TOSHIBA

TOSHIBA Bar Code Printer

B-SA4T/SX6T/SX8T/852-R Series

Network Specification

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TOSHIBA TEC CORPORATION

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1. SCOPE

This specification applies to the network for the B-SA4T, B-SX6T, B-SX8T, and B-852-R series general-purpose thermal label/tag printers (hereinafter referred to as the B-SA4T series).

2. GENERAL DESCRIPTION

With the built-in Ethernet controller and protocol stack, the B-SA4T series can provide the following LAN I/F specifications.

		Specifications
Protocol	Physical Layer	10BASE-T, 100BASE-TX (IEEE802.3 compliant) Auto negotiation 10/100Mbps Full/Half Duplex
	Data Link Layer	CSMA/CD
	Network Layer	IP, ICMP, ARP
	Transport Layer	TCP, UDP
	Application Layer	SOCKET, TELNET, LPR, SNMP agent, DHCP client, Web server
Layout	Link LED (Green) LAN connector Ethernet terminal Activity LED (Orange) Viewed from the back of the printer	
Network Interface	Number of ports	1
	Ethernet terminal	For both 10BASE-T and 100BASE-TX
	Connector	RJ-45
LED	Link LED (At the upper left when viewed from the printer back)	ON: Link of either of 10 Mbps or 100 Mbps is being detected. OFF: Link pulse of neither of 10 Mbps or 100 Mbps is detected. * Communication is not available until the Link LED turns on.
	Activity LED (At the lower left when viewed from the printer back)	ON: Receive/Send packets exist. OFF: (Idle state)
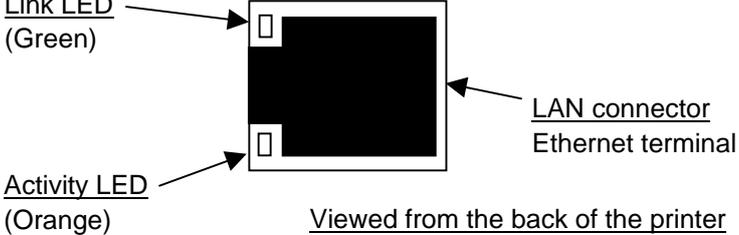
3. SETTING

	Factory Default Setting	Default Value for Parameter Clear	Remarks
LAN	ON	ON	1. User System mode <7>
SNMP	ON	ON	1. User System mode <7>
Printer IP Address	192.168.10.20	Not cleared	1. System mode <7> 2. IP Address Set Command 3. TEC Barcode Net Admin
Gateway IP Address	0.0.0.0	Not cleared	1. System mode<7> 2. IP Address Set Command 3. TEC Barcode Net Admin
Subnet Mask	255.255.255.0	Not cleared	1. System mode<7> 2. IP Address Set Command 3. TEC Barcode Net Admin
Socket Communication Port	ON 8000	ON Port number not cleared	1. System mode<7> 2. Socket Communication Port Set Command 3. TEC Barcode Net Admin
DHCP	OFF	OFF	1. System mode<7> 2. DHCP Function Set Command 3. TEC Barcode Net Admin
DHCP ID	FFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFF	Not cleared	1. System mode<7> 2. DHCP Function Set Command 3. TEC Barcode Net Admin
DHCP HOST NAME	""	Not cleared	1. System mode<7>
WEB Printer	OFF	OFF	1. System mode<7> 2. TEC Barcode Net Admin

For the user accessible mode and System mode, please refer to the Key Operation Specification. For commands, please refer to the External Equipment Interface Specification.

When LAN is set to OFF, the LAN interface is not activated.

4. LPR SERVER

4.1 REQUIRED SETTINGS

LAN	ON
IP address	Any
Subnet mask	Any
Gateway	Any

4.2 OPERATION

When the power is turned on, the printer starts up a printer daemon task, if LAN is set to ON.

5. SOCKET COMMUNICATION

5.1 REQUIRED SETTINGS

LAN	ON
IP address	Any
Subnet mask	Any
Gateway	Any
Socket	ON
Port number	Any

5.2 SOCKET COMMUNICATION SPECIFICATION

5.2.1 Communication Procedure

(1) Using the port number set by the printer, make the socket connection from the client PC to the printer.

