

# CITIZEN

**IF1-WFx4 / IF1-WFx5**

**IF2-WFx5 / IF2-WFx6**

**“Wireless LAN” (WLAN) Interface Board**

**User’s Manual**

Rev1.02

**CITIZEN SYSTEMS JAPAN CO., LTD.**

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## Read before using

Be sure to read this manual carefully before using the product. After you read it, store it in a safe place so that you can reread it when necessary.

- Contents of this manual may be changed without notice.
- Reproducing and/or copying the contents of this manual by any means without permission are prohibited.
- We will not be responsible for any adverse occurrence that results from the use of this manual, regardless if it contains omissions, errors/misprints, etc.
- Note that we will not be responsible for (a) loss caused by improper operation or mishandling of the device by the user, or (b) loss due to operational environment.
- Data etc., are basically impermanent; long time or permanent storing/saving of data by the device is not possible.
- Note that we will not be responsible for any loss or loss of profits owing to loss of data due to breakdown, repairs, inspections, etc.
- Please contact us if there are omissions, errors, ambiguities, etc. in this manual.
- Refer to this document along with the user manual of the printer.
- This product operates by setting up a wireless connection between itself and other WLAN equipment for data transmission. Therefore, other WLAN equipment is required to use this product. While we have confirmed the operation of this product with certain WLAN equipment, operation with all types of WLAN equipment is not guaranteed. Carry out a sufficient evaluation before using this product.

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- Other company names and product names mentioned here are trademarks or registered trademarks of those companies.

# 1. Introduction

Thank you for purchasing the Citizen IFx-WFxx “Wireless LAN” (WLAN) interface board.

By using the WLAN interface board (hereinafter referred to as the interface board) with our POS printers and barcode printers, you can directly connect to various printers via a network and use computers on the network to print from the printers. In addition, the operational status, print settings, and other information about the printer can be checked from computers on the network.

## 1-1. Features

- Support for WLAN and Ethernet for configuration
- Support for 802.11b/g/n WLAN and capable to support 802.11a
- Support for WPA/WPA2 WLAN encryption
- Support for DHCP, static IP, and ZeroConf methods of IP address acquisition
- Configuration through a browser or utility software
- Support for Raw 9100 port and LPR printing methods
- Panel button to print configuration information and change the configuration mode
- LED indicators for connection, operation, and error statuses
- Support for printing and peripheral device control by XML data depending on the printer

## 1-2. Model Classification

IF1 type: Applicable to CT-S801(II) / 851(II) / 601(II) / 851(II) / CL-S400DT / 6621 / CL-E7xx

IF2 type: Applicable to CT-D151 / CT-E651 / CT-S251 / 751 / 4500

	IF1 type		IF2 type	
	Normal model	Model with USB host	(with USB host)	
Name	IF1-WF04 IF1-WF44 IF1-WFN4	IF1-WF05 IF1-WFN5	IF2-WF05 IF2-WFN5	IF2-WFx6
Peripheral device control	Not possible	Possible	Possible	Possible
Number of USB ports	1	2	1	2

IF1-WF04, IF1-WF44, IF1-WF05, IF2-WF05 come with 2.4GHz USB WiFi dongle.

IF1-WFN4, IF1-WFN5, IF2-WFN5 comes without USB WiFi dongle.

IF2-WFx6 does not exist as a single item.

## 1 Introduction

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### 1-3. Specifications

#### USB Wi-Fi adaptor

Model number		WU606n
Radio	Supported standards	IEEE802.11n, IEEE802.11g, IEEE802.11b
	Number of channels	1 to 13
	Frequency band	2.4GHz band (2,412 to 2,472 MHz)
	Transmission speed	IEEE802.11n: maximum 150 Mbps IEEE802.11g: maximum 54 Mbps IEEE802.11b: 11 Mbps

#### Main board (Network)

WLAN	Access mode	Infrastructure, * Ad-Hoc
	Security	WPA2-PSK (encryption: AES, TKIP)
		WEP (Key size: 64 bit/128 bit)
Ethernet	Standards	100BASE-TX/10BASE-T, Full Duplex/Half Duplex auto negotiation
	Port	RJ-45
Network	IP Version	IPv4
	Protocols	TCP, UDP, HTTP, ICMP, DHCP, SNMP
	Port number for printing	RAW (port 9100 (Changeable)), LPR
	IP address setting	Manual, DHCP

#### Hardware

		IF1-WFx4 / IF1-WFx5	IF2-WFx5
Hardware	Compatible printers	CT-S801 / 851 / 601 / 651(II) CL-S400DT / 6621 / E7xx	CT-D151 / E651 / S251 / 751 CT-S4500
		Operation panel	
	USB	USB-A connector 1 or 2 USB Specs	

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## Software

Software	Setting methods	Browser, PC setting tool
	Firmware upgrade	Browser, PC setting tool
	Supported Platforms	Windows XP, Windows Vista, Windows 7, Windows8

\*The communication by "Ad-Hoc" does not work correctly in various cases due to various restrictions. If "Ad-Hoc" does not work correctly, we recommend "Infrastructure".

\*Only 2.412GHz~2.462GHz is allowed to be used in USA. Available 2.4GHZ channels to choose for US users are only 1 - 11.

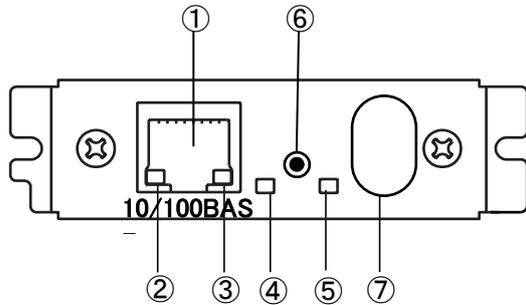
\*Rules on the use of 5GHz band channels may vary according to different national laws.

Choose the 5GHz channel according to the law of the country to use this device.

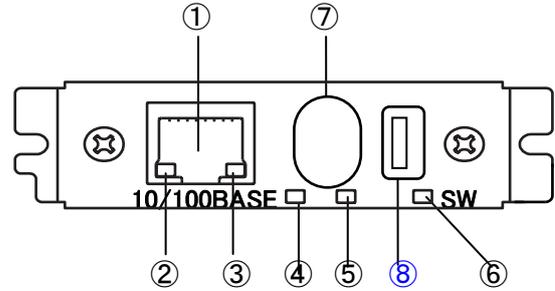
1-4. Part Names and Functions

Interface Board Unit

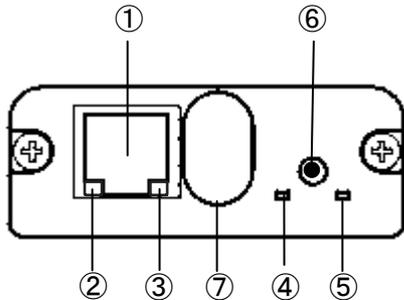
IF1-WFx4 (USB 1 port)



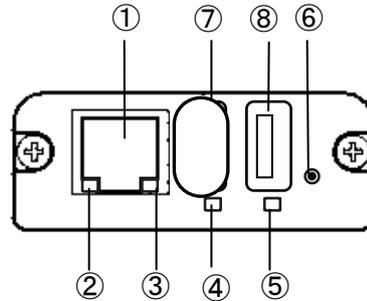
IF1-WFx5 (USB 2 ports)



IF2-WFx5 (USB 1 port)



IF2-WFx6 (USB 2 ports)



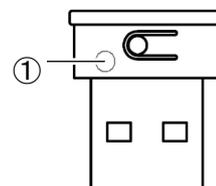
- ① RJ45 connector (compatible with 10Base-T/100Base-TX)  
Connection for LAN cable
- ② Ethernet transmission speed LED indicator (green)\*<sup>1</sup>  
Shows Ethernet transmission speed with steady/blinking light.
- ③ Ethernet status indicator LED (yellow)\*<sup>1</sup>  
Shows Ethernet connection status (disconnected, receiving data, etc.).
- ④ Ethernet/WLAN status LED indicator (green)\*<sup>1</sup>
- ⑤ Ethernet/WLAN status LED indicator (red)\*<sup>1</sup>  
Shows transmission, connection and error statuses with steady/blinking lights combinations.
- ⑥ Panel button\*<sup>2</sup>  
Used to operate the Interface board.
- ⑦ USB Wi-Fi adaptor / USB connector (First)  
Connection for the Wi-Fi adapter.
- ⑧ USB connector (Second)  
This exists only on IF1-WFX5/IF2-WFX6.

\*1 See 3-5, Display status by LED (page 20) for indicator details.

\*2 See, 3-2, Using the Panel Button (page 16) for panel button operations.

### USB Wi-Fi Adapter

- ① Wireless adapter status indicator LED\*  
Shows connection status (connecting, communicating, etc.).



## 2. Preparation

### 2-1. Installing the printer and connecting LAN cable

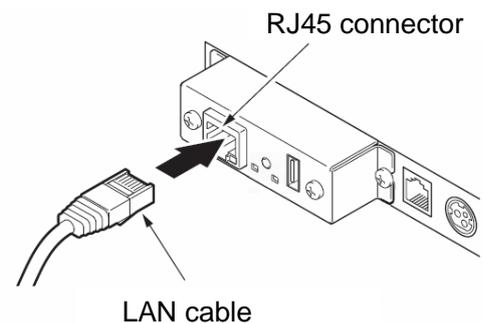
#### ■ Installing Printer

With an unobstructed view, the guideline transmission distance is approximately 30 m. The transmission distance depends on the setup environment. This includes electrical interference from the periphery, obstacles such as the printer, and the antenna location. Carefully consider these points before the installation.

