Product Specifications Manual

WiFi Ethernet I/F Card

IFBD-HW03/04

Rev. No. 0.00

Star Micronics Co., Ltd.
Special Products Operating Division

1. Read First

This product is a printer server (I/F card) dedicated to STAR POS printers that conform to wireless LAN IEEE802.11b. At the time that this specifications manual was created, the following STAR POS printer was targeted.
TSP743 F/W V6.0 or later
TSP743 will not support this printer driver simply by updating the F/W. Only printers whose F/W at the time of default shipment is V6.0 or later can be used.

1.1. Main Settings at Product Shipment

The wireless LAN unit and TCP/IP settings which are necessary to use this product are outlined below. Refer to section “3.6 Setting Display Items” below for details on settings that are not listed here.

1.1.1. Wireless LAN Unit Default Settings

Wireless Mode AdHoc (Communication not using an access point)
SSID “STAR-WIFI”
Channel 11
Web Encryption Disabled
WEP Key No setting

* Set the PC to the above settings when using this product. Once the PC and product are connected, it is possible to change the settings of this product to those that support the environment of use, by using a Web browser.

1.1.2. TCP/IP Default Settings

RARP client Enabled
DHCP/BOOTP client Enabled
IP address “0.0.0.0”
Subnet mask “0.0.0.0”
Default gateway “0.0.0.0”
DNS Primary Server “0.0.0.0”
DNS Secondary Server “0.0.0.0”

1.1.3. Operator Permission Log-in Password Default Settings

To change settings on this product, use WEB, TELNET and FTP protocols. However, when doing so, it is necessary to log-in to this product with an account having operator permission.
Account information is shown below.

Operator account name: “root”
Password “” Nothing needs to be input.
It is possible to change the password after logging in.

1.1.4. Setting the IP Addresses

It is possible to set the IP address for this product using one of four types of methods. They are RARP, DHCP, ARP or fixed flash memory. When a procedure for setting a multiple of IP address according to the network environment is effective, the methods above are arranged in order of priority. For that reason, when using with a fixed IP address written to the flash memory, it is recommended that it be used after disabling the product’s RARP, and DHCP/BOOTP settings.

2. Hardware

2.1. Supporting Destination for Wireless Units

The wireless frequency bandwidth that can be used with a 2.4 GHz frequency bandwidth used in IEEE802.11b varies according to the individual regulations of each country. This difference is supported by having three types of PCB units for each area of use.

The wireless communication channels that can be used with the IEEE802.11b on each PCB for each country are outlined below.

Also, to identify the destination of the product, a two-digit alphabetical symbol that indicates where the product is to be used, is inscribed on the Ethernet-MAC address tool.

Country	Communication Channel IEEE802.11b	Identification Marks on Ethernet-MAC Address Tool
North America	1 to 11	US
Europe	1 to 13	EU
Japan	1 to 14	JP

2.2. Sub-chassis (Brackets Mounted to Printer)

In order for this product to be used with a multiple of POS printer models, there are two types of bracket shapes mounted to the printer. The following shows the product name for each shape of bracket.

Applicable Printers	Product Name and Model Name
TSP700 Series	IFBD-HW03

2.3. Specifications

Network I/F Unit: Conforms to IEEE802.11b CF Card Type I and II

LED: LINK x 1 (green)

Setting Switches: DIP-SW 2bit

PCB Dimensions (Target): 69 mm x 95 mm (Tolerance: ±0.5 mm)
t = 1.6 mm (Tolerance: ±0.2 mm)

Power Supply: Operating Voltage: 5 V ±5% Rated Consumption Current: 500 mA Max

MTBF Value: 90,000 hours

2.4. Environment Conditions

The following outlines the environmental conditions.

Ambient Storage Conditions	Storage Temperature: -20°C to +70°C
Storage Humidity:	20% to 90% (No condensation)
Ambient Operating Conditions	Operating Temperature: 0°C to +55°C
Operating Humidity:	20% to 80% (No condensation)

2.5. Ratings

EMI	FCC	Part15 Class A
	VCCI	Class A
	EN55022	Class B

3. Mechanical Specifications

3.1. General Description

This product is a wireless network interface card (printer server) embedded in the Star's POS printer. The wireless unit conforms to IEEE802.11b specifications.

3.2. Features

- Supports the following Star Micronics POS printer.
  Supports: TSP743
- To supply power from the printer to the adapter, it is not necessary to connect the separate AC adapter for this adapter.
- Incorporated with SSL (Secure Sockets Layer) for printing in secure communications (SSL). Decrypts encrypted print data and outputs to the printer therefore predate that is protected from eavesdropping on the network and from falsification.
- Supports #900 on TCP/IP and print protocols of LPR and IPP. Also, FTP (supporting binary data) printing is possible.
  For that reason, it can be used on many PC operating systems.
  Supports Windows98/ME/NT4/2000/XP, LINUX, MAC-OS-X
- Sends the printer's ASB status to be read on the PC.
- A multiple protocols to be used simultaneously.
- Supports multi-session printing.
- Receives e-mail (POP3 protocols) and outputs them to the printer for printing. (Only supports text data)
- Emails automatically according to status changes, such as printer errors.
- Uses flash memory. This enables updating firmware via the network.
- Allows monitoring of changes in settings and statuses of the product and printer via each dedicated setting utility, TELNET, HTTP and FTP.

3.3. Protocols

TCP/IP

Network Layers	ARP, RARP, IP, ICMP
Transport Layers	TCP, UDP
Application Layers	BOOTP, DHCP, DNS
	LDP, IPP, (Printing Functions)
	Raw Mode Print (TCP #9100: Print/Get Print Status)
	POP 3, (Text Printing Functions)
	SMTP (Supports status notification to 3 locations)
	HTTP (Supports English, Japanese printer detail status tables)
	FTP (Gets printer status, settings,
	Printing, F/W updates)
	TELNET (Gets printer status, settings)

UDP/IP

Application Layers	JCP (Silex-technology's setting protocol (UDP #19541)
	SNMP

Others

Embedded with MIB-2, HostResource-MIB, Silex-technology Corporation PrivateMIB

Self-diagnosis printing and setting printing

Easy upgrades using flash memory

TCP/IP Specifications

This product has the following TCP/IP specifications.

- IP version 4
- IP routing: 1
- ICMP Redirect Request
- ICMP Echo Request
- UDP Maximum Number of Sessions: 8
- UDP Maximum Data Gram Length: 2048 octet for both sending and receiveing
- UDP Omitted When Sending Check Sum (Normally 0)
- TCP Maximum Number of Sessions: 24 (Of these, 1 is used in LISTEN)
- TCP Window Size: Maximum 8192 octet for both sending and receiving (Variable using upper protocols)

The TCP/IP protocol environment is provided with LPD, IPP, Raw Mode Print (TCP #9100) and FTP for printing, and can use TELNET, HTTP and FTP to change each setting.

Supports TCP/IP printing which is provided as standard with Windows NT/Windows 2000/Windows XP. Specifications of protocols differ with the normal UNIX for these LPD, so printing is not possible by spooling to a UNIX server once, such by sending Windows to UNIX to product. Also, because LPD is not provided in Windows 95, Windows 98 or Windows ME, direct printing is not possible. However, direct printing is possible by using a tool dedicated to that purpose (Star LPR).

3.3.1. Setting the IP Addresses

This product has five IP address setting methods for Star's independent setting protocols. They are DHCP; BOOTP; RARP; and ARP. Immediately after initializing settings, all settings methods are initialized and enabled. Therefore, it is possible to set IP addresses using any method.

The following describes how to set IP addresses using each method, assuming the following addresses: MAC address: 00:80:92:12:34:56; IP address: 192.168.1.1 (pbox)

* The IP address dynamically ensured by this product is not written to the storage field of the setting information. Specifically, if setting an IP address using either DHCP, BOOTP, RARP or ARP and starting up that IP address the next time, it is necessary to change the IP address of the setting information region using http (WEB), FTP and TELNET.

3.3.1.1. DHCP/BOOTP

This product conforms to RFC2131/RFC2132. It is possible to get the IP address, sub-net mask, gateway address and DNS server address using either the DHCP server or the BOOTP server.
A work station running either a DHCP server or BOOTP server is necessary for setting IP addresses using DHCP/BOOTP.

