# TOSHIBA

TOSHIBA Bar Code Printer

# B-EX Series

# Network Specification

**TOSHIBA TEC CORPORATION**

# Table of Contents

# 1. SCOPE

This specification applies to the network for the B-EX series industrial sophisticated general-purpose barcode label printers (hereinafter referred to as the B-EX series).

# 2. GENERAL DESCRIPTION

With the standard wired LAN module and the optional wireless LAN module, the B-EX series can connect the printer to the host via TCP/IP.

# 3. SUPPORTED PROTOCOL

TCP/IP

| Protocol | | Specifications |
|---|---|---|
| Protocol | Physical Layer | 802.3 (wired), 802.11b/g (wireless) |
| | Data Link Layer | CSMA/CD (wired), CSMA/CA (wireless) |
| | Network Layer | IP, ICMP, ARP |
| | Transport Layer | TCP, UDP |
| | Application Layer | SOCKET, LPR, FTP server, Web server, POP3 client, SMTP client, SNMP agent, DHCP client and WINS client |

Wireless LAN Protocol for B-EX6T

| | Layer | Specifications | |
|---|---|---|---|
| Protocol | Physical Layer | 802.11b/g/n (2.4GHz) | |
| | Data Link Layer | CSMA/MA | |
| | Network Layer | IP, ICMP, ARP | |
| | Transport Layer | TCP, UDP | |
| | Application Layer | Common | |
| | | TCP Socket server,UDP Socket server | |
| | | LPR server,HTTP server,DNS client | |
| | | Access Point mode | Infrastructure mode |
| | | DHCP server | DHCP client |

# 4. NETWORK SPECIFICATIONS

## 4.1 PROTOCOL

This printer has the functions of the LPR server, socket communication server, FTP server, mail transmission/reception (POP3/SMTP), HTTP server (Web printer), DHOP client, WINS client and security (wireless LAN only) as specified in the network specifications.

## 4.2 RESTRICTIONS

The printer does not receive large amounts of broad packets in normal operation. Therefore, when the printer receives a large amount of packets due to improper wiring of the network, an error may appear.

## 4.3 TRANSMISSION OF A PING

- When the printer is started, it sends a ping to the printer's IP address +1.  In the case the DHCP is set to ON, a ping is transmitted after the IP address is fixed.
- When using the LPR server, socket communication server, FTP server, E-mail (POP3/SMTP), or HTTP server (Web printer) function, transmitted data is not guaranteed if the printer IP address is changed (due to a DHCP update or a change to the setting through the tool) or a communication is disconnected due to a restart of the printer during communication.
- Since it is assumed that the Internet protocol is Ipv4, printer operations under the environment of IPv6 are not guaranteed.
- **B-EX6T1/T3 printer operation under the environment of IPv6 is possible.**

## 4.4 PRINTER BEHAVIOR WHILE UNCONNECTED TO WLAN ACCESS POINT

The printer will automatically connect to a WLAN access point at a start-up if an optional wireless LAN board has been installed and "ON (AUTO)" or "ON (WLAN)" is selected for the LAN/WLAN parameter and "Infrastructure" for the connection mode. If a connection to the access point cannot be established, the printer tries a connection to an access point every 40 seconds (active scan).

In the case the printer has no connection to an access point for approximately two hours after a restart of the printer, no further WLAN connection will be made.

The printer behavior differs depending on the model and firmware version.

(1) Model and firmware version:

    B-EX4T1-TS25-R  V2.0 or later
    B-EX4T1-G/T  C1.1 or later
    B-EX4T2-G/T  C1.1 or later
    B-EX4T2-H  C1.0F or later
    B-EX4D2-G/T  D1.1 or later
    **B-EX6T1/T3-G/T**

Restart: Once the printer connects to an access point, it will not restart.

(2) Model and firmware version:

    B-EX4T1-TS15-R
    B-EX4T1-G/T  C1.0
    B-EX4T2-G/T  C1.0
    B-EX4T2-H  C1.0E
    B-EX4D2-G  D1.0
    Other models than those listed in (1) above, including custom models.

Restart: The printer will restart when an unconnected state is detected, even after a connection to an access point was established.

# 5. CONNECTION DIAGRAM

## 5.1 WIRED LAN
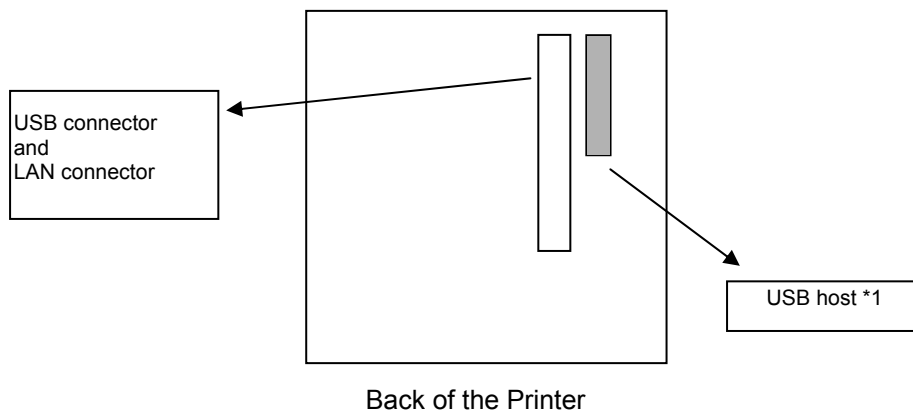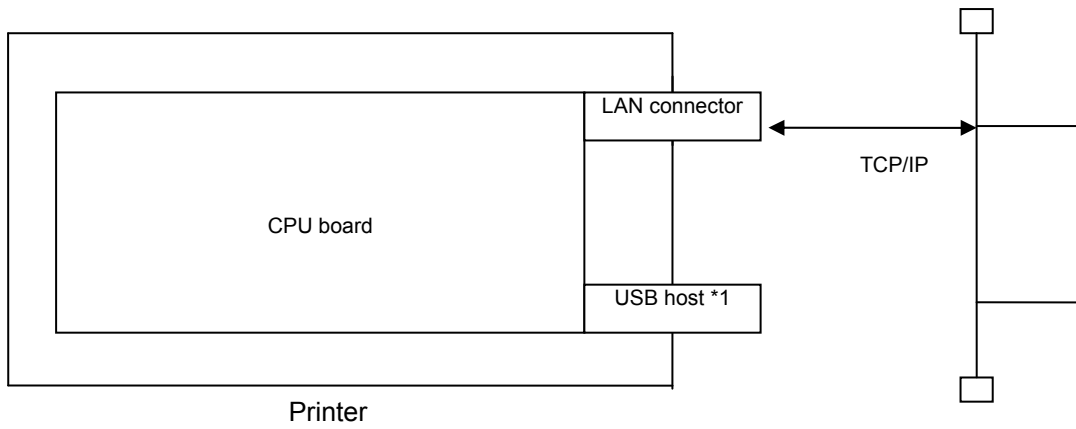


Printer



Back of the Printer

*1: The USB host is used in the functions of the Web printer, e-mail transmission/reception and FTP when the use of external memory is specified for the Web printer function.

## 5.2 WIRELESS LAN

```
┌──────────────────────────────── - 5 - ──────┐              ┌─┐
│  ┌──────────────────────────┬─────────────┐ │              └─┘
│  │                          │LAN connector│ │               │
│  │                          ├─────────────┤ │              ─┤
│  │      CPU board           │Wireless LAN │ │◄ - - ► ┌──────────┐
│  │                          │board        │ │        │Wireless AP│
│  │                          ├─────────────┤ │        └──────────┘
│  │                          │USB host *1  │ │  TCP/IP   │
│  └──────────────────────────┴─────────────┘ │          ─┤
└──────────────────────────────────────────────┘           │
              Printer                                      ┌─┐
                                                           └─┘
```

Printer

Wireless AP

TCP/IP



```
┌──────────────────────────────┐
│                    ┌─┐ ┌─┐    │
│                    │ │ │ │    │
│ ┌────────────┐     │ │ │ │    │
│ │USB connector│◄───┘ │ │ │    │
│ │and          │      │ │ │    │
│ │LAN connector│      │ │ │    │
│ └────────────┘      │ │ └┐    │
│                     │ │  └──► ┌────────────┐
│                     └─┘       │USB host *1  │
│                               │and          │
└───────────────────────────────│wireless LAN │
                                 │board        │
                                 └────────────┘
```

Back of the Printer

USB connector
and
LAN connector

USB host *1
and
wireless LAN board

*1: The USB host is used in the functions of the Web printer, e-mail transmission/reception and FTP when the use of external memory is specified for the Web printer function.

# 6. SETTINGS

## 6.1 LISTS OF NETWORK PARAMETERS AND DEFAULT VALUES

Wireless LAN parameters and default values are listed below.
In the "System Mode" column, "Yes" indicates the parameter can be changed in B-EX's system mode and "No" indicates the parameter cannot be changed in B-EX's system mode.
For more information, see the Key Operation Specification.

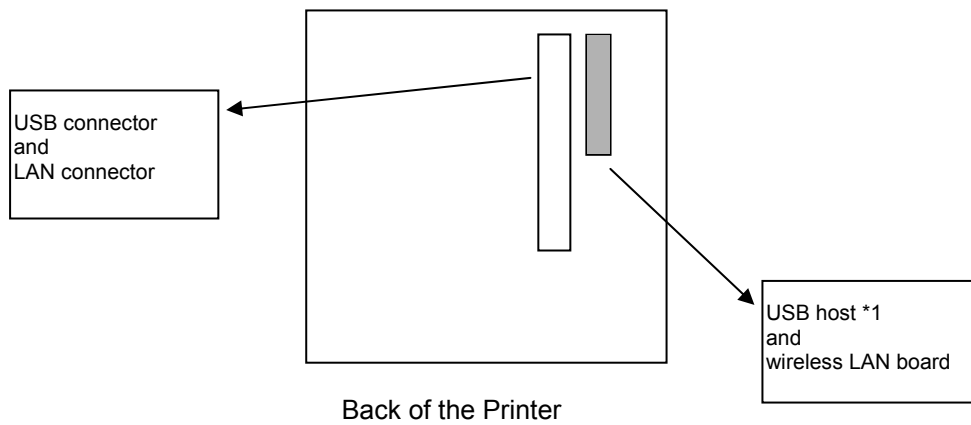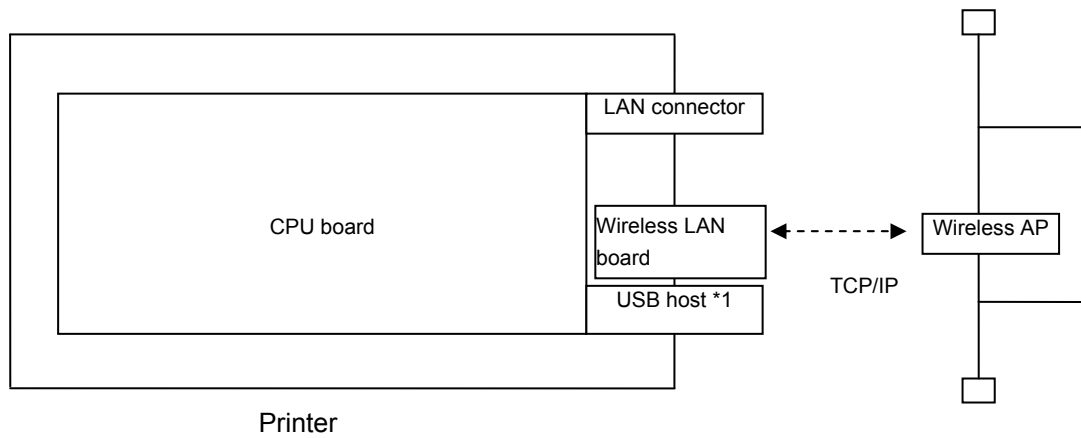| Category | Parameter Name | Value | Default Value | System Mode |
|---|---|---|---|---|
| | Network Function | Disabled/Auto/Wired/Wireless | Auto | Yes |
| | Host Name | xxxxxxxx... (max. 32 bytes) | None<br><br>(Null (0x00) x 32) | Yes |
| DHCP | DHCP ID | xxxxxxxx... (max. 64 bytes) | None<br><br>(Null (0x00) x 64) | Yes |
| | DHCP Client | Disable/Enabled | Disabled | Yes |
| TCP/IP | IP Address | xxx.xxx.xxx.xxx (000 to 255) | 192.168.10.20 | Yes |
| | Subnet Mask | xxx.xxx.xxx.xxx (000 to 255) | 255.255.255.0 | Yes |
| | Default Gateway | xxx.xxx.xxx.xxx (000 to 255) | 0.0.0.0 | Yes |
| WINS | WINS | Disable/Enabled (STATIC)/Enabled (DHCP) | Disabled | Yes |
| | WINS Server | xxx.xxx.xxx.xxx (000 to 255) | 0.0.0.0 | Yes |
| LPR | LPR | Disable/Enabled | Enabled | Yes |
| Socket Communication | Socket Communication | Disable/Enabled | Enabled | Yes |
| | Socket Communication Port | 00000 to 65535 *1 | 08000 | Yes |
| Wireless LAN | Wireless Connection Mode | Adhoc/Infrastructure | Infrastructure | Yes |
| | b/g Selection | 11b, 11g, 11b/g | 11b/g | Yes |
| | ESSID | xxxxxxxx... (max. 32 bytes)<br><br>Case-sensitive | "TOSHIBATEC" | No |
| | Country Code | Chapter 8.4 SE Setting Function<br>See Country Code/Country Name in [List of Available Channels by Country] | JPN (When DBCS is in Japanese.)<br>BEL (When DBCS is in other than Japanese.) | No |
| | Beacon Transmission Interval | 00000 to 99999 (msec) | 1000 | No |
| | ANY SSID | OFF<br><br>ON: Priority AP not available<br><br>ON: Priority AP only<br><br>ON: Other than priority AP available | OFF | No |
| | Priority AP1 | xxxxxxx... (12 bytes HEX) *2 | None<br><br>(Null (0x00) x 12) | No |
| | Priority AP2 | xxxxxxx... (12 bytes HEX) | None<br><br>(Null (0x00) x 12) | No |
| | Priority AP3 | xxxxxxx... (12 bytes HEX) | None<br><br>(Null (0x00) x 12) | No |
| | Priority AP4 | xxxxxxx... (12 bytes HEX) | None<br><br>(Null (0x00) x 12) | No |
| | Priority AP5 | xxxxxxx…(12bytes HEX) | None<br><br>(Null (0x00) x 12) | No |

| Category | Parameter Name | Value | Default Value | System Mode |
|---|---|---|---|---|
| | Roaming Threshold | 00 to 99<br><br>Originally, the threshold is expressed in negative numbers but not set in negative numbers. | 70 | No |
| 802.11b | Channel | 01 to 14 | 1 | Yes |
| | Transmission rate | 11Mbps/5.5Mbps/2Mbps/1Mbps | 11Mbps | Yes |
| 802.11g | Channel | 01 to 13 | 1 | Yes |
| | Transmission rate | 54Mbps/48Mbps/36Mbps<br><br>24Mbps/18Mbps/12Mbps<br><br>9Mbps/6Mbps/11Mbps/5.5Mbps<br><br>2Mbps/1Mbps | 54Mbps | Yes |
| 802.11b/g | b/g Encryption | Disabled/WEP40/WEP128/AES<br>TKIP | Disabled | Yes |
| WPA | WPA Authentication Method | Disabled/WPA/WPA-PSK/WPA2<br>WPA2-PSK | Disabled | Yes |
| WEP | WEP Authentication Method | Disabled//Open System/Shared Key | Disabled | Yes |
| | Default Key | 1 to 4 | 1 | Yes |
| | Size/Key #1 | Disabled/64 bits/128 bits | Disabled | No |
| | Size/Key #2 | Disabled/64 bits/128 bits | Disabled | No |
| | Size/Key #3 | Disabled/64 bits/128 bits | Disabled | No |
| | Size/Key #4 | Disabled/64 bits/128 bits | Disabled | No |
| | WPA Encryption Key | 8 to 64 single-byte alphanumeric characters | (Null (0x00) x 64) | No |
| | Authentication Method | Disabled/EAP-TLS/PEAP<br>EAP-TTLS/EAP-FAST<br>EAP-MD5, LEAP | Disabled | Yes |
| | Authentication Username | xxxxxxx (max. 32 bytes) | None<br>(Null (0x00) x 32) | No |
| | Authentication Password | xxxxxxx (max. 32 bytes) | None<br>(Null (0x00) x 32) | No |
| 802.1X Function | IEEE802.1X | Disable/Enabled | Disabled | Yes |

*1: When the port number is set to 21, 80 or 515, the printer does not properly operate. (The port numbers from 0 to 1023 are not generally used.)

*2: ANY SSID and priority AP functions are available only when the printer starts up.

## 6.2 FACTORY DEFAULT VALUE

Except for IP Address, Gateway, Subnet Mask and Socket Port numbers, all module factory default values for wireless LAN parameters are the same as module default values.

## 6.3   DESCRIPTION OF WIRELESS LAN PARAMETERS

A description of each parameter is listed below.

| Parameter Name | Description |
| --- | --- |
| IP Address | Sets the IP address of the module. |
| Gateway IP Address | Sets the IP address of the default gateway. |
| Subnet Mask | Sets the subnet mask. |
| LPR Communication | Specifies whether to enable or disable LPR communication. |
| Socket Communication | Specifies whether to enable or disable socket communication. |
| Socket Communication Port | Specifies the port number for socket communication. |
| DHCP | Specifies whether to enable or disable DHCP protocol. |
| DHCP ID | Specifies the client ID to notify the DHCP server using the DHCP protocol.  If the value of the null character is specified, the MAC address is used. |
| Host Name | Specifies the character string of the host name to be notified to the host using the DHCP or WINS protocol.  If the value of the null character is specified, the MAC address is used. |
| WINS | Specifies whether to enable or disable WINS protocol.  If ON (STATIC) is selected, the WINS server specified by the WINS server parameter is used.  If ON (DHCP) is selected, the WINS server specified by the DHCP server parameter is used. |
| WINS Server | Sets the WINS server address when the WINS parameter is set to ON (STATIC).  If the WINS parameter is set to ON (STATIC), this parameter is ignored. |
| ESS ID | Sets the ESS ID. |
| Connection Mode | Sets the connection mode to Adhoc or Infrastructure. |
| 11 b/g Setting | Selects to use 11b or 11g as a wireless LAN standard. |
| Channel | Selects a channel used for Adhoc communication. |
| Authentication Method | Specifies the authentication method. |
| WEP | Sets whether or not to use WEP. |
| SEND KEY | Selects the key number used for transmission. |
| WEP Key #1 | Specifies WEPKEY #1. |
| WEP Key #2 | Specifies WEPKEY #2. |
| WEP Key #3 | Specifies WEPKEY #3. |
| WEP Key #4 | Specifies WEPKEY #4. |
| Security Mode | Specifies the security mode. |
| User Name | Specifies the username used in security mode. |
| Password | Specifies the password used in security mode. |
| Country Setting | Selects a country. Items not specified by the user. |

## 6.4   PARAMETER SETTING TOOL

The network parameters can be set using the "B-EX setting tool."
For more information on the operation, see the "B-EX Printer Setting Tool Operation Specification."

## 6.   SETTINGS (FOR E-EX6T)

## 6.1 LISTS OF NETWORK PARAMETERS AND DEFAULT VALUES

Network parameters and default values when using BCP Setting Tool are listed below.
In the "System Mode" column, "Yes" indicates the parameter can be changed in B-EX's system mode and "No" indicates the parameter cannot be changed in B-EX's system mode.
For more information, see the Key Operation Specification Ver.2 (EAA-04151).

| Category | Parameter Name | Value | Default Value | System Mode |
|---|---|---|---|---|
| | Network Function | Disabled/Auto/Wired/Wireless | Auto | Yes |
| | Host Name | xxxxxxxx... (max. 32 bytes) | None (Null (0x00) x 32) | Yes |
| DHCP | DHCP ID | xxxxxxxx... (max. 64 bytes) | None (Null (0x00) x 64) | Yes |
| | DHCP Client | Disable/Enabled | Disabled | Yes |
| TCP/IP | IP Address | xxx.xxx.xxx.xxx (000 to 255) | 192.168.10.20 | Yes |
| | iPv6 Link Local Address | HEX2 bytes x 8 | Auto from MAC | No |
| | iPv6 Global Address | HEX2 bytes x 8 | None | No |
| | Subnet Mask | xxx.xxx.xxx.xxx (000 to 255) | 255.255.255.0 | Yes |
| | Default Gateway | xxx.xxx.xxx.xxx (000 to 255) | 0.0.0.0 | Yes |
| LPR | LPR | Disable/Enabled | Enabled | Yes |
| Socket Communication | Socket Communication | Disable/Enabled | Enabled | Yes |
| | Socket Communication Port | 00000 to 65535 *1 | 091000 | Yes |
| Wireless LAN | Wireless Connection Mode | Infrastructure/AP mode | Infrastructure | Yes |
| | ESSID | xxxxxxxx... (max. 32 bytes) Case-sensitive | "TOSHIBATEC" | No |
| | Regulation Standards | FCC/ETSI/TELEC | FCC | No |
| | Beacon Transmission Interval | 50 to 1500 (msec) | 100 | No |
| | Roaming Threshold(Upper limit) | 00 to 99 *2 | 60 | No |
| | Roaming Threshold(Under limit) | 00 to 99 *2 | 80 | No |
| | Channel | 01 to 1x (x=1:FCC, x=3:ETSI, x=4:TELEC) | 01 | Yes |
| Security | Security Mode | Open　WEP　WPA Personal　WPA2 Personal　WPA Enterprise　WPA2 Enterprise | Open | No |
| | WEP Authentication Method | Open System/Shared Key | Open System | No |
| | WEP Key Index | 1 to 4 | 1 | Yes |
| | WEP Key | HEX 10 Lines | NULL　0x00)× 10 | No |
| | WPA Encryption Key | 8 to 63 single-byte alphanumeric characters, HEX 64 lines | (Null (0x00) x 64) | No |
| | EAP Authentication Method | Disabled/EAP-TLS/PEAP EAP-TTLS/EAP-FAST | Disabled | No |
| | Root CA Certificate | DER format Certificate File | Unregistered | No |
| | Client Certificate | DER format Certificate File (Unencrypted) | Unregistered | No |
| | Client Secret Key | DER format Certificate File | Unregistered | No |
| | Authentication Username | xxxxxxx (max. 32 bytes) | (Null (0x00) x 32) | No |

| Category | Parameter Name | Value | Default Value | System Mode |
|---|---|---|---|---|
| | Authentication Password | xxxxxxx (max. 32 bytes) | (Null (0x00) x 32) | No |

*1: The port numbers from 0 to 1023 are not generally used.

*2: -(Minus) is not necessary for the setting.

*3: WPA Enterprise and WPA2 Enterprise are selectable only when using Infrastructure mode.