#### ■ Connecting LAN cable\*

Connect a LAN cable to the RJ45 connector of this interface board. (Diagram on right shows a typical example)

\* When configuring the wireless LAN settings on this interface board, connect via Ethernet to configure them.



#### Warning

- If the Ethernet and Wi-Fi USB adapter are connected at the same time, Ethernet will be enabled.
- For use with a wireless LAN, disconnect the LAN cable after the settings are finished.

### 2-2. Connecting the USB Wi-Fi Adapter

To perform wireless LAN communication, connect the USB Wi-Fi adapter to a USB port of the board. In the case of the IF1-WFX5 which has two USB ports, connecting USB Wi-Fi adapters to both the left and right ports is possible, but even if two USB Wi-Fi adapters are connected to both the left and right, operation will not be possible.

Connect the USB Wi-Fi adapter while the power of the printer is off.

### 2-3. Connecting a Peripheral Device

There are the following restrictions regarding peripheral devices. Correctly observe them when using a peripheral device.

- Connecting a device other than a supported model to a USB port is prohibited (please inquire about which devices are supported).
- Connecting a tablet or other device to a USB port for the purpose of supplying power is also prohibited.
- Connecting and disconnecting a peripheral device to/from a USB port while the power of the printer is on is prohibited.
- Connecting via a USB hub is prohibited.

- In the case of the IF1-WFX5 which has two USB ports, connecting to both the left and right ports is possible, but connecting two of the same type of device (two displays, two scanners, etc.) is prohibited.

## 2 Preparation

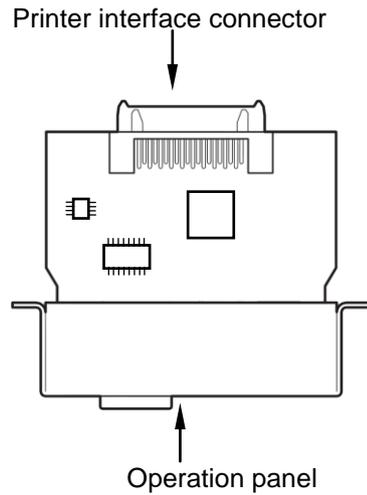
### 2-4. Connecting the Interface Board Unit

1) The interface board can be used by connecting it to the main board of a printer.

The printer interface connector is connected to the connector of the main board of the printer.

You can also replace another interface with the wireless LAN interface but care is required.

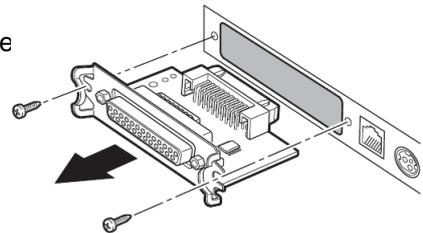
(Diagram below shows a typical example)



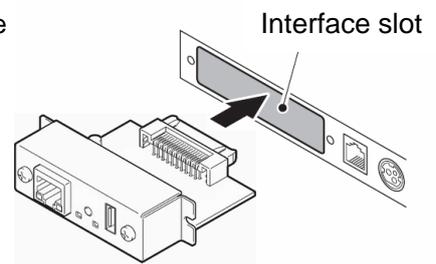
#### Warning

- Malfunctions may occur if the interface board is removed or re-inserted.
- To install the interface board, please contact your dealer or service person.
- If you work on your own, consider static electricity and other factors carefully and then install the interface board at your own responsibility.

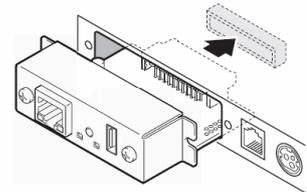
2) If another interface board is installed in the printer, remove it.



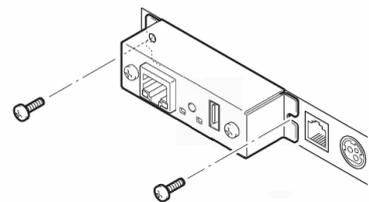
- 3) Insert the interface board into the interface slot of the printer.



- 4) Connect the interface connector of the board to the interface connector inside the printer.



- 5) Fix the interface board in place with screws.



## 3. Network Settings and Operation

### 3-1. Overview

To use this interface board connected to a network, you need to connect to the network and configure the settings for communication in addition to configuring the settings of the printer.

There are two methods to configure the settings for a network connection.

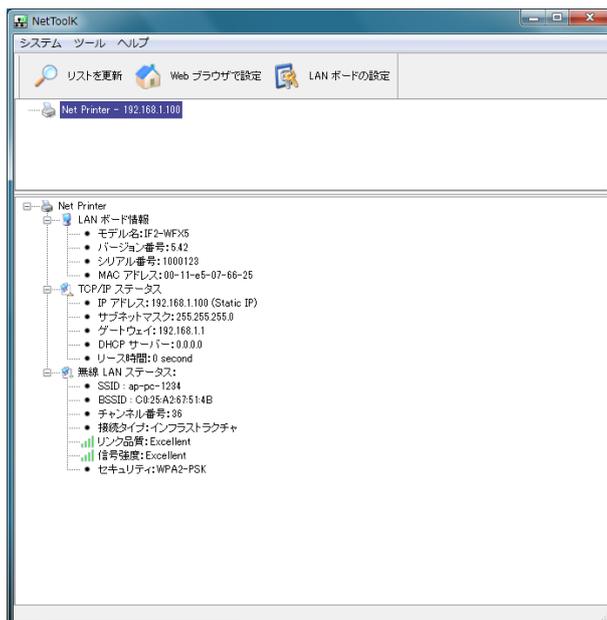
#### Web Manager

Connect to this interface board from a browser and then configure the settings from a dedicated settings screen.



#### NetToolK

Connect to this interface board from a dedicated tool for Windows and then configure the settings.



You can check the current state and restore the initial state by operating the panel button.

See the next page for an explanation of the panel button.

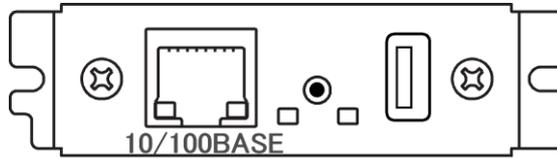
Furthermore, you can check the communication and other statuses from the LEDs on the interface. See “3-5 Display status by LED”.

## 2 Network Settings and Operation

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### 3-2. Using the Panel Button

The panel button on the operation panel is used to operate the Interface board.



#### ■ Starting the LAN Interface Board

Turn on the printer. The Interface board starts working approximately 20 seconds after the printer turns on.

#### ■ Printing the Interface Board Configuration

Press the panel button. See 3-3, Printing the Interface Board Configuration (page 17) for details.

#### ■ Switching to Setting Mode

Press and hold the panel button. The buzzer\* will sound once, signaling a switch to setting mode.

• Setting mode enables the reading of the factory default settings.

• If there is no activity for three seconds in the setting mode, the buzzer\* will sound once, signaling a return to normal mode.

\* Note that the buzzer will not sound if the Interface board is connected to the barcode printer. In addition, the buzzer will not sound when the Interface board is used with the POS printer if the buzzer has been set to not sound.

#### ■ Restoring to the Factory Default Settings

Switch to setting mode, then press and hold the panel button. The Interface board will return to the factory default settings.

### Warning

When the operation is complete, the interface board will restart automatically.

The settings are cleared so the wireless LAN must be configured again.

When automatically obtaining the IP address from the DHCP server is set, an IP address that differs from the previous one may be assigned.

### 3-3. Printing the Interface Board Configuration

Press the panel button to print out the configuration of the interface board from the printer.

■ Ethernet Connection and DHCP On

- ① Title of the printout.
- ② Model name, hardware revision, and firmware version of the interface board
- ③ System information of the interface board  
The LAN board name, serial number, and MAC address are printed.
- ④ Network information of the interface board
- ⑤ Ethernet information. Printed when connected by Ethernet.
- ⑥ Printer information. The name of the manufacturer and the model name of the printer connected to the interface board are printed.
- ⑦ Configuration information of the interface board. The information stored in the interface board is printed and may be different from the connection status of the current network. Check the connection status using the network information of ④.

