.

Before running BYNetWinConfig.exe, the host should be connected to the wireless network of the printer following the above steps. Set the wireless mode, SSID and SUBNET mask of the host same with that of JK-W01 module. To ensure the host and interface module under one SUBNET, IP Address of the host is set under same SUBNET address.

Notice:

In case of configuring JK-W01 module with web parameter in use of

configuration tools, if many network devices with same IP Address are connected under one SUBNET at same time (for example, many interface modules all use default settings), the communication could not work normally due to a collision existing in IP Address. Therefore, when JK-W01 module with default settings is configured with network parameter, for each time only one Ethernet interface device could be connected, and you should ensure that the configured IP Address is different.

When configuring JK-W01 module parameter, the wireless network in Ad-Hoc mode and infrastructure mode should not be set with same SSID and channel to avoid abnormal communication.

The usage of the configuration tool of JK-W01 module is referred as below:

Run “BYNetWinConfig.exe” and the main window of configuration tool is shown as below (Figure 5.4.1):

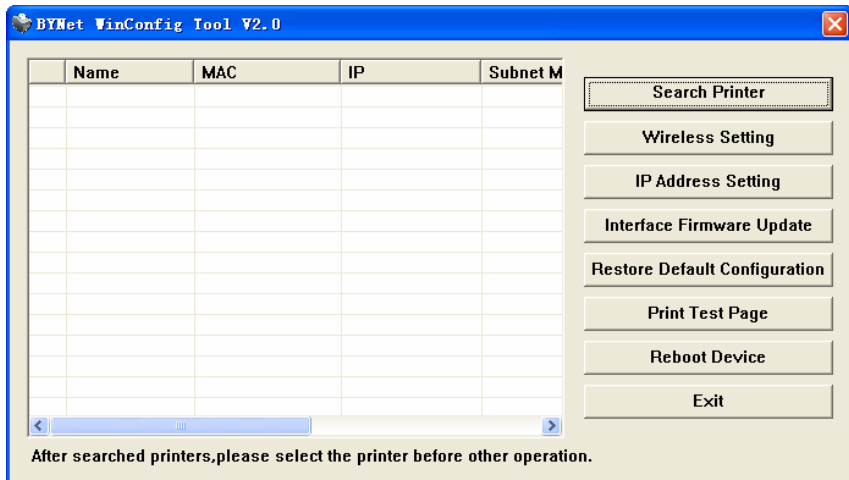


Figure 5.4.1 Configuration tool window

■ Search network device function

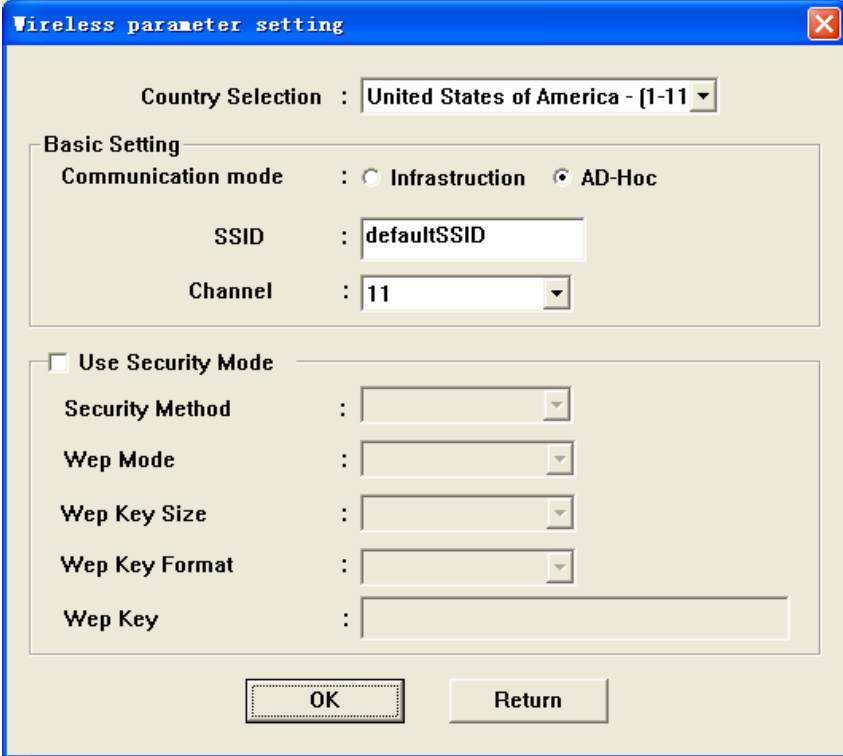
Click the button “Search Printer” in main window, and later find all printers in use of JK-W01 module under same subnet, which are shown in list box for user’s configuration, including:

Name of printer, MAC Address, IP Address, Gateway Address, Subnet Mask, DHCP enable/disable and firmware version of JK-W01 module.