## 6.2   DESCRIPTION OF WIRELESS LAN PARAMETERS

A description of each parameter is listed below.

| Parameter Name | Description |
|---|---|
| Network Function | Switches  Disabled/Auto/Wired/Wireless for using either  LAN or WLAN |
| Host Name | Specifies the character string of the host name to be notified to the host using the DHCP or WINS protocol.  If the value of the null character is specified, the MAC address is used. |
| DHCP ID | Specifies the client ID to notify the DHCP server using the DHCP protocol.  If the value of the null character is specified, the MAC address is used. |
| DHCP Client | Specifies whether to enable or disable DHCP protocol. |
| IP Address | Sets the IP address of the module. |
| IPv6 Link Local Address | Specific Local address that automatically created from MAC address |
| IPv6 Global Address | Unique address in all IPv6 that obtain from DHCPv6 Server |
| Subnet Mask | Sets the subnet mask. |
| Default Gateway | Sets the IP address of the default gateway. |
| Socket Communication | Specifies whether to enable or disable socket communication. |
| Socket Communication Port | Specifies the port number for socket communication. |
| LPR | Specifies whether to enable or disable LPR communication. |
| Wireless Connection Mode | Sets the connection mode to Infrastructure or AP mode. *1 |
| ESS ID | Sets the ESS ID. |
| Regulation Standards | Selects regulation standards to FCC, ETSI, or TELEC. |
| Beacon transmission interval | Sets the beacon transmission interval for using with AP mode. |
| Roaming Threshold | Sets the RSSI threshold for roaming |
| Channel | Selects a channel used for communication. |
| Security Mode | Specifies the security mode. |
| WEP Authentication Method | Specifies the authentication method when selecting WEP as a security mode. |
| WEP KEY Index | Selects the key number used for WEPKEY transmission. |
| WEP KEY | Sets WEPKEY. |
| WPA Encryption KEY | Specifies the authentication method when selecting WPA Personal or WPA2 Personal as a security mode. |
| EAP authentication Method | Specifies the authentication method when selecting WPA Enterprise or WPA2 Enterprise as a security mode. |
| Root CA Certificate | Sets the Root CA Certificate when selecting EAP-TLS, PEAP, or EAP-TTLS as EAP authentication method. |
| Client Certificate | Sets the Client Certificate when selecting EAP-TLS as EAP authentication method. |
| Client Key | Sets the Client Key when selecting EAP-TLS as EAP authentication method. |
| User Name | Specifies the username used in security mode. |
| Password | Specifies the password used in security mode. |

*

1 Printer operates as Access point with AP mode and communicates with host devices connected to the printer in Infrastructure mode. Host device is connectable up to 8 devices.

## 6.3   PARAMETER SETTING TOOL (FOR B-EX6T)

The network parameters can be set using the "B-EX setting tool."
For more information on the operation, see the "B-EX Printer Setting Tool Operation Specification."

# 7. PROTOCOLS AND SETTINGS

## 7.1 SOCKET COMMUNICATION

Using the socket communication protocol, the host device can send print data to the printer.
This bi-directional socket communication also allows the host device to receive the printer status.

### 7.1.1 Required Settings

| | |
|---|---|
| LAN/WLAN | Other than Disabled |
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |
| Socket | Enabled |
| Port number | Any |

### 7.1.2 Communication Procedures

(1) Socket connection is made from the client PC to the printer using the port number set in the printer.

(2) Printer commands are sent from the client PC to the printer.

(3) When automatic status response is enabled in the printer, the printer returns a status to the client PC.

***NOTES*:**

*1. For more information on status response from the printer, see Section "8 STATUS" in the External Equipment Interface Specification.*

*2. For the parameter to specify whether to enable or disable automatic status response, see the sections describing the Issue and Feed commands in the External Equipment Interface Specification.*

### 7.1.3 Communication Specifications

The printer can be connected with several clients at the same time.  While data processing starts between the printer and client, the printer does not accept subsequent data from other connected clients until the on-going data processing is completed.
When being connected with several clients, the printer returns a status only to the earliest connected client.

## 7.2. LPR COMMUNICATION

Using the LPR communication protocol, the host device can send print data to the printer.

### 7.2.1 Required Settings

| | |
|---|---|
| LAN/WLAN | Other than Disabled |
| LPR | Enabled |
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |

### 7.2.2 Operation

On power-up, when the LAN function and the LPR function are enabled, the printer runs a printer daemon task.

### 7.2.3 Communication Specifications

For the LPR communication, only one connection is supported.
If a new connection is requested while the printer already has a connection in communication, the printer accepts this request, but immediately disconnects it without doing any data transmission.

## 7.3  WEB PRINTER

When the following conditions are met, the printer allows checking its status, printing labels, browsing or changing the settings and downloading firmware on the PC browser.
This is called Web printer function.

### 7.3.1    Required Settings

| Web Printer | Other than Disabled |
|-------------|---------------------|
| LAN/WLAN    | Other than Disabled |
| IP Address  | Any                 |
| Subnet Mask | Any                 |
| Gateway     | Any                 |

### 7.3.2    Preparation

- Environment where a wired LAN or wireless LAN connection is established
- XML ROM file including the Web printer settings or USB host board (option) and USB storage device
- Files to be displayed on the browser (*.htm, *.asp)
  TOSHIBA TEC provides the sample display files (*.htm, *.asp).  These files (*.htm, *.asp) contain the following files.

  Default.htm
  Headsens.htm
  Mentctr.htm
  Pmenu.htm
  Prt_sts.htm
  Psensor.htm
  Ribbon.htm
  Screen.htm
  Temper.htm
  File.asp
  Pdown.asp
  String.asp
  Ilogin.htm
  Params.htm
  Spooler.htm
  Overseae.htm (English version only)
  In addition, the sample display files contain graphics files and JavaScript files.

### 7.3.3 Web Pinter Specifications

The sample display files (*.htm, *.asp) are used to explain the Web printer specifications.

#### 7.3.3.1 Preparation (When using internal memory)

(1) An XML ROM including Web printer settings needs to be created to operate the Web printer function with the internal memory.  The following steps are used to create the XML ROM.
  ① Create a folder named "HTML."
  ② Copy the display files (*.htm, *.asp) to "HTML."
  ③ Cerate a ROM for the "HTML" directory data by using the XML ROM Creation Tool.
(2) Download the created XML ROM to the printer with the Printer Setting Tool.
(3) Enable the Web printer function in system mode.  For more information on the operation procedure, see the Key Operation Specification.

#### 7.3.3.2 Preparation (When using external memory)

(1) The HTML file needs to be installed on the USB storage device to operate the Web printer function.  The following steps are used to install the HTML file.
  ① Connect the USB storage device to the USB connector on the PC.
  ② After the USB storage device is recognized and a driver is assigned, create a folder named "HTML" in the root and a folder named "TMP" under "HTML."
  ③ Copy the display files (*.htm, *.asp) to "HTML."
    The "TMP" folder is used to temporarily store files.
  ④ Remove the USB storage device in the state where it is safe to remove the USB storage device.
    The FTP function can be also used to install similar files.  For more information on the FTP function, see Section 7.4 FTP Server.
(2) Connect the USB storage device to the UCB connector on the optional printer USB host board.
(3) Enable the Web printer function in system mode.  For more information on the operation procedure, see the Key Operation Specification.

Note: After copying the display file (*.htm) to the USB storage device, check the attribute of the file and remove the attribute if the file is read only.
(If the file is read only, the Web function does not properly work.)
Note: When the "HTML" folder is not found, the printer starts looking for the "SX-HTM" folder. When the "SX_HTM folder is found, rename and use it.

#### 7.3.3.3 Startup

Start up the browser on the PC (JavaScript-enabled browser such as Internet Explorer) to connect to the printer.
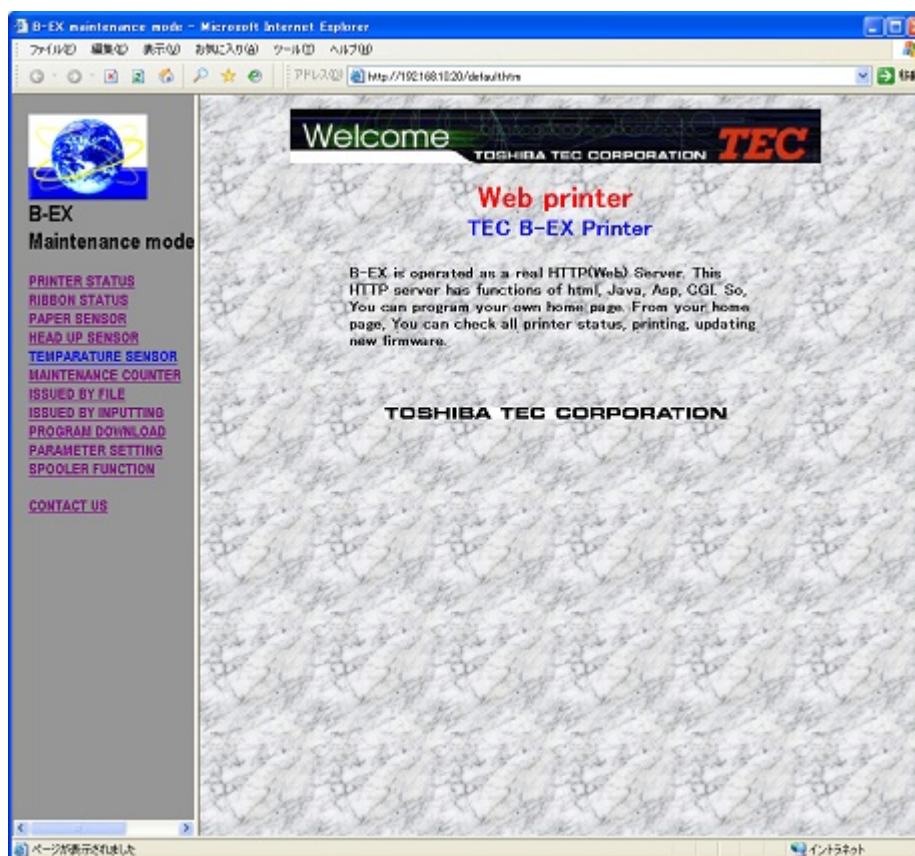The HTML folder is a root directory and either of the following addresses applies.
http://Printer IP address/
or
http://Printer IP address/default.htm

### 7.3.3.4 Printer Status View

Select "PRINTER STATUS" in the menu on the left of the window.
(1) PRINTER STATUS: Indicates the printer status. (The display is updated every 3 seconds.)
- IDLE HEAD CLOSE (The printer is in an idle state, and the print head is closed.)
- IDLE HEAD OPEN (The printer is in an idle state, and the print head is opened.)
- PRINTER WORKING (The printer is in operation.)
- WAITING FOR PEEL OFF (The label is waiting for being stripped.)
- SYNTAX ERROR (A command syntax error occurs.)
- COMMUNICATION ERROR (A communication error occurs.)
- PAPER JAM (A paper jam occurs.)
- CUTTER ERROR (A cutter error occurs.)
- NO PAPER (The printer runs out of paper.)
- NO RIBBON (The printer runs out of ribbon.)
- HEAD OPEN ERROR (A head open error occurs.)
- THERMAL HEAD ERROR (A broken dots error occurs.)
- EXCESS HEAD TEMPERATURE (The print head temperature is excessively high.)
- RIBBON ERROR (A ribbon error occurs.)
- REWINDER OVERFLOW (A rewinder overflow occurs.)
- SAVING (The printer is in save mode.)
- MEMORY WRITE ERR (A write error occurs.)
- FORMAT ERROR (An erase error occurs.)
- MEMORY FULL (The remaining space is not sufficient.)

(2) RIBBON STATUS: Indicates the length of ribbon used. (The display is updated every 3 seconds.)
  • RIBBON 1/8 (Approximately 1/8 of the total length of ribbon is used.)
  • RIBBON 2/8 (Approximately 2/8 of the total length of ribbon is used.)
  
  **:**
  
  • RIBBON 7/8 (Approximately 7/8 of the total length of ribbon is used.)
  • RIBBON 8/8 (Approximately 8/8 of the total length of ribbon is used.)
  NOTE: No value is displayed for the B-EX4D2-G/T.

(3) PAPER SENSOR: Indicates levels of paper sensors. (The display is updated every 3 seconds.)
  • TRANSMISSIVE SENSOR: *.*V (Input level of the transmissive sensor: 0.0 V to 5.0 V)
  • REFLECTIVE SENSOR: *.*V (Input level of the reflective sensor: 0.0 V to 5.0 V)

(4) HEAD UP SENSOR: Indicates the head up sensor status. (The display is updated every 3 seconds.)
  • HEAD CLOSE (The print head is closed.)
  • HEAD OPEN (The print head is opened.)

(5) TEMPERATURE SENSOR: Indicates the temperature sensor status. (The display is updated every 3 seconds.)
  • HEAD TEMPERATURE: ∗∗ °C  (Print head temperature)
  • OUTSIDE TEMPERATURE: ∗∗ °C (Outside air temperature)

(6) MAINTENANCE COUNTER: Indicates the values for various counters such as the label distance covered. (The display is updated every 3 seconds.)
  • TOTAL FEED: *.* km (Total label distance covered)
  • FEED: *.* km (Label distance covered)
  • PRINT: *.* km (Print distance)
  • CUT COUNT: **** (Cut count)
  • HEAD UP/DOWN COUNT: **** (Head up/down count)
  • RIBBON WORK TIME: **h (Ribbon motor drive time)
  • RIBBON WORK TIME: **h (Head-up solenoid drive time)
  • RS-232C ERROR COUNT: **** (RS-232C communication error count)
  • SYSTEM ERROR COUNT: **** (System error count)
  • POWER FAILURE COUNT: **** (Momentary power interruption count)

  An example for each status display is shown below.

[Display Examples]

PRINTER STATUS (IDLE HEAD CLOSE)
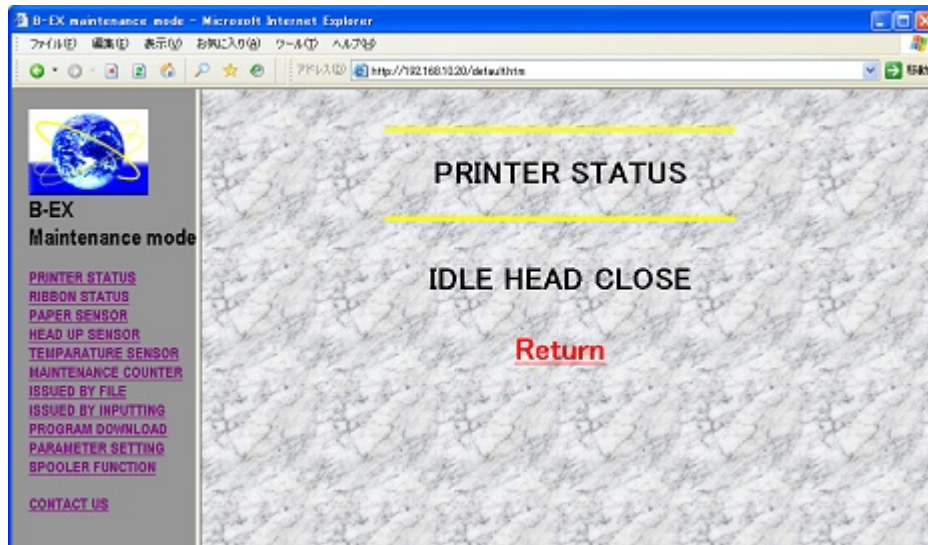


RIBBON STATUS (RIBBON 2/8)
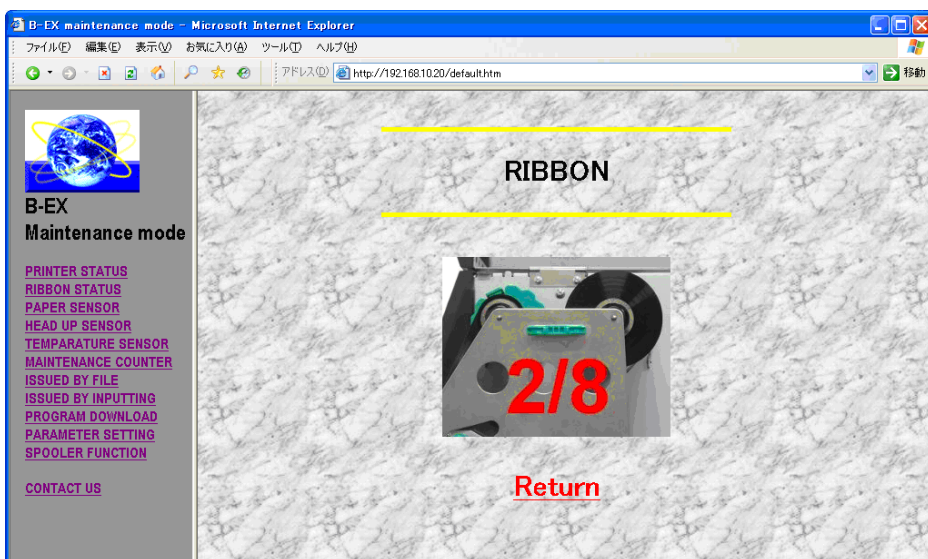
PAPER SENSOR (Transmissive sensor: 2.5 V, Reflective sensor: 1.2 V)
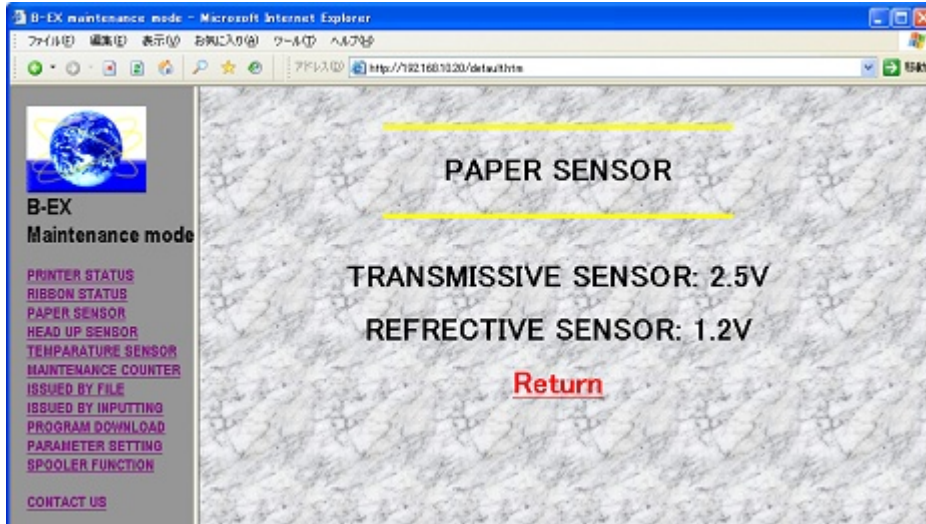


HEAD UP SENSOR (CLOSE)
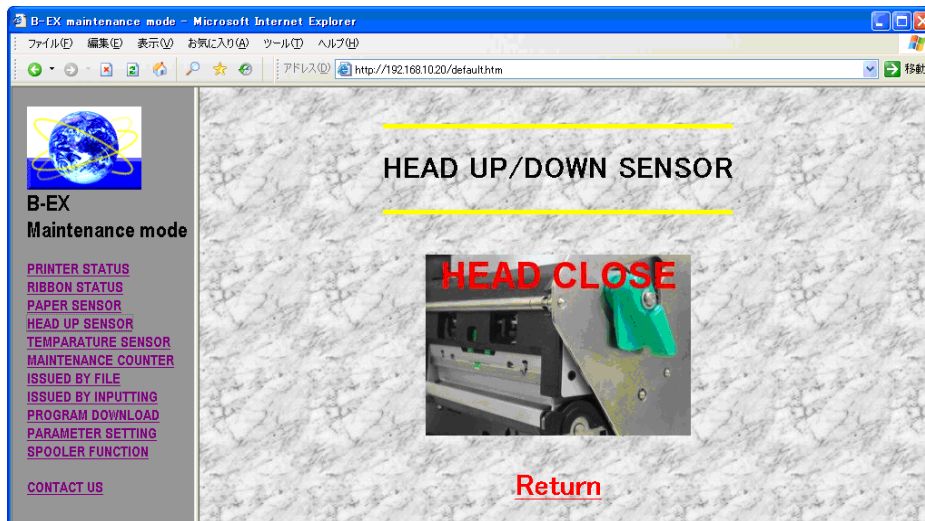
TEMPERATURE SENSOR (Print head temperature: 24 °C, Outside temperature: 24 °C)
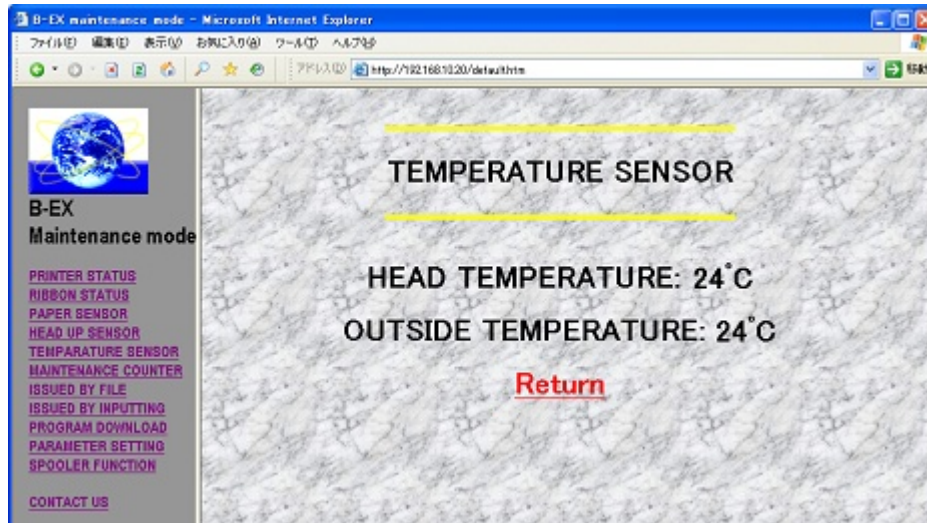