(2) Send a command from the client PC to the printer.

(3) If the automatic status transmission is specified, the printer sends back a status to the client PC.

NOTES: *1. For details on the status response of the printer, refer to chapter 9 "STATUS RESPONSE" in the External Equipment Interface Specification.*

2. For the parameter setting for the automatic status transmission, refer to section of "Issue Command" in the External Equipment Interface Specification.

5.2.2 Communication Specifications

Socket communication supports multiple clients. Multiple client PCs can connect to the printer simultaneously.   However, if the printer has connected to another session, when a new session is connected, the printer can receive data sent from the new session after the previous session is disconnected. The printer makes a status response only to the oldest session among sessions connected.

(1) Up to 5 client PCs can be connected to the printer at the same time. If the number of client PCs exceeds the maximum, the printer refuses connections to excess client PCs.

(2) When the printer does not receive any communication packets for 120 minutes or more, the printer carries out the connection test to the connection. If the connecting state is not found between the printer and a client PC, the printer automatically disconnects the connection.

6. DHCP CLIENT FUNCTION

6.1 REQUIRED SETTINGS

LAN	ON
IP address	Any
Subnet mask	Any
Gateway	Any
DHCP	ON
DHCP ID	Any
DHCP HOST NAME	Any

6.2 ABOUT DHCP CLIENT FUNCTION

This function dynamically acquires the IP address, which is usually set on the printer, from the DHCP server when the printer is turned on. If this function is used, there is no need to set the IP address on the printer in the system mode.

6.3 DHCP CLIENT SPECIFICATIONS

(1) Lease period

The default value for the lease period is 30 minutes. If the lease period is not specified on the DHCP server, the lease period is the default value of 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 acquire 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 of acquiring the lease is approximately 2 minutes. If the lease cannot be acquired from the DHCP server within 2 minutes, the printer starts up after 2 minutes, using the IP address, which has been set on the printer in the system mode. (The IP address cannot be acquired from the DHCP server.)

(3) DHCP ID

The DHCP ID can be set in the system mode or by the Parameter Set Command. The DHCP ID can be used for checking, which IP address is leased to which client on the DHCP server.
If the DHCP IP is not set, the server is notified of the MAC address of the network device, such as LAN card and the LAN board, as the DHCP ID.
16-byte character strings can be set as the DHCP IP. However, "FFH (in hex)" must not be used since it is recognized as an end-of-data character.
If "FFH (in hex)" is set as the first byte of the DHCP ID, it assumes that the DHCP ID has not been set.

(4) DHCP HOST NAME

A DHCP HOST NAME can be set in the system mode. With the interaction between the DHCP server and the DNS server, the printer can communicate using an IP address dynamically assigned under the specified host name.
16-byte character strings can be set as the DHCP HOST NAME. However, "FFH (in hex)" must not be used since it is recognized as an end-of-data character.
If "FFH (in hex)" is set as the first byte of the DHCP HOST NAME, it assumes that the DHCP HOST NAME has not been set.

Setting of DHCP Server (Windows 2003)

Scope settings (Property)

① General

Scope [157.69.25.0] barcode-test.local Properties

General | DNS | Advanced

Scope

Scope name: barcode-test.local

Start IP address: 157 . 69 . 25 . 100

End IP address: 157 . 69 . 25 . 200

Subnet mask: 255 . 255 . 255 . 0   Length: 24

Lease duration for DHCP clients
- ⦿ Limited to:
  - Days: 1   Hours: 0   Minutes: 5
- ○ Unlimited

Description:

[OK] [Cancel] [Apply]

② DNS

Scope [157.69.25.0] barcode-test.local Properties

General | DNS | Advanced

You can setup the DHCP server to automatically update authoritative DNS servers with the host (A) and pointer (PTR) records of DHCP clients.