- Supports Windows NT DHCP server specifications (specifications incorporating Microsoft expansion).
- Because part of the DHCP Discover protocol is compatible with the BOOTP Request, both are handled as the same thing. For example, if a BOOTP Reply is returned for a DHCP Discover, the system uses the address obtained by BOOTP.
- The DHCP/BOOTP Request constantly sends with a broadcast (255.255.255.255). However, only the DHCP Renew Request (delay request for address use time) is sent to the server that obtained that address.
- DHCP/BOOTP timeout is 4 seconds, which is the recommended value for RFC2131. However, variable ±1 second according to a random number. There are three retries.
- Use the set IP address in the issuer's address and DHCP/BOOTP CIADDR (client IP address) field if the IP address is preset. When a normal response is received, it switches to the newly obtained IP address.
- The issuer address and CIADDR become 0.0.0.0 if the IP address is not set. Also, in such a case, a "B" flag (0x8000) is set to the DHCP Discover packet flags field, and a request is made to the server for each 'broadcast of DHCP Response.'

Setting Method: Register the IP addresses to be set and the combination of MAC addresses to the DHCP/BOOTP server, then turn on the power to the product.

3.3.1.2. RARP

A work station running either an RARP server is necessary for setting IP addresses using RARP.

Setting Method: Register the IP addresses to be set and the combination of MAC addresses to the RARP server, then turn on the power to the product.

3.3.1.3. ARP

To set an IP address using ARP, register the IP address in combination with the MAC address and then transmit a ping.

Setting Example:

(1) Turn on the power to the product

(2) Register the IP address in combination with the MAC address to the ARP table.

(For UNIX)

```
arp -s pbox 00:80:92:12:34:56 temp
arp –a
```

(For Windows)

```
arp -s pbox 00:80:92:12:34:56
arp –a
```

(3) Transmit a ping.

```
ping pbox
```

3.3.2. LPD Specifications

This products LPD protocol conforms to RFC1179. The list of logic printer names is handled as a queue name. The product waits for the queue name lp.

Example: Setting example for printcap

```
pboxlp:¥
    :lp=:rm=pbox:rp=lp:
```

When sending jobs using lpr, the order of sending data files and control files inside the jobs does not affect the printing operation.

Deleting jobs using lprm is not supported, but as a dummy response, ACK (0x0A of one octet) is returned.

The lpq response value format is UNIX compatible, but the long format using lpq-l is an independent format including the printer status.

Example: lpq short format printer ready

```
lpq –Ppboxlp
no entries
```

Example: lpq short format printer not ready

```
lpq –Ppboxlp
Warning: Printer not ready ←This message is applied regardless of the reason.
no entries
```

Example: lpq long format printer ready

```
lpq -l –Ppboxlp
Ready no entries
```

Example: lpq long format printer not ready

```
lpq -l –Ppboxlp
Not Ready
    Printer Cover Open
    Receipt Paper End no entries
```

3.3.3. Raw Mode Print (TCP #9100) Specifications

This product provides Raw Mode Print communications that is used as a listen port for the Port: 9100, as a printing mechanism running under the TCP/IP environment. With Raw Mode Print, all data that flows between TCP sessions is considered data handled between the printer and PC. Bi-directional data transmission is thus performed.

The Raw Mode Print function in this product operates under the following conditions.

- The maximum number of sessions accepted on the Port: 9100 is settable using the following setting items.
- 9100 Multi-session: Enable: 8; 9100 Multi-session: Disable: 1 A rejection of acceptance (TCP reset) is issued from the product to all PCs that could not establish connection if there is no request for connection of more than the maximum number of sessions accepted.
- Data traveling from the printer in the direction of the PC is printer status (ASB status) information obtained via the serial RS-232C.
- Only when there is a change in the status is status data from the printer obtained by an interruption from the printer and sent to the PC.
- The end of 1 data is considered to be established at the cut off of a TCP session (TCP FIN, TCP RST • TCP Session Timeout). Special communication procedures are not performed on the printer at this time. In the event that special control is necessary, such as stopping the printer, that is performed on the PC.

3.3.4. TELNET Specifications

The TELNET of this product conforms to RFC854. It employs a conversational menu format and is used to change internal settings, reference and display the status. There are multiple accounts for logging in. It supports the user names and passwords outlined in the table below. The viewable and settable items vary for each account.

(See section 2.3.4 Settings/Display Items for details on settings an parameters that can be referenced.)

Account	User Name	Password	Target
Root User	root • No differentiation between upper and lower case characters	Can be set • Seven or more char. of ASCII • Initial Value: No characters • No differentiation between upper and lower case characters	System controllers
User	(Any ASCII character string)	None	General users

Example of Execution of TELNET Commands

```
Star Micronics IFBD-HW03/04 Ver 1.0.0 TELNET server.
Ethernet Address [ 00:80:92:12:34:56 ]
Copyright (C) 2004 STAR MICRONICS CO.,LTD.
Copyright (C) 2004 silex technology, Inc.
login: root
'root' user needs password to login.
password:
User 'root' logged in.

 No.   Item                              Value             (level.1)
--------------------------------------------------------------------
   1 : Configure General
   2 : Configure TCP/IP
   3 : Configure SNMP
   4 : Configure Printer
   5 : Web Page Refresh Interval(sec.)    : 10
  96 : Display Status
  97 : Reset Settings to Defaults
  98 : Restart Print Server
  99 : Exit
Please select(1 - 99)? 1

No.   Item                              Value             (level.2)
--------------------------------------------------------------------
   1 : Change root Password   : “”
   2 : NIC Reset Control       : DISABLE
  99 : Back to prior menu
Please select(1 - 99)?
```

3.3.5. HTTP Specification

This product supports HTTP. This means that it is possible to use a Web browser to change the NIC and printer settings, display system information when running the product, and view that status of the printer port.

- Conforms to HTTP 1.0 (RFC 1945)
- Conforms to HTML 3.0.
- Writing is password protected to prevent access by anyone other than the root and maker.
- The printer port status display is automatically updated each time it is set by Web or TELNET (1 to 300 seconds; Initial value: 10 seconds). Also, when updated, it automatically moves to a position where it is easy to view the status display.

Note: The display of each browser may vary slightly.

There are multiple accounts for setting items necessary for logging in using a Web browser. It supports the user names and passwords outlined in the table below. The viewable and settable items vary for each account.

Account	User Name	Password	Target
Root User	root • No differentiation between upper and lower case characters	Can be set • Seven or more char. of ASCII • Initial Value: No characters • No differentiation between upper and lower case characters	System controllers
User	(Any ASCII character string)	None	General users

3.3.6. FTP Specification

The FTP of this product conforms to RFC959.

It is possible to specify ASCII (A), BINARY (I) or TENEX (L 8) as the transmission mode, but the differences in the modes is not handled by the product, and depends on the client side.

There are multiple accounts for setting items necessary for logging in by the client. It supports the user names and passwords outlined in the table below.

Account	User Name	Password	Target
Root User	root • No differentiation between upper and lower case characters	Can be set • Seven or more char. of ASCII • Initial Value: No characters • No differentiation between upper and lower case characters	System controllers
User	(Any ASCII character string)	None	General users

The following outlines the directory configuration.

* The files in each directory are dummies.

It is possible for the same actions by reading and writing with any filename, if in the same directory.

```
/
|─lp/
|       print.dat
|
|─config/
|       config.txt
|
|─flash/
        fwdata.bin
```

Port Name	Manufacturer Permission Root User Permission	User Permission	Functions
lp	Writable	Writable	Print port It is possible to print the contents of the file by uploading it to this directory.
config	Readable Writable	Readable	Setting function * See section 2.6.2 Setting Functions Using FTP
flash	Writable		Firmware update port * See section 2.6.3 Updating Firmware Using FTP

Specify whether to issue put after issuing the cd command and transferring to the transfer destination directory, or the transfer destination directory to the transfer destination filename of put.