**MAINTENANCE COUNTER**
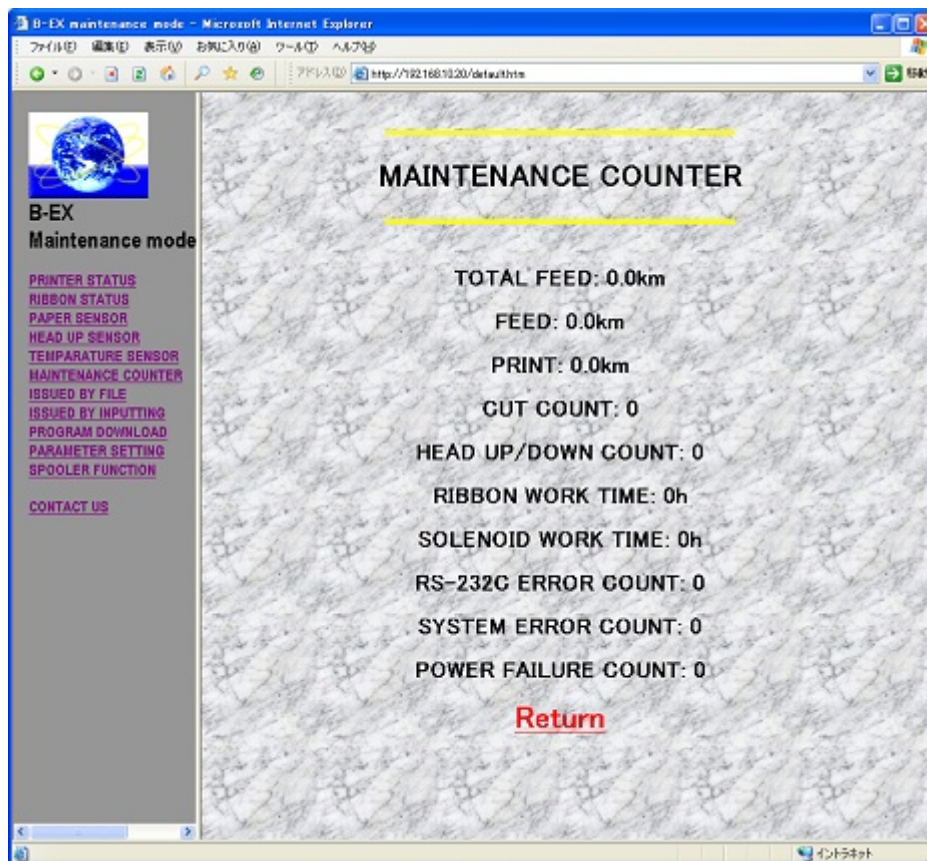
### 7.3.3.5 Label Printing

(1) Select "ISSUED BY FILE" in the menu on the left of the window.
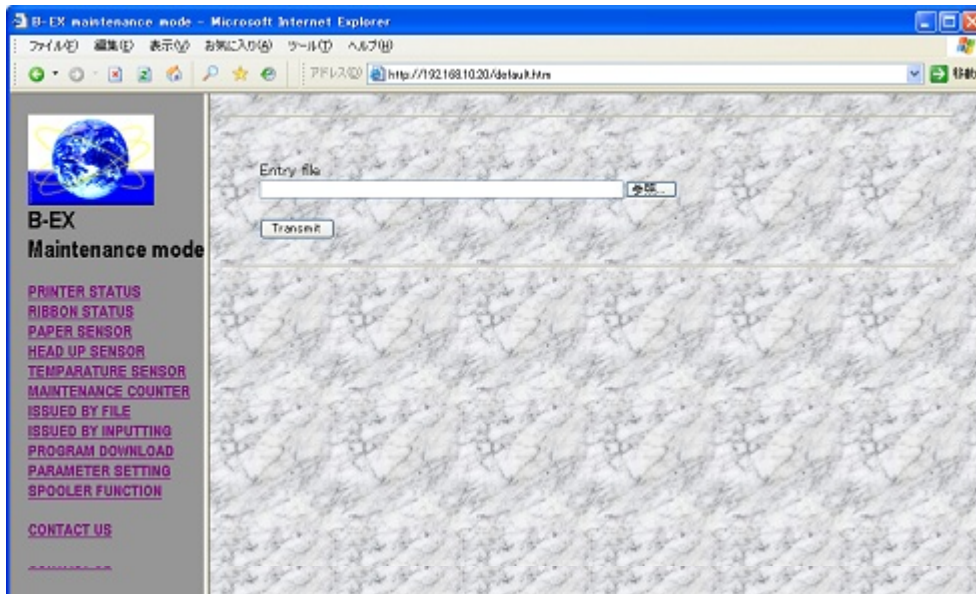


Select a file to send and click "Transmit."
The file to send is a text file with a command. If the print command is included in this file, printing is carried out.

Note: This function is not available when the use of the internal memory is specified for the Web printer.
Note: Since temporary files are created on the USB storage device, the amount of space needs to be equal to the size of files to be sent to the USB storage device or greater.

(2) Select "ISSUED BY INPUTTING" in the menu on the left of the window.



Enter necessary information and click [Issue] to print labels in the specified format.

Note: This function is not available when the use of the internal memory is specified for the Web printer.

Note: Since temporary files are created on the USB storage device, the amount of space needs to be equal to the size of files to be sent to the USB storage device or greater.

### 7.3.3.6 Firmware Downloading

Select "PROGRAM DOWNLOAD" in the menu on the left of the window.
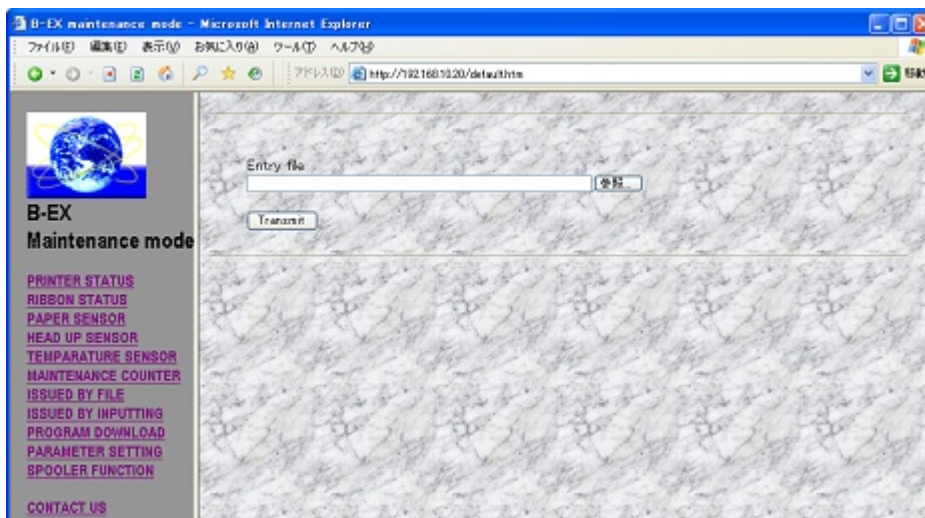


Select a firmware file to download and click "Transmit."
The firmware file to send needs to be in the same format as the one to be sent by the program downloader (for USB).

When the contents of the firmware file are not correct, cannot be properly read or written, "FORMAT ERROR" appears on the LCD screen and the program will not be downloaded.

Note: This function is not available when the use of the internal memory is specified for the Web printer.

Note: Since temporary files are created on the USB storage device, the amount of space needs to be equal to the size of files to be sent to the USB storage device or greater.

### 7.3.3.7　Parameter Change

Select "PARAMETER SETTING" in the menu on the left of the window.
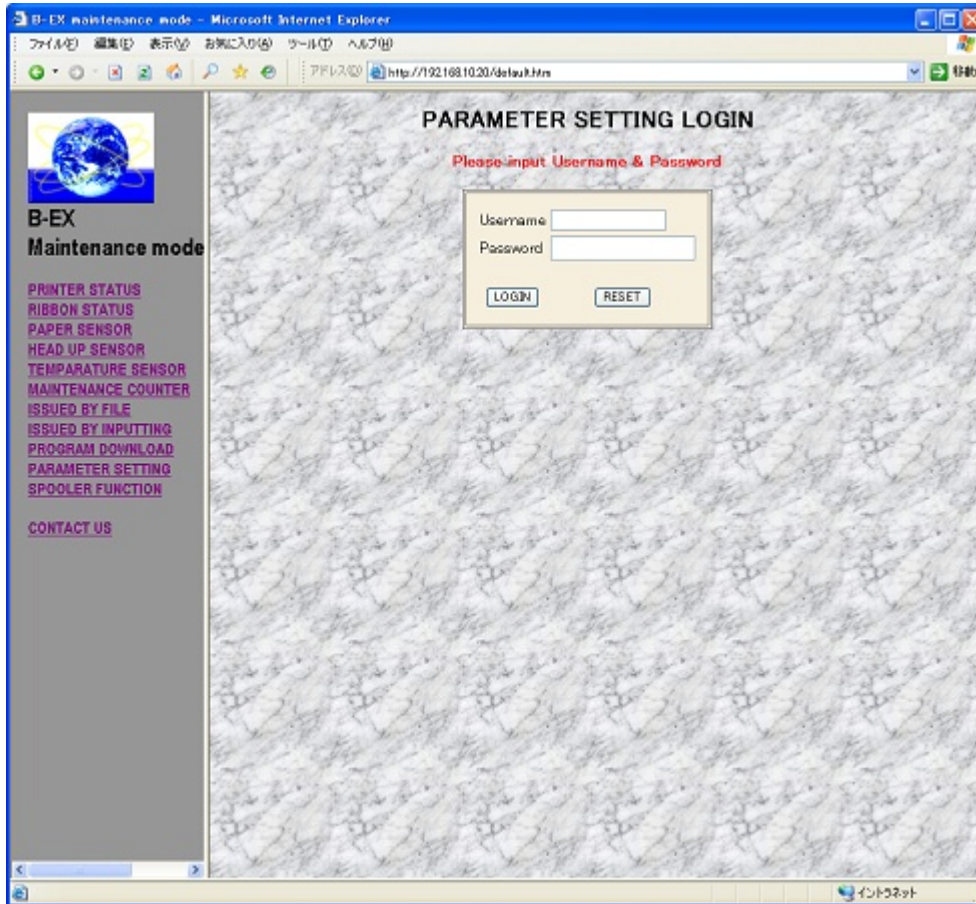


When you enter your username and password on the login screen and successfully authenticated, the parameter settings screen appears.

The username and password need to be the ones for the administrator described in \pass\pass.txt (/ATA0/PASS/PASS.TXT).

For the method of describing password files, see Section 7.4.3 FTP Server Specifications.

The current parameter settings are displayed.
To change the settings, change parameters on the browser, and then click [SUBMIT].
The printer is then restarted to make the changes take effect.
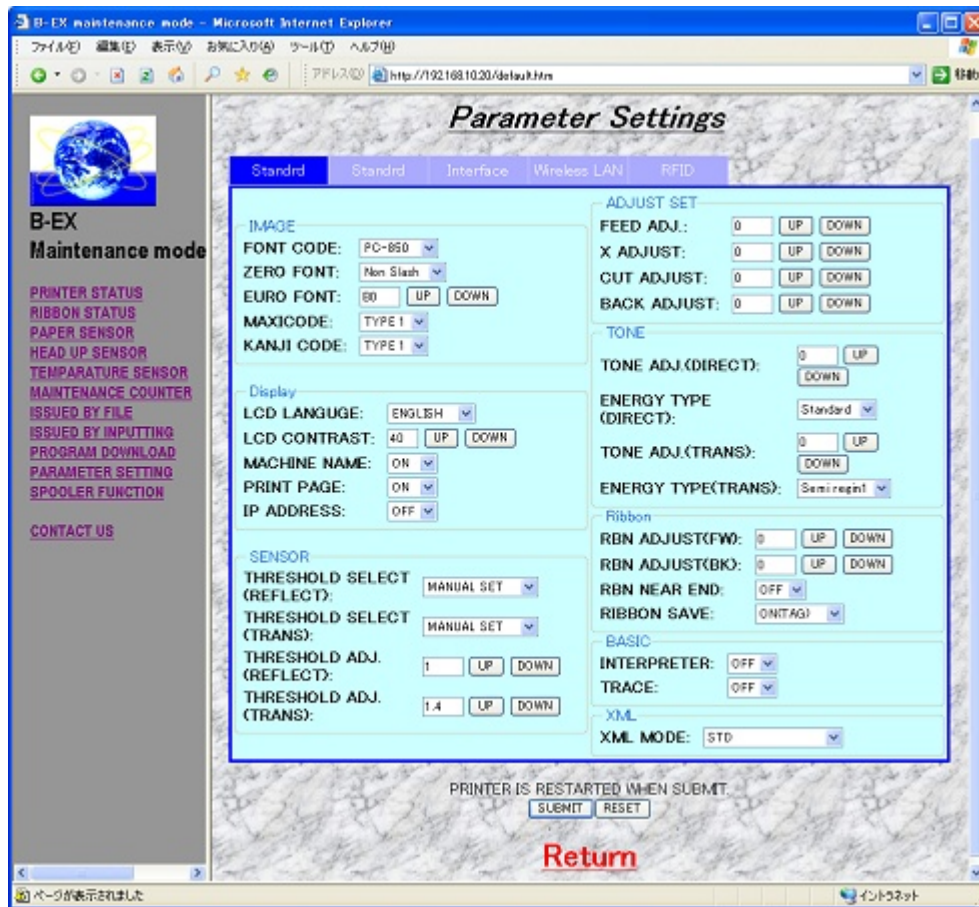


Note: Use only 1-byte characters when manually entering a value.

### 7.3.3.8　Print Job Management Function

(1) Print Job Management Function

It is a function to display files saved in a given folder in the printer as print jobs on the browser, and command to issue, delete, reissue, issue all or delete all print jobs from the browser.

With the FTP function or e-mail function, print jobs can be saved in the printer.

Three types of print jobs are available, immediate print job, stored print job and data transfer complete job.　Immediate print jobs are printed as soon as they are saved in the printer. Stored print jobs are not printed until a print command is sent from the browser after they are saved in the printer.　When print data transfer is complete, both jobs are saved as data transfer complete jobs in the printer.

(2) Preparation

① Create three folders to save print jobs in the printer.
- PRTDATA folder (to save immediate print jobs)
  When using the internal memory: /RAM0/PRTDATA
  When using the external memory: /ATA0/PRTDATA
- PRTPOOL folder (to save stored print jobs)
  When using the internal memory: /RAM0/PRTPOOL
  When using the external memory: /ATA0/PRTPOOL
- PRTEND folder (to save data transfer complete jobs)
  When using the internal memory: /RAM0/PRTEND
  When using the external memory: /ATA0/PRTEND

② Describe time intervals to update the print job management screen in the setting file.
Save the setting file as http.ini in the "http" folder on the USB storage device or in the "http" folder on the XML ROM.
The method of describing this setting file is stated as follows:

- Time intervals to update the print job management screen
  Format　INTERVAL=5

Set time intervals (seconds) to update the print job management screen.
The intervals can be set from 0 to 32767 (approximately nine hours).

Setting File Example
\http\http.ini (/ATA0/HTTP/HTTP.INI)
Command line starting with #
*INTERVAL=5*

In this case, update the print job management screen every five seconds.

Note:　When the http folder or http.ini does not exist on the USB storage device, update the print job management screen every five seconds.
Note:　When the interval value is set to 0, the print job management screen is not updated.

(3) Operation

The printer performs the following operations.

① Monitors the PRTDATA folder all the time, saves a file stored in the PRTDATA folder as an immediate print job, and performs the following steps as soon as the file is saved.
   1. Transfers print data.
   2. After print data transfer is complete, deletes the file from the PRTDATA folder and saves it as a data transfer complete job in the PRTEND folder.
      When several files exist in the PRTDATA folder, repeats the above steps 1. and 2. to transfer print data in sequence.

② When a command to delete the immediate print job is received from the printer's homepage, deletes the file from the PRTDATA folder.

③ Saves the file stored in the PRTPOOL folder as a stored print job, and stores it until a command to print the file is received from the printer's homepage.  When the command to print the file is received, deletes the file from the PRTPOOL folder, saves it as an immediate print job in the PRTDATA folder and performs Step ① to print it.

④ When a command to delete the stored print job is received from the printer's homepage, deletes the file from the PRTPOOL folder.

⑤ Saves the file stored in the PRTEND folder as a data transfer complete job.  When a command to reprint the file is received, deletes the file from the PRTEND folder, saves it as an immediate print job in the PRTDATA folder and performs Step ① to print it.

⑥ When a command to delete the data transfer completed job is received from the printer's homepage, deletes the file from the PRTEND folder.

⑦ When a command to print all files is received, deletes all file in the PRTPOOL folder, saves them as immediate print jobs in the PRTDATA folder and performs Step ① to print them.

⑧ When a command to delete all files is received from the printer's homepage, deletes all files from the PRTPOOL and PRTEND folders.

⑨ Updates the print job management screen every number of seconds specified in the http.ini file.  Displays the printer status, remaining print data transfer count, available space in the printer (or on the USB storage device when using the external memory, or RAM disk when using the internal memory,) print jobs, [All Issue] and [All Delete] buttons.

(4) Method of saving print jobs

To save an immediate print job, write the file in the PRTDATA folder in the printer.

To save a stored print job, write the file in the PRTPOOL folder in the printer.

Note: Use English one-byte characters for the print job name (file name).

Note: Use a maximum of eight characters for the print job name (file name) and three-character extension format, "########.***".

   ########=print job name

   ***=Extension

Note: When the same file name as the one already saved is used as a print job name, it is overwritten.

・ Saving via FTP

To save an immediate print job by connecting the printer via FTP, copy the file in the PRTDATA folder in the printer.

To save a stored print job, copy the file in the PRTPOOL folder in the printer.

For more information on the FTP function, see Section 7.4 FTP Server.

・ Saving via e-mail

Attach the file you want to save as a job, specify the printer's e-mail address as a destination and send e-mail to the printer.

To save the file as an immediate print job, "PRTDATA" needs to be contained in the subject.

To save the file as a stored print job, "PRTPOOL" needs to be contained in the subject.

For more information on the e-mail function, see Section 7.5 E-mail Function.

Note: Use English one-byte characters for "PRTDATA" and "PRTPOOL" contained in the subject.

Note: When a subject other than the above is specified, as soon as receiving the e-mail, the printer prints the contents of the attached file and does not save the file as a print job in the printer.

Note: When a print job is saved via e-mail, since temporary files are created in the printer, the amount of space needs to be at least four times the size of files to be sent to the printer. When the printer does not have sufficient space, it does not receive the e-mail, so that the e-mail is not deleted from the server.

(5) Print job management screen

Select "SPOOLER FUNCTION" in the menu on the left of the window.

[Display Example]

PRINT JOB MANAGEMENT SCREEN (When 1-GB USB memory is fitted)
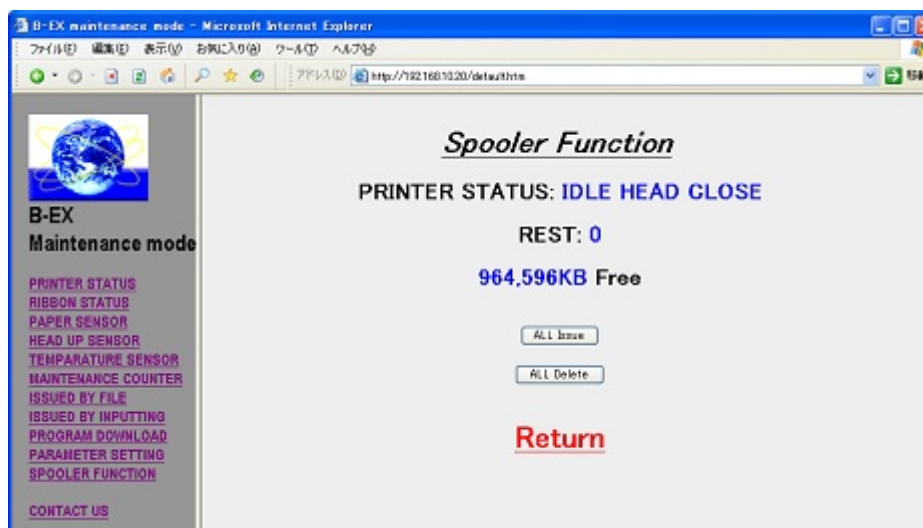
Description of the screen
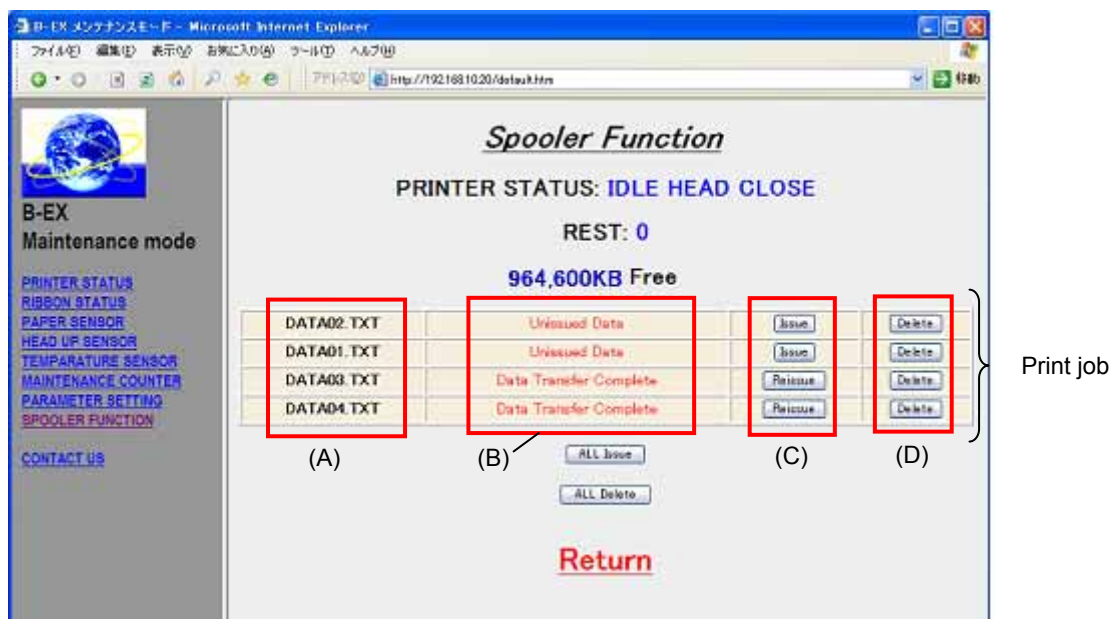


PRINTER STATUS:   Current printer status
REST:   Remaining print data count
**,***KB Free:   Available space in the printer
NOTE:
  The above screen indicate the following information:
  Printer status:  Idle state
  The remaining print data transfer count:  0
  Available memory size in the printer: 964,600 KB (When 1-GB USB memory is fitted)
Print job (A):  Job name (file name)
Print job (B):  Job status

| Message | Description |
|---|---|
| Spooling… | Immediate print job<br>This message is displayed from a print job is stored in the PRTDATA folder in response to a pint job issue request, till the print job has been transferred. |
| Unissued Data | Print job stored<br>This message is displayed for the print jobs stored in the PRTPOOL folder. |
| Data Transfer Complete | Data transfer completed job<br>This message is displayed when the print jobs, transferred from the PRTDATA folder, are stored in the PRTEND folder. |

  NOTE: The print job list displays print jobs in the order of Immediate print job, Print job stored, and Data transfer completed job. ,
Print job (C):  [Issue] or [Reissue] button
          Note: This button is not displayed for the immediate print jobs.
Print job (D):  [Delete] button
[ALL Issue] button:      Used to print all stored print jobs
[ALL Delete] button:     Used to delete all stored print jobs and data transfer completed jobs.
  NOTE: When the LCD language is set to Japanese, the messages are displayed in Japanese. When the LCD language is set to other than Japanese, the messages are displayed in English.