① { I/F Board Information

② { IFx-WFXx(Rev0.1.3): Ver 2.00

③ { System  
WLAN Board Name : Net Printer  
Serial Number : 100123  
MAC Address : 00:01:02:0a:0b:0c

④ { Current Network Status  
IP Address : 192.168.0.2 (DHCP)  
Subnet Mask : 255.255.255.0  
Gateway : 192.168.0.1  
DHCP Server : 192.168.0.1

⑤ { Ethernet Status  
Speed & Duplex : Auto (100BaseTx Full)

⑥ { Printer Status  
Manufacturer : CITIZEN  
Model : CT-S801

⑦ { User Configuration  
DHCP : Enable  
IP Address : 192.168.0.10  
Subnet Mask : 255.255.255.0  
Gateway : 192.168.0.1  
Print Port : 9100  
Receive Timeout : 180  
Wireless Type : Infrastructure  
SSID : CITIZENSYSTEMS  
Security : None

## 2 Network Settings and Operation

### ■ LAN Connection and DHCP Off

- ① Title of the printout.
- ② Model name, hardware revision, and firmware version of the interface board.
- ③ System information of the interface board. The LAN board name, serial number, and MAC address are printed.
- ④ Network information of the interface board.
- ⑤ Information of Wi-Fi adapter and access point that the interface board is connected. "Module" is printed when USB Wi-Fi adapter is in place. Other 2 items are printed when connected with access point. Until establishing the connection, it is printed as "Scanning".
- ⑥ Printer information. The name of the manufacturer and the model name of the printer connected to the interface board are printed.
- ⑦ The configuration information of the interface board. The information stored in the interface board is printed and may be different from the connection status of the current network. Check the connection status using the network information of ④.

```
I/F Board
Information

IFx-WFxx(Rev0.1.3): Ver 2.00

System
WLAN Board Name : Net Printer
Serial Number   : 100123
MAC Address     : 00:01:02:0a:0b:0c

Current Network Status
IP Address      : 192.168.0.2 (DHCP)
Subnet Mask    : 255.255.255.0
Gateway        : 192.168.0.1
DHCP Server    : 192.168.0.1

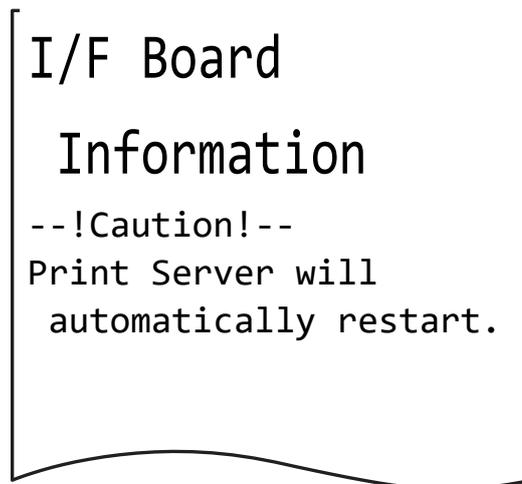
Ethernet Status
Speed & Duplex : Auto (100BaseTx Full)

Printer Status
Manufacturer    : CITIZEN
Model          : CT-S801

User Configuration
DHCP           : Enable
IP Address     : 192.168.0.10
Subnet Mask    : 255.255.255.0
Gateway       : 192.168.0.1
Print Port     : 9100
Receive Timeout : 180
Wireless Type  : Infrastructure
SSID          : CITIZENSYSTEMS
Security       : None
```

### 3-4. Returning the Interface Board Configuration to Factory Default Settings

- 1) Press and hold the panel button to switch to setting mode.
- 2) After the interface board has switched to setting mode, press and holds the panel button again within three seconds. The following message is printed and the interface board returns to factory default settings.



```
I/F Board
Information
--!Caution!--
Print Server will
automatically restart.
```

#### Warning

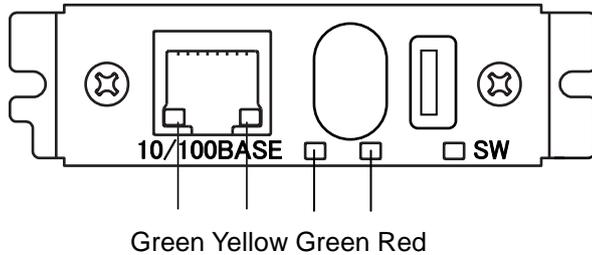
When the operation completes, this interface board restarts automatically.  
When automatically obtaining the IP address from the DHCP server is set, an IP address that differs from the previous one may be assigned.

## 2 Network Settings and Operation

### 3-5. Display status by LED

The following charts show what each LED indicator indicates.

(Diagram shows a typical example. There are interface boards where the positioning of LEDs differs, but the order from left to right is the same.)



#### ① Ethernet transmission speed indicator

Transmission speed	LED (green)
100 Mbps	On
10 Mbps / Disconnected	Off

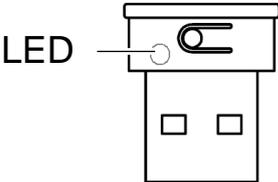
#### ② Ethernet connection/transmission status indicator

Connection status	LED (yellow)
Connected	On
Disconnected	Off
Transmitting data	Flashing

#### ③ Wired/WLAN status indicator

Connection Status		LED (green)	LED (red)	Description
Printer disconnected		Off	-	Not connected to printer.
Printer connection	Network: disconnected	On	Off	Connected to printer.
	Ethernet connecting	On	Flashing (1-second cycle)	Seeking IP address from DHCP server via Ethernet.
	Ethernet working	On	On	Network operation via Ethernet.
	WLAN connecting	Flashing (2-second cycle)	Flashing (1-second cycle)	Connecting to access point or seeking IP address from DHCP server via WLAN.
	WLAN working	Flashing (2-second cycle)	On	Network operation via WLAN.
Resource error		Alternating blinking (1-second cycle)		The interface board is malfunctioning.
System error		Alternating blinking (0.2-second cycle)		The interface board is malfunctioning.

④ USB Wi-Fi adapter status indicator (WU606n)



Status	LED
Connecting	Repeats short-cycle and long-cycle flashing.
Communicating	Irregular flashing (changes with data transmission status)

### 3-6. Simple Setting Procedure Example for Wireless LAN

If you do not know much about network settings, configure the settings in reference to the corresponding procedure below.

However, the instructions in the procedure may not necessarily be appropriate for your network environment.

■ When setting that is supposed to assign the IP address from DHCP

- 1) Connect the USB Wi-Fi adapter to the interface board.
- 2) Connect the Ethernet cable to the interface board. The LAN cable must be connected to, for example, an enabled network environment in which a DHCP server exists. (Ethernet has priority over wireless LAN.)
- 3) After the printer is turned on and the interface board will automatically obtain an IP address from the DHCP server within 90 seconds.

You can confirm that the IP address is assigned correctly by pressing the panel button to print out the configuration of the interface board. See 3-3, Printing the Interface Board Configuration (page 17) for details.

- 4) Once the conditions enabling access to the printer are met, configure the wireless LAN settings in Web Manager.

Connect to Web Manager of the printer from the browser of a PC connected to the same network. See “4 Web Manager” (page 23) for details.

You can use the NetToolK network configuration tool for Windows instead of Web Manager. See “5 NetToolK” (page 38) for details.

- 5) Once the required settings are finished, disconnect the LAN cable.

If LAN Setting on the CONFIG >> GENERAL tab in Web Manager is the initial value of Enable, communication will switch to wireless LAN when the LAN cable is disconnected. When the LEDs indicate the status of operating with a Wireless LAN, press the panel button to print the setting information and then confirm that the settings are as you configured them.

■ When using a static IP address in an environment without DHCP

The procedure differs for the part of step 3) above. As an IP address cannot be obtained automatically, the ZeroConf function assigns the IP address 169.254.XX.YY (XX.YY will differ depending on the setup environment). Press the panel button to print the setting information and then confirm the assigned IP address.

Take measures such as adjusting the IP addresses of the hosts to enable connecting to the IP address of the printer.

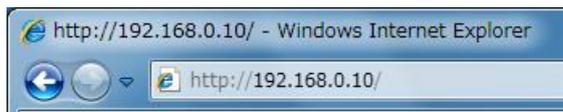
The subsequent procedure is the same as step 4) and after above.

## 4. Web Manager

The Interface board is equipped with a Web manager function, which allows you to access the Interface board from a web browser and check the status of the Interface board or change its settings.

### 4-1. Starting the Web Manager

- 1) Start a web browser.
- 2) In the address bar, enter the IP address and then press **Enter**.



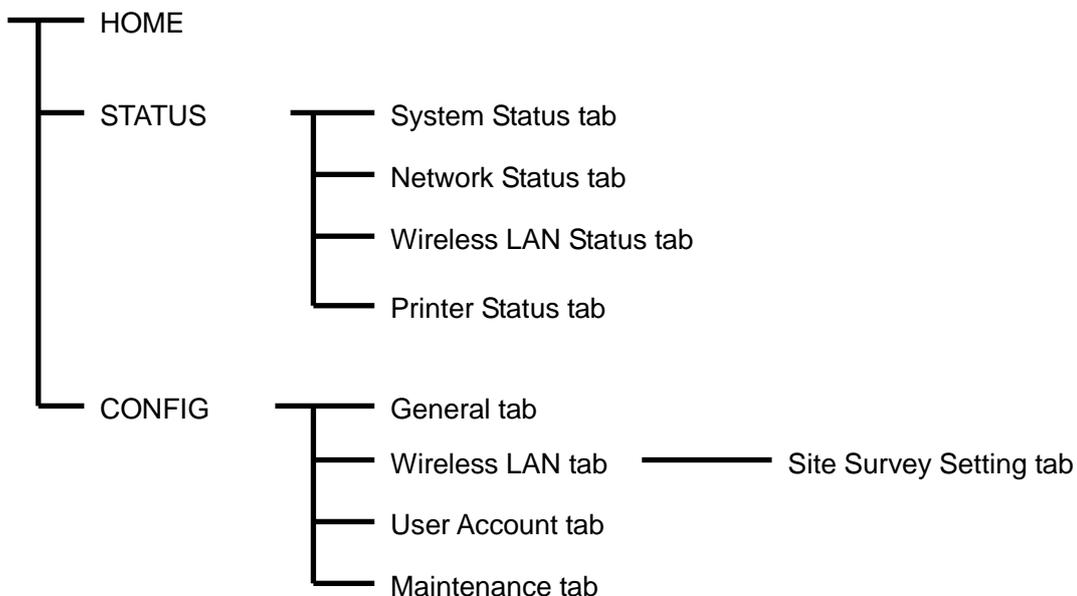
\* The image to the left is a sample. Enter the actual allocated value for the IP address.