Example 1: Specifying the transfer destination directory name for output

```
ftp>put testfile /lp                          * Specify transfer destination when using put
200 PORT command Ok.
150 Open data connection
226 Data connection closed
7801 byte sent in....
```

Example 2: Changing the current directory for output

```
ftp>cd /lp
250 Command Ok.
ftp>put testfile                  * Use put after specifying the transfer destination using cd.
200 PORT command Ok.
150 Open data connection
226 Data connection closed
7801 byte sent in....
```

The FTP *NLST* (ls) command and *LIST* (dir) command response formats are compatible with UNIX, considering supporting FTP clients using GUI.

Ex.:

```
ftp> dir /
200 PORT command Ok.
150 Open data connection.
total 0
d-w--w--w-  1 nobody    nobody          0 Jan  1   1970 lp
dr--r--r--  1 nobody    nobody          0 Jan  1   1970 config
dr--r--r--  1 nobody    nobody          0 Jan  1   1970 flash
226 Data connection closed.
ftp: 190 bytes received in 0.17Seconds 1.11Kbytes/sec.
```

It is not possible to check the status using *NLST/LIST* with this product. However, as a substitute means, it is possible to check the status using the *STAT* command. The printer status is returned by provided the directory name (printer name) as an argument. The status of the FTP server is returned if STAT is issued without applying an argument.
However, the STAT command is not a standard FTP command.
Normally, it is possible to issue a STAT by using the *QUOTE* command on command line type FTP clients.

Example 1: (When Printer Status is Normal)

```
ftp / > quote stat lp
FTP directory status:
Ready
End of status.
```

Example 2: (When Printer Cover is Open)

```
ftp / > quote stat lp
FTP directory status:
Not Ready
    Printer Cover Open
    Receipt Paper End
End of status.
```

3.3.6.1. Printing Mechanism Using FTP

It is possible to print by logging in to this product using FTP, then writing the file to the root directory or to the “Ip” directory (port).

3.3.6.2. Setting Mechanism Using FTP

It is possible to view settings by logging in to this product using FTP, then accessing the “config” directory (port) and reading the file.

Also, settings are made by uploading settings files from the client.

Setting File Example

```
MAC addr: 00:80:92:12:34:56
*** USER                          :anonymou
*** Printer Status                :Ready

    Web Page Refresh Interval(sec.) :10
<< Configure General >>
    Change root Password          :" ***** "
    NIC Reset Control             :ENABLE
<< Configure WiFi - .11b >>
    Wireless Mode                 :Infra.
    SSID                          :"STAR-WIFI"
    Channel                       :11
    Use WEP                       :None
    WEP Key                       :""
<< Configure TCP/IP >>
    DHCP/BOOTP                    :ENABLE
    RARP                          :ENABLE
    IP Address                    :0.0.0.0
    Subnet Mask                   :0.0.0.0
    Default Gateway               :0.0.0.0
    Universal PnP                 :DISABLE
    9100 Multi Session            :ENABLE
<< Configure TCP/IP - DNS >>
    Primary Server                :0.0.0.0
    Secondary Server              :0.0.0.0
<< Configure TCP/IP - POP >>
    POP Protocol                  :DISABLE
    Check Interval(min.)          :15
    Local Time Zone               :"+09:00"
<< Memory Switch Setting >>
    Code Page                     :Codepage 858 (Multilingual)
    Black Mark Sensor             :Disable
```

Shows the MAC address. The setting is rejected if the MAC address does not match this product when writing settings.

Shows the user name currently accessing.

Shows the current printer status.

The password item is masked by * in the display. The password will be erroneous if re-written while masked with *, so settings are not possible if all characters are *.

- Setting file format: “Item name;” “Setting” or “Item Name” = “Setting”
- Item names and settings are separated by a colon (:) or an equal sign (=) in single byte characters.
- A space or a tab code applied to the head or tail of an item name is ignored.
- In the following cases, it is ignored and the next line is read.

  • The head character of the item name is any other than a number or an alphabetic character.
- If a value that cannot be set is input, the status prior to that change in setting is returned and the connection is closed.

  When quit normally, the product will self-reboot.

Example: When a Setting Fails

"451 Aborted; Data write error" is returned.

```
ftp> cd config
ftp> put config.txt
200 PORT command Ok.
150 Open data connection.
451 Aborted; Data write error.
```

Example: When Ended Normally

"226 Data connection closed." is returned.

Self-reboot

```
ftp> cd config
ftp> put config.txt
200 PORT command Ok.
150 Open data connection.
226 Data connection closed.
```

3.3.6.3. Updating Firmware Using FTP

This uploads binary data for upgrades in bin format to the “flash” directory (port) with a binary mode by logging in to the product using FTP.

- The firmware cannot be updated using FTP when starting up in the flash memory load mode when the power is turned on, by setting the DIP switches.
- The “flash" port is viewable by all users.
- Firmware update is only possible by logging in with the root or maker user.
- When uploading or after it is completed, this checks whether transmission was correct by calculating the sum value of the firmware data on the FTP side. If transmission was not normal on the firmware, the update of the firmware is cancelled.
- When the update is normally on FTP, the product will self-reboot.

3.3.6.4. Example of the Procedures for Updating the Firmware of the Product Using FTP

The following describes an example of the procedures for F/W update of the product using FTP.

// PC side environment //
- OS:
  Windows 2000 or XP

- File storage location:
  "C:¥IFBD-HW_FW_1.0.2"
  IFBD-HW03/04 F/W binary data
  "IFBD-HW03_04.bin"
  is in the folder.

- FTP client software
  Startup the standard Windows FTP command from the command prompt.

// IFBD-HW03/04 side environment //
- TCP/IP address: 192.168.222.21
- Root permission password: “”
  * A password is unnecessary for default settings.

Startup the command prompt on the targeted PC in the environment outlined above.

In that procedure, operate according to the following steps.

Command Prompt Dump	Explanation
C:¥IFBD-HW_FW_1.0.2>dir	IFBD-HW03/04 F/W binary file location confirmation
There is no volume label for the C drive.	
The volume serial number is 387D-6F02.	
Directory of C:¥IFBD-HW_FW_1.0.2	
2004/12/24 18:13 <DIR> .	
2004/12/24 18:13 <DIR> ..	
2004/10/28 09:06 887,845 IFBD-HW03_04.bin	
1 file: 887,845 bytes	
2 directories: 15,553,077,248 bytes of available space	
C:¥IFBD-HW_FW_1.0.2>ftp	Startup the standard Windows FTP command.
ftp> open 192.168.222.21	Specify the IFBD-HW03/04 IP address
Connected to 192.168.222.21.	>> IFBD-HW internal FTP server startup message
220 Star Micronics IFBD-HW03/04 Ver 1.0.0b3 FTP server.	
User (192.168.222.21:(none)): root	Log-in as “root” user
331 Password required.	No password (In default)
Password:	
230 User Logged in.	>> Log in successful
ftp> ls	Issues ls command for IFBD-HW internal folder name check
200 PORT command Ok.	
150 Open data connection.	
lp	
config	
flash	>> Check “flash” folder
226 Data connection closed.	
ftp: 19 bytes received in 0.13Seconds 0.15Kbytes/sec.	
ftp> cd flash	Change target folder to “flash”
250 Command Ok.	
ftp> binary	Change FTP transfer to binary mode
200 Type set to I.	
ftp> put IFBD-HW03_04.bin	Transfer F/W binary file
200 PORT command Ok.	

150 Open data connection. 226 Data connection closed. ftp: 887845 bytes sent in 13.49Seconds 65.82Kbytes/sec. ftp> quit C:¥IFBD-HW_FW_1.0.2>	 >> Transfer complete message Quit FTP command

3.3.7. DNS Specification

This product inquires the domain name and host name to the DNS name server and resolves IP addresses. Also, it is possible to get IP addresses of the DNS name server using DHCP.

3.3.8. IPP

This product supports IPP (Internet Print Protocol)1.0.

- IPP/1.0
- Supports HTTP/1.1 chunked encoding
- Port 80 or 631 are available for use
- Charset supports only UTF-8
- Supports Print-Job, Validate-Job, Get-Printer-Attributes, Get-Jobs, Get-Job-Attribute operations
- Maximum 8 jobs

The IPP Printer-URI of this product can use either "/ipp" or "/ipp/lp." For example, if the IP address was 192.168.1.1, the URL will be "http://192.168.1.1/ipp."