(6) Operation Example

1-1. With the following print jobs listed, the [Delete] button for DATA01.TXT is clicked.

| DATA02.TXT | Unissued Data | [Issue] | [Delete] | |
|---|---|---|---|---|
| DATA01.TXT | Unissued Data | [Issue] | [Delete] | ← Click the [Delete] button. |
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

↓ DATA01.TXT is deleted.

| DATA02.TXT | Unissued Data | [Issue] | [Delete] |
|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

1-2. With the following print jobs listed, the [Issue] button for DATA02.TXT is clicked.

| DATA02.TXT | Unissued Data | [Issue] | [Delete] | ← Click the [Issue] button. |
|---|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

↓ DATA02.TXT is transferred.

| DATA02.TXT | Spooling… | | [Delete] | These may not be |
|---|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | displayed depending on |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | the display update timing. |

↓ Data transfer is completed.

| DATA02.TXT | Data Transfer Complete | [Reissue] | [Delete] | |
|---|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | Listed in random order |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

1-3. With the following print jobs listed, the [Delete] button for DATA02.TXT is clicked.

| DATA02.TXT | Data Transfer Complete | [Issue] | [Delete] | ← Click the [Delete] button. |
|---|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

↓ DATA02.TXT is deleted.

| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
|---|---|---|---|
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

1-4. With the following print jobs listed, the [Reissue] button for DATA04.TXT is clicked.

| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | ← Click the [Reissue] button. |
|---|---|---|---|---|
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

↓ DATA04.TXT is transferred.

| DATA04.TXT | Spooling… | | [Delete] | These may not be |
|---|---|---|---|---|
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | displayed depending on the display update timing. |

↓ Data transfer is completed.

| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | Listed in random order. |
|---|---|---|---|---|
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | |

1-5. With the following print jobs listed, the [Delete] button for DATA04.TXT is clicked.

| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] | |
|---|---|---|---|---|
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] | ← Click the [Delete] button. |

↓ DATA04.TXT is deleted.

| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
|---|---|---|---|

2. The [ALL Issue] button under the print job list is clicked.

| | | | |
|---|---|---|---|
| DATA02.TXT | Unissued Data | [Issue] | [Delete] |
| DATA01.TXT | Unissued Data | [Issue] | [Delete] |
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

↓ DATA02.TXT and DATA01.TXT are transferred.

| | | | |
|---|---|---|---|
| DATA02.TXT | Data Transfer Complete | | [Delete] |
| DATA01.TXT | Data Transfer Complete | | [Delete] |
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

These may not be displayed depending on the display update timing.

↓ Transfer of DATA01.TXT print data is completed.

| | | | |
|---|---|---|---|
| DATA02.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA01.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

Listed in random order

3. The [ALL Delete] button under the print job list is clicked.

| | | | |
|---|---|---|---|
| DATA02.TXT | Unissued Data | [Issue] | [Delete] |
| DATA01.TXT | Unissued Data | [Issue] | [Delete] |
| DATA03.TXT | Data Transfer Complete | [Reissue] | [Delete] |
| DATA04.TXT | Data Transfer Complete | [Reissue] | [Delete] |

↓ All print jobs are deleted.

Print job storage and jot status
PRTDATA folder ........... The job status shows "Spooling" as soon as the jobs are saved.
PRTPOOL folder .......... The job status shows "Unissued Data" as soon as the jobs are saved as stored print jobs.
PRTEND folder ............ The job status shows "Data Transfer Complete" as soon as the jobs are saved as data transfer completed print jobs.

Note: The following may occur depending on the screen update timing because the printer updates the print job management screen every number of seconds specified in the http.ini file.
• The job status does not change to "Spooling" but directly to "Data Transfer Complete."
• Even when print data transfer is complete, the job status does not change to "Data Transfer Complete" but remains "Spooling."
• When various requests, such as a depression of the [Issue] button or [Delete] button, are performed while non-latest the print job management screen is displayed, an error, such as an applicable file is not found, may occur.

Example
Make the update interval of the print job management screen longer in the http.ini file, and perform the following before the next update.
1. Delete the print jobs via FTP.
2. For the print job deleted in step 1 above, click the [Issue] button on the management screen to request for printing.

Since a deleted file remains displayed until the screen is updated, an operation to request for printing is enabled. However, the file has already been deleted, printing does not occur.

Note: If a long update interval of the print job management screen has been set in the http.ini file, it is preferable to manually update the browser, then perform an operation (such as printing and deletion) on the management screen.

Note: If the Internet Explorer security is set to high, this tool may not properly operate.
Example:
The following dialog box appears when a button on the print job management screen is clicked.
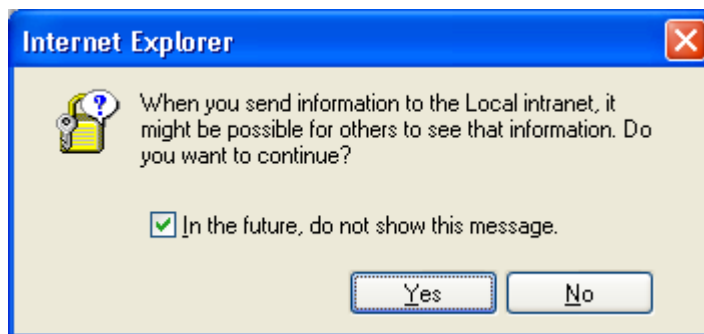
## 7.3.4    HTML File Change

The sample display files can be edited and customized.  However, the leading area of each file (upper than Please do not change above script) is not allowed to change.

Example: Prt_sts.htm

```
<META HTTP-EQUIV="Refresh" CONTENT="3">
<META HTTP-EQUIV="Pragma" CONTENT="no-cache">
<SCRIPT LANGUAGE="JAVASCRIPT">
<!--
sts= 1;  ←------ sts value can be rewritten according to the printer.
// -->
</SCRIPT>
<! sts =  1 : idle head close           >
<! sts =  2 : idle head open            >
<! sts =  3 : printer working           >
<! sts =  4 : pause                     >
<! sts =  5 : wait for peel off         >
<! sts =  6 : syntax error              >
<! sts =  7 : communication error       >
<! sts =  8 : paper jam                 >
<! sts =  9 : cutter error              >
<! sts = 10 : no label                  >
<! sts = 11 : no ribbon                 >
<! sts = 12 : head open error           >
<! sts = 13 : thermal head error        >
<! sts = 14 : excess head temperature   >
<! sts = 15 : ribbon error              >
<! sts = 16 : rewinder overflow         >
<! sts = 17 : saving mode               >
<! sts = 18 : flash write error         >
<! sts = 19 : flash erase error         >
<! sts = 20 : flash memory full         >
```
Not allowed to change

```
<!-------------------- Please do not change above script -------------------->
<TITLE> idle head down </TITLE>
</HEAD>
<BODY>
<BODY LINK="#0000ff" VLINK="#800080" BACKGROUND="Image19.jpg">
<BR>
<HR SIZE="5"WIDTH="50%"ALIGN="center"COLOR="YELLOW">
<P>
<CENTER>
<H1>PRINTER STATUS</H1>
</CENTER>
<HR SIZE="5"WIDTH="50%"ALIGN="center"COLOR="YELLOW">
<P>
<BR>
<CENTER>
<H1>
```

```
<SCRIPT LANGUAGE="JAVASCRIPT">
<!--
if (sts == 1){
pstatus = "IDLE HEAD CLOSE";
}
if (sts == 2){
pstatus = "IDLE HEAD OPEN";
}
if (sts == 3){
pstatus = "PRINTER WORKING";
}
if (sts == 4){
pstatus = "PRINTER PAUSE";
}
if (sts == 5){
pstatus = "WAITING FOR PEEL OFF";
}
if (sts == 6){
pstatus = "SYNTAX ERROR";
}
if (sts == 7){
pstatus = "COMMUNICATION ERROR";
}
if (sts == 8){
pstatus = "PAPER JAM";
}
if (sts == 9){
pstatus = "CUTTER ERROR";
}
if (sts == 10){
pstatus = "NO PAPER";
}
if (sts == 11){
pstatus = "NO RIBBON";
}
if (sts == 12){
pstatus = "HEAD OPEN ERROR";
}
if (sts == 13){
pstatus = "THERMAL HEAD ERROR";
}
if (sts == 14){
pstatus = "EXCESS HEAD TEMPERATURE";
}
if (sts == 15){
pstatus = "RIBBON ERROR";
}
if (sts == 16){
pstatus = "REWINDER OVERFLOW";
}
```

```
if (sts == 17){
pstatus = "FLASH SAVE MODE";
}
if (sts == 18){
pstatus = "FLASH WRITE ERROR";
}
if (sts == 19){
pstatus = "FLASH ERASE ERROR";
}
if (sts == 20){
pstatus = "FLASH MEMORY FULL";
}
document.write(pstatus);
// -->
</SCRIPT>

</H1>
</CENTER>
<P>
<BR>
<A HREF="default.htm"target="_top">
<B><FONT COLOR="#FF0000"><H1><P ALIGN="center">Return</P></H1></FONT></B>
</A>
</BODY>
</HTML>
```

In addition, descriptions to be sent in binary mode contained in files for label printing and firmware downloading (*.asp) are not allowed to change.


Example: File.asp

```
<HTML><HEAD><TITLE>Issue by file transmission</TITLE></HEAD>
<BODY LINK="#0000ff" VLINK="#800080" BACKGROUND="Image19.jpg">
   <HR>
   <BLOCKQUOTE>
   <BR>
   <FORM action=/form/formFile method=POST ENCTYPE=multipart/form-data>
   Entry file<BR>  Binary mode set
   <INPUT NAME="filename"  TYPE="file" SIZE=70><P>
   <INPUT TYPE="submit" VALUE="Transmit"><P>
   </FORM>
   </BLOCKQUOTE>
<HR>
</BODY></HTML>
```

## 7.4  FTP SERVER

It is a function to allow files in the printer to be written via FTP (File Transfer Protocol) as the standard protocol.

User authority is divided into two types.  Users who have the authority as administrators can read and write all files, however, users who have the authority as users are restricted to access files.

By sending a printer command file via FTP, you can save print jobs in the printer.

The accessible directories are RAM disk (/RAM0/) and USB storage (/ATA0/.)

### 7.4.1    Required Settings

| LAN | Other than Disabled |
|-----|---------------------|
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |

### 7.4.2    Preparation

- Environment where a wired LAN or wireless LAN connection is established
- XML ROM including the password information or USB host board (option) and USB storage device
- Password file \pass\pass.txt (/ATA0/PASS/PASS.TXT)

### 7.4.3 FTP Server Specifications

#### 7.4.3.1 Preparation

To establish FTP connection from the host to the printer, username and password need to be entered. These username and password need to be saved as a password file on the XML ROM or the USB storage device.

When the Web printer function is disabled or the use of the internal memory is specified, the password file in the XML ROM is used.
When the use of the external memory is specified, the password file on the USB storage device is used.

Save the password file as pass.txt in the "pass" folder on the USB storage device.

The method of describing this password file is stated as follows:


- Password of the user who has the authority as an administrator
  [Format] ADMINUSR=root,ADMINPASS=barcode

  Set ADMINUSR as a username and ADMINPASS as a password.
  Maximum 15 characters for the username and 10 characters for the password can be used.


- Password of the user who has the authority as a user
  [Format] USR=toshiba,PASS=tec

  Set USR as a username and PASS as a password.
  Users who have the authority as administrators can access all files including pass.txt on the USB storage device. On the other hand, users who have the authority as user can only access folders other than the folders of HTML, HTTP, PASS, MAIL, XML, SA_HTM, and CERT.
  Maximum 15 characters for the username and 10 characters for the password can be used.
  Note: When the "pass" folder or pass.txt does not exist, you are accessed as a user who has the authority as a user.

#### 7.4.3.2 Access

Use the username and password included in pass.txt to log in from the client to the printer. The directory to access the printer is /RAM0/ in the case of the RAM disk, or /ATA0/ in the case of the USB storage device.

#### 7.4.3.3 Saving Print Jobs

When a file is transferred to the PRTDATA folder (when using the internal memory: /RAM0/PRTDATA, and when using the external memory: /ATA0/PRTDATA), an immediate print job can be saved. When a file is transferred to the PRTPOOL folder (when using the internal memory: /RAM0/PRTPOOL, and when using the external memory: /ATA0/PRTPOOL), a stored print job can be saved.
For more information on the Print Job Management function, see Section 7.3.3.8.
Note: When the same file name as the one already saved is used as a print job name, it is overwritten.
Root directory (/RAM0: internal memory, /ATA0: external memory)

#### 7.4.3.4 Passive Mode Switch Message

When data transfer mode is changed to passive mode by a PASV command sent from the client, the following message is sent to the client:

In the case the printer IP address is 192.168.10.20 and the port No. is 1024:

• 227 Entering Passive Mode    192,168,10,20,4,0

  &lt;Applicable models&gt;    B-EX4T1-G/T-QM/CN   C1.2 or later
                                B-EX4T1-TS25-R      V2.2 or later
                                B-EX4T2-G/T-QM/CN   C1.2A or later
                                B-EX4T2-H-QM/CN    C1.1A or later
                                B-EX4D2-G/T-QM/CN   D1.1 or later

• 227 Entering Passive Mode 0,0,0,0,4,0
  &lt;Applicable models&gt;    Models other than above

#### 7.4.4 Setting File Example

(1) \pass\pass.txt (/ATA0/PASS/PASS.TXT)
    Command line starting with #
    *ADMINUSR=root,ADMINPASS=barcode*
    *ADMINUSR=tec,ADMINPASS=taro*
    *USR=suzuki,PASS=abcxyz*
    *USR=test,PASS=abcdef*

## 7.5 E-MAIL FUNCTION

The built-in function, which automatically sends and receives e-mail, can notify the host of the printer status by e-mail, issue a print command and save print jobs by sending the printer command embedded in the e-mail, which was sent from the host to the printer.

The SMTP protocol is used for the e-mail sending function of the printer and the POP3 protocol is used for the e-mail receiving function of the printer.

An e-mail server, which supports SMTP and POP3 protocols, is required where the printer can be accessed via LAN.

#### 7.5.1 Required Settings

| LAN/WLAN | Other than Disabled |
|---|---|
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |

### 7.5.2 Preparation

- Environment where a wired LAN or wireless LAN connection is established
- XML ROM including the e-mail function settings or USB host board (option) and USB storage device
- E-mail send data setting file \mail\smtp.ini (/ATA0/MAIL/SMTP.INI)
- E-mail receive data setting file \mail\pop3.ini (/ATA0/MAIL/POP3.INI)
- E-mail send message text e.g. \mail\text\sts00.txt (/ATA0/MAIL/TEXT/STS00.TXT)
- Host e-mail server (supporting SMTP and POP3)

Note: When the Web printer function is disabled or the use of the internal memory is specified, the setting files in the XML ROM are used.
When the use of the external memory is specified, the setting files on the USB storage device are used.

### 7.5.3    E-mail Sending Specifications

### 7.5.3.1    Preparation

(1) Save the printer account number in the e-mail server.
(2) Describe setting information required to send e-mail in the setting file.
Save the setting file as smtp.ini in the "mail" folder on the XML ROM or the USB storage device.
The method of describing this setting file is stated as follows:

- Setting the IP address of the e-mail server
  | Format | HOST_IP=123.456.789.012

  Set the IP address of the e-mail server.

- E-mail address of the printer
  | Format | FROM_USR=bex@foo.toshibatec.co.jp

  Set the e-mail address of the printer.
  A maximum of 256 characters can be used.

- SMTP protocol port
  | Format | PORT=25

  Select the port used for the SMTP protocol.
  Normally use Port 25.

- Setting the status reply
  | Format | RESMAIL=1

  With this parameter set to 1, when a print command is sent to the printer by e-mail, a print completion status is automatically returned to the sender of the e-mail.

- Setting an e-mail destination address by status
  Whether to enable or disable e-mail transmission, and e-mail destination and message text can be set depending on the type of status.
  | Format | ENABLEaa=1

  When 1 is set, the e-mail transmission is enabled.  When 0 is set, it is disabled.
  | Format | TO_USERaa=foo@foo.toshibatec.co.jp

  Select an e-mail destination address.  Specify multiple users, which are separated by delimiters (,).
  A maximum of 20 items and a maximum of 1,000 characters can be used.
  | Format | TEXT_BODYaa=/ATA0/MAIL/TEXT/STS00.TXT

  Use a file to specify the location of the e-mail message text.
  The above-mentioned formats are used.  "aa" is a numeric value between 00 and 54 and has the following meanings.
  00 Head close
  01 Head open
  06 Command error
  07 Serial port error
  11 Paper jam
  12 Cutter error
  13 No paper
  14 No ribbon
  15 Feed while head open

17 Head error

18 Head temp error

21 Ribbon sensor error

22 Rewinder full

40 Issue complete

41 Feed complete

50 Flash write error

51 Flash format error

54 Flash full

e.g.   ENABLE00=1

TO_USR00=abcdefg@foo.toshibatec.co.jp

TEXT_BODY00=/ATA0/MAIL/TEXT/STS00.TXT

Note: When the internal memory is used, the "/ATA0/" in the TEXT_BODYaa is automatically replaced with "/RAM0/."

(3) When TEXT_BODYaa is specified in the setting file, its file is required.

However, when the specified file does not exist, a status notification message is automatically generated and sent. When SUBJECT:????? is specified as the 1st line, ????? will be the subject of the e-mail to be sent.

e.g.   /ATA0/MAIL/TEXT/STS00.TXT

SUBJECT:Head Close

Head Close

### 7.5.3.2   Operation

When the printer undergoes its status changes, it automatically sends status information to the destination by e-mail in accordance with the SMTP.INI settings.

When the printer undergoes its status changes while printing the print command received by e-mail and RESMAIL for SMTP.INI is set to 1, it also sends status information to the e-mail sender.

Note: When a command is issued by e-mail, multiple print commands are included in one file, only one status is returned, thus, it is preferable to include one print command in each file.

Note: When a command is issued by e-mail, multiple files attached are sent in one e-mail, status information is returned the same number as the number of attached files.

### 7.5.3.3   Setting File Example

(1) \mail\smtp.ini (/ATA0/MAIL/SMTP.INI)

Command line starting with #

*# IP address of mail server*

*HOST_IP=123.456.789.012*

*# mail address of B-EX printer*

*FROM_USR=bcpbexa@foo.toshibatec.co.jp*

*# SMTP port default=25*

*PORT=25*

*# Send back response mail to sender*

*RESMAIL=1*

*# Head close*

*ENABLE00=1*

*TO_USR00=abc@foo.toshibatec.co.jp*

*TEXT_BODY00=/ATA0/MAIL/TEXT/STS00.TXT*

*# Head open*

*ENABLE01=1*

```
TO_USR01=abc@foo.toshibatec.co.jp
TEXT_BODY01=/ATA0/MAIL/TEXT/STS01.TXT
# Command error
ENABLE06=1
TO_USR06=abc@foo.toshibatec.co.jp
TEXT_BODY06=/ATA0/MAIL/TEXT/STS06.TXT
# Serial port error
ENABLE07=1
TO_USR07=abc@foo.toshibatec.co.jp
TEXT_BODY07=/ATA0/MAIL/TEXT/STS07.TXT
# Paper jam
ENABLE11=1
TO_USR11=abc@foo.toshibatec.co.jp
TEXT_BODY11=/ATA0/MAIL/TEXT/STS11.TXT
# Cutter error
ENABLE12=1
TO_USR12=abc@foo.toshibatec.co.jp
TEXT_BODY12=/ATA0/MAIL/TEXT/STS12.TXT
# No paper
ENABLE13=1
TO_USR13=abc@foo.toshibatec.co.jp
TEXT_BODY13=/ATA0/MAIL/TEXT/STS13.TXT
# No ribbon
ENABLE14=1
TO_USR14=abc@foo.toshibatec.co.jp
TEXT_BODY14=/ATA0/MAIL/TEXT/STS14.TXT
# Feed while head open
ENABLE15=1
TO_USR15=abc@foo.toshibatec.co.jp
TEXT_BODY15=/ATA0/MAIL/TEXT/STS15.TXT
# Head error
ENABLE17=1
TO_USR17=abc@foo.toshibatec.co.jp
TEXT_BODY17=/ATA0/MAIL/TEXT/STS17.TXT
# Head temp error
ENABLE18=1
TO_USR18=abc@foo.toshibatec.co.jp
TEXT_BODY18=/ATA0/MAIL/TEXT/STS18.TXT
# Ribbon sensor error
ENABLE21=1
TO_USR21=abc@foo.toshibatec.co.jp
TEXT_BODY21=/ATA0/MAIL/TEXT/STS21.TXT
# Rewinder full
ENABLE22=1
TO_USR22=abc@foo.toshibatec.co.jp
TEXT_BODY22=/ATA0/MAIL/TEXT/STS22.TXT
# Issue complete
ENABLE40=1
TO_USR40=abc@foo.toshibatec.co.jp
TEXT_BODY40=/ATA0/MAIL/TEXT/STS40.TXT
```

*# Feed complete*
*ENABLE41=1*
*TO_USR41=abc@foo.toshibatec.co.jp*
*TEXT_BODY41=/ATA0/MAIL/TEXT/STS41.TXT*
*# Flash write error*
*ENABLE50=1*
*TO_USR50=abc@foo.toshibatec.co.jp*
*TEXT_BODY50=/ATA0/MAIL/TEXT/STS50.TXT*
*# Flash format error*
*ENABLE51=1*
*TO_USR51=abc@foo.toshibatec.co.jp*
*TEXT_BODY51=/ATA0/MAIL/TEXT/STS51.TXT*
*# Flash full*
*ENABLE54=1*
*TO_USR54=abc@foo.toshibatec.co.jp*
*TEXT_BODY54=/ATA0/MAIL/TEXT/STS54.TXT*

(2) \mail\text\sts00.txt (/ATA0/MAIL/TEXT/STS00.TXT)
*SUBJECT:Head Close*
*Head Close*
*Status No.00*

### 7.5.4     E-mail Receiving Specifications

### 7.5.4.1     Preparation

(1) Save the printer account number in the e-mail server.
(2) Describe setting information required to receive e-mail in the setting file.
Save the setting file as pop3.ini in the "mail" folder on the XML ROM or the USB storage device.
The method of describing this setting file is stated as follows:

• Setting the IP address of the e-mail server
  | Format |  HOST_IP=123.456.789.012

  Set the IP address of the e-mail server.

• POP3 protocol port
  | Format |  PORT=110

  Select the port used for the POP3 protocol.
  Normally use Port 110.

• E-mail account of the printer
  | Format |  USER=bex

  Set the e-mail account of the printer.
  A maximum of 300 bytes can be used.

- E-mail account password of the printer
  Format PASSWORD=barcode

  Set the e-mail account password of the printer.
  A maximum of 300 bytes can be used.