Notice: If there popup information to inform error communications, such as “UDP broadcast error”, please check whether network connection is normal or whether the fireproofing wall is shut down.

■ Wireless parameter configuration

Click “Wireless Setting” button in main window and a pop-up configuring window is shown as below:



The image shows a software window titled "Wireless parameter setting" with a blue title bar and a red close button. The window has a light beige background. At the top, there is a "Country Selection" label followed by a dropdown menu showing "United States of America - (1-11)". Below this is a section titled "Basic Setting" enclosed in a rounded rectangle. Inside this section, there are three labels: "Communication mode" with two radio buttons, "Infrastruction" (unselected) and "AD-Hoc" (selected); "SSID" with a text box containing "defaultSSID"; and "Channel" with a dropdown menu showing "11". Below the "Basic Setting" section is another section titled "Use Security Mode" which is preceded by an unchecked checkbox. This section contains five labels with corresponding input fields: "Security Method", "Wep Mode", "Wep Key Size", "Wep Key Format", and "Wep Key". At the bottom of the window are two buttons: "OK" and "Return".

Figure 5.4.2 Wireless parameter configuring window

This window shows wireless parameter settings of JK-W01 module. Via this window, you can modify the configurations as: country and district, SSID, communication mode (Ad-Hoc mode and infrastructure mode), communication channel and security settings (WEP and WPA)

■ Set network parameters as IP Address

Select the device in list box of main window, and click the button "IP Address Setting" to enter the configuration window of "Setting TCP/IP" (Shown as figure 5.4.3). So you can set network

parameters as IP Address.

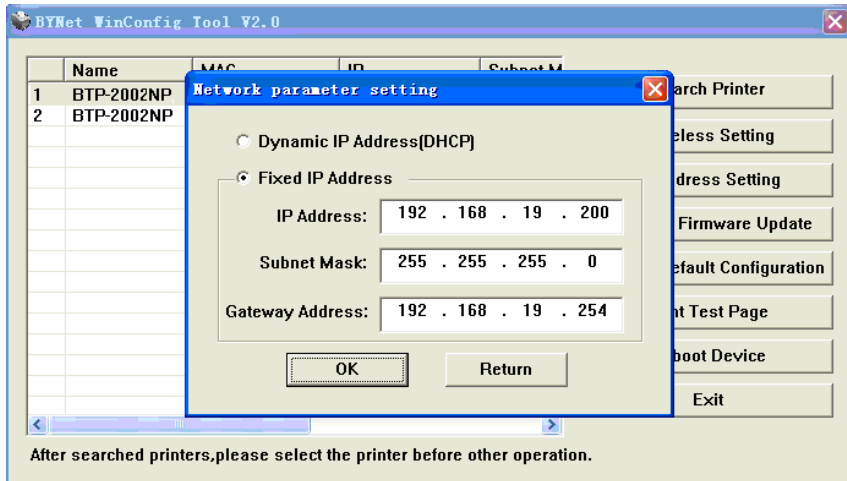


Figure 5.4.3 Network parameter configuring window

Via this window, two configuration modes can be used as below:

- 1) First: select “Dynamic IP Address (DHCP)”, and then IP Address Subnet Mask and Gateway could be obtained automatically via DHCP Protocols;
- 2) Second: select “Fixed IP Address”, set IP Address, Subnet Mask and Gateway by hand. Click “OK” to finish it after the configuration.

Notice:

Because JK-W01 module needs long time to obtain IP Address with DHCP, it is recommended to use fixed IP Address.

■ Firmware upgrade of JK-W01 module

Select the device in list box of main window, and then click button “Interface Firmware Update” to enter the firmware upgrade window (shown as figure 5.4.4).

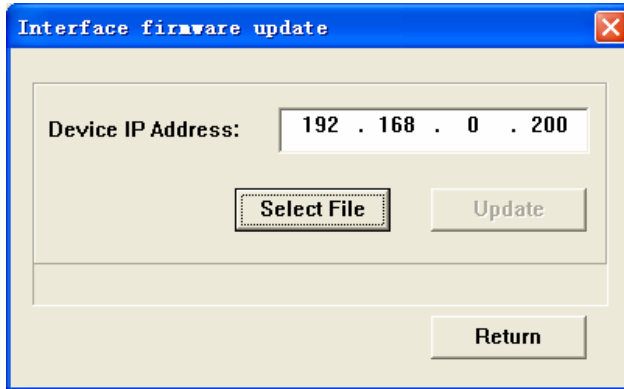


Figure 5.4.4 Firmware Upgrade Window

Check if IP Address is same with that of selected device. If same, click the button “Select File” to enter “open” window (shown as figure 5.4.4), and open the upgrade program file. Then back to the update window and click “Update” button to realize it. The process bar shows the course. When it succeeds, a prompt shall be given. Otherwise a failure prompt shall mention an error:

■ Recover default settings

Select the device in list box and click the button “Restore Default Configuration” in main window, and then the printer could recover the default settings as below:

SSID:	default SSID
Mode:	Ad-Hoc
IP:	192.168.0.200
SUBNET Mask:	255.255.255.0
GATEWAY:	192.168.0.1

DHCP: Disabled

Without security settings

■ **Print test page**

Select the printer in list box and click the button “Print Test Page” in main window, then you could print out test pages with printer, of which include the parameters of JK-W01 module.

■ **Print restoration functions**

After modifying the configuration, a prompt shall be given and click “Reboot Device” button to effect the configuration; If users need to disable the modification at once, click “Reboot Device” button and a pop-up window shall be given. Click ‘OK” button to reset the printer and click “Return” button to exit the confirmation window. When not restoring the printer, you can continue to modify other parameters.

5.5 Executing printing function

Printer driver should be installed according to the description in printer user’s manual and selects serial interface. After installation, the port of printer driver is reset to be network port. The following shows how to configure network port with BTP-2002NP printer under WindowsXP operation system:

- 1) Click BTP-2002NP printer icon installed, then open properties column as shown in Figure 5.5.1;

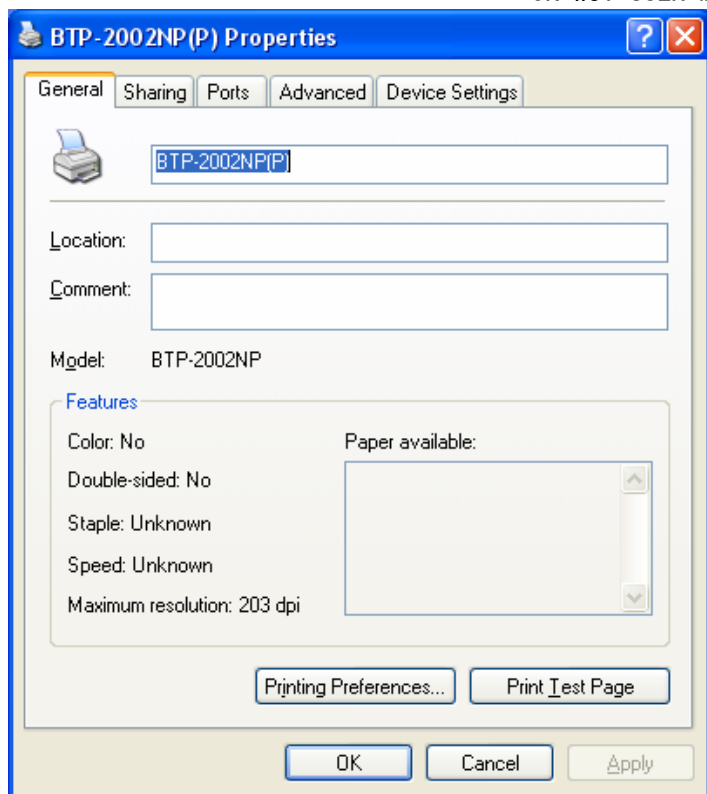


Figure 5.5.1 Printer properties window

- 2) Select "Ports" properties column as shown in Figure 5.5.2. If TCP/IP port isn't installed, click "Add port" button;