3.3.8.1. IPP Job Detail Specifications

As a response to Print-Job, Job-ID and Job-URI are generated. Job-ID is a request ID of the VPORT level and takes values from 1 to 65535. Job-URI applies a Job-ID with "?" for the Printer-URI. If the IP address is 192.168.1.1 and the request ID was 215 with Printer-URI="/ipp," the job URL will be "http://192.168.1.1/ipp?215."

This product does not have spooling functions. Therefore, there is basically no response of the Print-job until data reception is completed and printing ends. However, it is possible to abort jobs being printed by issuing Get-jobs while printing, getting a job list and then issuing Cancel-job.

After printing, the job is placed in the Completed status. When the maximum number of jobs is exceeded, the oldest Completed jobs are deleted in order.

3.3.8.2. IPP Attribute Detail Specifications

The entire character string of the device ID is returned to the printer-info, and the printer model name ("MDL" keyword information) is returned to the printer-make-and-model if it was possible to get the IEEE1284 device ID from the printer port.

The sysName and sysLocation contents of SNMP for each of the printer-name and printer-location are returned.

Document-format supports "application/octet-stream" and "text/plain."

Job-sheet (burner) supports "none," and "standard."

3.3.8.3. Secure Communications (SSL) Printing Function Specifications

This product is incorporated with SSL (Secure Sockets Layer) for printing in secure communications (SSL). HTTP is mounted on the upper application of SSL to enable encrypted communications. Encrypted communication is used in sending and receiving IPP printing and settings information to the Web browser.

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)

Basic Specifications

Protocol:	SSL v2/v3
TCP port number:	443
Public key algorithm:	RSA (Key bit length: Fixed to 512 bits)
Encryption method/Key length:	DES-40
	DES-64
	3DES-192
Hash Method:	MD5
Authentication:	Server authentication
ID:	Identification using self-naming ID.

Secure communication (SSL) printing functions are not enabled in the default settings at the time of shipping. Initially, create an ID from the product Web page. When SSL communications are started, server authentication is performed in a hand-shake method for identification. At that time, the exchange of information of the public key encryption necessary for the client and the encryption method are determined. The client uses this public key to encrypt print data, but only the print server that issued that ID can decrypt this data.
It is possible to set an effective time period for these IDs so that printing is no longer possible after that period has expired. This can be used by applying a printer usage time limit. After the time limit has expired, it is possible to create a new ID again, and to print using this new ID. Because this is a print server ID, it does not restrict clients. There is no authentication function on the client side. Furthermore, the name of the ID is not one related to a third party authentication mechanism; rather it is one in the printer server.
Specify the print port for secure communication (SSL) printing as follows.
(Ex.)
https://192.168.1.1/ipp/lp
It is also possible to make secure communication (SSL) settings in addition to the secure communication (SSL) print function. That URL is shown below.
(Ex.)
https://192.168.1.1/

3.3.9. POP3 Specifications

It is possible to send and print email using the Internet standard POP3 protocol. Up to 4 mail accounts can be registered. Filtering is also possible for received mail using size, title, addressee and sender.

3.3.9.1. Print Specifications

Only the size and filename of the attached file are printed.

3.3.9.2. Restrictions

It is possible to target mail that exceeds a predetermined size from reception.

Use the POP LIST command response to calculate size.

Use the POP UIDL command to eliminate mail that has been read from the targeted process after the second time.

It is possible to delete received or printed mail from the server.

3.3.9.3. Filter Definition Character String

The filter is defined by a character string of a maximum of 78 characters.

The S: character string; F: character string; T: character string; and C: character string; are defined by character strings connected by “&” and “|”

Use the following sentence by connecting using “&” (AND conditions) or “|” (OR conditions) for the filter settings.

Class	Target for Inspection	Example of Use	
S:	Subject	S:news & S:daily	Prints mail whose subject is daily and news.
F:	From	F:rt-users	Prints mail from rt-users.
T:	To	T:support@star.co.jp	Prints mail to support.
C:	CC	C:user | T:use	Prints mail that includes addressee or user in CC field.

Ex.:

"T:user1 | C:user1 & F:user2@star.co.jp & S:title"

Mail is printed with user 1 in to: or cc:; from: is set to user2@star.co.jp, and the characters string of the title in the subject.

3.3.10. SMTP Specification

This product supports SMTP. It is provided a function for notifying the operating conditions and the status of connected printers via email. The main functions are outlined below.

- Configures notification messages according to the system (protocol operating conditions) status and printer status
- Three addresses (email addresses) and notification message levels for each address can be specified.
- Queue notification messages according to the message transmission interval settings and supports a function for batch transmissions. This avoids continuous message transmissions
- Individual messages can be added to the content of the message by using a signature setting

3.3.10.1. Transmission Message Format

The message specifications for sending from this product are outlined below.

- Messages are in English text only.
- One line comprises 63 characters; messages that exceed that amount are automatically provided with a line break.
- No encoding is applied.

See the following page for an example of the transmission format.

Continued from previous page

Example Message Format

```
0         1         2         3         4         5         6
01234567890123456789012345678901234567890123456789012345678901234
+---------+---------+---------+---------+---------+---------+------
From: Star Micronics
To: address1@silex.jp, address2@silex.co.jp
Subject: Report from Star Micronics IFBD-HW03/04


Star Micronics IFBD-HW03/04 Ver. 1.0.0
Ethernet Address : 00:80:92:12:34:56

[NEWEST PRINTER STATUS]
 ASB(HexDump)
 [23 06 00 00 00 04 00 00 00 -- -- -- -- -- --]
 [-- -- -- -- -- -- -- --   -- -- -- -- -- -- --]
 [-- -- -- -- -- -- -- --   -- -- -- -- -- -- --]
 [-- -- -- -- -- -- -- --   -- -- -- -- -- -- --]

[PRINTER STATUS]
00:09:28 Signal Line : [BUSY][NOT SELECT][PAPER OUT][FAULT]
     Offline
     Printer Cover Open
     Receipt Paper End

[RAS COUNTER INFORMATION]
The number of times of fire to a Print Head [lines]
     76543210     (limiter : 99)
The number of times of Memory-SW rewriting [times]
     76543213     (limiter : 200)

[SYSTEM STATUS]
IFBD-HW03/04   Version 1.0.0
TCP/IP status
   IP Address         : 192.168.1.1
   Subnet Mask        : 255.255.255.0
   Default Gateway    : 192.168.1.254
   Primary Server     : 0.0.0.0
   Secondary Server : 0.0.0.0
E-MAIL status
   Session:2 times.
All profiles are disabled.
SMTP status
TO-ADDR1
   E-MAIL Address: <user1@star.co.jp>
   Last Session   : Nothing
   Current status: Waiting for Interval time.
   Try to send    : 0 times.
   Fail to sendr : 0 times.
TO-ADDR2
   E-MAIL Address: <>
   Last Session   : Nothing
   Current status: Idle.
   Try to send    : 0 times.
   Fail to sendr : 0 times.
TO-ADDR3
   E-MAIL Address: <>
   Last Session   : Nothing
   Current status: Idle.
   Try to send    : 0 times.
   Fail to sendr : 0 times.


--------------------
Star Micronics IFBD-HW03/04
00:80:92:12:34:56
--------------------
```

Message Header

From and To reflect settings.

Subject is a fixed header string.

Message Body

Composed of a title, printer status, system status, and signature

Title
Displays product name, version and Ethernet address

Latest printer status
Displays latest ASB when mail is sent.

Printer status
Displays status character string/time of occurrence (# of sec. after starting product)

RAS counter information
Displays RAS counter name that exceeds the limit, the counter value, and limit value

System status
Displays the network operating status

Signature

Reflects the setting value (4 LINES)

3.3.11. Universal Setting Function

This product is provided a “universal setting function” for automatically detecting this product on Windows ME and Windows XP.