- E-mail check interval
  CHECKINTERVAL=10
  Set time intervals (seconds) to check e-mail.
  The intervals can be set from 0 to 42, 949 and 672 (approximately 12,000 hours).

## 7.5.4.2    Operation

The printer connects to the e-mail server at constant time intervals to check e-mail in accordance with the e-mail check interval settings.  The printer receives e-mail destined for the printer.
When files are attached to e-mail, the printer restores and sends each attached file, which does not contain "PRTDATA" or "PRTPOOL" in the subject, as a printer command.  When "PRTDATA" or "PRTPOOL" is contained in the subject, the printer saves each attached file as a print job.
When no file is attached, the e-mail is issued as a printer command.
For more information on saving print jobs, see Section 7.5.4.4.
Note: A line feed code may be automatically inserted into an e-mail message depending on the e-mail software, however, when a line feed is inserted between commands, the printer does not properly operate.
Note: Three types of encode system corresponding to attached files are Base64, Quoted Printable and 7 bits.
Note: When a command is issued by e-mail, use {|} to control commands because NUL data may be automatically deleted depending on the e-mail software.
Note: When the e-mail transmission software is in html format, the printer does not properly operate.
Note: When a command is issued or a print job is saved via e-mail, since temporary files are created in the printer, the amount of space needs to be at least four times the size of files to be sent to the USB storage device.  When the printer does not have sufficient space, the printer does not receive the e-mail, so that the e-mail is not deleted from the server.

## 7.5.4.3    Setting File Example

(1) \mail\pop3.ini (/ATA0/MAIL/POP3.INI)
Command line starting with #
*# IP address of mail server*
*HOST_IP=123.456.789.012*
*# SMTP port default=110*
*PORT=110*
*# User name*
*USER= bcpbexa*
*# Password*
*PASSWORD= barcode*
*# Check Mail Every (sec.)*
*CHECKINTERVAL= 10*

### 7.5.4.4 Saving Print Jobs

When an immediate print job is saved, the desired file to be saved is attached to an e-mail message and the e-mail, which contains "PRTDATA" in the subject, is sent to the printer, the printer saves the attached file as an immediate print job.

When a stored print job is saved, the desired file to be saved is attached to an e-mail message and the e-mail, which contains "PRTPOOL" in the subject, is sent to the printer, the printer saves the attached file as a stored print job.

For more information on the Print Job Management function, see Section 7.3.3.8.

Note: Use English one-byte characters for "PRTDATA" and "PRTPOOL" contained in the subject.

Note: When a subject other than the above is specified, as soon as receiving the e-mail, the printer prints the contents of the attached file and does not save the file as a print job on the USB storage device.

Note: When the same file name as the one already saved is used as a print job name, it is overwritten.

Note: To contain "PRTDATA" or "PRTPOOL" in the subject, always describe "PRTDATA" or "PRTPOOL" at the beginning of the subject.

## 7.6 DHCP CLIENT FUNCTION

It is a function to dynamically obtain the IP address, which is usually specified in the printer, from the DHCP server when the printer starts up.
When this function is used, an IP address does not need to be set in system mode.

### 7.6.1 Required Settings

| | |
|---|---|
| LAN/WLAN | Other than Disabled |
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |
| DHCP | Enabled |
| DHCP ID | Any |
| DHCP HOST NAME | Any |

### 7.6.2 DHCP Client Specifications

(1) Lease period
The default lease period is 30 minutes. If the lease period is not specified on the DHCP server, the lease period is set to 30 minutes.
Just before the lease period is expired, the printer automatically extends the lease period.

(2) Startup time
It takes approximately 30 seconds to obtain the lease from the DHCP server. Therefore, when the DHCP client function is used, it takes approximately 30 seconds for the printer to start up, after the printer is powered on.
The timeout to obtain the lease is approximately 2 minutes. If the lease cannot be obtained from the DHCP server within 2 minutes, the printer starts up 2 minutes later.

(3) Operation in the case of a failure to obtain the lease
If the lease cannot be obtained when the printer starts up, the IP address is changed to 0.0.0.0, disabling network communications.
An attempt to obtain the lease from the DHCP server is made approximately every 30 seconds. Once the lease is obtained, the IP address is set, enabling network communications.

(4) DHCP ID
The DHCP ID can be set by the parameter set command.
The DHCP ID can be used to check which IP address is leased to which client on the DHCP server.
If the DHCP ID is not set, the server is notified of the MAC address as the DHCP ID.
64-byte binary data can be set for the DHCP ID, however, "FFH (in hex)" cannot be used since it is recognized as an end-of-data character.
When 00H (in hex) is set for all the 64 bytes[*1] (default), this DHCP ID is regarded as a temporary ID, and the first byte is overwritten with FFH (in hex) at a start-up of the printer. (B-EX4T1-TS25 V2.0 or later, B-EX4T1-QM/CN C1.1 or later, B-EX4T2-G/T C1.1 or later, B-EX4T2-H C1.0F or later)
If the first byte of the DHCP ID is set to "FFH (in hex)", it is assumed that the DHCP ID has not been set and the MAC address of the printer is set as DHCP ID, enabling communications.
*1: Users cannot use an all-00H DHCP ID.

(5) DHCP HOST NAME
The DHCP HOST NAME can be set by the parameter set command.
The interaction between the DHCP server and the DNS server enables communications with the printer, to which an IP address is dynamically assigned as the host name specified.
If the DHCP HOST NAME is not set (no characters are specified), the MAC address of the printer is used as the DHCP HOST NAME.

### 7.6.3 Setting of DHCP Server

Windows2003 Server

Scope settings (Properties)
① General
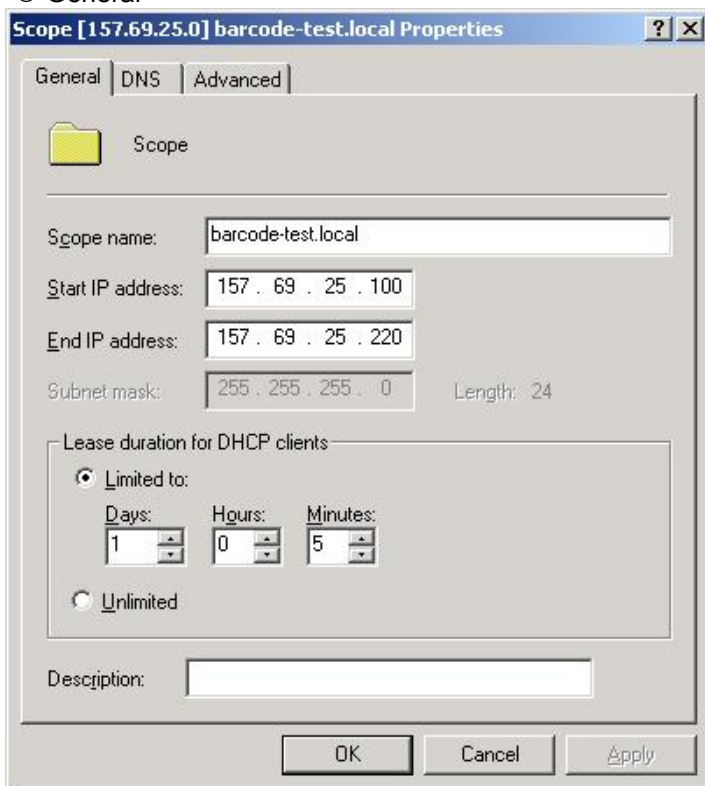


② DNS
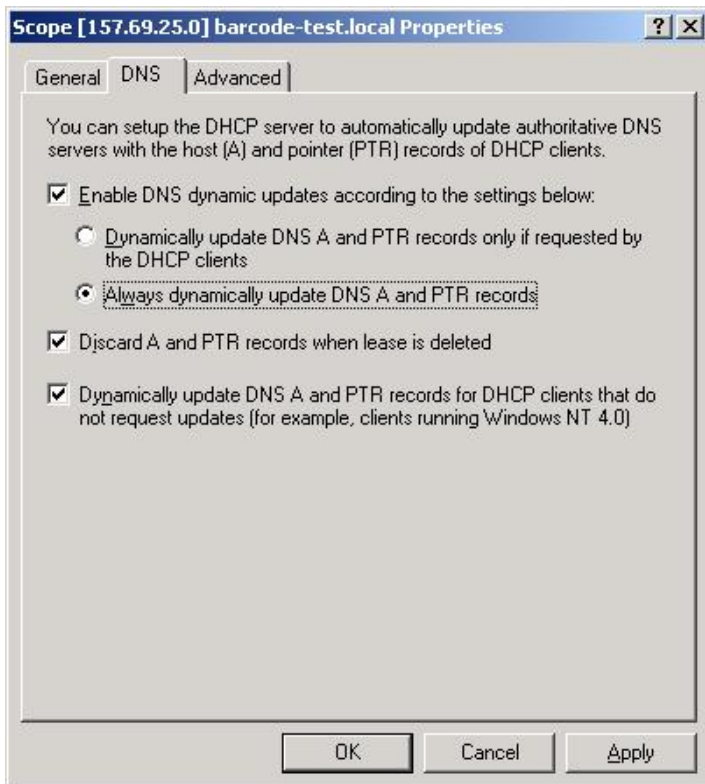
③ Advanced
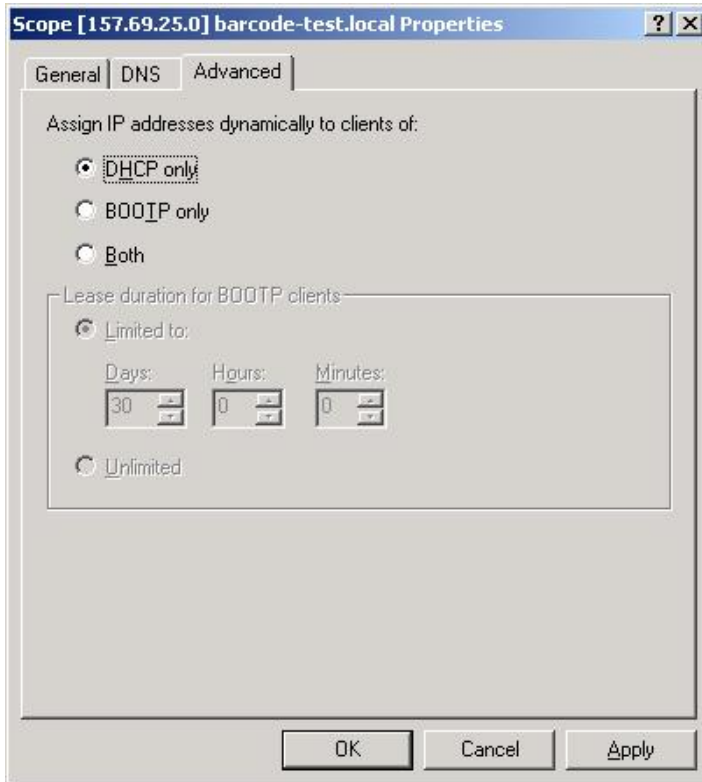


## 7.6.4 Scope Options Settings

Make additional settings: DNS Server IP Address and DNS Server Domain Name.  Unless these settings are made, the DNS server cannot forward queries or backward queries for the domain names.

① Setting of DNS Server IP Address
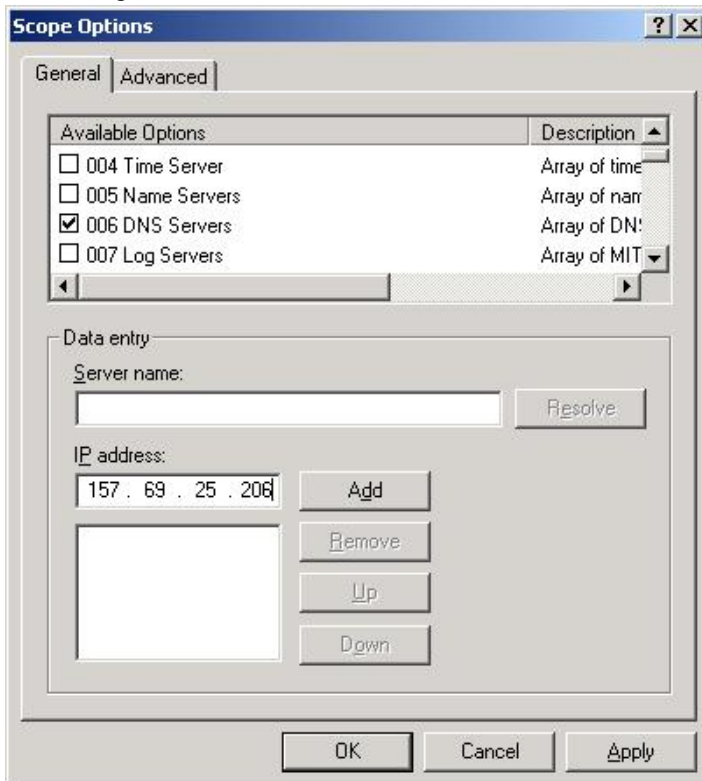
② Setting of DNS Domain Name
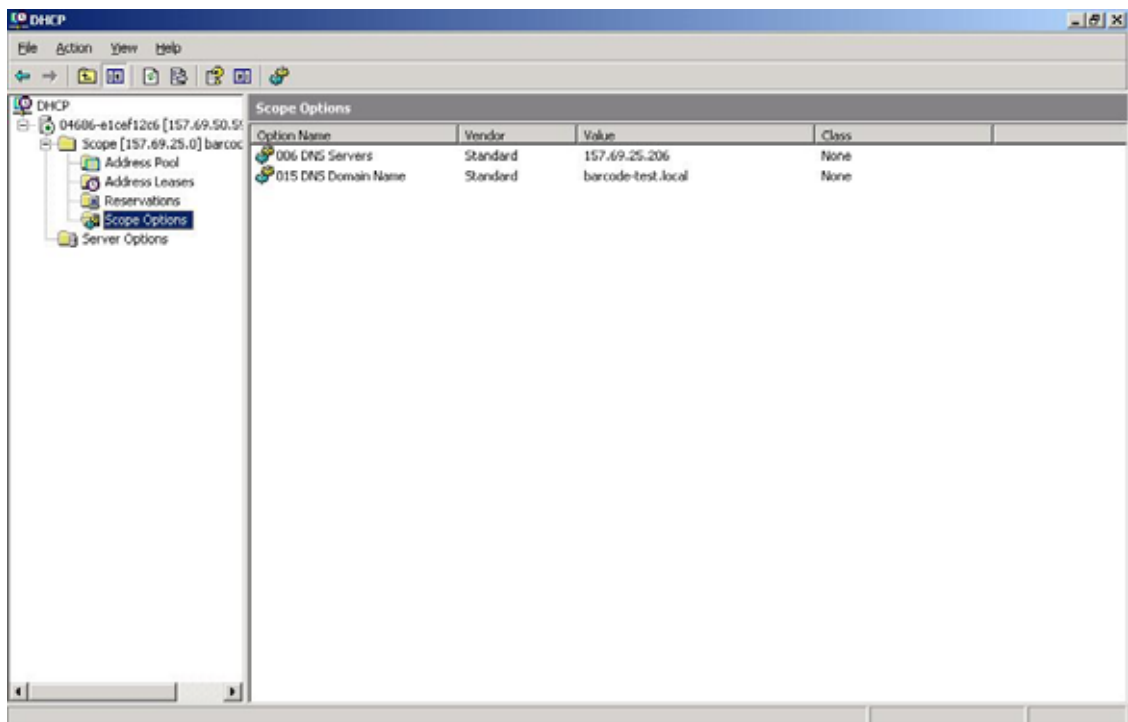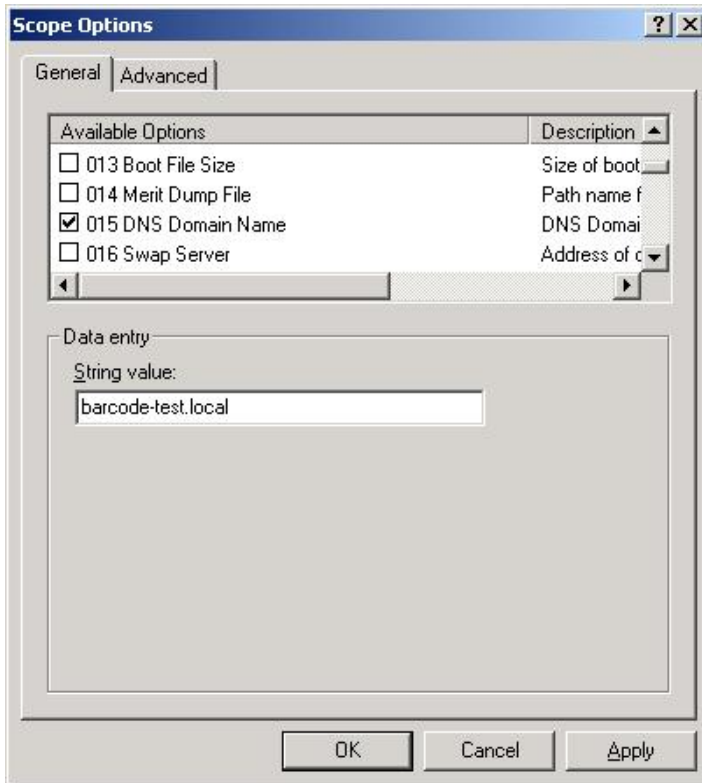
## 7.7  WINS PROTOCOL

Using the WINS protocol, the printer IP address and host name table can be saved in the WINS server.  By inquiring of the WINS server, the host device can obtain the printer IP address from the printer host name.

Setting parameters

WINS:      Set to Enabled or DHCP.
If WINS is set to Enabled, save the IP address and host name table in the WINS server of which IP address is set as WINS IP.

If WINS is set to DHCP, save the IP address and host name table on the WINS server, which is notified by the DHCP server.

To select DHCP, the DHCP client function needs to be enabled. (See Section "7.6 DHCP Client Function.")


WINS IP:   Set an IP address of the WINS server.
           If DHCP is selected for WINS, the WINS IP is ignored.

# 8. WIRELESS LAN INTERFACE

With the optional wireless LAN board installed, the B-EX series can connect the printer to the host via TCP/IP.
Then, the same network function as the one when the normal LAN cable is connected.

## 8.1 WIRELESS CONNECTION SETTING

A wireless LAN connection can be established, enabling wireless communications using the "B-EX setting tool."

### 8.1.1 Required Settings

| | |
|---|---|
| LAN/WLAN | Auto or Wireless |
| 11 b/g Setting | Any *1 |
| ESSID | Any |
| 11b channel | Any if Adhoc is selected *2 |
| 11b baud rate | Any if Adhoc is selected |
| 11g channel | Any if Adhoc is selected *2 |
| 11g baud rate | Any if Adhoc is selected |

*1   If Adhoc is selected, 11b. or 11g. needs to be clearly specified. (11 b/g cannot be set.)
*2   If an IBSS network is established, 11b and 11g channels are enabled.
     (For more information on the operation, see the "B-EX Printer Setting Tool Operation Specification.")

## 8.2 ENCRYPTION SETTING

Encryption can be set using the B-EX setting tool, enabling WEP, TKIP, and AES encryption communications through the encryption protocol.
WEP authentication options are Disabled, Open or Shared Key.
WPA authentication options are Disabled, WPA, WPA-PSK, WPA2 or WPA2-PSK.

### 8.2.1 Required Settings

| | |
|---|---|
| Encryption Method | Any |
| WEP Authentication Method | Any |
| WPA Authentication Method | Any |
| Default Key | Any if WEP is selected |
| WEP #1 Size | Any if WEP is selected |
| WEP #1 Key | Any if WEP is selected |
| WEP #2 Size | Any if WEP is selected |
| WEP #2 Key | Any if WEP is selected |
| WEP #3 Size | Any if WEP is selected |
| WEP #3 Key | Any if WEP is selected |
| WEP #4 Size | Any if WEP is selected |
| WEP #4 Key | Any if WEP is selected |
| WPA Encryption Key | Any if WPA-PSK or WPA2-PSK is selected |

*   For the settings required for the combination of encryption and supplicant, see Section 8.7 PARAMETER SETTING.

## 8.3 AUTHENTICATION SETTING (SUPPLICANT)

Encryption can be set using the B-EX setting tool, enabling wireless communications through the authentication protocol.
Supplicant options are Disabled, EAP-TLS, PEAP, EAP-TTLS, EAP-FAST, EAP-MD5 or LEAP.
Additional settings may be required depending on the supplicant.

### 8.3.1 Required Settings

| | |
|---|---|
| Authentication Method | Any |
| 802.1X Function | Any |
| Authentication Username | Any |
| Authentication Password | Any |
| Authentication File | For more information, see Section 8.8. |

* Usernames are case-sensitive, however, some of them may not be case-sensitive for authentication, depending on the RADIUS server.
* For the settings required for the combination of encryption and supplicant, see Section 8.7 PARAMETER SETTING.

### 8.3.2 Certificate

Certificates may be required depending on the supplicant. (See Section 8.7 PARAMETER SETTING.)
Certificate files include:
- Root CA certificate file
- Client certificate file
- Client key file
- Pass phrase file
- Random file

The B-EX supports X.509-type pem (BASE64) file as an authentication file.

### 8.3.2.1 How to Obtain Certificate

Certificates are issued by the certification authority.  For examples of obtaining certificates, see the examples in Section 8.8 HOW TO CREATE AUTHENTICATE FILE.

### 8.3.2.2 How to Edit Certificate

The B-EX supports X.509-type pem (BASE64) file as an authentication file.  If a certificate file is not in pem format, the file needs to be converted to pem format.
For examples of editing certificates, see the examples in Section 8.8 HOW TO CREATE AUTHENTICATE FILE.

### 8.3.2.3 How to Install Certificate

As the password for TLS authentication, a password, which is set in the B-EX or for the authentication file, is selected and used by the RADIUS server.
Each certificate is installed using the B-EX setting tool.  For more information, see the "B-EX Printer Setting Tool Operation Specification."

## 8.4 SE SETTING FUNCTION

Parameters, which are set only for manufacturing and services, can be changed when parameters are set using the "B-EX setting tool." It requires no changes by the user.

It is applied when the country code is set.

For more information on the operation, see the "B-EX Printer Setting Tool Operation Specification."