☑ Enable DNS dynamic updates according to the settings below:
- ○ Dynamically update DNS A and PTR records only if requested by the DHCP clients
- ⦿ Always dynamically update DNS A and PTR records

☑ Discard A and PTR records when lease is deleted

☑ Dynamically update DNS A and PTR records for DHCP clients that do not request updates (for example, clients running Windows NT 4.0)

[OK] [Cancel] [Apply]

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③ Advanced
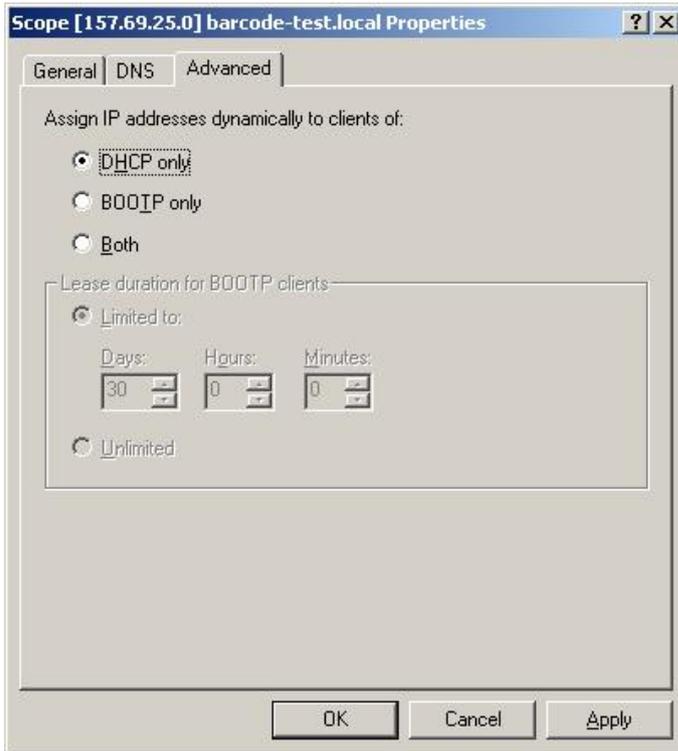
Scope optional settings