- Can enable/disable the “universal setting function” using the Web, FTP, or Telnet.
- When the “universal setting function” is enabled, and this product is started, it is automatically detected when using Windows ME or Windows XP. The device is displayed on the network computer (Windows ME) or network (Windows XP). The product’s web page is started by double-clicking the device that is displayed. This makes it possible to make a variety of settings of the product.
- When using Windows XP, it is necessary to install the universal plug and play service.
- Displays the device ID character string obtained from the printer for the character string displayed as the comment for the icon displayed on a Windows PC.
  Example: "MFG:Star;CMD:STAR;MLD:TSP700(STR_T-E001);CLS:PRINTER;"

3.4. UDP/IP Specifications

3.4.1. JCP (Silex-technology's setting protocol (UDP #19541)

This product is provided with Silex-technology's independent protocol (JCP). This product uses this protocol to search for the accessory LPR client (Star LPR) and the NIC that is connected to the LAN by this network card initial setting utility software such as "SetupIfbeHeHw.exe."

3.4.2. SNMP Specification

The SNMP of this product has an SNMP engine that operates with UDP/IP. It is possible to control the product and printer information using the SNMP manager.

- Supports SNMPv1, and MIB-II (RFC1213), Printer-MIB (RFC1759), HostResource-MIB (RFC1514), and Star's PrivateMIB.
- "public" has reading permission for the community name, and the character string registered in the "Authentic Community" for the product setting information has writing permission. However, if there is no character string set for the "Authentic Community," the community name "public" has writing permission.
- Restrictions:

  sysContact, sysName, sysLocation are restricted to a maximum of 78 characters (in single byte characters).

  1 is always returned for reading values when ifAdminStatus and ifOperStatus are read-only.

3.4.2.1. Support MIB

The following describes the MIB that is supported by this product.

Name	Explanation
sysDescr	ASCII character string of device name; version number
sysObjectID	Object ID representing product identification number
sysUpTime	Amount of time system is running from startup (in units of 10msec)
sysContact	ASCII character string of controller name, and contact information
sysName	ASCII character string of domain name for device control
sysLocation	ASCII character string representing physical location of device
sysServices	Value of service of device protocol hierarchy
ifNumber	Number of device network interfaces
ifIndex	Interface identification number
ifDescr	ASCII character string representing information relating to interface
ifType	Physical/link protocol interface type
ifMtu	Maximum possible sending/receiving data gram size
ifSpeed	Interface transmission speed [bit/sec]
ifPhysAddress	Interface physical address
ifAdminStatus	Interface control status
ifOperStatus	Interface operating status
ifLastChange	sysUpTime value when interface operating status changed the last time
ifInOctets	Number of bytes received by interface
ifInUcastPkts	Number of subnetwork unicast packets received and sent by the upper level
ifInNUcastPkts	Number of broadcast and multi-cast packets received and sent by the upper level
ifInDiscards	Number of reception packets discarded regardless of being normal packets because the buffer is full
ifInErrors	Number of reception error packets
ifInUnknownProtos	Illegal protocols or number of reception packets discarded because it is an unsupported protocol
ifOutOctets	Total number of bytes sent
ifOutUcastPkts	Number of send request packets with the unicast from the upper protocol

Continued on next page

Continuation 1 of Support MIB

Name	Explanation
ifOutNUcastPkts	Number of send request packets with the broadcast and multi-cast from the upper protocol
ifOutDiscards	Number of packets discarded without sending because the send buffer is full
ifOutErrors	Number of packets not sent because of an error
ifOutQLen	Length of send queue (number of packets)
ifSpecific	Media specific MIB definition object ID of the interface in use
atIfIndex	Value (=ifIndex) to identify interface relating to this conversion entry
atPhysAddress	Physical address dependent on the media
atNetAddress	Network address (IP address) paired with the physical address
ipForwarding	Indicates whether there is a function for forwarding IP data grams received as an IP gateway to others (1: Forwarding; 2: Not Forwarding)
ipDefaultTTL	TTL default value of header of IP data gram
ipInReceives	Total number of received IP data grams
ipInHdrErrors	Number of data grams discarded because of IP header error
ipInAddrErrors	Number of data grams discarded because of problem in IP header addressee address
ipForwDatagrams	Number of IP data grams forwarded to final destination
ipInUnknownProtos	Number of data grams discarded because protocol of the IP data grams for the node is unknown or because it is not supported
ipInDiscards	Number of data grams discarded because of internal problem in buffer space
ipInDelivers	Number of data grams distributed by the IP user protocol (upper level protocol including ICMP)
ipOutRequests.0	Number of executions of IP data gram sending requests by the local IP user protocol
ipOutDiscards	Number of IP data grams discarded without being sent because of insufficient buffer space
ipOutNoRoutes	Number of IP data grams discarded because there was no route to the destination when sending
ipReasmTimeout	Maximum value for the waiting time for reception of all IP data gram to re-assemble fragmented IP data grams that were received
ipReasmReqds	Number of fragmented IP data grams received that require re-assembly with this entity
ipReasmOKs	Number of times of successful re-assemblies of fragmented IP data grams that were received
ipReasmFails	Number of times of unsuccessful re-assemblies of fragmented IP data grams that were received
ipFragOKs	Number of successfully fragmented data grams with this entity
ipFragFails	Number of fragmented data grams discarded without fragmentation with this entity
ipFragCreates	Number of fragmented IP data grams generated as a result of fragmentation with this entity
ipAdEntAddr	IP address belonging to the address information
ipAdEntIfIndex	Interface identification number (=ifIndex) that corresponds to this IP address
ipAdEntNetMask	Subnet mask value that is related to this IP address
ipAdEntBcastAddr	Least significant bit value of IP broadcast address used by the broadcast sent by the interface of the IP address
ipAdEntReasmMaxSize	Maximum size of the IP data gram that can be re-assembled by this entity from the fragmented IP data gram that was received

Continued on next page

Continuation 2 of Support MIB

Name	Explanation
ipRouteDest	The IP address of the destination of this route (0.0.0.0 = default route)
ipRouteIfIndex	Interface identification number (=ifIndex) for sending to the next addressee host after this route
IpRouteMetric	Primary routing metric (-1 = not used) of this route
ipRouteNextHop	IP address of the next HOP of this route
IpRouteType	Type of route (1: None of the ones below; 2: Illegal route; 3: Direct connection; 4: Indirect connection)
IpRouteProto	Routing type learned from this route
IpRouteAge	Amount of time passed after recognition as a final normal route by this route
IpRouteMask	Value for logic AND prior to comparing addressee address and ipRouteDest
ipRouteInfo	Definition number on MIB for routing protocol used on this route
ipNetToMediaIfIndex	Interface identification number (=ifIndex) of this entry
ipNetToMediaPhysAddress	Physical address dependent on the media
ipNetToMediaNetAddress	IP address that corresponds to the physical address of this entry
ipNetToMediaType	Address conversion method (1: Other than below; 2: Ignored value; 3: Dynamically converted; 4: Statically converted)
icmpInMsgs	Total number of ICMP receptions
icmpInErrors	Number discarded of those ICMP received because of ICMP specifications errors such as a check sum error
icmpInDestUnreachs	Number received of undeliverable messages of ICMP addressee
icmpInTimeExcds	Number received of ICMP time exceeded messages
icmpInParmProbs	Number received of ICMP parameter illegal messages
icmpInSrcQuenchs	Number received of ICMP source quenches
icmpInRedirects	Number received of ICMP redirects
icmpInEchos	Number received of ICMP echo request messages
icmpInEchoReps	Number received of ICMP echo reply messages
icmpInTimestamps	Number received of ICMP time stamp request messages
icmpInTimestampReps	Number received of ICMP time stamp reply messages
icmpInAddrMasks	Number received of ICMP address mask request messages
icmpInAddrMaskReps	Number received of ICMP address mask reply messages
icmpOutMsgs	Total number of ICMP messages sent
icmpOutErrors	Number discarded without being sent because the buffer was full when sending ICMP
icmpOutDestUnreachs	Number sent of undeliverable messages of ICMP addressee
icmpOutTimeExcds	Number sent of ICMP time exceeded messages
icmpOutParmProbs	Number sent of ICMP parameter illegal messages
icmpOutSrcQuenchs	Number sent of ICMP source quenches
icmpOutRedirects	Number sent of ICMP redirect
icmpOutEchos	Number sent of ICMP echo request messages
icmpOutEchoReps	Number sent of ICMP echo reply messages
icmpOutTimestamps	Number sent of ICMP time stamp request messages
icmpOutTimestampReps	Number sent of ICMP time stamp reply messages
icmpOutAddrMasks	Number sent of ICMP address mask request messages
icmpOutAddrMaskReps	Number sent of ICMP address mask reply messages