### 8.4.1 List of Available Channels by Country

| Country Code | Country Name | 11b Available Channel | 11g Available Channel |
|---|---|---|---|
| 392 | Japan | 1-14 | 1-13 |
| 840 | U.S. | 1-11 | 1-11 |
| 124 | Canada | 1-11 | 1-11 |
| 036 | Commonwealth of Australia | 1-13 | 1-13 |
| 554 | New Zealand | 1-13 | 1-13 |
| 484 | the United Mexican States | 1-11 | 1-11 |
| 710 | South African Republic | 1-13 | 1-13 |
| 156 | People's Republic of China | 1-13 | 1-13 |
| 344 | Hong Kong | 1-13 | 1-13 |
| 158 | Taiwan | 1-11 | 1-11 |
| 410 | Republic of Korea | 1-13 | 1-13 |
| 056 | Kingdom of Belgium | 1-13 | 1-13 |
| 528 | the Netherlands (the Kingdom of the Netherlands) | 1-13 | 1-13 |
| 442 | Grand Duchy of Luxembourg | 1-13 | 1-13 |
| 250 | the France Republic | 1-13 | 1-13 |
| 380 | the Italian Republic | 1-13 | 1-13 |
| 276 | Federal Republic of Germany | 1-13 | 1-13 |
| 208 | Kingdom of Denmark | 1-13 | 1-13 |
| 372 | Ireland | 1-13 | 1-13 |
| 826 | UK | 1-13 | 1-13 |
| 300 | Republic of Greece | 1-13 | 1-13 |
| 724 | Spain (España) | 1-13 | 1-13 |
| 620 | Portuguese Republic | 1-13 | 1-13 |
| 040 | the Republic of Austria | 1-13 | 1-13 |
| 246 | Republic of Finland | 1-13 | 1-13 |
| 752 | Kingdom of Sweden | 1-13 | 1-13 |
| 203 | Czech Republic | 1-13 | 1-13 |
| 233 | Republic of Estonia | 1-13 | 1-13 |
| 196 | the Republic of Cyprus | 1-13 | 1-13 |
| 428 | Republic of Latvia | 1-13 | 1-13 |
| 440 | Republic of Lithuania | 1-13 | 1-13 |
| 348 | Republic of Hungary | 1-13 | 1-13 |
| 470 | Republic of Malta | 1-13 | 1-13 |
| 616 | the Republic of Poland | 1-13 | 1-13 |
| 705 | Republic of Slovenia | 1-13 | 1-13 |
| 703 | Slovak Republic | 1-13 | 1-13 |
| 100 | Republic of Bulgaria | 1-13 | 1-13 |
| 642 | Romania | 1-13 | 1-13 |
| 578 | Kingdom of Norway | 1-13 | 1-13 |
| 438 | Principality of Liechtenstein | 1-13 | 1-13 |
| 352 | Republic of Iceland | 1-13 | 1-13 |
| 756 | Swiss Confederation | 1-13 | 1-13 |

If a country code other than the above is selected, the printer operates according to the settings for Japan.

## 8.5.  REFERENCE TO PARAMETERS USING HTTP FUNCTION

When "http://[printer IP address]/" is entered on the Web browser to access a printer, the printer homepage can be accessed.

On the Web page, Connection (wireless connection information), Reception (reception information) and Transmission (transmission information) tabs are provided, allowing the user to refer to the parameters on each page.

* When the Web printer function is enabled, the Web printer screen appears but no wireless LAN parameter screen does.


### 8.5.1    Required Settings

| LAN/WLAN | Auto or Wireless |
|----------|------------------|
| Web Printer | Disabled |
| IP Address | Any |
| Subnet Mask | Any |
| Gateway | Any |

HTML files need to be downloaded in advance.
Display files are downloaded at the factory default.
Only when a wireless LAN connection is established, these files are available.


### 8.5.2    Preparation

TOSHIBA TEC provides the following files:
• Files to be displayed on the browser (*.BIN)
• Sample display files (*.BIN)
The display files are updated every three seconds, however, they may not be automatically updated depending on the behavior of the browser.  Once the update fails due to the influence of the communication environment, subsequent automatic updates are disabled.  In that case, latest information is displayed by manually updating the files.

(1)  Connection (wireless connection information) page
It helps the user to refer to the current wireless connection status of the printer.

(1)  Connected to SSID                          : ESSID currently in use
(2)  Using channel                               : Channel currently in use
(3)  MAC address of Access Point              : MAC address of the access point currently
                                                    connected
(4)  Current transmission rate (Mbits/s)       : Current connection link speed
(5)  Current communications quality(%)         : Radio intensity
(6)  MAC address of the Printer               : MAC address of the wireless LAN module
(7)  Current IP address                        : IP address currently running (If DHCP is
                                                    enabled, the leased IP address s displayed.)
(8)  Module Firmware version                   : Version of wireless LAN module firmware
(9)  Connection                                : Opens the Connection information screen.
(10) Reception                                 : Opens the Reception information screen.
(11) Transmission                              : Opens the Transmission information screen.

(2)  Reception (reception information) page

It helps the user to refer to the wireless reception status of the printer.  These values are obtained after the printer is turned on or reset.

   (1)   Frames                          :  Total number of received frames
   (2)   Fragments                     :  Number of fragmented frames for reception
   (3)   Total Bytes                  :  Total bytes of received data
   (4)   HW Errors                 :  Number of SDIO card errors for reception
   (5)   Decrypt Errors           :  Total number of errors for decryption of received packets
   (6)   802.1X disallowed     :  Total number of packets received and discarded of
   (7)   Data Size (kBytes/sec)   :  Measured received data size per second
   (8)   Data Size (kBytes/16sec) :  Measured received data size per 16 seconds
   (9)   Data Error Count      :  Reception error count
  (10) Mistake Packet Count   :  Count of packets received and discarded of
  (11) Invoke Packet Count    :  Invalid packet count
  (12) Connection            :  Opens the Connection information screen.
  (13) Reception             :  Opens the Reception information screen.
  (14) Transmission        :  Opens the Transmission information screen.

(3)  Transmission (transmission information) page

It helps the user to refer to the wireless transmission status of the printer.  These values are obtained after the printer is turned on or reset.

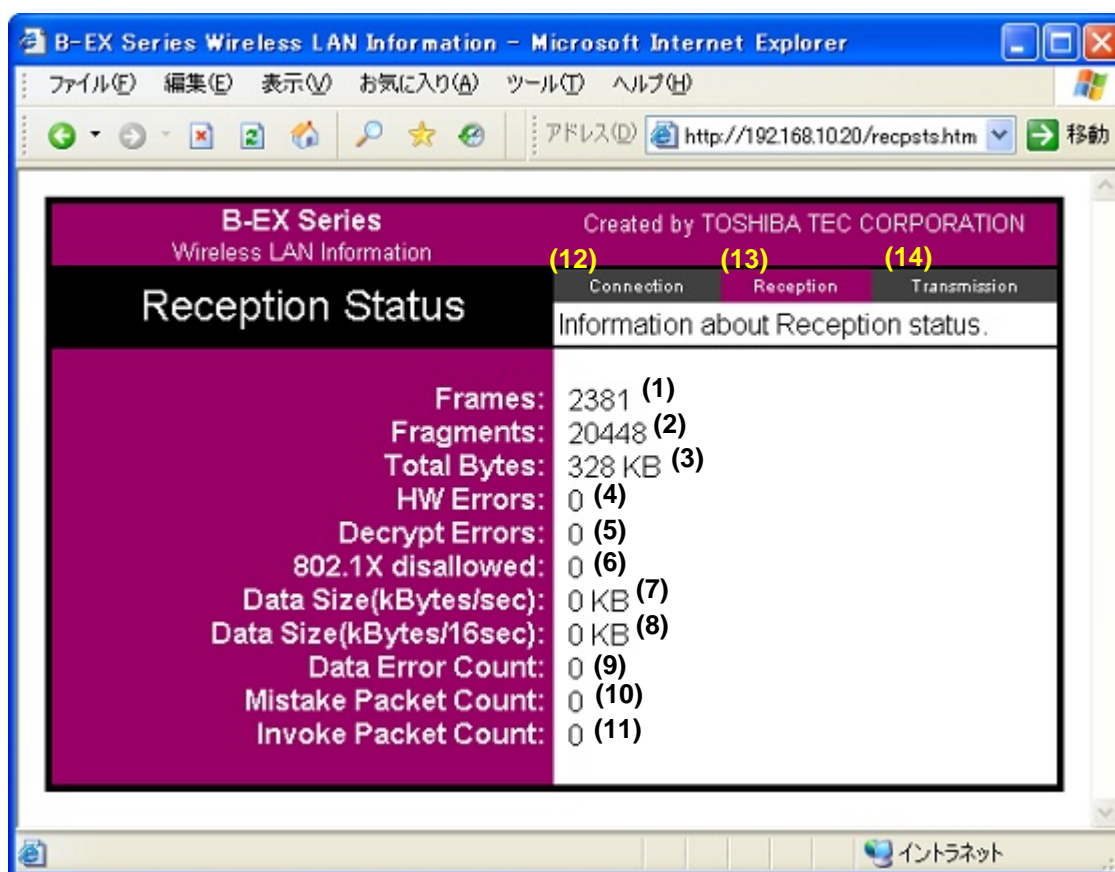|  | | |
|---|---|---|
| (1) | Frames | : Total number of transmitted frames |
| (2) | Fragments | : Number of fragmented frames for transmission |
| (3) | Total Bytes | : Total bytes of transmitted data |
| (4) | HW Errors | : Number of SDIO card errors for transmission |
| (5) | ACK Fail | : Number of times when ACK response was not sent |
| (6) | 802.1X disallowed | : Total number of packets transmitted and discarded of |
| (7) | Data Size (kBytes/sec) | : Measured transmitted data size per second |
| (8) | Data Size (kBytes/16sec) | : Measured transmitted data size per 16 seconds |
| (9) | Data Error Count | : Transmission error count |
| (10) | Busy Count | :  Transmission busy count |
| (11) | Connection | :  Opens the Connection information screen. |
| (12) | Reception | : Opens the Reception information screen. |
| (13) | Transmission | : Opens the Transmission information screen. |
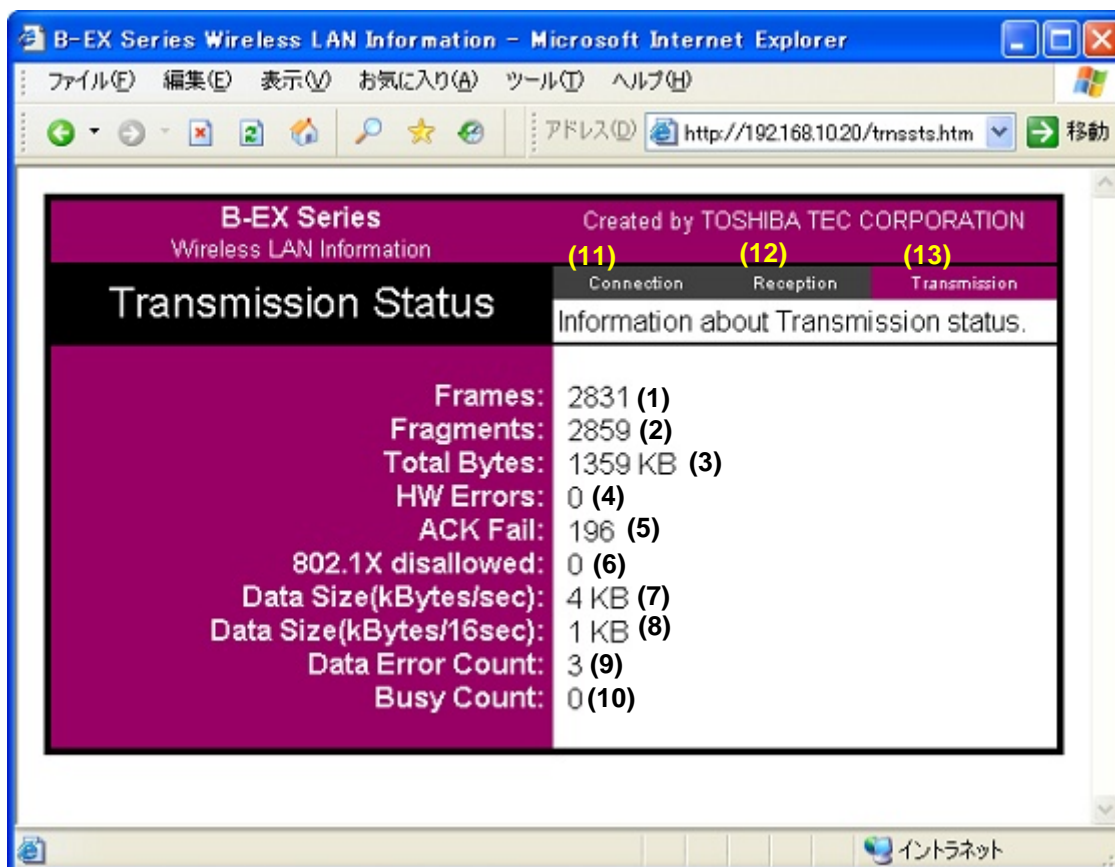
## 8.6 WIRELESS LAN SETTING PROCEDURE FLOW

```
                    ┌──────────────────┐
                    │ Start of Setting │
                    └──────────────────┘
                             │
                             ▼
                         ◇ Wireless        Not used
                         ◇   LAN      ──────────────────▶   ┌──────────────────────┐
                             │                              │  Wireless LAN = OFF  │
                           Used                             └──────────────────────┘
                             │
                             ▼
           ┌─────────────────────────────────────┐
           │ LAN setting                       7 │
           │    IP address setting               │
           │    Subnet mask setting              │
           │    Default gateway setting          │
           │    Socket communication setting 7.1 │
           │    LPR setting                  7.2 │
           │    DHPC setting                 7.6 │
           │    WINS setting                 7.7 │
           └─────────────────────────────────────┘
                             │
                             ▼
           ┌─────────────────────────────────────┐
           │ Wireless connection setting     8.1 │
           │    Connection mode                  │
           │    11b/g selection                  │
           │    ESSID setting                    │
           │    ADHOC setting                    │
           └─────────────────────────────────────┘
                             │
                             ▼
                         ◇ Encryption      Not used
                         ◇            ──────────────────▶   ┌──────────────────────┐
                             │                              │   Encryption = OFF   │
                           Used                             └──────────────────────┘
                             │
                             ▼
           ┌─────────────────────────────────────┐
           │ Encryption setting              8.2 │
           │    Encryption method                │
           │    WEP setting                      │
           │    WPA setting                      │
           └─────────────────────────────────────┘
                             │
                             ▼
                         ◇ Authentication  Not used
                         ◇            ──────────────────▶   ┌──────────────────────┐
                             │                              │    Supplicant = OFF  │
                           Used                             └──────────────────────┘
                             │
                             ▼
           ┌──────────────────────────────────────────┐
           │ Authentication setting               8.3 │
           │    Supplicant selection                  │
           │    802.1X setting                        │
           │    Authentication user name setting      │
           │    Authentication password setting       │
           │    Authentication file setting     8.3.2 │
           │    Refer to Chapter "8.8 HOW TO CREATE   │
           │    AUTHENTICATION FILE".                 │
           └──────────────────────────────────────────┘
                             │
                             ▼
                    ┌──────────────────┐
                    │  End of Setting  │
                    └──────────────────┘
```
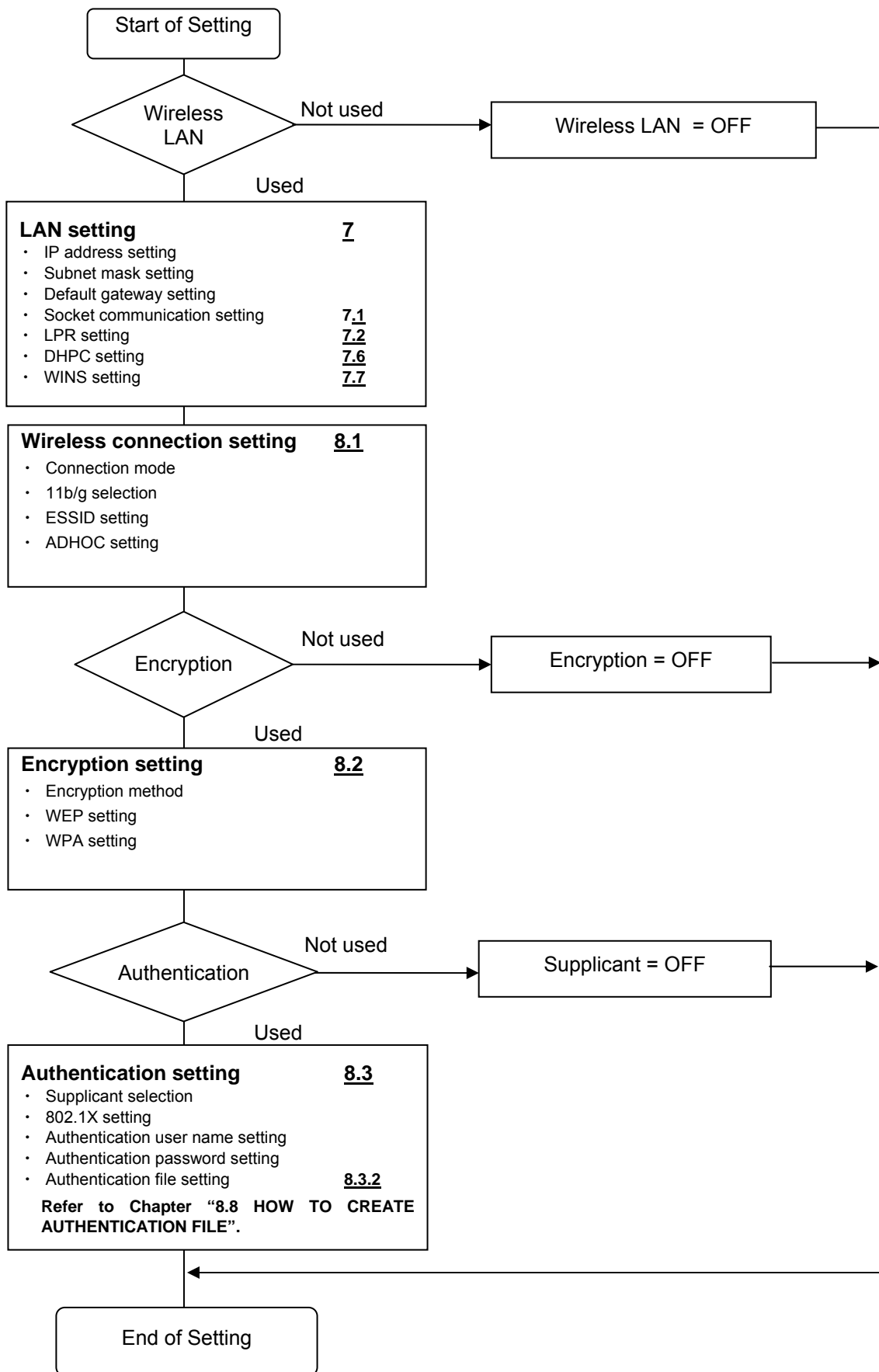
## 8.7. PARAMETER SETTING

Parameters required for security and associated settings supported by wireless LAN

Attachment A: Security and Associated Settings Supported by Wireless LAN

| Connection Mode | Encryption | WPA | Authentication Method | Supplicant | Internal Authentication Method | PAC provisioning Method | Username | Password | Internal Authentication Method | Root CA | Client Certificate / Client Key / Pass phrase / Random | PAC Provisioning Method | PAC file/File Password | WEP Key/Index | PSK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ADHOC | OFF | OFF | OPEN SYSTEM | OFF | | | | | | | | | | | |
| ADHOC | WEP40/140 | OFF | OPEN SYSTEM | OFF | | | | | | | | | | YES | |
| INFRA | OFF | OFF | OPEN SYSTEM | OFF | | | | | | | | | | | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | OFF | | | | | | | | | | YES | |
| INFRA | WEP40/140 | OFF | SHARED KEY | OFF | | | | | | | | | | YES | |
| INFRA | TKIP | WPA-PSK | OPEN SYSTEM | OFF | | | | | | | | | | | YES |
| INFRA | AES | WPA2-PSK | OPEN SYSTEM | OFF | | | | | | | | | | | YES |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | TLS | | | YES*1 | - | | YES | YES | | | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | TTLS | MSCHAPV2/MD5 | | YES | YES | - | YES | - | | | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | LEAP | | | YES | YES | | - | - | | | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | PEAP | MSCHAPV2 | | YES | YES | - | YES | - | | | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | MO6 | | | YES | YES | | - | - | | | YES | |
| INFRA | WEP40/140 | OFF | SHARED KEY | MO6 | | | YES | YES | | - | - | | | YES | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | AUTO | YES | YES | MSCHAPV2 | - | - | AUTO | - | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | MANUAL | YES | YES | MSCHAPV2 | - | - | MANUAL | YES | - | |
| INFRA | WEP40/140 | OFF | OPEN SYSTEM | EAP-FAST | GTC | MANUAL | YES | YES | GTC | - | - | MANUAL | YES | - | |
| INFRA | WEP40/140 | OFF | NETWORK EAP | LEAP | | | YES | YES | | - | - | | | - | |
| INFRA | TKIP | WPA | OPEN SYSTEM | TLS | | | YES*1 | - | | YES | YES | | | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | TTLS | MSCHAPV2/MD5 | | YES | YES | - | YES | - | | | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | LEAP | | | YES | YES | | - | - | | | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | PEAP | MSCHAPV2 | | YES | YES | - | YES | - | | | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | AUTO | YES | YES | MSCHAPV2 | - | - | AUTO | - | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | MANUAL | YES | YES | MSCHAPV2 | - | - | MANUAL | YES | | |
| INFRA | TKIP | WPA | OPEN SYSTEM | EAP-FAST | GTC | MANUAL | YES | YES | GTC | - | - | MANUAL | YES | | |
| INFRA | TKIP | WPA | NETWORK EAP | LEAP | | | YES | YES | | - | - | | | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | TLS | | | YES*1 | - | | YES | YES | | | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | TTLS | MSCHAPV2/MD5 | | YES | YES | - | YES | - | | | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | LEAP | | | YES | YES | | - | - | | | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | PEAP | MSCHAPV2 | | YES | YES | - | YES | - | | | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | AUTO | YES | YES | MSCHAPV2 | - | - | AUTO | - | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | EAP-FAST | MSCHAPV2 | MANUAL | YES | YES | MSCHAPV2 | - | - | MANUAL | YES | | |
| INFRA | AES | WPA2 | OPEN SYSTEM | EAP-FAST | GTC | MANUAL | YES | YES | GTC | - | - | MANUAL | YES | | |
| INFRA | AES | WPA2 | NETWORK EAP | LEAP | | | YES | YES | | - | - | | | | |

Yes:     Setting required

No:     No setting required

Gray area: Not related to set item (No setting required)

*1:     Same value as that in the subject of client certificate required depending on the system

## 8.8. HOW TO CREATE AUTHENTICATION FILE

This chapter explains the method of obtaining a root CA certificate file (in pem format), client certificate file (in pem format), client key file (in pem format), pass phrase file and random file.

The B-EX supports X.509-type pem (BASE64) file as an authentication file.  If a certificate issued by the certification authority is not in pem format, the file needs to be converted to pem format using a command such as OpenSSL for Windows.

### 8.8.1    Root CA Certificate

This section explains the method of converting a certificate issued by a Root CA preinstalled on Windows, as an example.