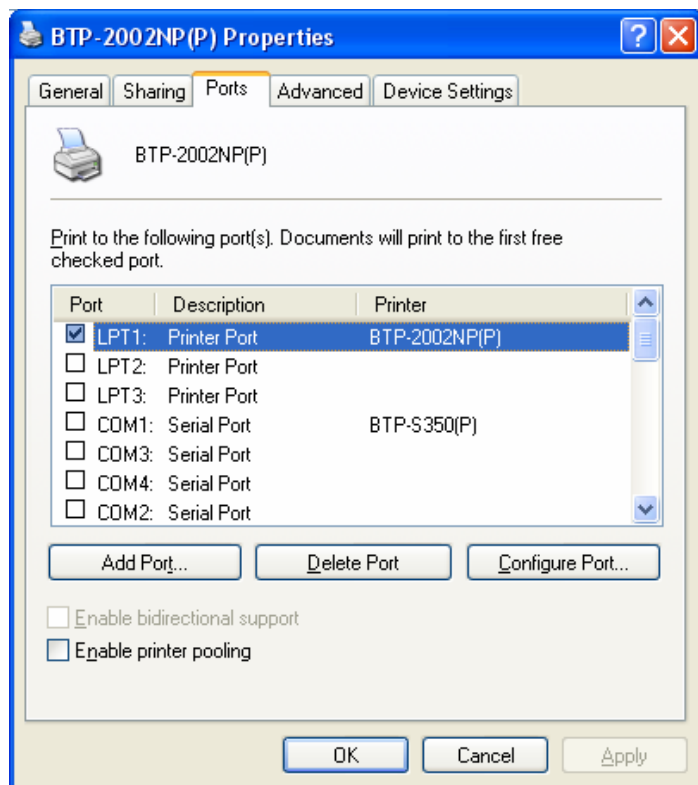


Figure 5.5.2 PORT properties column

- 3) Select “Standard TCP/IP Port” in the list box of “Printer Ports” and click “New Port” Button as shown in Figure 5.5.3;

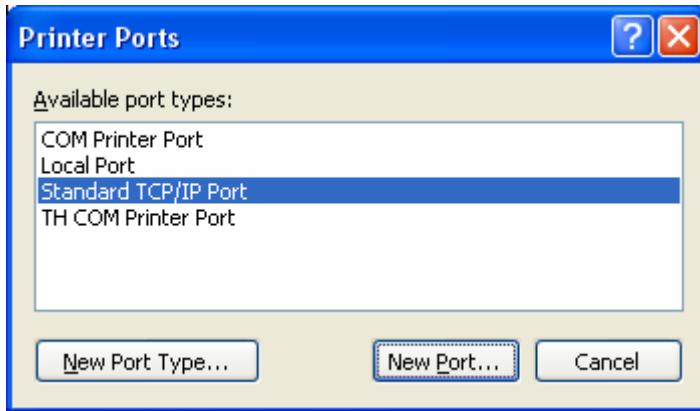


Figure 5.5.3 Printer Ports window

- 4) Click “Next” as shown in Figure 5.5.4;

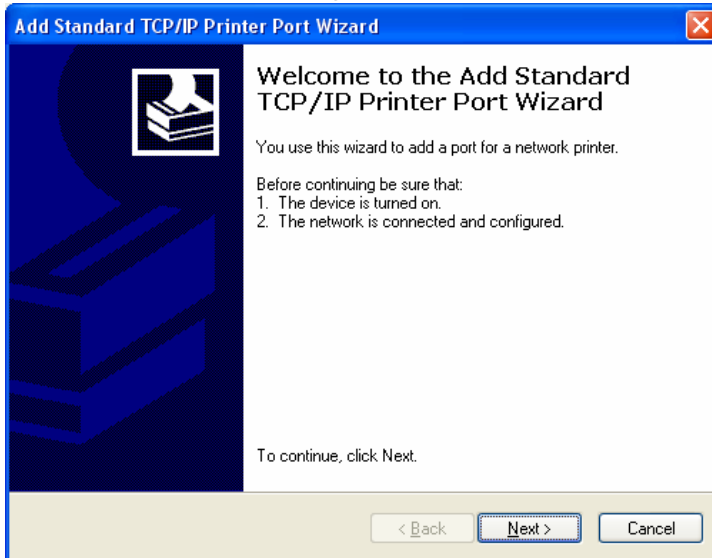


Figure 5.5.4

- 5) Fill with “printer name or IP Address” in corresponding editing column, of which the content is same with self-test page of printer, and then click “Next” button as shown in Figure 5.5.5;

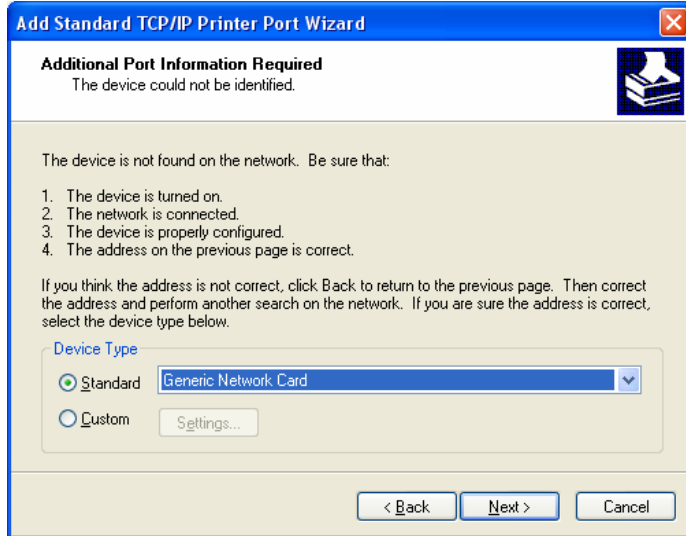


Figure 5.5.5

- 6) Default the content as shown in Figure 5.5.6 and click “Next”;