Continued on next page

Continuation 3 of Support MIB

Name	Explanation
tcpRtoAlgorithm	Resend timeout value determining algorithm on TCP connection (1: Other than below; 2: Fixed value; 3: MIL-STD-1778 4:Van Jacobson's algorithm)
tcpRtoMin	Minimum value (in 10 msec units) of the resend timeout value for TCP protocol
tcpRtoMax	Maximum value (in 10 msec units) of the resend timeout value for TCP protocol
tcpMaxConn	Maximum number of TCP connections
tcpActiveOpens	Number of TCP connections expanded actively
tcpPassiveOpens	Number of TCP connections expanded passively
tcpAttemptFails	Number of TCP connections failures
tcpEstabResets	Number of TCP connections resets
tcpCurrEstab	Number of TCP connections either ESTABLISHED or CLOSE-WAIT
tcpInSegs	Number of received TCP segments
tcpOutSegs	Number of sent TCP segments
tcpRetransSegs	Number of resent TCP segments
tcpConnState	Status of TCP connection (1: Closed; 2: Listen; 3: SynSent; 4: SynReceived; 5: Established; 6: FinWait 1; 7: FinWait2; 8: CloseWait; 9: LastAck; 10: Closing; 11: TimeWait; 12: Delete TCB)
tcpConnState	Status of TCP connection
tcpConnLocalAddress	Local IP address of this TCP connection
tcpConnLocalPort	Local port number of this TCP connection
tcpConnRemAddress	Remote IP address of this TCP connection
tcpConnRemPort	Remote connection port of this TCP connection
tcpInErrs	Number of error segment (TCP check sum errors) received
tcpOutRsts	Number of TCP connections resets
udpInDatagrams	Total number of UPD data grams distributed by UDP user
udpNoPorts	Number of UPD data grams received at a port that is not open
udpInErrors	Number of received UPD data grams discarded because of addressee port application problems
udpOutDatagrams	Number of UPD data grams received
udpLocalAddress	Local address of port waiting reception of UPD (0.0.0.0: No specification of received addresses)
udpLocalPort	Local port number waiting reception

Continued on next page

Continuation 4 of Support MIB

Name	Explanation
snmpInPkts	Total number of SNMP messages received from transport service
snmpOutPkts	Total number of SNMP messages sending send requests to transport layer
snmpInBadVersions	Total number of unsupported version messages of received SNMP messages
snmpInBadCommunityNames	Total number of illegal community name messages of received SNMP messages
snmpInBadCommunityUses	Total number of operations not allowed in that community of received SNMP messages
snmpInASNParseErrs	Number of errors detected in ASN.1 or BER format while decoding the SNMP messages received
snmpInTooBigs	Number of received SNMP PDU whose error status was “Too Big”
snmpInNoSuchNames	Number of received SNMP PDU whose error status was “No Such Name”
snmpInBadValues	Number of received SNMP PDU whose error status was “Bad Value”
snmpInReadOnlys	Number of received SNMP PDU whose error status was “Read Only”
snmpInGenErrs	Number of received SNMP PDU whose error status was “Gen Err”
snmpInTotalReqVars	Number of MIB objects normally read by Get-Request, Get-NextRequest PDU
snmpInTotalSetVars	Number of MIB objects normally changed by receiving Set-Request
snmpInGetRequests	Number of SNMP Get-Request PDU received
snmpInGetNexts	Number of SNMP Get-NextRequest PDU received
snmpInSetRequests	Number of SNMP Set-Request PDU received
snmpInGetResponses	Number of SNMP Get-Response PDU received
snmpInTraps	Number of SNMP TRAP PDU received
snmpOutTooBigs	Number of PDU sent by specifying “Too Big” in the error status
snmpOutNoSuchNames	Number of PDU sent by specifying “No Such Name” in the error status
snmpOutBadValues	Number of PDU sent by specifying “Bad Value” in the error status
snmpOutGenErrs	Number of PDU sent by specifying “Gen Err” in the error status
snmpOutGetRequests	Number of SNMP Get-Request PDU sent
snmpOutGetNexts	Number of SNMP Get-NextRequest PDU sent
snmpOutSetRequests	Number of SNMP Set-Request PDU sent
snmpOutGetResponses	Number of SNMP Get-Response PDU sent
snmpOutTraps	Number of SNMP TRAP PDU sent
snmpEnableAuthenTraps	Authentication-failure TRAP occurrence control (1: TRAP occurs; 2: TRAP does not occur)

Continued on next page

Continuation 5 of Support MIB

Name	Explanation
hrDeviceIndex	Fixed value applied to connected devices
hrDeviceType	Type of device connected
hrDeviceDescr	Information character string of device connected
hrDeviceID	Product ID of device connected
hrDeviceStatus	Status of device connected (1: Unknown; 2: Running; 3: Warning; 4: Testing; 5: Down)
hrDeviceErrors	Number of errors on device connected
hrPrinterStatus	Status of connected printers (1: Idle; 2: Printing; 3: Warmup)
hrPrinterDetectedErrorState	Status of errors on connected printers (0: Low Paper; 1: No Paper; 2: Low Toner; 3: No Toner; 4: Door Open; 5: Jammed; 6: Offline; 7: Service Requested)
jciTrapCommunity	TRAP community name when NIC issues TRAP
jciTrapHost	TRAP sending destination IP address
jciAuthenticCommunity	SNMP authentication community name
jciDefaultTimeToLive	TTL default value of header of IP data gram
jciPSPortNumber	Printer port number
jciPSPortIndex	Fixed value applied to printer port
jciPSPortDescr	Printer port number
jciPSPortType	Printer port type (1: Other; 2: CENTRONICS; 3: SERIAL; 4: BICENTRO; 5: NULL; 6: P1284; 7: GPIB; 8: SCSI; 9: P1394; 10: USB)
jciPSPortInOctets	Total reception data volume from printer
jciPSPortOutOctets	Total sending data volume to printer
jciPSPortCurrentJobs	Number of print jobs held by NIC
jciPSPortCurrentInOctets	Volume of data received from printer when sending current or prior print job
jciPSPortCurrentOutOctets	Volume of data sent to printer when sending current or prior print job
jciPSPortCurrentStatus	Printer port status (1: Can print soon; 2: Will be printed later; 3: Can't print currently)
jciPSPortCurrentStatusBinary	Printer port bit status (bit 0: In Use; bit 1: Busy; bit 2: Not Ready; bit 3: Paper Empty; bit 4: Not Selected; bit 5: Fault)
jciPSPortCurrentStatusDescr	Printer port status character string
jciPSEnablePortTrap	TRAP issuing control (1: Enable; 2: Disable) when printer port status changes
jciPSPortTrapInterval	Printer port monitoring intervals for issuing TRAP
jciPSPConfigTcpEnable	TCP protocol control (0: Enable; 1: Disable)
jciPSPConfigTCP/IPIpAddress	IP address
jciPSPConfigTCP/IPSubnetMask	Subnet mask
jciPSPConfigTCP/IPGatewayAddress	Gateway IP address
jciPSPConfigTCP/IPRarpEnable	RARP protocol control (0: Enable; 1: Disable)
jciPSPConfigTCP/IPBootpEnable	BOOTP protocol control (0: Enable; 1: Disable)
jciPSPConfigTcpDnsAddressPri	DNS server (primary) IP address
jciPSPConfigTcpDnsAddressSec	DNS server (secondary) IP address
jciPSPConfigTcpRootPasswd	Controller password
jciPSPConfigTcpBannerEnable	Burner output control (0: Enable; 1: Disable)
jciPSPortConfigsNumber	Printer port number when starting up
jciPSPortConfigIndex	Fixed value applied to printer port
jciPSPortConfigDescr	Printer port number
jciPSPortConfigBojRaw	Character string sent to printer before output of direct output port (Ip port)