1. Open the Internet Explorer and select [Tools], then [Internet Options].  On the Internet Properties screen, click [Content] and then [Certificates…].
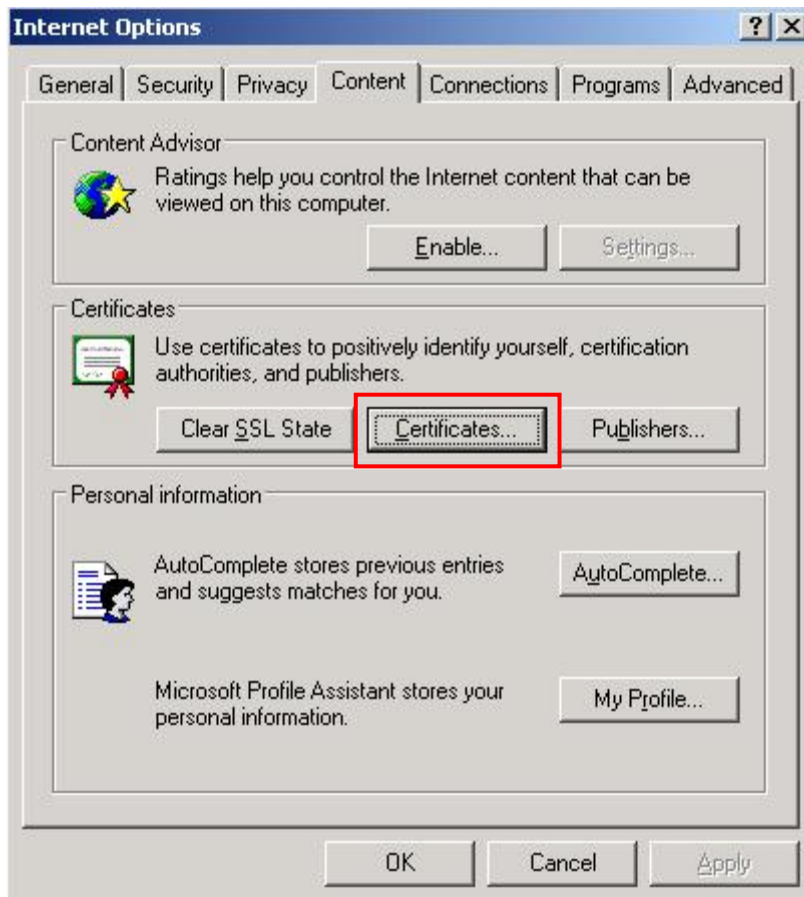
2. Click [Trusted Root Certification Authorities] tab, select the Root CA to convert, then click [Export...].
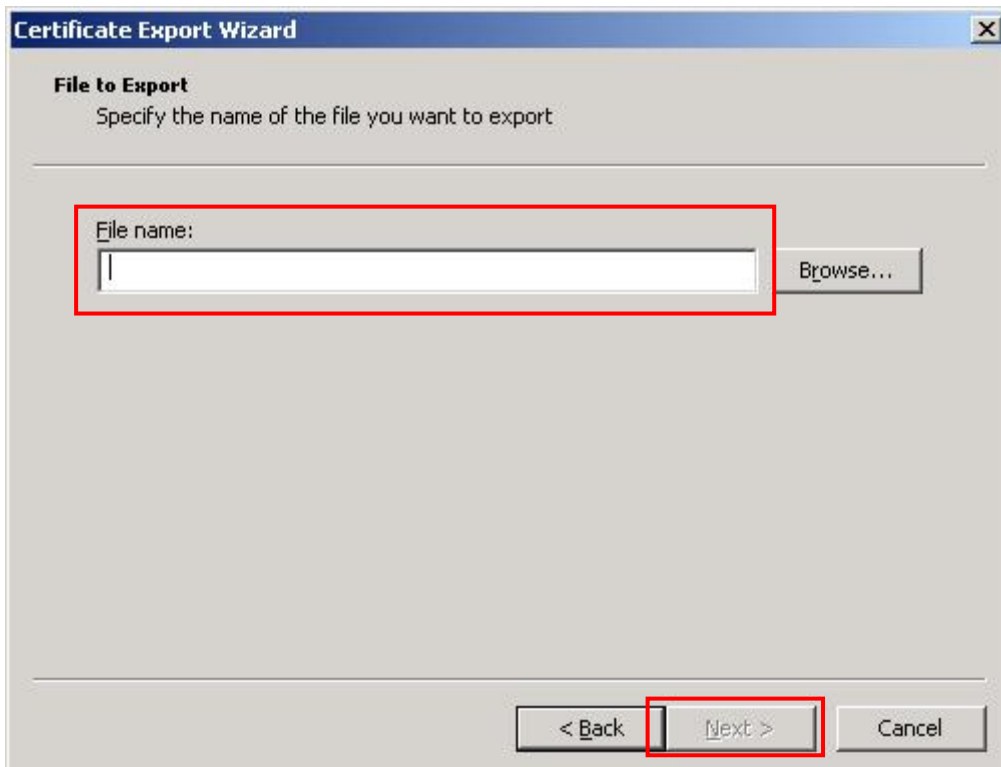


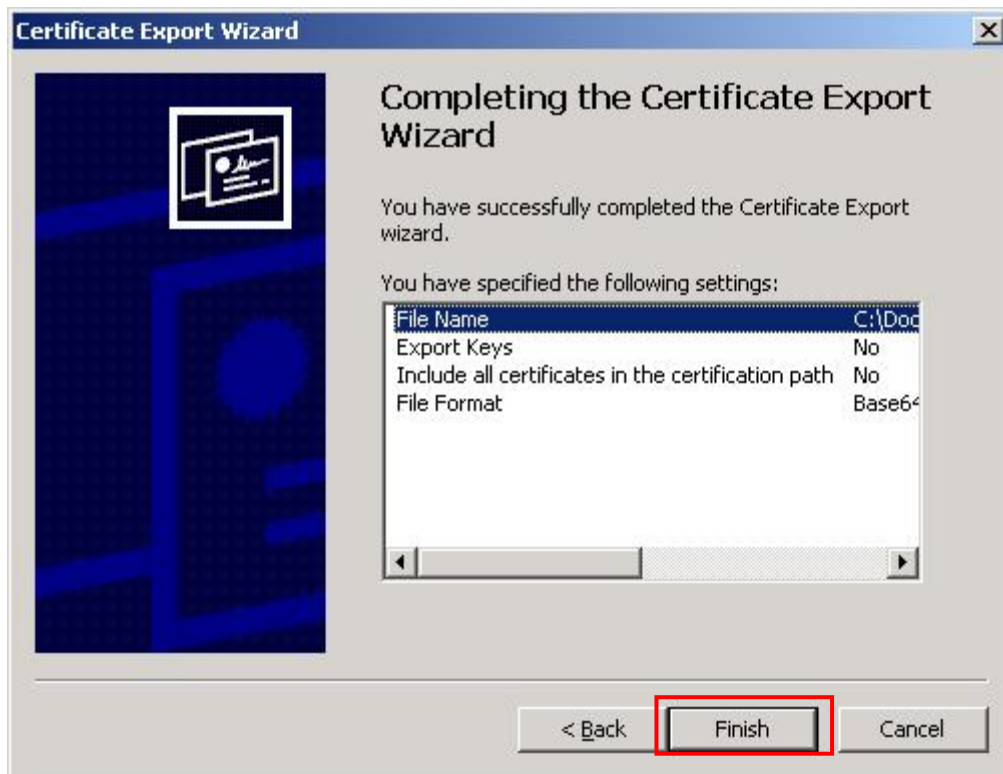3. On the Certificate Export Wizard screen, click [Next].

4. To export a base64 encoded certificate, select [Base 64 encoded X.509 (CER)] and click [Next].
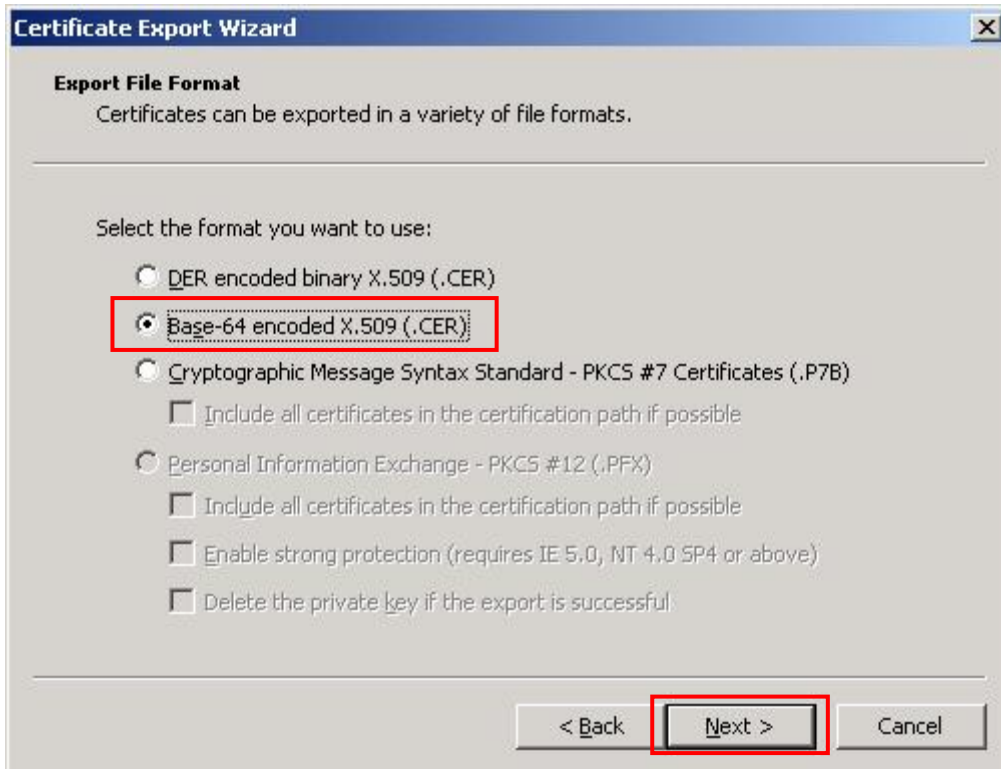


5. Enter a name of the file to be exported, and then click [Next].

6. Export of the certificate file has been successfully completed.  The file exported through the above-mentioned steps is a Root CA certificate file.

### 8.8.2 How to Obtain Certificate

The following steps are required to obtain a client certificate. After obtaining the certificate, create a pem file in accordance with the method of converting client certificates.

This section explains the method of converting certificates, which have been installed on Windows, as an example. (If a client certificate is in PKCS#12 format, start converting the client certificate by skipping this section.)

When the format of the client certificate is uncertain, the certificate may be installed on Windows by double-clicking the certificate. The certificate has been properly imported, allowing it to be converted in accordance with the steps below.

1. Open the Internet Explorer and select [Tools], then [Internet Options]. On the Internet Properties screen, click [Content] and then [Certificates…].
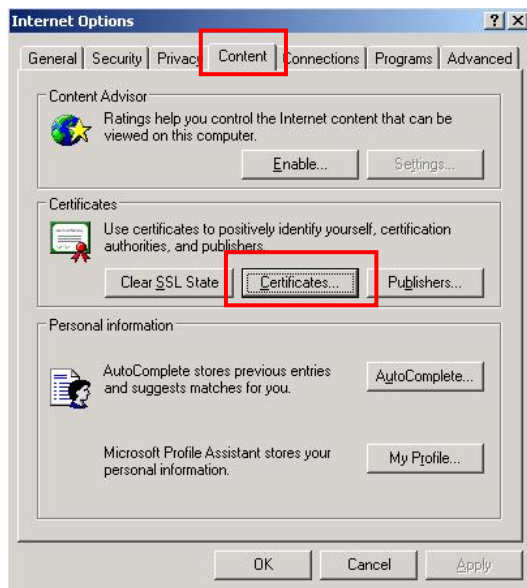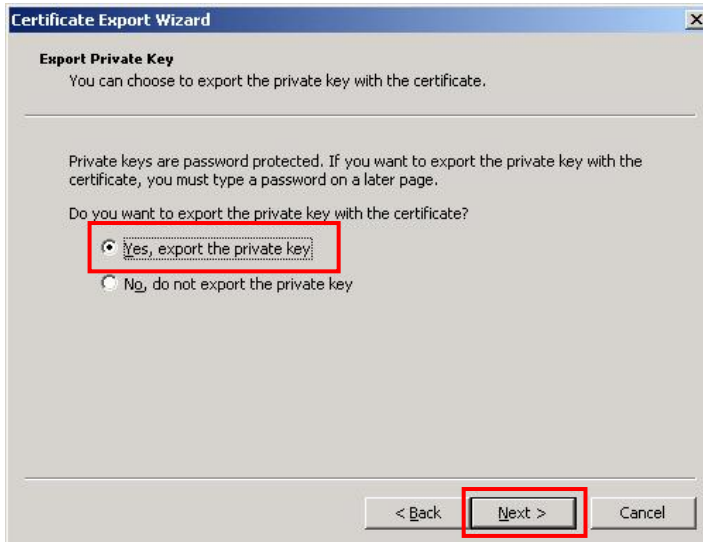


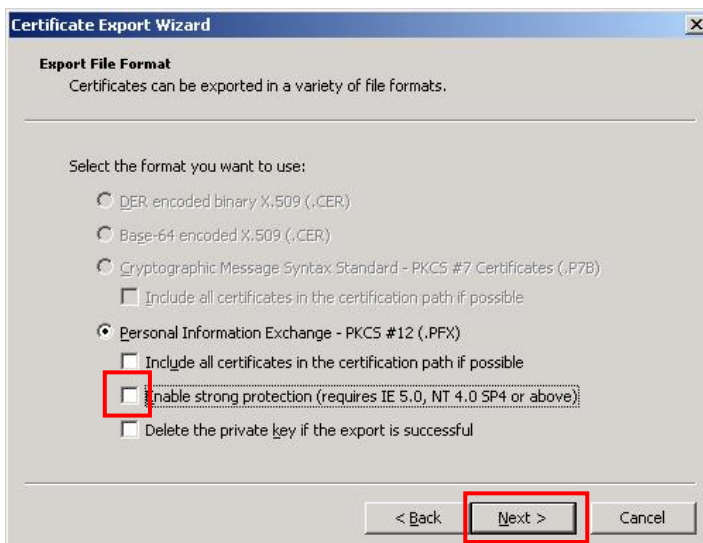2. Select an installed client certificate then click [Export...].
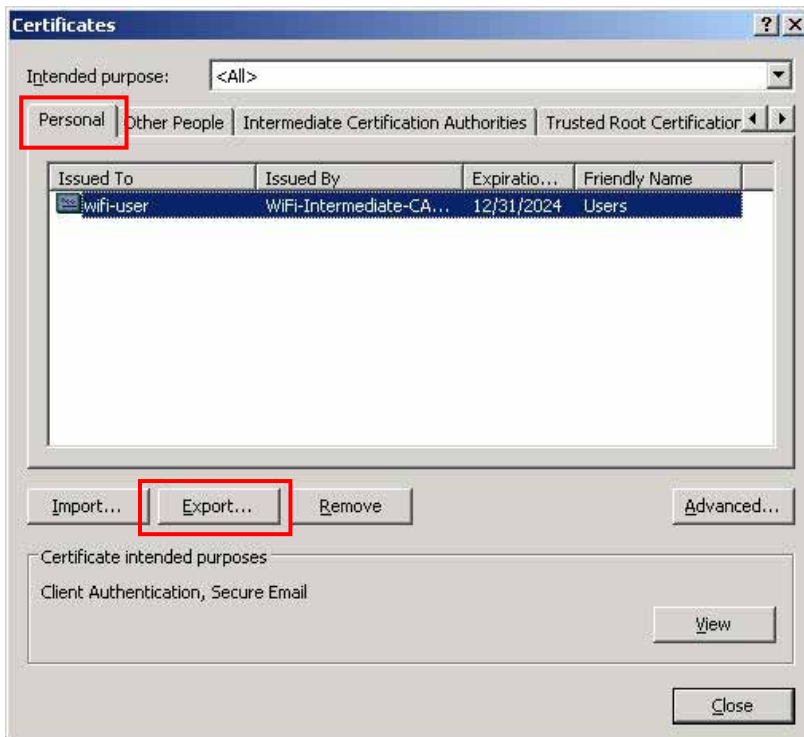
3. On the Certificate Export Wizard screen, click on the [Next] button.



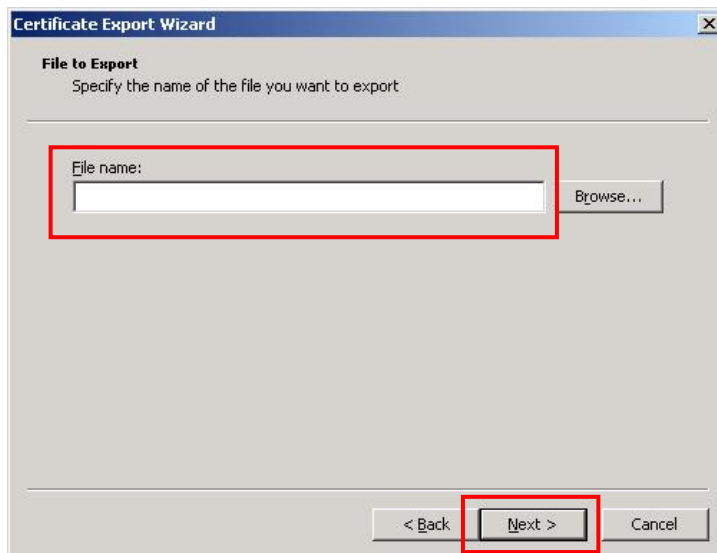4. Select [Yes, export the private key] and then click [Next].



5. Remove the check from [Enable strong protection (requires IE 5.0, NT 4.0 SP4 or above)] and then click [Next].

6. Enter a password, which is required to convert a file to PEM format and other purposes.



7. Enter a name of the file to be exported, then click on the [Next] button.



8. Export of the client certificate file in pfx format has been successfully completed. Click [Finish].

#### 8.8.2.1    Conversion of Client Certificate and Client Key File

This section explains the method to convert a client certificate in pkcs12 format exported from IAS on Windows to a client certificate and client key in pem format, as an example.  (OpenSSL 0.9.8n was used.)
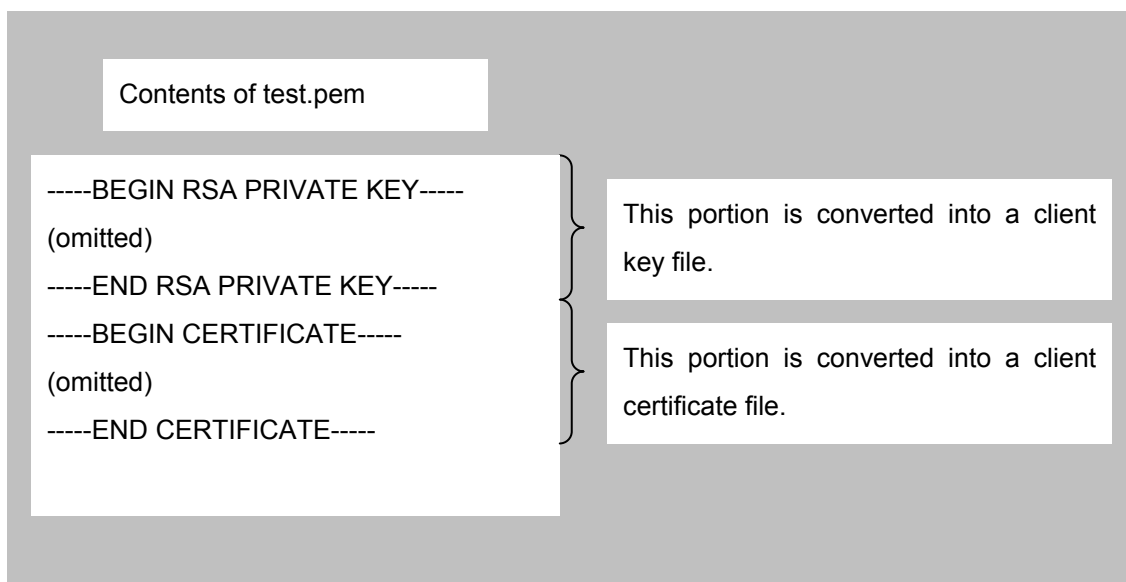
1. Convert pfx certificate to pem format.
   Install the freeware OpenSSL (http://www.openssl.org/) and execute the following command:
   openssl pkcs12 -clcerts -in test.pfx -out test.pem

*   The above command sample requires conversion of test.pfx, however, the file exported as a client certificate file needs to be specified for conversion.

2. Convert test.pem into client certificate file and client key file.
   Divide the file into different portions (CERTIFICATE/RSA PRIVATE KEY) using the text editor and save each of them.



```
Contents of test.pem

-----BEGIN RSA PRIVATE KEY-----
(omitted)
-----END RSA PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
(omitted)
-----END CERTIFICATE-----
```

This portion is converted into a client key file.

This portion is converted into a client certificate file.

#### 8.8.3    Pass Phrase File

Specify a pass phrase for a client certificate key file.

#### 8.8.4    Random File

This file can contain anything. (The file size must be 300 bytes or less due to system limitation.)

# 8. WIRELESS LAN INTERFACE (FOR B-EX6T)

With the optional wireless LAN board(GS2100M) installed, the B-EX6T can connect the printer to the host via TCP/IP. Then, the same network function (except SNMP function) as the one when the normal LAN cable is connected.

## 8.1 WIRELESS CONNECTION SETTING

A wireless LAN connection can be established, enabling wireless communications using the "BCP setting tool."

### 8.1.1 Required Settings

| ESSID | Any |
|---|---|
| Channel | Any if AP mode is selected |

## 8.2 ENCRYPTION SETTING

Encryption can be set using the BCP setting tool. Encryption is selectable from Disabled, WEP40 Open System, WEP40 Shared Key, WPA Personal (PSK), WPA Enterprise (EAP), WPA2 Personal (PSK), and WPA2 Enterprise (EAP)

For the combination of Encryption setting and Authentication protocol, please see the table below.

| Authentication Method | Encryption Method |
|---|---|
| Open System | None/WEP40 |
| Shared key | WEP40 |
| WPA Personal(PSK) | TKIP |
| WPA Enterprise(EAP) | TKIP |
| WPA2 Personal(PSK) | AES/TKIP |
| WPA2 Enterprise(EAP) | AES/TKIP |

### 8.2.1 Required Settings

| Encryption Method | Any |
|---|---|
| Default Key | Any if WEP is selected |
| WEP Key | Any if WEP is selected |
| WPA Encryption Key | Any if WPA-PSK or WPA2-PSK is selected |
| Supplicant | Any if WPA-PSK or WPA2-PSK is selected |

\* For the settings required for the combination of encryption and supplicant, see Section 8.4 PARAMETER SETTING.