#### Warning

- The configuration window of the interface board cannot be displayed if the network settings of your computer and the interface board differ. Ensure that the IP address of the interface board matches the settings of your network.
- The IP address of the interface board can be confirmed by using the "Printing the Wireless LAN Interface Board Configuration" method.
- The IP address of this interface can be confirmed as described in "3-3 Printing the Interface Board Configuration".

#### Web Manager Window Layout

The Web manager consists of the following windows and tabs.



\* If the XML function and peripheral device control function can be used, the Service Status tab is displayed in the STATUS window and the Service tab is displayed in the CONFIG window.

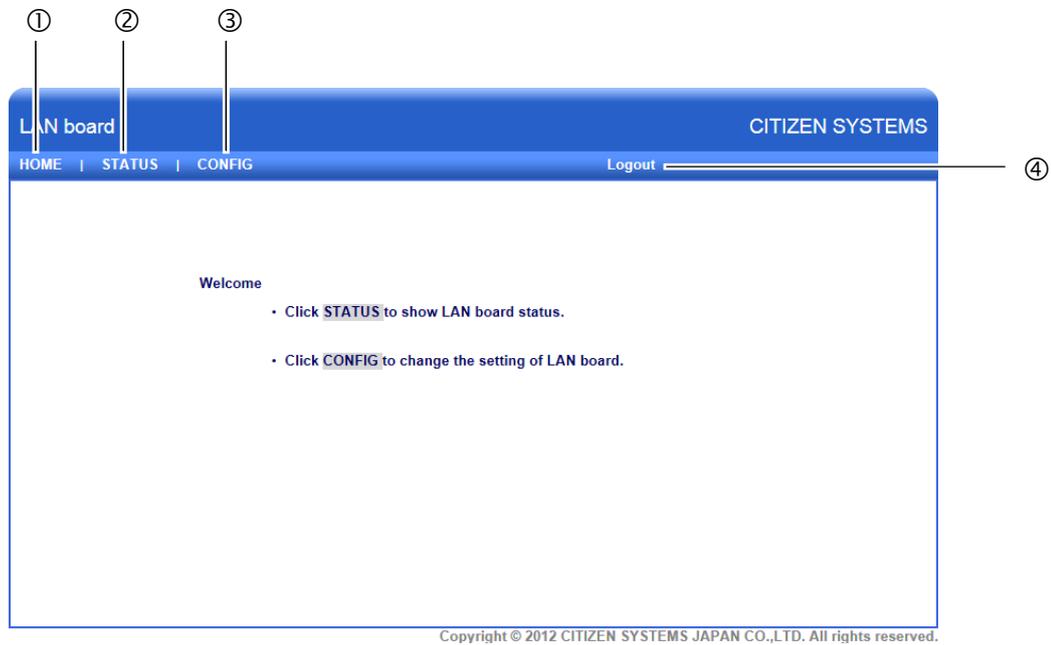
See "6 XML Function and Peripheral Device Control Function" (page 46) for details on the XML function and peripheral device control function.

## 2 Web Manager

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### 4-2. HOME Window

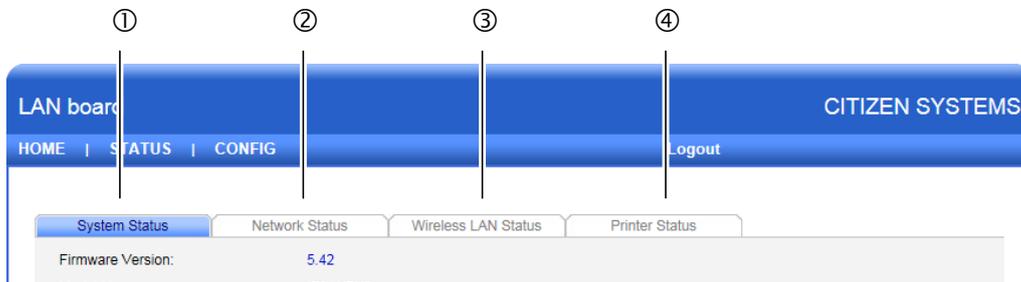
This is the Home window of the Web manager.



- ① HOME button  
Display the Home window.
- ② STATUS button  
Display the Status window. At the status window, you can check the status of the Interface board.
- ③ CONFIG button  
Display the CONFIG window. At the CONFIG window, you can configure the Interface board.
- ④ Logout button  
Log out from the CONFIG window of the Interface board. It is not possible to open the CONFIG window at multiple PCs of the same time. You must log out to make settings using another Web manager or NetToolK.

### 4-3. STATUS Window

Displays the status of the Interface board.



- ① System Status tab  
See 4-3-1, STATUS>>>System Status Tab (page 26).
- ② Network Status tab  
See 4-3-2, STATUS>>>Network Status Tab (page 27).
- ③ Wireless LAN Status tab  
See 4-3-3, STATUS>>>Wireless LAN Tab (page 28).
- ④ Printer Status tab  
See 4-3-4, STATUS>>>Printer Status Tab (page 29).

## 2 Web Manager

### 4-3-1. STATUS>>System Status Tab

System Status	Network Status	Wireless LAN Status	Printer Status
Firmware Version :	1.2		
Model Name :	IF1-WF01		
Serial Number :	10000123		
MAC Address :	00-11-E5-02-DF-2C		
Print Settings			
Raw Port Number :	9100		
Timeout for print data :	180		
LPR Queue Name :	lp		
UPnP :	Enable		

- ① Firmware Version  
Displays the firmware version of the Interface board.
- ② Model Name  
Displays the model name of the Interface board.
- ③ Serial Number  
Displays the serial number of the Interface board.
- ④ MAC Address  
Displays the MAC address of the Interface board.
- ⑤ RAW Port Number  
Displays the TCP port number for RAW printing.
- ⑥ Timeout for print data  
Displays the socket timeout duration during printing. When the host and the TCP/IP socket are connected and the host sends no data for this duration during printing, the socket is forced to close. When the setting is "0", the socket remains connected until a disconnection request is received from the host.
- ⑦ LPR Queue Name  
Displays the LPR queue name.
- ⑧ UPnP  
Displays the UPnP configuration status.

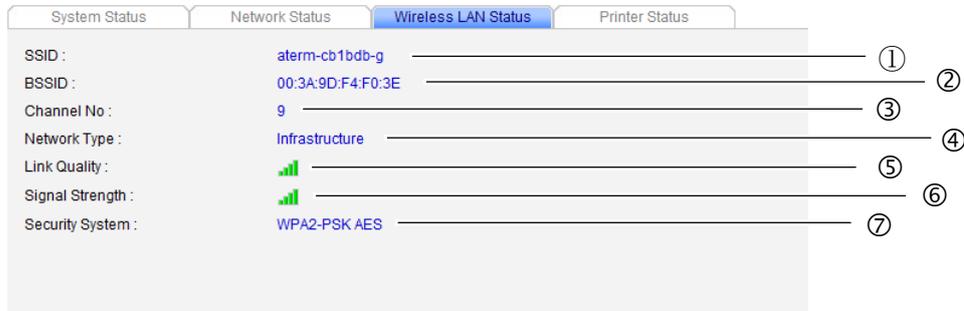
## 4-3-2. STATUS&gt;&gt;Network Status Tab

System Status	Network Status	Wireless LAN Status	Printer Status
LAN board name:	Net Printer		
IP Address:	192.168.1.102 (dhcp)		
Subnet Mask:	255.255.255.0		
Default Gateway:	192.168.1.1		
DHCP Server:	192.168.1.1		
Lease Time:	86400 seconds		

- ① LAN board name  
Displays the LAN board name of the Interface board.
- ② IP Address  
Displays the IP address of the Interface board.
- ③ Subnet Mask  
Displays the subnet mask of the Interface board.
- ④ Default Gateway  
Displays the default gateway of the Interface board.
- ⑤ DHCP Server  
Displays the IP address of the DHCP server from which the Interface board obtained its IP address.
- ⑥ Lease Time  
Displays the lease time of the IP address allocated by the DHCP server.

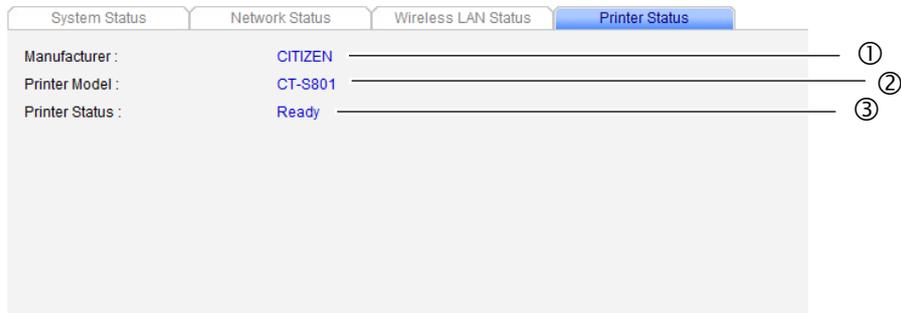
## 2 Web Manager

### 4-3-3. STATUS>>Wireless LAN Tab



- ① SSID  
Displays the SSID of the access point to which the Interface board is connected.
- ② BSSID  
Displays the BSSID of the WLAN to which the Interface board is connected. Generally, the BSSID is the MAC address of the access point.
- ③ Channel No  
Displays the WLAN channel used by the Interface board.
- ④ Network Type  
Displays the current access method (Infrastructure or Ad Hoc).
- ⑤ Link Quality  
Displays the current link quality of the WLAN using four bars.
- ⑥ Signal Strength  
Displays the signal strength of the WLAN using four bars.
- ⑦ Security System  
Displays the security method of the WLAN to which the Interface board is currently connected.