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

① Setting of DNS Server IP Address
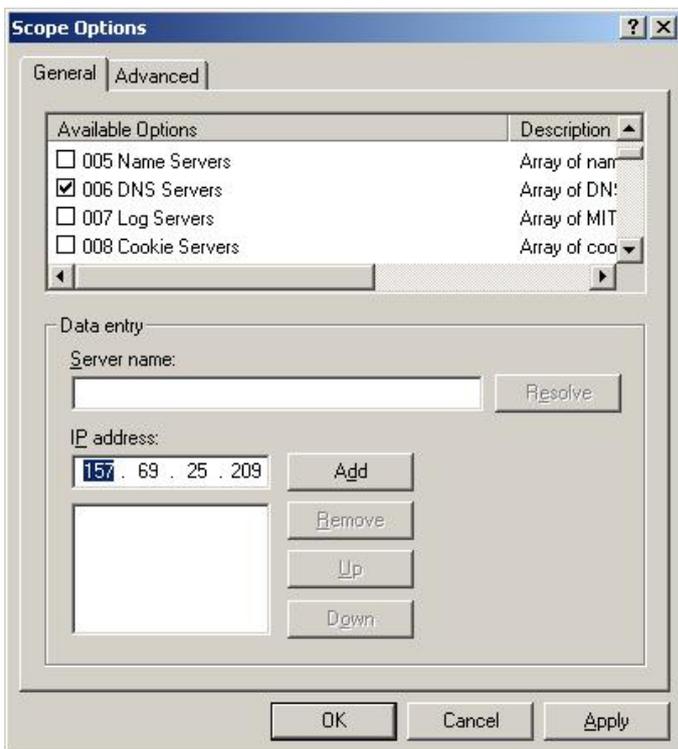
② Setting of DNS Server Domain Name
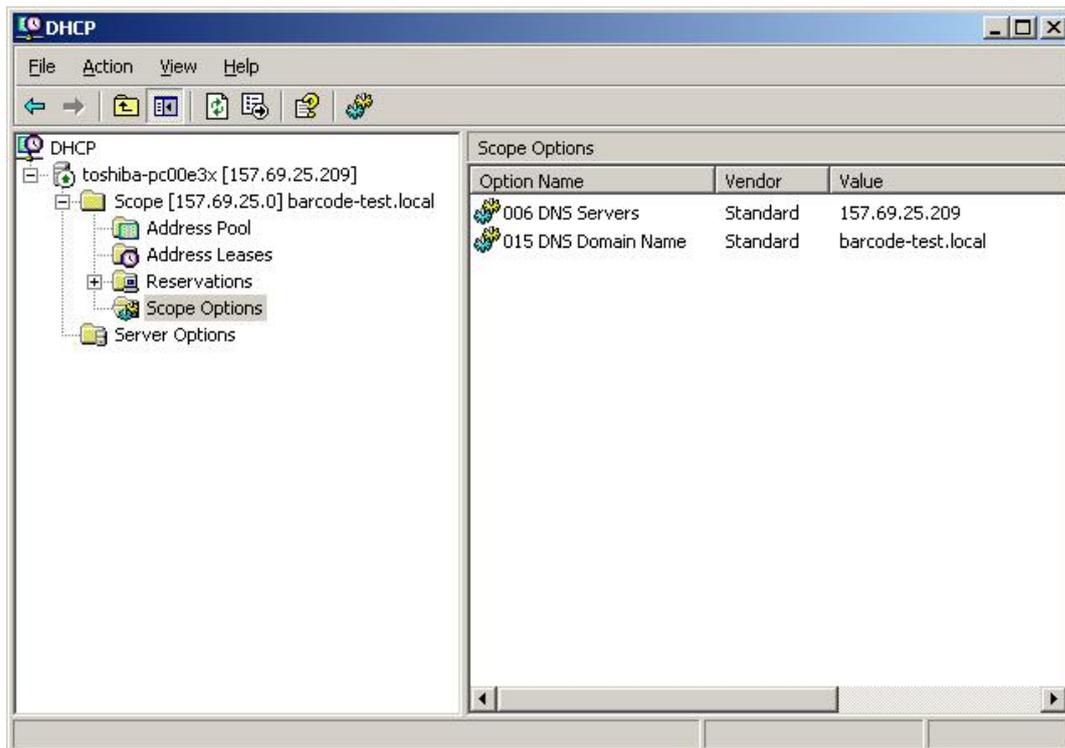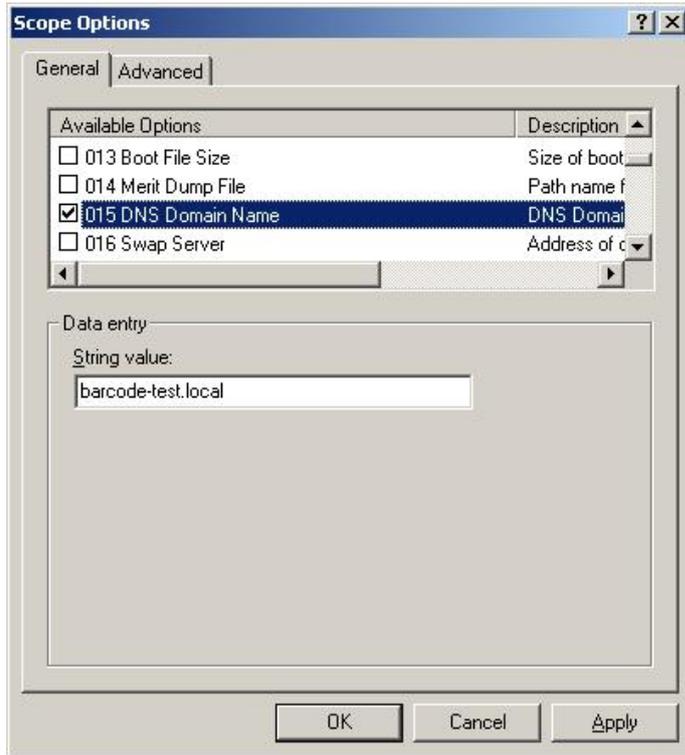
7. WEB PRINTER

7.1 REQUIRED SETTINGS

LAN	ON
IP address	Any
Subnet mask	Any
Gateway	Any
WEB PRINTER	ON

HTML file must have been downloaded.
At the factory shipment, samples of display files are downloaded.

7.2 OPERATION

Printer's status and settings can be viewed or changed from the browser on the PC. This function is called Web printer function.