Continued on next page

Continuation 6 of Support MIB

Name	Explanation
jdPSPortConfigEojRaw	Character string sent to printer after output of direct output port (Ip port)
jdPSPortConfigBojKanji	Character string sent to printer before output to output port (sjis/euc port) via the Kanji filter
jdPSPortConfigEojKanji	Character string sent to printer after output to output port (sjis/euc port) via the Kanji filter
jdPSPortConfigPrinterType	Printer emulation code
jdPSPortConfigTabSize	Character string to convert tab codes (0x09) into single-byte spaces (0x20) when outputting via a Kanji filter
jdPSPortConfigPageWidth	Number of characters in one line when outputting via a Kanji filter
jdPSPortConfigPageLength	Number of characters in one page when outputting via a Kanji filter
jdPSPortConfigBannerOutput	Burner output control (0: Enable; 1: Disable)
jdPSFConfigMailRecvUserProfileNumber	Number of users receiving mail
jdPSFConfigMailRecvUserProfileIndex	User number for receiving mail
jdPSFConfigMailRecvEnable	Mail reception control (0: Enable; 1: Disable)
jdPSFConfigMailRecvPopServerName	POP server name
jdPSFConfigMailRecvPopPortNumber	POP port number:
jdPSFConfigMailRecvUserName	POP user Name
jdPSFConfigMailRecvPassword	POP password
jdPSFConfigMailRecvLoginWithApop	APOP use control (0: No; 1: Yes)
jdPSFConfigMailRecvDeleteMails	Received mail delete control (0: No; 1: Yes)
jdPSFConfigMailRecvInFerstSession	Mail first reception
jdPSFConfigMailRecvMaxRetrieve	Maximum size of mail reception
jdPSFConfigMailRecvFilterSettings	Mail reception filter
jdPSFConfigMailRecvCheckInterval	Interval to check reception of mail
jdPSFConfigMailRecvLocalizeTimeStamp	Local time zone control (0: No; 1: Yes)
jdPSFConfigMailRecvCurrentTimeZone	Local time zone
jdPSFConfigMailSendEnable	Mail sending control (0: Enable; 1: Disable)
jdPSFConfigMailSendSmtpServerName	SMTP server control
jdPSFConfigMailSendSmtpPortNumber	SMTP port number:
jdPSFConfigMailSendRetry	Mail sending retry count
jdPSFConfigMailSendReplyToAddress	Mail origin address
jdPSFConfigMailSendAddressNumber	Number of mail origin addresses
jdPSFConfigMailSendAddressIndex	Mail origin address number
jdPSFConfigMailSendAddress	Mail destination address
jdPSFConfigMailSendInterval	Intervals for checking sent mail
jdPSFConfigMailSendOfflineEvent	Sending mail with printer offline (0: Off; 1: On)
jdPSFConfigMailSendPaperEmptyEvent	Sending mail with printer out (0: Off; 1: On)
jdPSFConfigMailSendFaultEvent	Sending mail with printer error (0: Off; 1: On)
jdPSFConfigMailSendSignatureNumber	Number of lines for signature when sending mail
jdPSFConfigMailSendSignatureIndex	Line number of signature when sending mail
jdPSFConfigMailSendSignature	Character string of signature when sending mail

Support MIB End

3.4.2.2. TRAP Occurrence Phenomenon

When the EnableAuthenTrap setting on this product is set to ENABLE (which can be set from the Web or Telnet), the following three types of phenomenon occur for the product to issue a TRAP to the SNMP manager (Trap notification address).

TRAP Occurrence Phenomenon

1. When the product is started

[Generic trap type = 0 (Cold Start)]

2. When the printer status has changed (IEEE1284 port status monitoring)

[Generic trap type = 6 (Enterprise Specific)]

3. When there was access using an illegally authenticated community name

[Generic trap type = 4 (Authentication Failure)]

3.5. Other Specifications

3.5.1. DIP Switches and LED Specifications

The DIP switches on this product startup the flash memory loader when only the first switch is ON at startup.

After the power is turned on, the product checks the status of the DIP switches. If switch #1 is on, the system enters flash memory load mode. In the load mode, the status LED flashes in approximately 1 second cycles. Switch #2 can determine the wireless mode at this time.

If switch #1 is off, the system starts an application written to the flash memory. By setting switch #2 to on, it is possible to set the default settings at this time.

The following table shows the allocation of operations to each status of the DIP switches.

DIP Switches		Operation
SW-1	SW-2	
OFF	OFF	Normal startup
OFF	ON	Initialize setting information
ON	OFF	Startup loader (Infra mode)
ON	ON	Startup loader (Adhoc mode)

3.5.2. Flash ROM Specifications

It is possible to update the product program region by uploading firmware from the network using the flash memory loader. Normally, this is used to upgrade, but it is also possible to downgrade when developing products or testing.

FLDP (an independent protocol) and FTP are used as the protocols for upgrading firmware.

- Use a tool dedicated for upgrading using our FLDP. Upload data (extension: .bin) for the version upgrade in binary format.

- Use any general FTP client to upgrade using FTP. Log in, upload data (extension: .bin) for the version upgrade in binary format to the “flash” directory. TCP/IP is used, so it is not possible to startup the product in loader mode using the DIP switch operations.

- If not specified in particular, no initialization of the NIC settings is necessary after upgrading.

3.5.3. Self-Diagnosis Function Specifications

This product can print the results of a self-diagnosis and contents of the internal settings.

A self-diagnosis print is performed after a test print of the printer when the printer is started.

Example Self-diagnosis Print

```
01234567890123456789012345678901234567890
+---------------+---------------+---------------+---------------+
Star Micronics IFBD-HW03/04 Ver 1.0.0
Copyright (C) 2004 STAR MICRONICS CO.,
LTD.
Copyright (C) 2004 silex technology, I
nc.

*** Diagnostic report ***
    ROM Check         : Ok
    ROM stat          : xxxx FFFF 0000 0000
    NIC Check         : Ok
    NIC Addr          : 00:80:92:12:34:56
EEPROM Check          : Ok
EEPROM Check          : xxxx xxxx 0000 0000

Wireless LAN status   : AP Connected
  Current SSID        : STAR-WIFI
  Current BSSID       : xx:xx:xx:xx:xx:xx
  Current Channel     : 5 (1-14)
  Region   Code       : 42

*** Configuration report ***
     [Web Page Refresh Interval(sec.)]
          :10
<< Configure General >>
     [Change root Password]
          :""
     [NIC Reset Control]
          :ENABLE
<< Configure WiFi – .11b >>
     [Wireless Mode]
          :Infra.
     [SSID]
          :"STAR-WIFI"
     [Channel]
          :11
     [Use WEP]
          :None
     [WEP Key]
          :""
<< Configure TCP/IP >>
     [DHCP/BOOTP]
          :ENABLE
     [RARP]
          :ENABLE
     [IP Address]
          :0.0.0.0
     [Subnet Mask]
          :0.0.0.0
     [Default Gateway]
          :0.0.0.0
     [Universal PnP]
          :DISABLE
     [9100 Multi Session]
          :ENABLE
<< Configure TCP/IP - DNS >>
     [Primary Server]
          :0.0.0.0
     [Secondary Server]
          :0.0.0.0
<< Configure TCP/IP - POP >>
     [POP Protocol]
          :DISABLE
<< Configure TCP/IP - SMTP >>
     [SMTP Protocol]
```

```
        :DISABLE
<< Configure SNMP >>
    [Authentic Community]
        :"******"
    [Trap Community]
        :"public"
    [Trap Address(IP)]
        :0.0.0.0
    [SysContact]
        :""
    [SysName]
        :""
    [SysLocation]
        :""
    [EnableAuthenTrap]
        :2
<< Configure Secure Print >>
    [Secure Print]
        :ENABLE
    [SSL Mode]
        :ALL
```

"*** Diagnostic report ***"

The following shows the self-diagnosis print.

When an error is detected at startup, "*** Hardware problem report ***" is printed.

<ROM check: Explanation of results of ROM check sum inspection>

First Digit	Second Digit	Third Digit	Fourth Digit
Sum value described in ROM	Sum value actually calculated	Always 0	Always 0

NIC check: Shows the results of an NIC packet transmission test. Also, prints the MAC address.