## 4-3-4. STATUS&gt;&gt;Printer Status Tab



- ① Manufacturer  
Displays "CITIZEN".
- ② Printer Model  
Displays the model of the printer to which the Interface board is connected.
- ③ Printer Status  
Displays the operational status of the printer to which the Interface board is connected.  
Ready: Ready to print.  
Offline: Not ready to print.  
Paper Empty: Out of paper.  
Error: Error status.

(Note) When the printer is connected to the Interface board and the bi-directional port of the printer driver is enabled, the printer status is not correctly displayed. In such cases, confirm the printer status from the Windows spooler.

## 2 Web Manager

### 4-4. CONFIG Window

You can configure the Interface board after logging in as an administrator.

①  
②  
③  
④

① User Name

Enter the name of the Interface board administrator. (Initial setting: admin)

② Password

Enter the administrator password. (Initial setting: admin)

③ Login button

Enter the administrator name and password, and then click "Login". The CONFIG window appears.

④ Cancel button

Cancel login.

①  
②  
③  
④

① General tab

See 4-4-1 CONFIG>>General Tab (page 32).

② Wireless LAN tab

See 4-4-2 CONFIG>>Wireless LAN Tab (page 34).

③ User Account tab

See 0

④

⑤

⑥ CONFIG>>User Tab (page 36).

⑦ Maintenance tab

See 4-4-4 CONFIG>>Maintenance Tab (page 37).

## 2 Web Manager

### 4-4-1. CONFIG>>General Tab

The screenshot shows the 'General' tab in the Web Manager configuration interface. It contains several sections:

- LAN board Information:** A text input field for 'LAN board name' containing 'Net Printer'.
- TCP/IP:** Radio buttons for 'Obtain an IP Address Automatically' (selected) and 'Use the following IP Address'. Below are input fields for 'IP Address' (192.168.10.100), 'Subnet Mask' (255.255.255.0), and 'Default Gateway' (192.168.10.100).
- UPnP Setting:** Radio buttons for 'UPnP' with 'Enable' selected.
- LAN Setting:** Radio buttons for 'Priority to Ethernet' with 'Enable' selected.
- Print Settings:** Input fields for 'Raw Port Number' (9100) and 'Timeout for print data' (180). Below are radio buttons for 'Action at Timeout' with 'Close all connections' selected.

At the bottom of the form are 'Submit' and 'Reset' buttons.

#### LAN board Information

- LAN board name (factory default: Net Printer)  
Set the ID of the Interface board.

#### TCP/IP

- Obtain an IP Address Automatically (factory default)  
Automatically obtain the IP address from the DHCP server.
- Use the following IP Address  
Enter IP addresses in the IP Address, Subnet Mask, and Default Gateway fields.

#### UPnP Setting

- UPnP (factory default: Enable)  
Set the UPnP setting.

#### LAN Setting

- Priority to Ethernet (factory default: Enable)  
Enable: When Ethernet cable is connected, LAN (Ethernet) is chosen.  
Disable: The connection is fixed for either LAN or WLAN chosen at boot.

	Enable	Disable
WLAN at boot	WLAN	WLAN
WLAN at boot + Ethernet connected later	LAN	WLAN
LAN at boot	LAN	LAN
LAN at boot + Ethernet disconnected later	WLAN	LAN

### **Print Settings**

Configure the printing functions of the printer.

- Raw Port Number (factory default: 9100)

Set the TCP port number for RAW protocol printing.

- Timeout for print data

Set the timeout duration for the connection to the host.

- Action at Timeout

Select the action for other connections when a timeout occurs with the host. There are two selections: Close all connections and Move to next connection.

### **Submit button**

Enter the changes.

### **Reset button**

Cancel the changes.

## 2 Web Manager

### 4-4-2. CONFIG>>Wireless LAN Tab

General Wireless LAN User Account Maintenance

**Basic**

Network Type Infrastructure

SSID CITIZENSYSTEMS 32 letters[max.]

**Security**

Security System Disable

**SCAN Access point**

SCAN AP Start...

**Channel Setting**

Region Default

Submit Reset

#### Basic

- Network Type (factory default: Infrastructure)  
Select the access mode from Infrastructure and Ad Hoc.
- SSID (factory default: CITIZENSYSTEMS)  
Enter the SSID specified for the connection access point.

#### Security

- Security System (factory default: Disable)  
Select the encryption method from Disable, WEP, WPA-PSK, and WPA2-PSK.

#### For WEP

**Security**

Security System WEP

**WEP Settings**

Authentication Open System

Key Size 64 Bit (Hex - 10 chars)

Key 1  0123456789

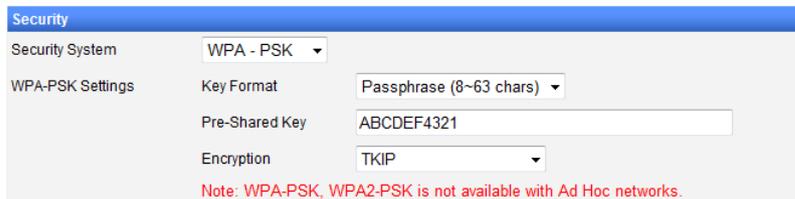
Key 2

Key 3

Key 4

- Authentication (factory default: Open System)  
Select the authentication method from Open System and Shared Key.
- Key Size (factory default: 64 Bit (Hex - 10 chars))  
Select a key size from 64 Bit (Hex - 10 chars), 64 Bit (ASCII - 5 chars), 128 Bit (Hex - 26 chars), and 128 Bit (ASCII - 13 chars).
- Key 1 to Key 4 (factory default: Key 1=0123456789)  
Enter the WEP key and then select the button of the key to be used.

### For WPA - PSK and WPA2 - PSK



Security System: WPA - PSK

WPA-PSK Settings:

- Key Format: Passphrase (8~63 chars)
- Pre-Shared Key: ABCDEF4321
- Encryption: TKIP

Note: WPA-PSK, WPA2-PSK is not available with Ad Hoc networks.

- Key Format (factory default: Passphrase (8-63 chars))  
Select the key format from Passphrase (8-63 chars) and Hex (64 chars).
- Pre-Shared Key (factory default: ABCDEF4321)  
Enter the shared key.

### Site Survey Setting

This function searches for access points. An SSID can be selected when this function is used.

Click “Start” to display the following window.

General		Wireless LAN		User Account		Maintenance	
SSID	BSSID	Strength	Security	Mode	Channel		
<input type="radio"/> CTZ-00AA	00:01:8e:21:06:6a		WPA/WPA2-PSK TKIP/AES	Infra	11		
<input checked="" type="radio"/> CTZ-00BB	00:26:87:0e:c1:e8		WPA/WPA2-PSK TKIP/AES	Infra	13		
<input type="radio"/> SYSTEM_0123	00:80:4c:7d:65:91		WPA/WPA2-PSK TKIP/AES	Infra	4		
<input type="radio"/> SYSTEM_ABCD	00:0d:0b:11:76:8d		WPA-PSK TKIP	Infra	11		
<input type="radio"/> TEST0001	00:80:4c:7d:3f:5b		WPA/WPA2-PSK TKIP/AES	Infra	11		
<input type="radio"/> TEST0002	00:1d:93:34:af:fe		WPA-PSK TKIP/AES	Infra	8		
<input type="radio"/> TEST0003	00:1d:93:34:af:ff		WPA2-PSK AES	Infra	9		
<input type="radio"/> TEST0004	00:1d:93:07:4f:cc		WPA-PSK TKIP	Infra	1		
<input type="radio"/> CITIZEN_AAAA	00:0d:0b:1a:40:05		WEP	Infra	7		
<input type="radio"/> CITIZEN_BBBB	00:1d:93:07:4f:cd		WEP	Infra	7		
<input type="radio"/> CITIZEN_CCCC	00:02:2d:74:81:b0		NONE	Infra	1		

Select the button of the access point you want to set, and then click “Set”.

### Region

When using the interface board in the USA or Canada, select USA/Canada to prevent channels for which use is not permitted from being selected in your location. In other locations, this can be left set to Default.

## 2 Web Manager

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### Submit button

Enter the changes.

### Reset button

Cancel the changes

### 4-4-3. CONFIG>>User Account Tab

You must log in as an administrator to change the settings of the Interface board. At this screen, the administrator name and password can be changed.