7.3 REQUIREMENTS

- Display files for the browser (*.htm, *.asp)

  TOSHIBA TEC provides samples of display files (*.htm, *.asp).
  Display files (*.htm, *.asp) include the following files.

  Default.htm
  Headsens.htm
  Mentctr.htm
  Pmemu.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 (in English only)

7.4 WEB PRINTER SPECIFICATIONS

This section describes the Web printer specifications using sample display files (*.htm, *.asp).

7.4.1 Startup

Start up the browser on the PC (JavaScript-enabled browser such as Internet Explorer or Netscape Navigator) to connect to the printer.

The address is either of the following:
　　　http://Printer IP address/
　　　　　　　　　　or
　　　http://Printer IP address/default.htm

[Top page] (Example: B-SA4T)
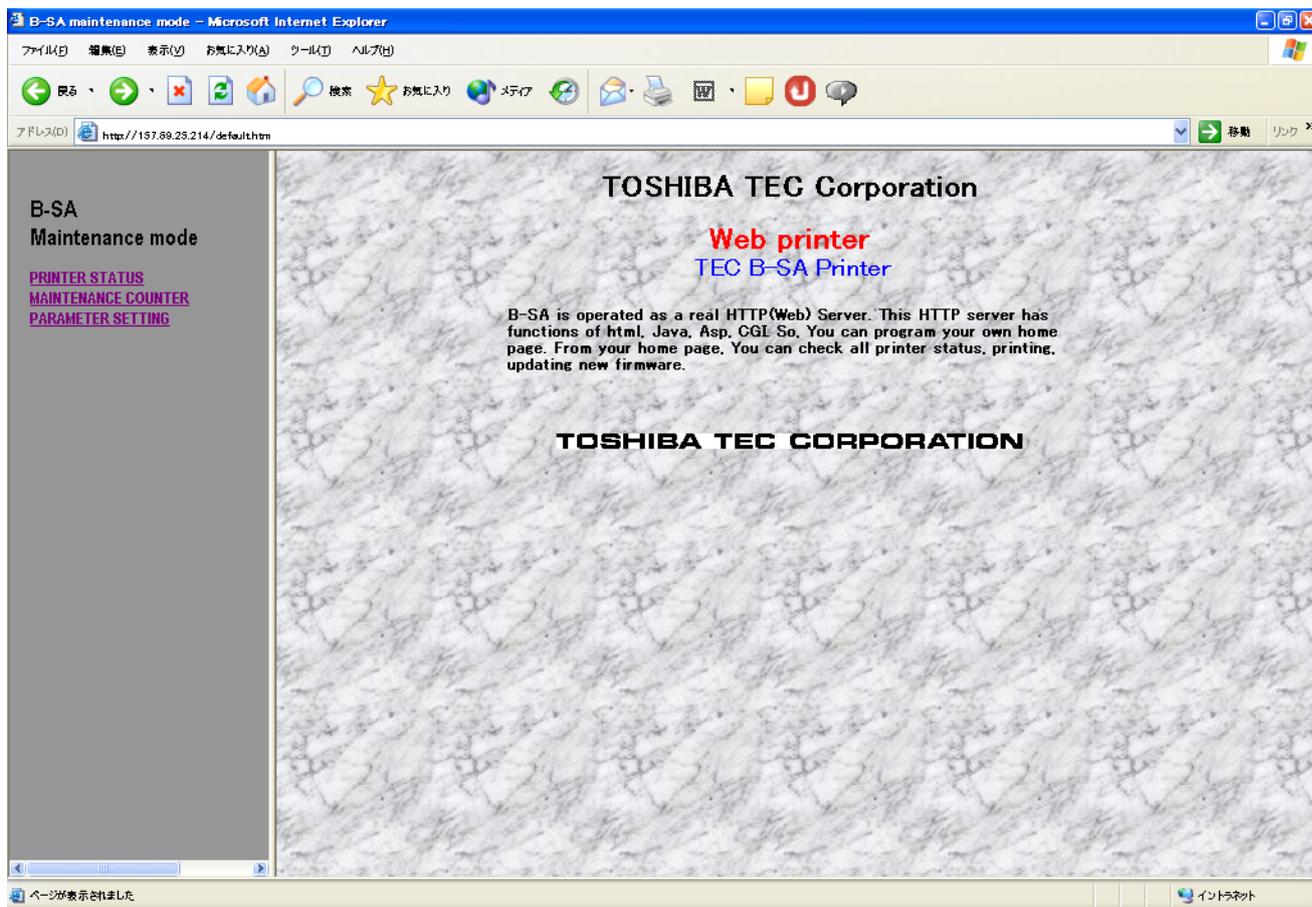
7.4.2 Printer Status View