## 8.3  AUTHENTICATION SETTING (SUPPLICANT)

Encryption can be set using the BCP setting tool, enabling wireless communications through the authentication protocol.
Supplicant options are Disabled, EAP-TLS, PEAPv0, PEAPv1, PEAPv0 without certificate, PEAPv1 without certificate, EAP-TTLS, EAP-FAST-GTC, and EAP-FAST-MSCHAPv2.
Additional settings may be required depending on the supplicant.

### 8.3.1    Required Settings

| | |
|---|---|
| Encryption | WPA Enterprise(EAP)　WPA2 Enterprise(EAP) |
| Authentication Username | Any |
| Authentication Password | Any |
| Authentication File | For more information, see Section 7.8.2. |

Usernames are case-sensitive, however, some of them may not be case-sensitive for authentication, depending on the RADIUS server.
* For the settings required for the combination of encryption and supplicant, see Section 8.4 PARAMETER SETTING.

### 8.3.2    Certificate

Certificates may be required depending on the supplicant. (See Section 8.4 PARAMETER SETTING.)
Certificate files include:
- Root CA certificate file
- Client certificate file
- Client key file

The B-EX supports ASIN.1-type DER file as an authentication file.

### 8.3.2.1    How to Obtain Certificate

Certificates are issued by the certification authority.  For examples of obtaining certificates, see the examples in Section 9 HOW TO CREATE AUTHENTICATE FILE.

### 8.3.2.2    How to Edit Certificate

The B-EX supports ASIN.1-type DER file as an authentication file.  If a certificate file is not in DER format, the file needs to be converted to DER format.
For examples of editing certificates, see the examples in Section 8 HOW TO CREATE AUTHENTICATE FILE.

### 8.3.2.3    How to Install Certificate

Each certificate is installed using the BCP setting tool.  For more information, see the "BCP Printer Setting Tool Operation Specification."

## 8.4 PARAMETER SETTING

Please see below table for the Parameters Setting usable with Wireless LAN.

| Wireless LAN Connection Mode | Security Mode | WEP Authentication | Other Authentication method | Internal Authentication Method | Username | Password | Root CA | Client Certificate Client Key | WEP Key/Index | PSK |
|---|---|---|---|---|---|---|---|---|---|---|
| AP mode | Open | OPEN SYSTEM | OFF | NONE | | | | | | |
| AP mode | WEP40 | OPEN SYSTEM | OFF | NONE | | | | | YES | |
| AP mode | WEP40 | SHARED KEY | OFF | NONE | | | | | YES | |
| AP mode | WPA/WPA2 Personal | NONE | OFF | NONE | | | | | | YES |
| INFRA | Open | OPEN SYSTEM | OFF | NONE | | | | | | |
| INFRA | WEP40 | OPEN SYSTEM | OFF | NONE | | | | | YES | |
| INFRA | WEP40 | SHARED KEY | OFF | NONE | | | | | YES | |
| INFRA | WPA/WPA2 Personal | NONE | OFF | NONE | | - | | | | YES |
| INFRA | WPA/WPA2 Enterprise | NONE | EAP-TLS | NONE | YES | | YES | YES | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | EAP-TTLS | MSCHAPv2 | YES | YES | YES | - | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | PEAPv0 | MSCHAPV2 | YES | YES | YES | - | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | PEAPv0 Without Cert | MSCHAPv2 | YES | YES | - | - | | |
| | WPA/WPA2 Enterprise | NONE | | | | | - | - | | |
| INFRA | WPA/WPA2 Enterprise | NONE | PEAPv1 | EAP-GTC | YES | YES | YES | - | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | PEAPv1 Without Cert | EAP-GTC | YES | YES | - | - | - | |
| | WPA/WPA2 Enterprise | NONE | | | YES | YES | - | - | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | EAP-FAST | MSCHAPv2 | YES | YES | - | - | - | |
| INFRA | WPA/WPA2 Enterprise | NONE | EAP-FAST | EAP-GTC | YES | YES- | | | | |

## 8.5 HOW TO CREATE AUTHENTICATION FILE

This section describes how to obtain Root CA certificate file, Client certificate file (Public Key), and Client key file (Private Key).

The B-EX series supports ASIN.1 type DER file as authentication file. If the certificate from Certificate Authority is not DER format, the file needs to be converted using tools such as Windows and openssl.
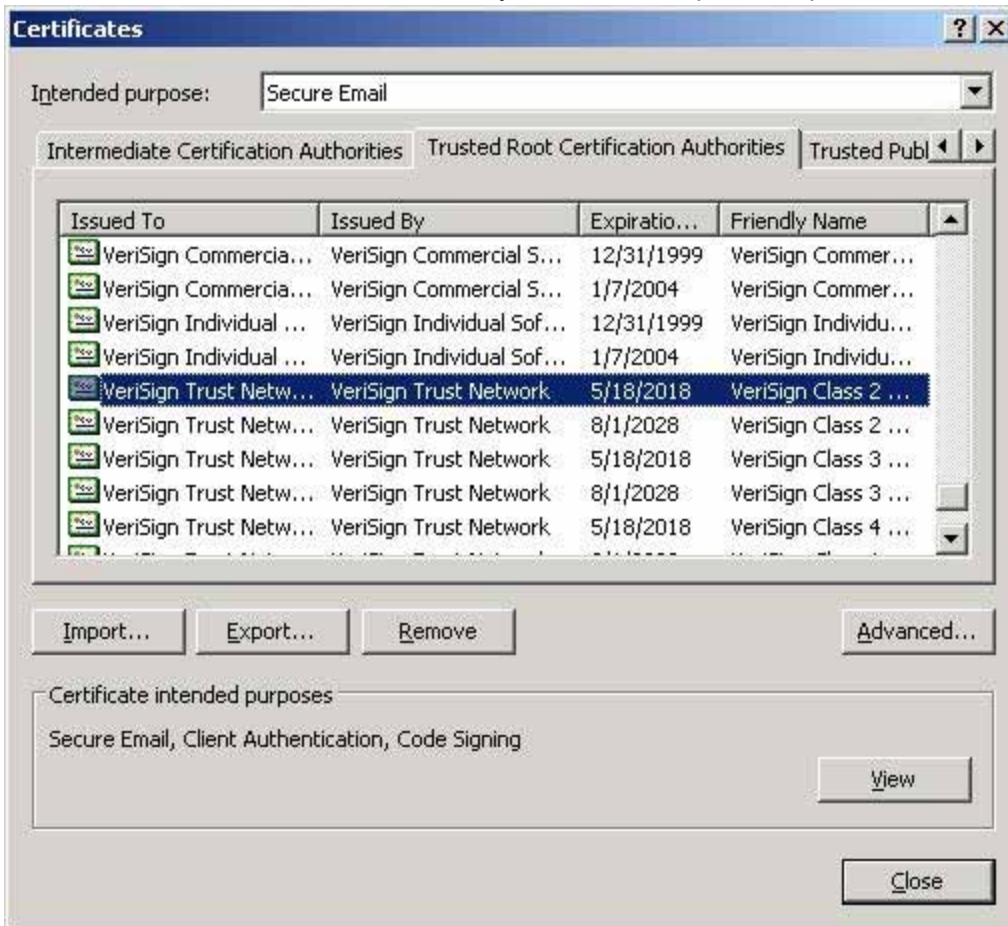
### 8.5.1 Root CA Certificate

Described below is the conversion method when using pre-installed Root CA in Windows.

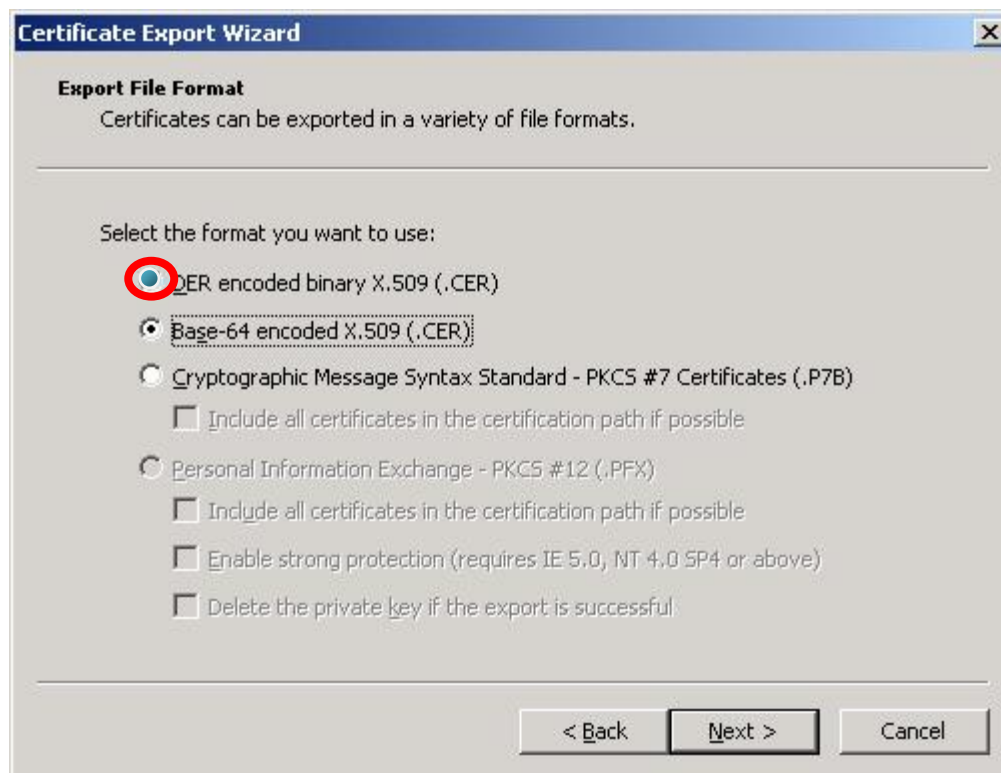Select Certificate from Internet Option on Internet Explorer
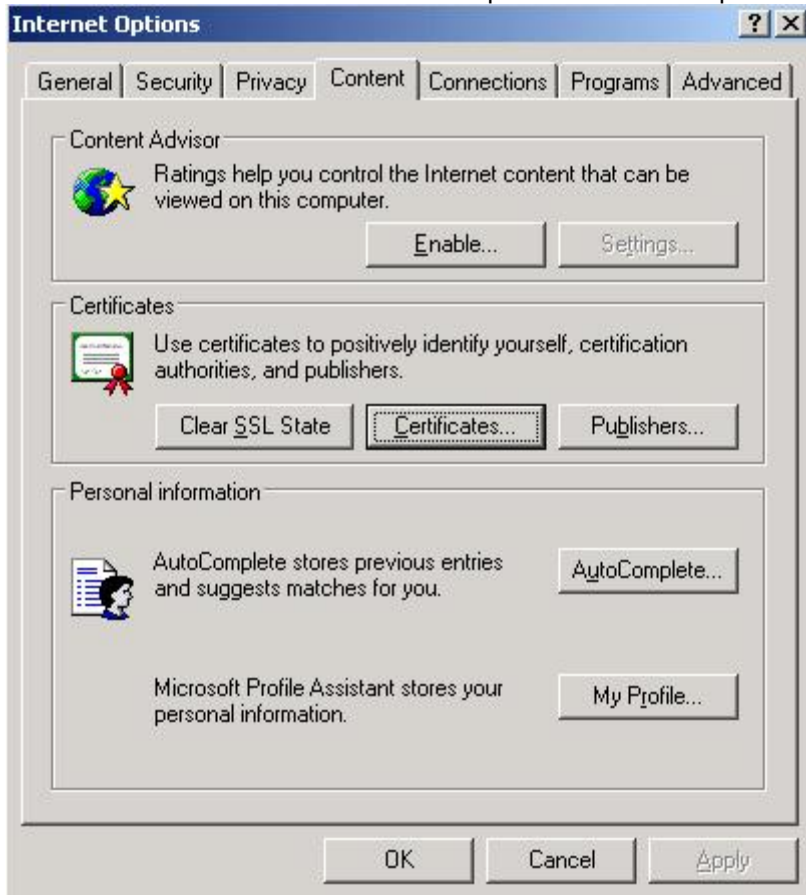
Select Root Certificate Authority to convert and press "Export".



Export with DER.

## Certificate Export Wizard

**Export File Format**
Certificates can be exported in a variety of file formats.

Select the format you want to use:

- ○ DER encoded binary X.509 (.CER)
- ● Base-64 encoded X.509 (.CER)
- ○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
  - ☐ Include all certificates in the certification path if possible
- ○ Personal Information Exchange - PKCS #12 (.PFX)
  - ☐ Include all certificates in the certification path if possible
  - ☐ Enable strong protection (requires IE 5.0, NT 4.0 SP4 or above)
  - ☐ Delete the private key if the export is successful

[ < Back ] [ Next > ] [ Cancel ]

---

## Certificate Export Wizard

**File to Export**
Specify the name of the file you want to export

File name:

[                                          ] [ Browse... ]

[ < Back ] [ Next > ] [ Cancel ]

---

## Certificate Export Wizard

### Completing the Certificate Export Wizard

Outputted file from above is Root CA Certificate file.

**8.5.2 Obtaining Client Certificate**

Described below is how to obtain Client Certificate file. After Obtaining Client Certificate File, Convert the file described in 8.5.3 Converting Client Certificate and create DER format file.

Example described here is an example that Certificate is pre-installed in Windows. (If Client Certificate is PKCS#12 format, please skip this article and start from 8.5.3.
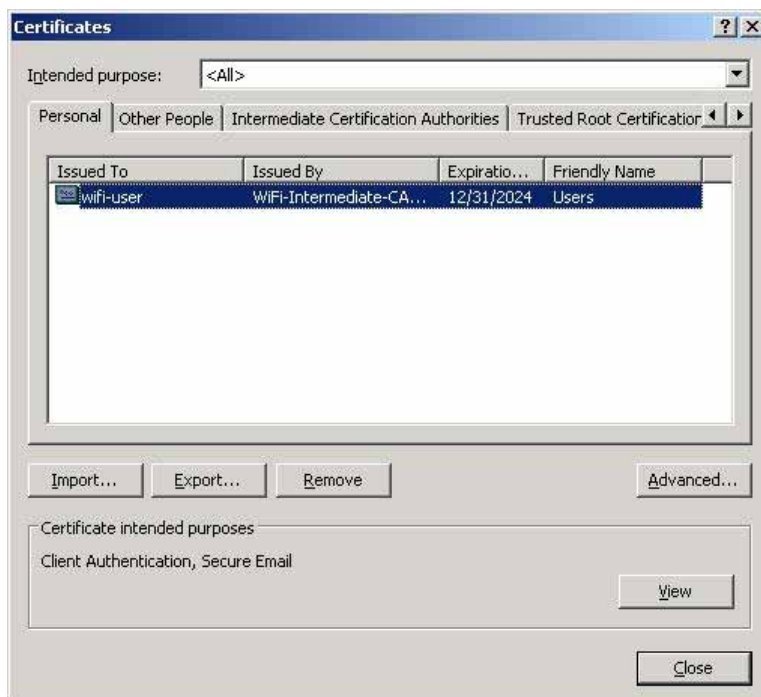
If the file format of Client Certificate is uncertain, double-clicking the certificate and it may be installed on Windows. If it can import correctly, Certificate can be converted according to the steps described in this article.
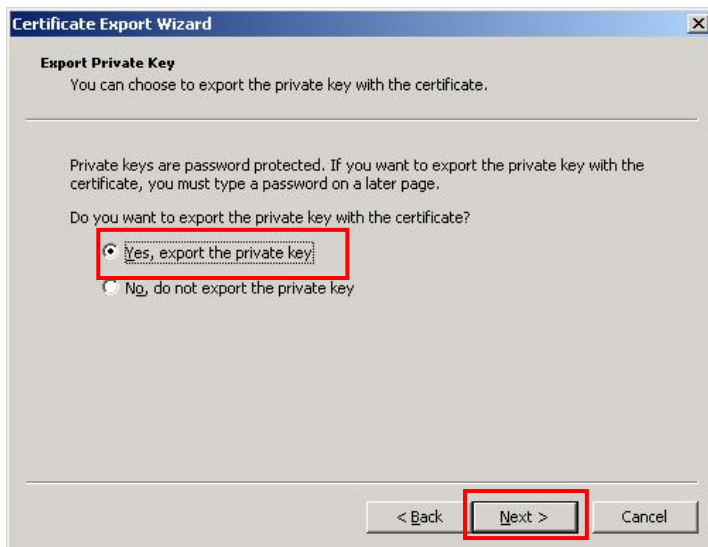
Open "Internet Option" from "Tool" menu.
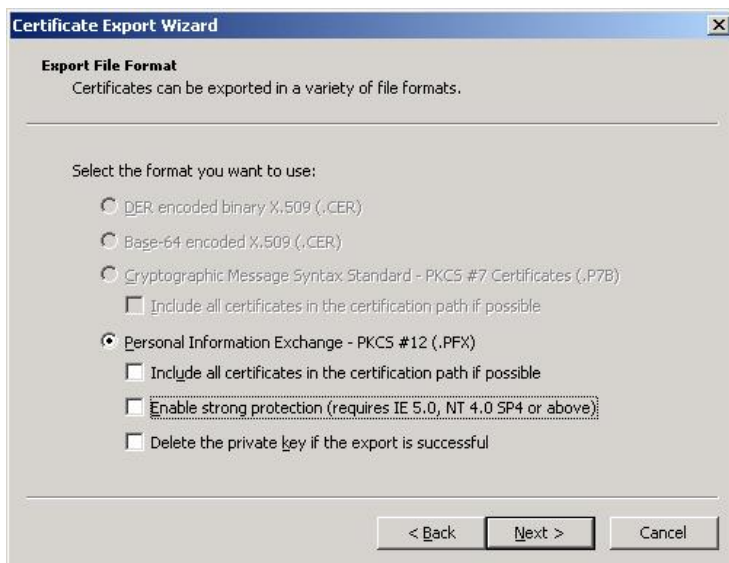
Click "Contents" Tab.
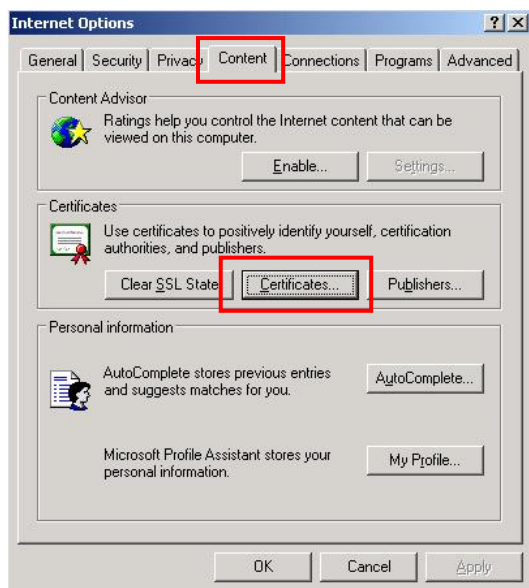


Press "Certificate" button.

Export wizard starts. Press "Next" to continue.



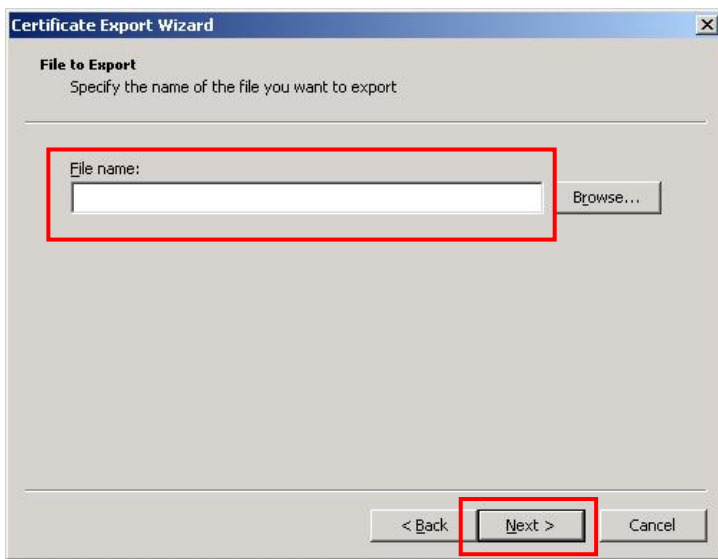Select "Yes, export the private key" and press "Next".



Make sure there are no check marks in the box and press "Next".

Set Password.

Setted Password will be required later when converting to the printer supported format.



Enter File name and Press "Next" to export file.

Client Certificate in PFX format output is completed.

**8.5.3 Converting Client certificate**

Following is the steps to convert Client certificate (pkcs12) exported from Windows IAS(as an example) to DER format. Open ssl version 0.9.8u was used for checking.

1. Convert .pfx to PEM format.

Download freeware soft Openssl    http://www.openssl.org/    and start following command:

openssl pkcs12 -clcerts -in test.pfx -out test.pem

*Setted Password will be used. *For output PEM formt, new password is required .

2. Convert Client authorization file to the DER format.

openssl x509 -inform PEM -outform DER -in test.pem -out clientcert.der

3. Convert Client key file to DER format.

openssl rsa -inform PEM -outform DER -in test.pem -out clientcertkey.der

*New password set in 1. will be used.

*Please speficy output file with client certificate file.


**8.6 DHCP Server function**

When setting AP mode, function to deliver IP address to the DHCP client connected with printer will be enabled.

**8.6.1 DHCP server specification**

(1) IP address to deliver

 IP address to delivered to DHCP client is theaddress that added 1 to the  printer IP address  or later.

If address range is out of subnet, address will be on top of the subnet.

Example:

Printer IP address is "192.168.10.20", "192.168.10.21" or later.

Printer IP address is "192.168.254.254, "192.168.254.1" or later.


(2) Maximum number of clients

Maximum delivery number of IP address is up to 8 clients.


(3) Lease Term

Lease Term is 24 hours.


# 9.  INSTRUCTIONS AND DIRECTIONS FOR USE OF NETWORK FUNCTION

## 9.1   USB STORAGE DEVICE DATA PROTECTION

- Pause the printer, make sure the Online LED is off, and then power off the printer.

If the printer is powered off while the printer is writing to a file, with the network function (FTP, HTTPD and e-mail) using the USB storage device, the system file on the USB storage device may be corrupted and data may be lost.

Therefore, the printer needs to be powered off when it is not accessing any file.

When [Pause] is pressed to place the printer in the pause state, the Online LED is off and the printer does not access files until the Online LED is on later.

## 9.2 AVAILABLE USB STORAGE DEVICE

With the Web printer function, when the available space on the USB storage device is insufficient, an error message appears after a print job is sent.  When the available space reaches zero bytes, CGI does not operate and an error message appears indicating no web page can be displayed on the web browser. (No error message may appear depending on the Web browser settings.)

Since [Delete] for Print Job Management function is disabled, the FTP function is used to delete a file on the USB storage device.

## 9.3 COPYING FILE TO USB STORAGE DEVICE

The computer with the USB connector is used to read and write files to the USB storage device used on the printer, however, when the USB storage device where the files were written is viewed on the printer, corrupted files may be found depending on the model.  In this case, the FTP function of the printer is required to read and write files.