General	Wireless LAN	User Account	Maintenance
<b>Set User</b>			
New User name	<input type="text" value="admin"/>	15 letters[max.]	
New Password	<input type="text"/>	15 letters[max.]	
Confirm New Password	<input type="text"/>	15 letters[max.]	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>			

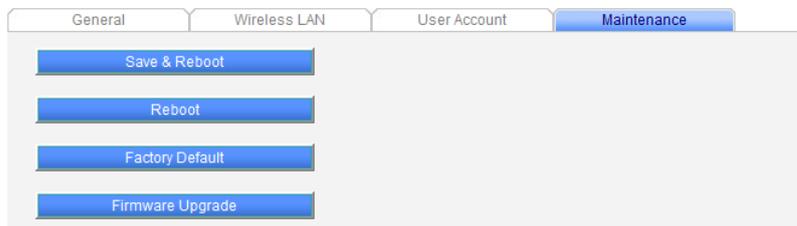
### Set User

- New User name (factory default: admin)  
Enter the new administrator name.
- New Password (factory default: admin)  
Enter the new password.
- Confirm New Password  
Enter the password again.

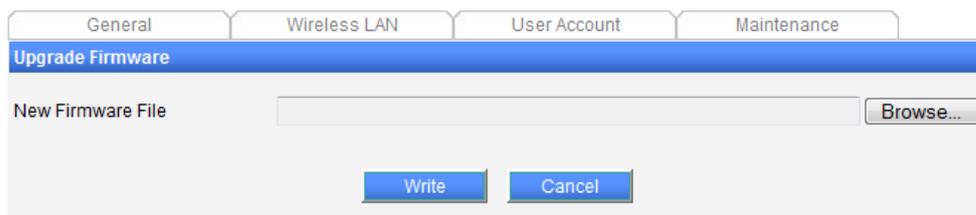
### Warning

If you forget the new username and password, settings must be returned to the factory default settings.

## 4-4-4. CONFIG&gt;&gt;Maintenance Tab



- Save & Restart button  
Save changes, and restart the Interface board.
- Restart button  
Restart the Interface board without saving changes.
- Factory Default button  
Return the Interface board to the factory default settings.
- Firmware Upgrade button  
Upgrade the firmware of the Interface board.

Firmware upgrade

- 1) Click "Browse", and select the firmware file.
- 2) Click "Write".

**Warning**

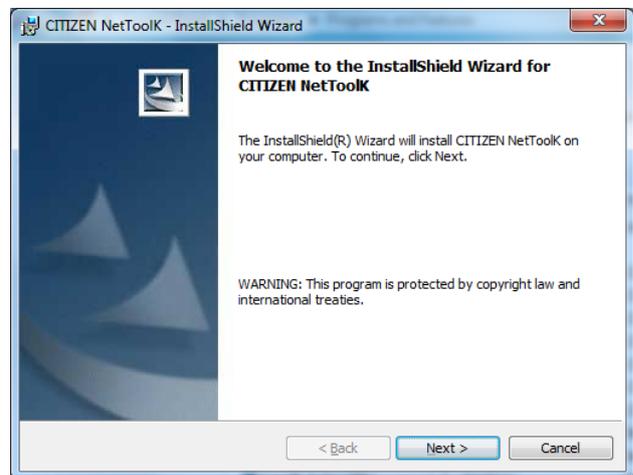
After the firmware upgrade starts, do not disconnect power or transmission to the printer until the upgrade is complete.

## 5. NetToolK

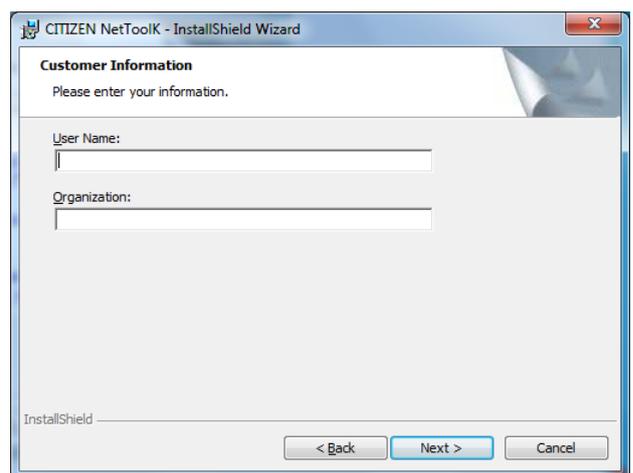
The “NetToolK” utility software runs in the Windows operating system and can be used to change the settings of the interface board. This tool can be used with both wired and wireless LAN interface boards.

### 5-1. Installing the NetToolK

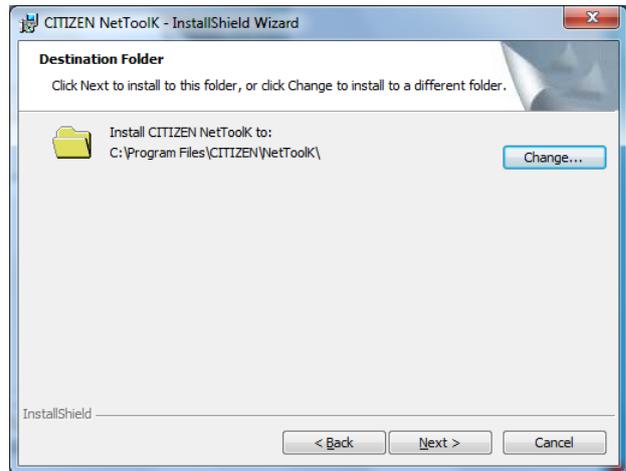
- 1) Acquire the file “NetToolKSetupToolSetup.exe” from the CD-ROM or our website. Double click the file.
- 2) If the “User Account Control” screen appears, click “Continue.”
- 3) The screen shown on the right appears. Click “Next.”



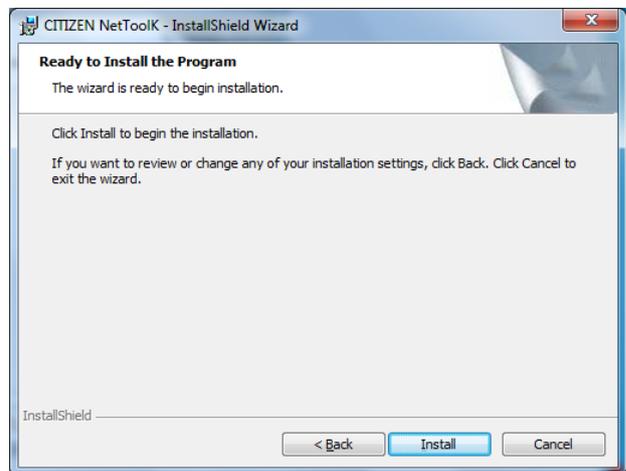
- 4) Enter a username and organization, and then click “Next.”



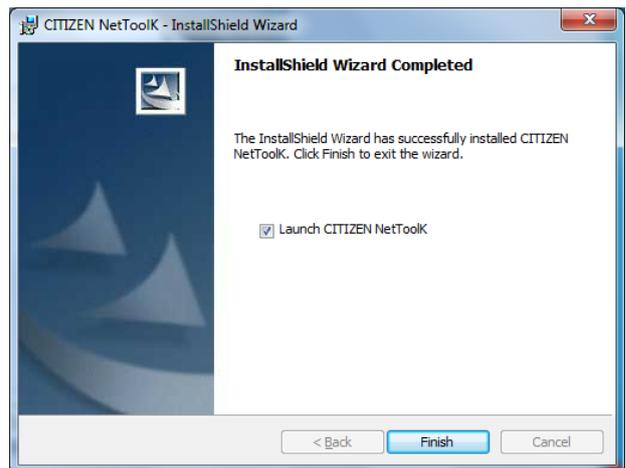
- 5) The screen shown on the right appears.  
Click “Next.”



- 6) The screen shown on the right appears.  
Click “Install”.



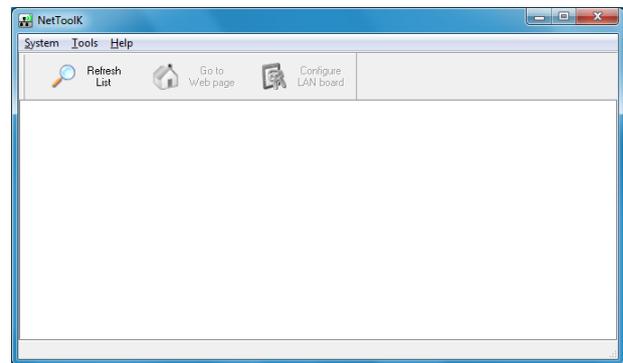
- 7) Click “Finish” to complete installation.



## 4 NetToolK

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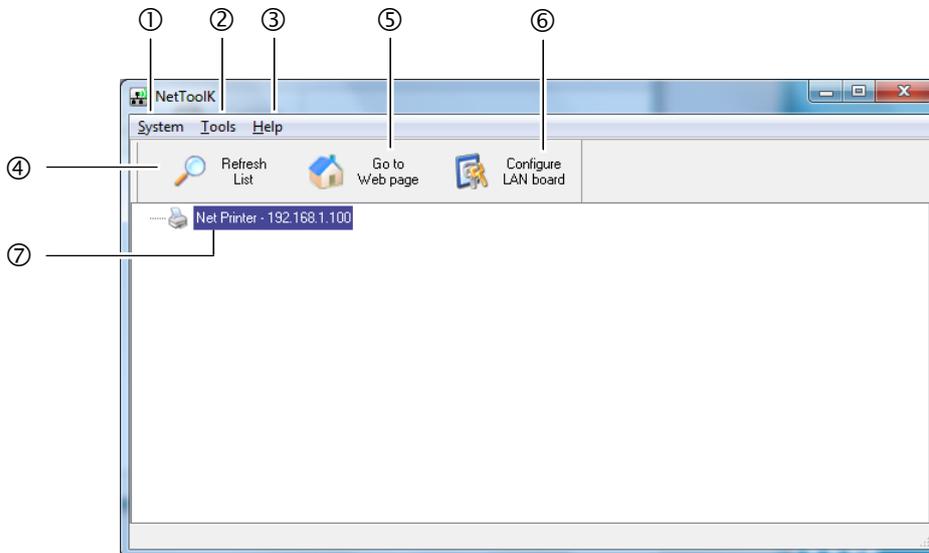
- 8) The PC setting tool starts. From the "System" menu, select "Exit".