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 operating.)
- PRINTER PAUSE (The printer is in a pause state.)
- WAITING FOR PEEL OFF (The label is waiting for being stripped.)
- SYNTAX ERROR (A command syntax error occurred.)
- COMMUNICATION ERROR (A communication error occurred.)
- PAPER JAM (A paper jam occurred.)
- CUTTER ERROR (A cutter error occurred.)
- NO PAPER (The paper has run out.)
- HEAD OPEN ERROR (A head open error occurred.)
- THERMAL HEAD ERROR (A broken dots error occurred.)
- EXCESS HEAD TEMPERATURE (The print head temperature is excessively high.)
- RIBBON ERROR (A ribbon error occurred.)
- FLASH SAVE MODE (In the save mode)
- FLASH WRITE ERROR (A writing error occurred.)
- FLASH ERASE ERROR (An erasing error occurred.)
- FLASH MEMORY FULL (The remaining capacity is not sufficient.)
- NO RIBBON (The ribbon has run out.)
- LOW BATTERY (The battery level is low.)

② RIBBON STATUS: Indicates the length of used ribbon.
(The display is updated every 3 seconds.)

- RIBBON 1/8　　(The used ribbon length is 1/8 of total length.)
- RIBBON 2/8　　(The used ribbon length is 2/8 of total length.)

- RIBBON 7/8　　(The used ribbon length is 7/8 of total length.)
- RIBBON 8/8　　(The used ribbon length is 8/8 of total length.)

③ TRANSMISSIVE SENSOR: Indicates the level of the transmissive sensor of the media sensor. (The display is updated every 3 seconds.)

- Input level of the transmissive sensor: 0.0 V to 5.0 V

④ REFLECTIVE SENSOR: Indicates the level of the reflective sensor of the media sensor.
(The display is updated every 3 seconds.)

- Input level of the reflective sensor: 0.0 V to 5.0 V

⑤ HEAD UP/DOWN SENSOR: Indicates the head up/down sensor status.
(The display is updated every 3 seconds.)
The value is fixed to HEAD CLOSE for the B-SA4T.
- HEAD OPEN (The print head is opened.)
- HEAD CLOSE (The print head is closed.)

⑥ HEAD TEMPERATURE: Indicates the print head thermistor status.
 (The display is updated every 3 seconds.)

• HEAD TEMPERATURE: ∗∗ °C (Print head temperature)
• OUTSIDE TEMPERATURE: ∗∗ °C (Outside air temperature)

An example for status display is shown below.

[Display Examples]

PRINTER STATUS (IDLE HEAD CLOSE)
RIBBON STATUS (Used ribbon length: 5/8)
PAPER SENSOR (Level of transmissive sensor: 1.5V/Reflective sensor: 0.1V)
HEAD UP/DOWN SENSOR (CLOSE)
TEMPERATURE SENSOR (Print head temperature: 27 °C, Outside temperature: 27 °C)