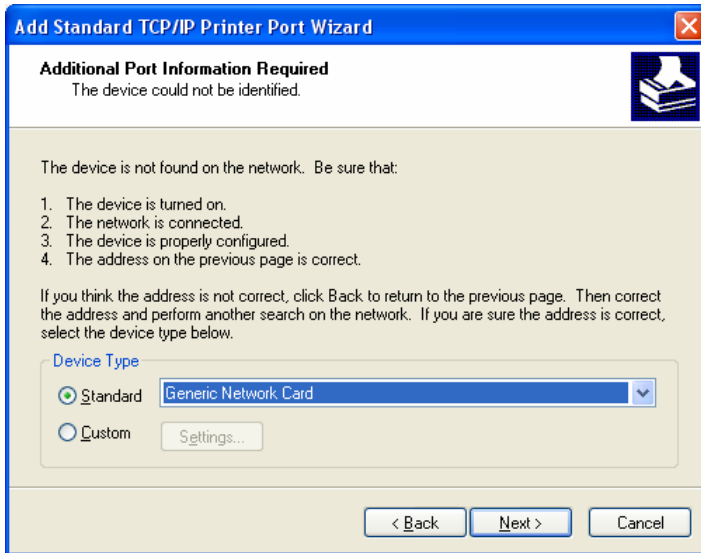


Figure 5.5.6

- 7) Click “Finish” button to end the adding as shown in Figure 5.5.7;

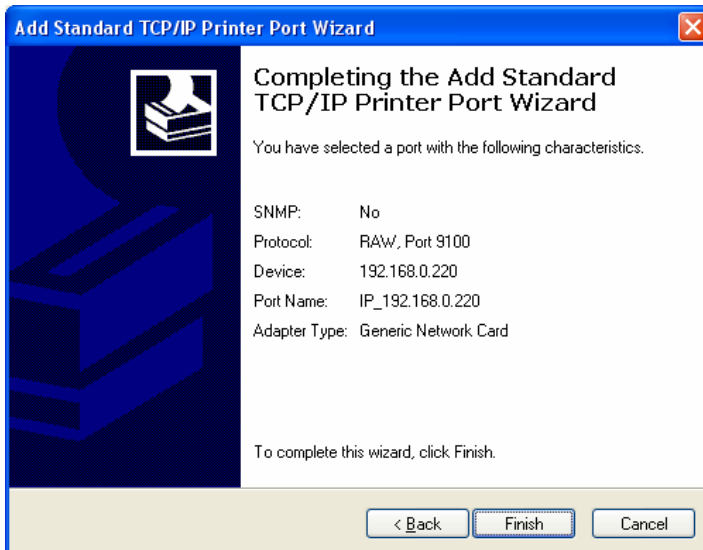


Figure 5.5.7

- 8) Select new TCP/IP Port and click “Apply” as shown in Figure 5.5.8, then “confirm”, and TCP/IP Port configuration is finished.

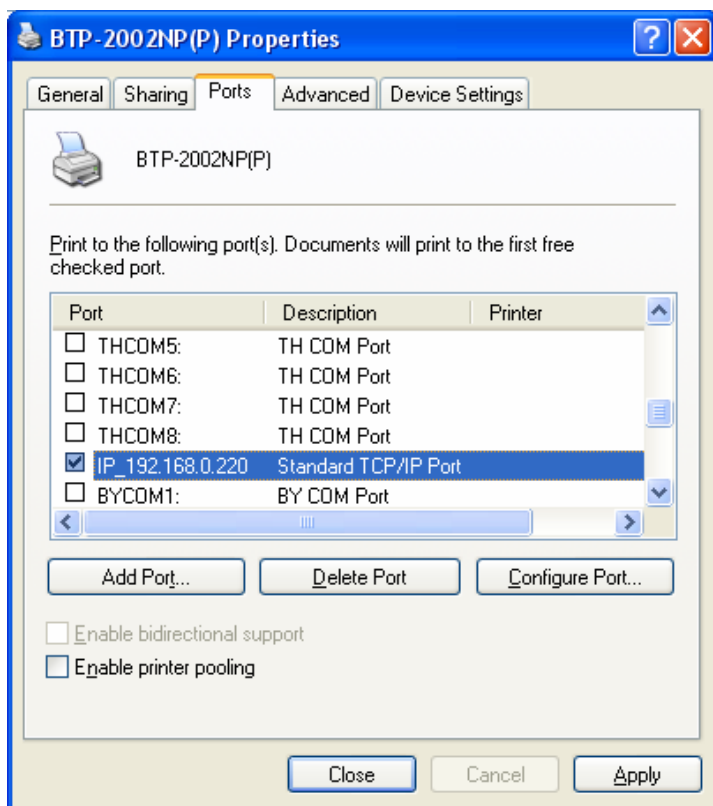


Figure 5.5.8

5.6 Program update

JK-W01 module supports firmware upgrade, which depends on TFTP Protocol to function. BYNetWinConfig.exe can realize the firmware upgrade function (refer to section 5.4). Or any TFTP customer tool can transmit the firmware-upgrading document to 69

Port of JK-W01 module for updating. When upgrading, must use the firmware offered by SNBC.