- 9) The icon on the right is placed on the desktop of the computer. You can now start program by double clicking this icon.



## 5-2. Information List Window

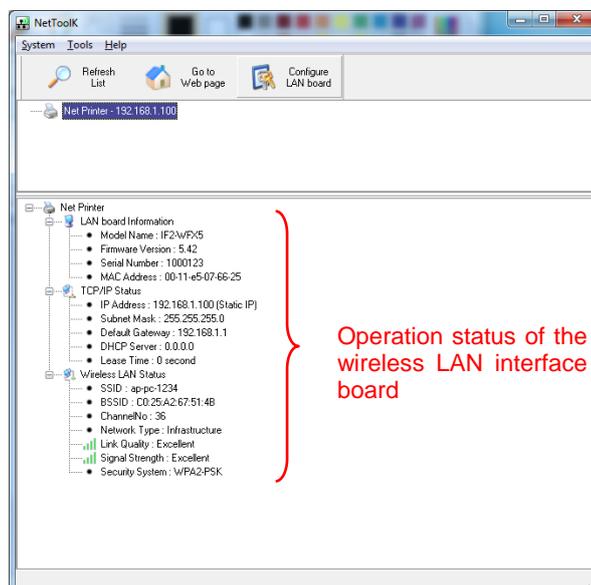
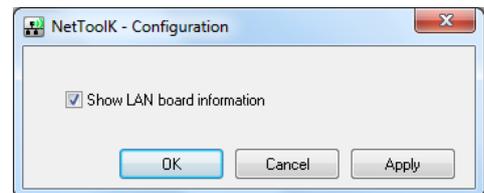


① "System"

Select "System" – "Exit" to exit the NetToolK.

② "Tools"

Select "Tools" – "Settings" to switch the display of the interface board information. When the "Show LAN board information" check box is selected, the LAN interface board operation status can be displayed as shown below.



## 4 NetToolK

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- ③ "Help" menu  
Select "Help" – "About" to display the version information of the NetToolK.
  
- ④ "Refresh List" button  
Refresh the list of the LAN interface board. The application periodically refreshes the list, but you can refresh the list manually by clicking this button.
  
- ⑤ "Go to Web Page" button  
Select the LAN interface board you want to configure, and then click "Go to Web Page". The browser starts and displays the Web manager.
  
- ⑥ "Configure the LAN Board" button  
Select the LAN interface board you want to configure, and then click "Configure the LAN Board". See 5-3 Setup Window (page 43).
  
- ⑦ LAN interface board list  
The list displays the LAN interface boards connected to the network. The LAN interface boards connected to the same subnet are displayed.

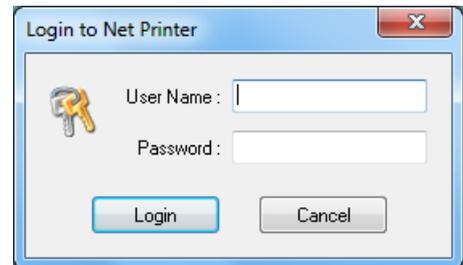
### 5-3. Setup Window

You can configure the LAN interface board by selecting the LAN interface board from the list screen and clicking “Configure the LAN Board”.

To login at the login screen, enter a username and password.

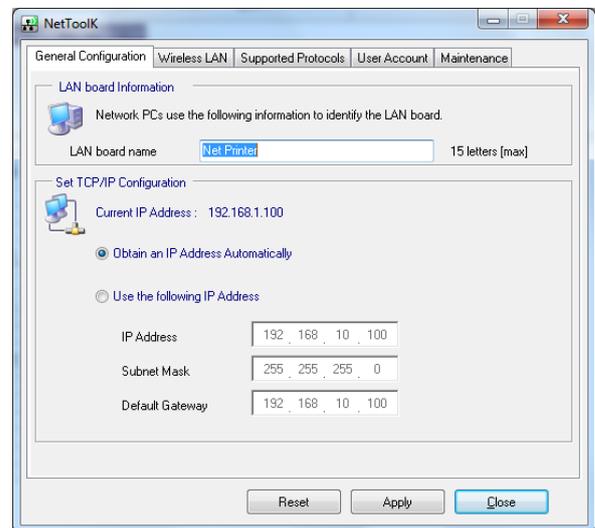
Username: admin (factory default)

Password: admin: (factory default)



#### 5-3-1. “General” Tab

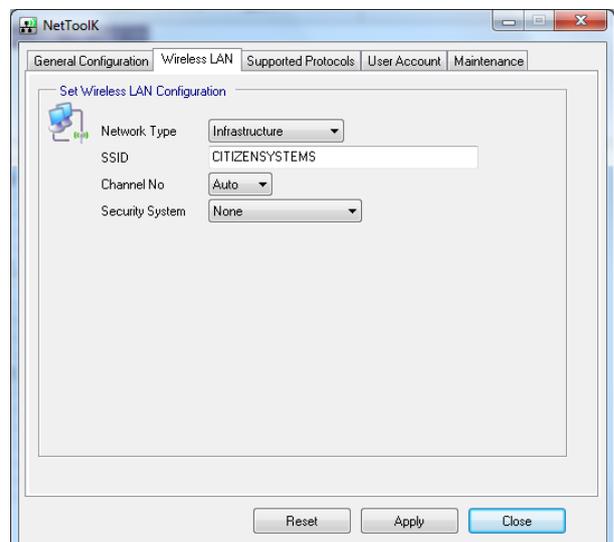
Use the “General” tab to configure the LAN board name and IP address



#### 5-3-2. “Wireless LAN” Tab

Use the “Wireless LAN” tab to configure the LAN.

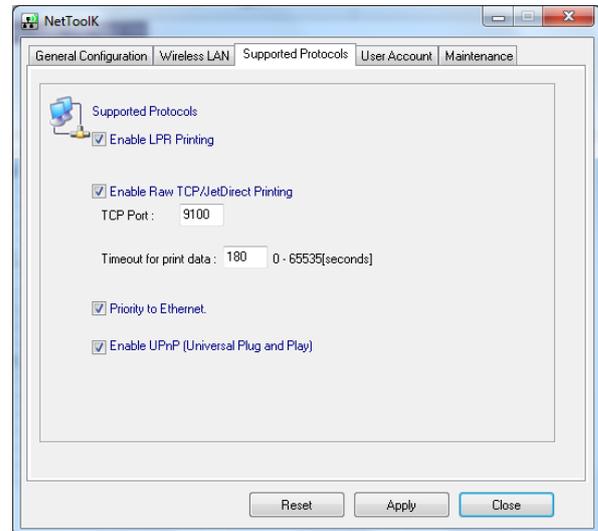
(This tab is not displayed for a wired LAN interface board.)



## 4 NetToolK

### 5-3-3. "Supported Protocols" Tab

Use the "Supported Protocols" tab to enable LPR and the RAW protocol, set the printer timeout duration, enable "Priority to Ethernet", and enable UPnP.

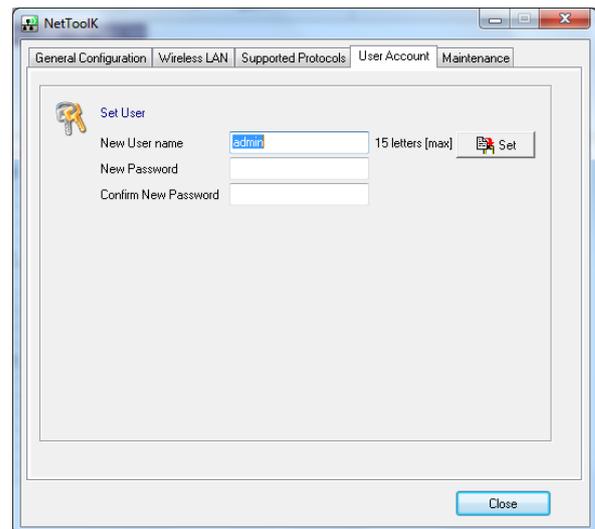


### 5-3-4. "User Account" Tab

Use the "User Account" tab to change the administrator name and password.

#### Warning

If you forget the new username and password, settings must be returned to the factory default settings.