(Example: B-SA4T)
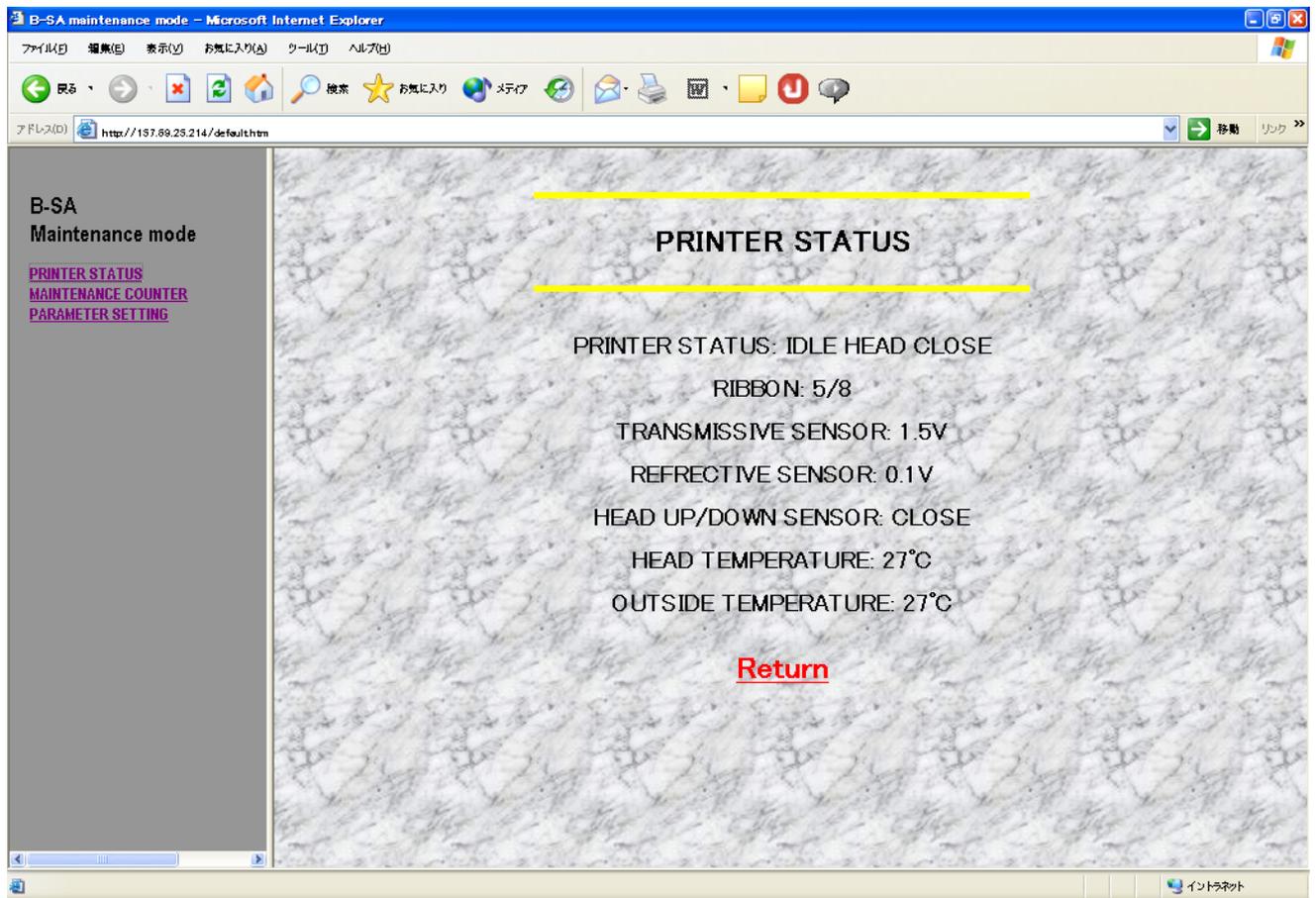
7.4.3 MAINTENANCE COUNTER View

Select the "MAINTENANCE COUNTER" in the menu on the left of the window.
The maintenance counter indicates the values for various counters such as the label distance covered. (The display is updated every 3 seconds.)

[Display Example (B-SA4T)]