If the upgrade fails so that JK-W01 module cannot work normally (for example printer power is off in operation), the printer should be turned off, and restart it after removing the short circuit ring of JP3 jumper. You can upgrade the firmware of JK-W01 module again which enters in BOOTLOADER mode now. After the upgrade succeeds, the printer should be shut down and remove the short circuit ring of JP3 again, then turn on the printer.

Take TFTP command attached with Windows2000 as an example to explain how to update the firmware:

```
C:>tftp -i 192.168.0.200 upfile.jk
```

Among which `-i` presents to transmit documents in binary mode; 192.168.0.200 is IP Address of JK-W01 module to be upgraded; upfile.jk is a firmware to be upgraded.

5.7 Status back

The back status of printer could be obtained via the status monitor routine offered by SNBC. This course provides source code for users which conduct them how to use DLL function, and execute enquiry printing status and transmit printing data for printer via programming itself.

The usage of status monitor routine is referred to below instruction: Run "NetPrnStatusDemo.exe", then Status Monitor Window comes out (shown as figure 5.7.1):

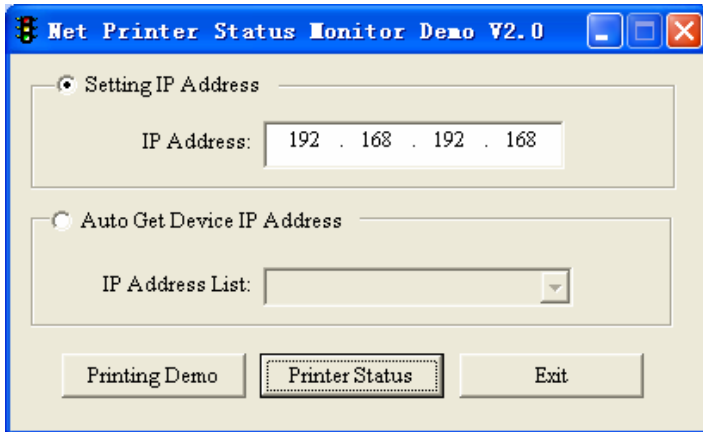


Figure 5.7.1 Status inquiry window

Click “Setting IP Address” button, you can input IP Address manually; or select “Auto Get Device IP Address” to search device’s IP Address connected in the network automatically (choose device’s IP Address in the list);

Click “Printing Demo” button to connect printer and transmit printing data, and then close the joint three items. Click “Printer Status” button to enter Status Monitor Window (shown as Figure 5.7.2):

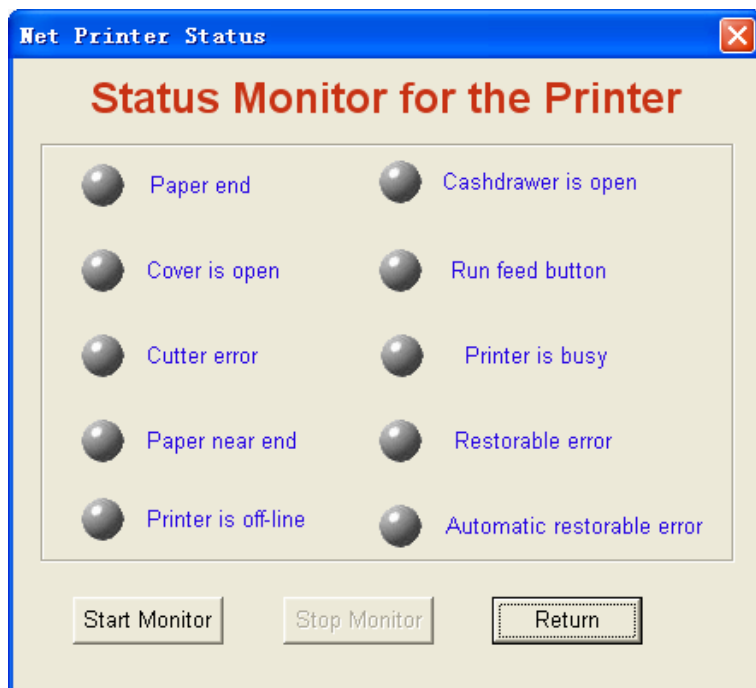


Figure 5.7.2 Status monitor window

Click "Start Monitor" button to monitor the printer status. The normal status of the printer is shown as Figure 5.7.3:

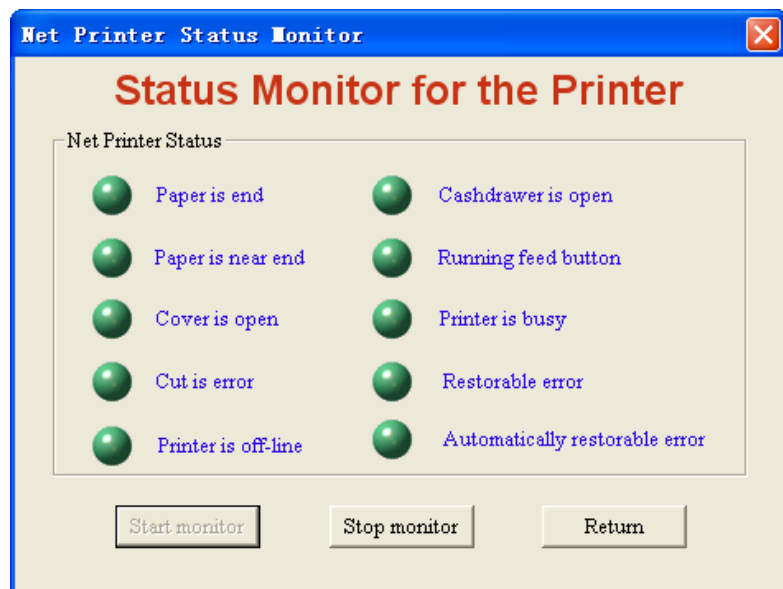


Figure 5.7.3 Normal status display

If the status is changed, the interface indicator shall show red. Click "Stop Monitor" button to stop status monitor, and click "Return" button back to main window.

5.8 HTTP functions

JK-W01 module can offer HTTP service that it uses the browser at the host to show the printer status and the module status based on WEB and proceeds interface module configuration and test-page printing. The port number used for this service is 80 TCP port.

The user should first get IP Address of JK-W01 module via the self-test page or special configuration tool when using it. Then input IP address in browser address list to inquire the printer status and

JK-W01 module via WEB with details as below:

Start Internet browser and input the printer IP address, then you can see the interface status page. Click “Refresh” button to renew current status shown as Figure 5.8.1:

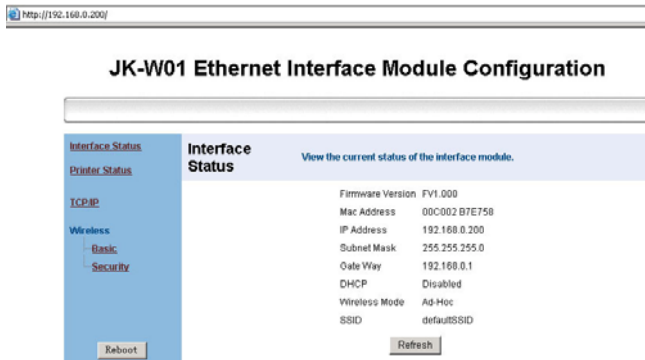


Figure 5.8.1 Interface status page

When clicking “Printer Status”, you can check the printer status page connecting with JK-E01 module. If it shows abnormal status, red words shall be shown. Click “Refresh” button to renew current status and click “Print Test Page” to print it shown as Figure 5.8.2:

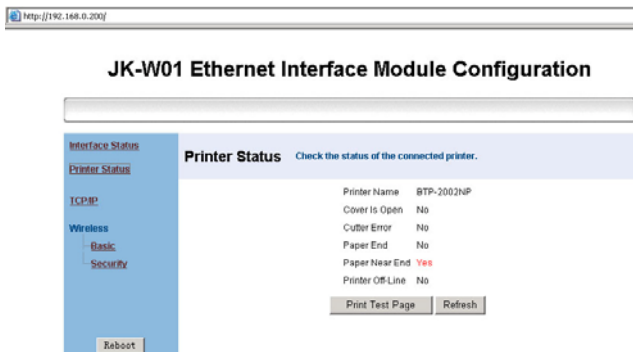


Figure 5.8.2 Printer status page

Click “TCP/IP” to enter IP parameter configuring page. This page shall provide two configuration modes: 1. Select “Dynamic IP Address(DHCP)” and get IP Address, Subnet Mask and Gateway Address automatically via DHCP protocol. 2. Select “Fixed IP Address” and configure IP Address, Subnet Mask and Gateway Address manually when the input field can be edited. After modification, click “Save” to save the settings, also you can click “Restore Defaults” button to recover factory defaults. When finishing the configuration, you need to restart the printer to effect new settings. For restarting the printer, click “Reboot” button at the left or turn on/off the printer power. The configuration page is shown as Figure 5.8.3:

The screenshot shows a web browser address bar with the URL <http://192.168.0.200/>. The main title of the page is "JK-W01 Ethernet Interface Module Configuration". On the left side, there is a navigation menu with the following items: "Interface Status", "Printer Status", "TCP/IP", "Wireless", "Basic", and "Security". The "Wireless" section is expanded, showing "Basic" and "Security" sub-items. A "Reboot" button is located at the bottom of this menu. The main content area is titled "TCP/IP" and "Settings for the TCP/IP network protocol.". It contains the following fields and options:

- IP Address:
 - ☐ DHCP Client
 - ☒ Fixed IP Address:

Device IP Address	192	168	0	200
Subnet Mask	255	255	255	0
Gateway Address	192	168	0	1

At the bottom of the main content area, there are three buttons: "Restore Default", "Save", and "Cancel".

Figure 5.8.3 TCP/IP configuration page

Click “Basic” and “Security” under “Wireless” to enter the page for wireless parameter basic configuration and security configuration. Set wireless basic parameter and security information at the relative

position. After the modification, click “Save” to keep the settings; or click “Restore Defaults” button to recover the factory defaults. After changing the configuration, you should restart the printer to effect new settings. For restarting the printer, click “Reboot” button at the left or turn on/off the printer power. The configuration page is shown as Figure 5.8.4 and Figure 5.8.5:

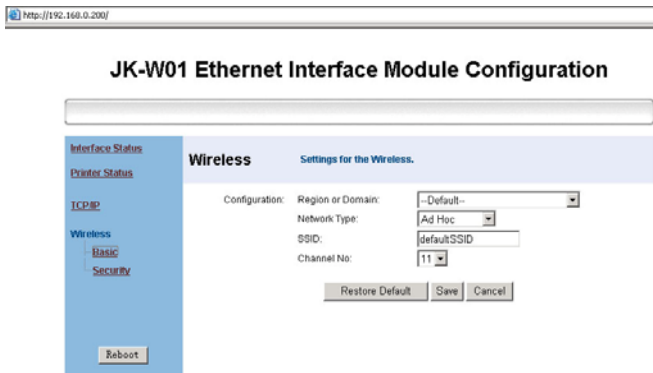


Figure 5.8.4 Wireless basic parameter configuration

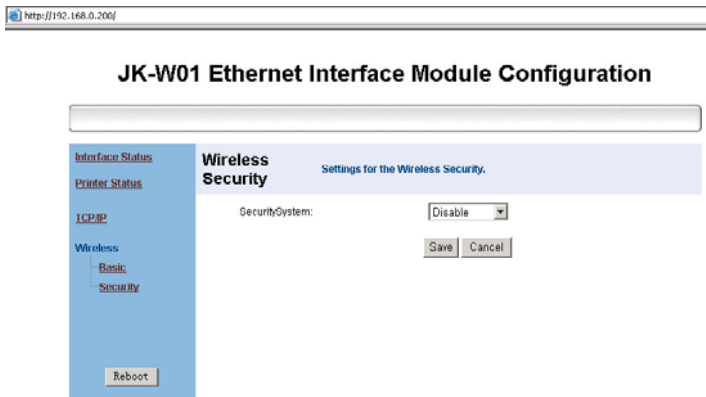


Figure 5.8.5 wireless security information configuration

5.9 Keys functions

Insert a thin object to key hole of JK-W01 module (shown as Figure 3.1.1) and hold down the key of it to turn on the printer. Release the key until the printer acts the paper feeding, then you can release the key to recover the factory defaults after the printer feeds paper.

Notice: The time for Holding down the key until the printer feeds paper is more than 10 seconds.

6 Interface signal

6.1 JK W01 interface

Wireless interface uses wireless USB network card with the specification as below:

Items	Content
Bus type	USB2.0
Data transmission speed	11,5.5,2,1 Mbps (802.11b mode) 54, 48, 36, 24, 18, 12, 9, and 6 Mbps (802.11g mode)
Channels	1-14 (according to different countries or districts)
Transmission distance	Max.100m without any block (it changes with operation environment)
Transmission power	16±2dBm (802.11b mode) , 14±2dBm (802.11g mode)

Reception sensibility	802.11b mode: 11 Mbps: -86dBm 5.5 Mbps: -89dBm 2 Mbps: -91dBm 1 Mbps: -91dBm	802.11g mode: 54Mbps: -70db 48Mbps: -72dBm 36 Mbps: -77dBm 24 Mbps: -80dBm 18 Mbps: -82dBm 12 Mbps: -85dBm 9 Mbps: -86dBm 6 Mbps: -88dBm
Security	64/128 WEP, WPA	
Wireless standard	802.11b, 802.11g	
Wireless modulate mode	DSSS and OFDM	

Table 6.1.1