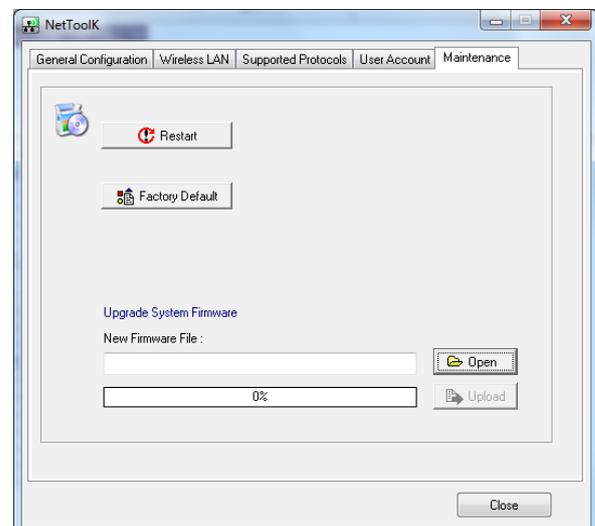


### 5-3-5. "Maintenance" Tab

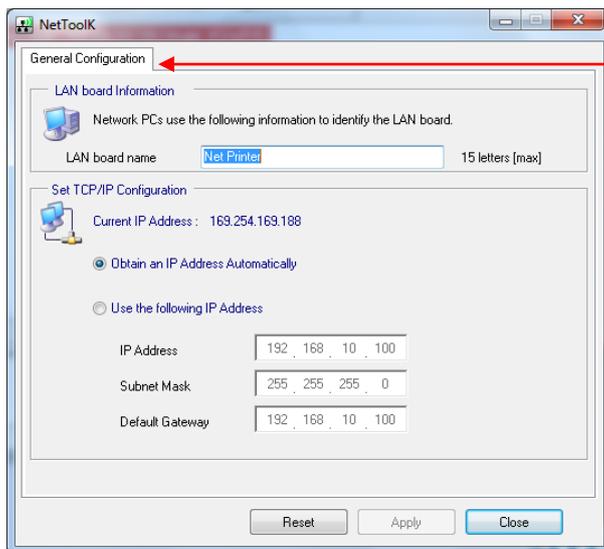
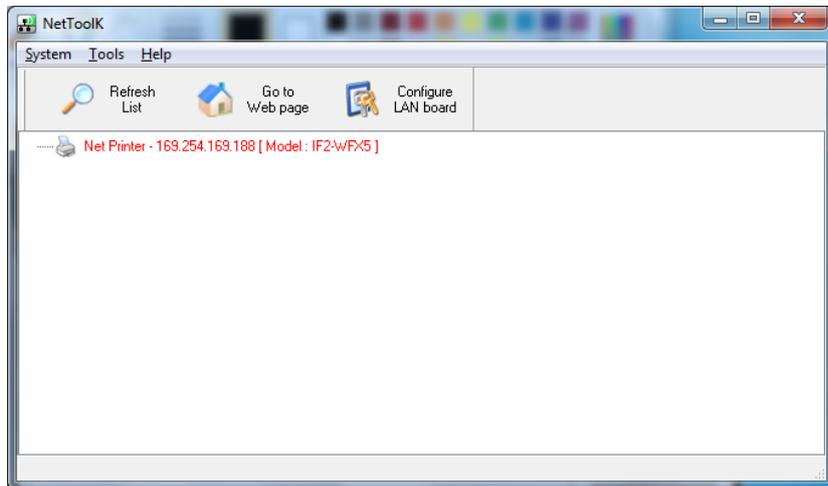
Use the "Maintenance" tab to restart the LAN interface board, return the settings to the factory default settings, and update the firmware.

#### Note

After the firmware upgrade starts, do not disconnect power or transmission to the printer until the upgrade is complete.



Note: If the computer at which you are performing the configuration and the LAN interface board have different subnet values, a message like the one shown below appears in red letters. If this message appears, set the IP address using the “Configure the LAN Board” button before configuring the LAN interface board.



Only the server name and IP address can be configured. Configure the IP address correctly one time before configuring the wireless LAN interface board.

## 6. XML Function and Peripheral Device Control Function

### 6-1. Overview

The XML function and peripheral device control function are functions of this interface board.

The XML function is a function to convert specific data in XML tag format to implement functions such as printing. The peripheral device control function is a function to control a device connected to a USB port of the interface board by using data in XML tag format. (A method to control a peripheral device without using the XML function is also provided.)

See the separate documents for CITIZEN XML Print Service for details on data in XML tag format, JavaScript library to generate that data, etc.

This function can be used when the following conditions are met.

- Printer is a POS printer (W model series) or label printer that supports the XML function.

- This interface is connected.

If the conditions are met, the Service Status tab is displayed in the STATUS window and the Service tab is displayed in the CONFIG window.

## 6-2. Explanation of Each Setting Item of Service Tab in CONFIG Window

The setting items that are displayed differ depending on the type of interface board that is connected to the printer.

IFx-xFX2 / IFx-xFX5 : All items

Other: XML Print items only

The Media Converter items may be displayed even when the interface board is used in combination with a printer that does not meet the conditions.

General	Wireless LAN	Service	User Account	Maintenance
<b>Media Converter</b>				
VCOM Convert	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	<input type="checkbox"/> Show configuration	
HID Scanner Convert	<input type="radio"/> Enable	<input checked="" type="radio"/> Disable	<input type="checkbox"/> Show configuration	
<b>XML Print</b>				
Port Number	<input type="text" value="8080"/>			
Timeout for connect	<input type="text" value="10"/>	5-60[Seconds]		
Timeout for print	<input type="text" value="60"/>	10-600[Seconds]		
<b>XML Device Control</b>				
Port Number	<input type="text" value="8085"/>			
Timeout for connect	<input type="text" value="10"/>	5-180[Seconds]		
Max connection	<input type="text" value="2"/>			
<b>XML Device Control / Line Display</b>				
Baud rate	<input type="text" value="9600"/>			
Data	<input type="text" value="8 bit"/>			
Parity	<input type="text" value="None"/>			
Stop	<input type="text" value="1 bit"/>			
Flow Control	<input type="text" value="Off"/>			
<input type="button" value="Test Device"/>				
<b>XML Device Control / Scanner</b>				
<input type="button" value="Test Device"/>				
<b>XML Device Control / Speaker</b>				
<input type="button" value="Test Device"/>				
<input type="button" value="Submit"/> <input type="button" value="Reset"/>				

#### 4 XML Function and Peripheral Device Control Function

##### 6-2-1. Media Converter

Item	Initial value	Configurable range	Description
VCOM Convert	Disable	Enable Disable	Set Enable when using a display or scanner using OPOS without XML control.
HID Scanner Convert	Disable	Enable Disable	Set Enable when using a scanner in HID mode without XML control.
Show Configuration	Unselected	Selected Unselected	If you select this, the advanced settings for communication with the device are displayed. The initial value of each item is the value for the corresponding device so there is no need to change it.

##### 6-2-2. XML Print

Item	Initial value	Configurable range	Description
Port Number	8080	1025 - 65535	Connection port number
Timeout for connect	10	5 - 60	Timeout time to wait for printing to start
Timeout for print	60	10 - 600	Timeout time to wait for the printer process to complete

##### 6-2-3. XML Device Control

Configure the following general settings for XML Device Control Service.

Item	Initial value	Configurable range	Description
Port Number	8085	1025 - 65535	Connection port number
Timeout for connect	10	5 - 180	Timeout time to wait for control to start (sec.)
Max Connections	2	1 - 3	Maximum number of simultaneous connections (normally use with the initial value)

#### 6-2-4. XML Device Control / Line Display

Configure the following general settings for a display. The setting initial values are already the appropriate values for the corresponding display so do not change them in the case of normal use.

Item	Initial value	Configurable range
Baud rate	9600	2400, 4800, 9600, 19200, 38400, 57600, 115200
Data	8 bit	7 bit, 8 bit
Parity	None	None, Odd, Even
Stop	1 bit	1 bit, 2 bit
Flow Control	Off	Hardware, Xon/Xoff, Off

If you press the “Test Device” button, a text string is displayed on the display according to these settings. If a connection with the display cannot be confirmed, an alert message (“Test failed”) is displayed in the browser.

#### 6-2-5. XML Device Control / Scanner

If you press the “Test Device” button, the connection with the scanner (USB HID keyboard method) is checked. If a connection with the scanner cannot be confirmed, an alert message (“Test failed”) is displayed in the browser.

#### 6-2-6. XML Device Control / Speaker

If the “Test Device” button is pressed while a USB speaker is connected, the sound (chime) prerecorded in the interface board is played. If a connection with the USB speaker cannot be confirmed, an alert message (“Test failed”) is displayed in the browser.

If you wish to actually use this function, submit an inquiry to us.

#### 6-2-7. Submit / Reset Button

After changing the settings, press the “Submit” button and then press the “Save & Reboot” button in the Maintenance menu. The settings will be enabled after the board reboots.

## 4 XML Function and Peripheral Device Control Function

---

### 6-3. Service Status Tab of STATUS Window

System Status	Network Status	Printer Status	Service Status
<b>Media Converter</b>			
Service Version:	1.0		
<b>VCOM #1</b>			
Status:	Ready (VID:067b, PID:2303)		
Port Number:	9200		
Type:	VCOM		
<b>VCOM #2</b>			
Status:	Offline		
Port Number:	9201		
Type:	CDC		
<b>HID Scanner</b>			
Status:	Disabled		
Port Number:	9210		
<b>XML Print</b>			
Service Version:	2.0		
Port Number:	8080		
<b>XML Device Control</b>			
Service Version:	1.0		
Port Number:	8085		
LineDisplay Status:	Disabled		
Scanner Status:	Ready		
Speaker Status:	Offline		

The settings on the Service tab, the connection state of the peripheral device, etc. are reflected here.