<EEPROM check: Results of EEPROM check sum inspection>

First Digit	Second Digit	Third Digit	Fourth Digit
Sum value described in EEPROM	Sum value actually calculated	Always 0	Always 0

*** Configuration report ***

The following information indicates the environment setting information stored in the product.

In environment setting printing, when the protocol stack is disabled, information relating to the disabled protocol is not output.

(The printing example above is the output result using default settings.)

3.6. Settings/Display Items

The following shows the sections that can be set and referenced and a list of variables.

3.6.1. General Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Change Root Password	• Seven or more char. of ASCII • No differentiation between upper and lower case characters	None (No password)
NIC Reset Control	ENABLE/DISABLE	ENABLE
Web Page Refresh Interval (sec.)	1-300	10

3.6.2. Wireless Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Wireless Mode	OldAdHoc/AdHoc/Infra.	AdHoc.
SSID	Any English character string (Max. 32 characters)	“STAR-WIFI”
Channel	1 to 14	11
Use WEP	None/64bit/128bit	None
WEP Key	26 digits in hexadecimal	00000000000000000000000000

3.6.3. TCP/IP Settings

Variable Name	Setting Range	Initial Value (Default Settings)
DHCP/BOOTP	ENABLE/DISABLE	ENABLE
RARP	ENABLE/DISABLE	ENABLE
IP Address	0.0.0.0 to 255.255.255.255	0.0.0.0
Subnet Mask	0.0.0.0 to 255.255.255.255	0.0.0.0
Default Gateway	0.0.0.0 to 255.255.255.255	0.0.0.0
Primary Server	0.0.0.0 to 255.255.255.255	0.0.0.0
Secondary Server	0.0.0.0 to 255.255.255.255	0.0.0.0
Universal PnP	ENABLE/DISABLE	DISABLE
9100 Multi Session	ENABLE/DISABLE	ENABLE

3.6.4. POP3 (Email Reception) Settings

3.6.4.1. Basic Settings

Variable Name	Setting Range	Initial Value (Default Settings)
POP Protocol	ENABLE/DISABLE	DISABLE
Check Interval (min.)	3-60	15
Local Time Zone	"-12:00" to"+12:00"	"+08:00"
User Profile	ENABLE/DISABLE	DISABLE

3.6.4.2. Account Settings For Each User (User Profile 1 to 4)

Variable Name	Setting Range	Initial Value (Default Settings)
POP Server Name	Host name or IP address	None
POP User Name	Max. 31 char. of ASCII	None
POP Password	Max. 31 char. of ASCII	None
POP Port Number	1-32767	110
User APOP	YES/NO	NO
Delete Mail after Retrieve	YES/NO	NO
Maximum Retrieve (Kbyte)	0-32767	64
Filter settings	Max. 78 char. of ASCII (Japanese lang. OK) (*1)	None

- Use the following sentence by connecting using "&" (AND conditions) or "|" (OR conditions) for the (*1) filter settings.

Class	Target for Inspection	Example of Use	
S:	Subject	S:news & S:daily	Prints mail whose subject is daily and news.
F:	From	F:rt-users	Prints mail from rt-users.
T:	To	T:support@star.co.jp	Prints mail to support.
C:	CC	C:user | T:user	Prints mail that includes addressee or user in CC field.

3.6.5. SMTP (Email Sending) Settings

3.6.5.1. Basic Settings

Variable Name	Setting Range	Initial Value (Default Settings)
SMTP Protocol	ENABLE/DISABLE	DISABLE
SMTP Server Name	Max. 78 char. of ASCII	None
From Address	Max. 78 char. of ASCII	None
To Address	Max. 78 char. of ASCII	None
Check Interval(min.)	1-10000	10
SMTP Port Number	1-32767	25
Signature Line1	Max. 63 char. of ASCII	----------
Signature Line2	Max. 63 char. of ASCII	Star Micronics IFBD-HE03/04
Signature Line3	Max. 63 char. of ASCII	[(Ethernet Address)]
Signature Line4	Max. 63 char. of ASCII	----------

3.6.5.2. Event to Address Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Offline	ON/OFF	OFF
Paper Empty	ON/OFF	OFF
Fault	ON/OFF	OFF
NearEnd	ON/OFF	OFF

3.6.6. SNMP Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Authentic Community	Max. 15 char. of ASCII	“public”
Trap Community	Max. 15 char. of ASCII (Japanese lang. OK)	“public”
Trap Address (IP)	0.0.0.0 to 255.255.255.255	0.0.0.0
SysContact	Max. 78 char. of ASCII (Japanese lang. OK)	None
SysName	Max. 78 char. of ASCII (Japanese lang. OK)	None
SysLocation	Max. 78 char. of ASCII (Japanese lang. OK)	None
EbableAuthenTrap	1/2	2

3.6.7. Secure Print Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Secure Print	ENABLE/DISABLE	ENABLE
SSL Mode	ALL RC4-40 RC4-128 DES-40 DES-64 3DES-192	ALL

3.6.8. RAS Counter Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Compare Value	0-99,999,999 = 0x00000000-0x05F5E0FF	99,999,999
Send Mail	ENABLE/DISABLE	DISABLE
To Address	Max. 78 char. of ASCII	None
Check Interval(min.)	1-10000	10
Offline	ON/OFF	OFF
Paper Empty	ON/OFF	OFF
Fault	ON/OFF	OFF

3.6.9. Memory Switch Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Code Page Setting	Select from list	Normal
Black Mark Sensor	ENABLE/DISABLE	DISABLE

3.6.10. SSL Identification Creation Settings (Web Only)

3.6.10.1. Identification Information Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Country/Region Code	2-character character string	Blank
Prefecture Name	128-character character string	Blank
City or Town Name	128-character character string	Blank
Organization Name	64-character character string	Blank
Section Name	64-character character string	Blank
General Name	64-character character string	Blank
Mail Address	128-character character string	Blank

3.6.10.2. Time Limit Settings

Variable Name	Setting Range	Initial Value (Default Settings)
Date of Issue	Display Only	Cannot be set because automatically generated
Time Limit Date	to 2049/12/31	2049/12/31

3.7. Status Display

3.7.1. Printer Status Display

The status of the printer can be verified using a Web screen, or TELNET, LPQ (LPSTAT) or FTP (STAT) commands.

With TELNET, ASB status is displayed in a hexadecimal dump.

The following are shown for the status of the printer.

Status Information		Status	Status Per Printer Type
			TSP700
Ready		Idling	○
Not Ready(...)		Error	○
NotReady(...) Information in ( )	Printer Cover Open	Cover Open	○
	Auto Cutter Error	Cutter Error	○
	Presenter Paper Jam Error	Presenter Jam Error	×
	Receipt Paper Inner Side Near End	Paper Near End (Inner Sensor)	○
	Receipt Paper End	Paper End	○
	Presenter Paper Detector	Paper in Presenter (Waiting Removal)	×
	OFF-LINE	Offline	×

3.7.2. System Status Display

The status of the printer and system can be verified in the system status display using a Web screen, or TELNET command. The following shows an example of operations after logging in using the TELNET command.

Display Example

```
    No.    Item                    Value          (level.1)
------------------------------------------------------------
         1: Configure General
         2: Configure TCP/IP
         3: Configure SNMP
         4: Configure Printer
         5: Web Page Refresh Interval(sec.)   : 10
        96: Display Status
        97: Reset Settings to Defaults
        98: Restart Print Server
        99: Exit
      Please select ( 1 - 99 )?  96

    Display Status
        1: prn1
        2: system
        3: ETB Counter
        4: RAS Counter
      99: Back to prior menu
    Please select (1 - 99)?  2

    IFBD-HW03/04 Version 1.0.0
    TCP/IP status
        IP Address       : 192.168.1.1
        Subnet Mask      : 255.255.255.0
        Default Gateway: 192.168.1.254
        Primary Server :0.0.0.0
        Secondary Server:0.0.0.0
    E-MAIL status
        Session:2 times.
    All profiles are disabled.
    SMTP status:Disabled
    Display status
       1: prn1
       2: system
       3: ETB Counter
       4: RAS Counter
      99: Back to prior menu
    Please select (1 - 99)?
```

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Please access the following URL
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