MAINTENANCE COUNTER
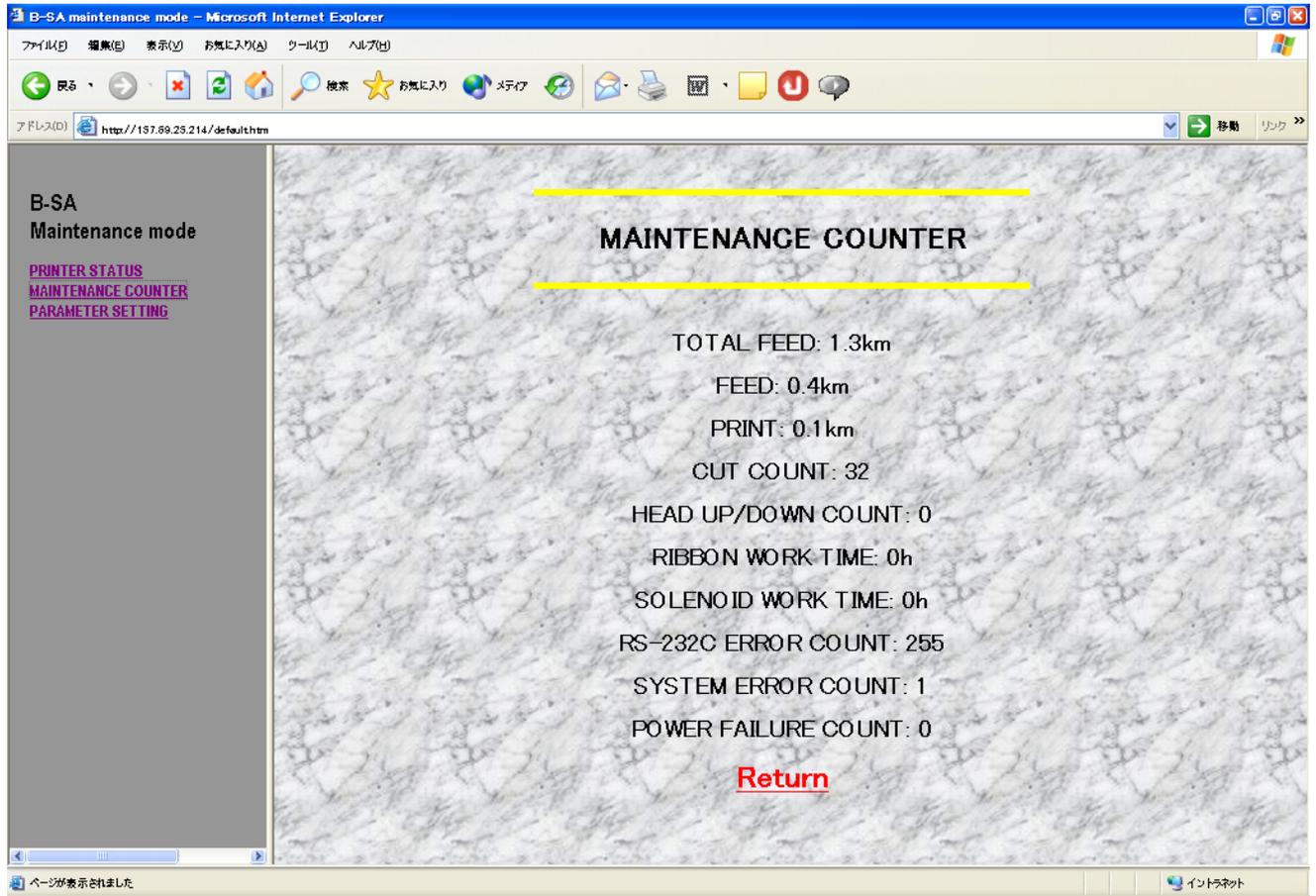
- TOTAL FEED: 1.3 km (Total label distance covered)
- FEED: 0.4 km (Label distance covered)
- PRINT: 0.1 km (Print distance)
- CUT COUNT: 32   (Cut count)
- HEAD UP/DOWN COUNT: 0   (Head up/down count)
- RIBBON WORK TIME: 0h   (Ribbon motor drive time)
- SOLENOID WORK TIME: 0h   (Head-up solenoid drive time)
- RS-232C ERROR COUNT: 255   (RS-232C communication error count)
- SYSTEM ERROR COUNT   1   (System error count)
- POWER FAILURE COUNT: 0   (Momentary power interruption count)

7.4.4 Parameter Change

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

The current parameter settings are displayed.
To change the setting, change a value, then click on the [SUBMIT] button.
The printer is then restarted to make the changes take effect.

[Display Example (B-SA4T)]

> **NOTES:** • Only when the control code is set to "Auto" or "{ | }", this function is available.
>
> • Use only 1-byte characters when manually entering a value.
>
> • When the BASIC interpreter function is ON, the parameter setting function is unavailable.

[Display Example (B-SX6T/SX8T)]