

UB-E04

Technical Reference Guide

Product Overview

This chapter explains features.

Set up

This chapter explains how to connect the UB-E04 to the TM printer and use it.

Application Development Information

This chapter explains necessary information when you develop applications.

Programming Samples

This chapter explains information for programming.

Product Specifications

This chapter explains product specifications.

Appendix

This chapter explains network parameters and a comparison of the UB-E03 and UB-E04.

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It comprises a set of highly functional and efficient commands and also offers the flexibility to easily make future upgrades.

For Safety

Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

 WARNING	You must follow warnings carefully to avoid serious bodily injury.
 CAUTION	Provides information that must be observed to prevent damage to the equipment or loss of data. <ul style="list-style-type: none">• Possibility of sustaining physical injuries.• Possibility of causing physical damage.• Possibility of causing information loss.
 CAUTION	Provides information that must be observed to avoid damage to your equipment or a malfunction.
 NOTE	Provides important information and useful tips.

Warnings



WARNING

- To avoid risk of electric shock, do not set up this product or handle cables during a thunderstorm.
- Never insert or disconnect the power plug with wet hands.
Doing so may result in severe shock.
- Handle the power cable with care.
Improper handling may lead to fire or electric shock.
 - * Do not modify or attempt to repair the cable.
 - * Do not place any heavy object on top of the cable.
 - * Avoid excessive bending, twisting, and pulling.
 - * Do not place the cable near heating equipment.
 - * Check that the plug is clean before plugging it in.
 - * Be sure to push the plug all the way in.
- Be sure to use the specified power source.
Connection to an improper power source may cause fire or shock.
- Do not place multiple loads on the power outlet.
Overloading the outlet may lead to fire.
- Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise.
Continued use may lead to fire. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.
- Never attempt to repair this product yourself. Improper repair work can be dangerous
- Never disassemble or modify this product.
Tampering with this product may result in injury or fire.
- Do not allow foreign matter to fall into the equipment.
Penetration by foreign objects may lead to fire.
- If water or other liquid spills into this equipment, do not continue to use it. Unplug the power cord immediately and contact your dealer or a Seiko Epson service center for advice.
Continued use may lead to fire.
- Do not use aerosol sprayers containing flammable gas inside or around this product.
The gas may stagnate and ignite, causing a fire.

Cautions



CAUTION

- Connecting an outdoor over head LAN cable directly to your product may lead to lightning damage. If you need to connect such a cable to your product, the cable must be protected against an electrical surge between the cable and your product. You should avoid connecting your product to a non-surge protected outdoor overhead LAN cable.
- Do not connect cables in ways other than those mentioned in this manual. Doing so may cause product faults or a fire.
- Be sure to set this equipment on a firm, stable, horizontal surface. The product may break or cause injury if it falls.
- Do not install the product in a location with excessive humidity or dust. Excessive humidity and dust may cause equipment damage or fire.
- To ensure safety, unplug this product before leaving it unused for an extended period.

Product Servicing

This product cannot be serviced at the component level. In case of a fault, replace the UB-E04 itself.

Restriction of Use

When this product is used for applications requiring high reliability/safety such as transportation devices related to aviation, rail, marine, automotive etc.; disaster prevention devices; various safety devices etc.; or functional/precision devices etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability.

Because this product was not intended for use in applications requiring extremely high reliability/safety such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care etc., please make your own judgment on this product's suitability after a full evaluation.

Wireless LAN Connection

With the UB-E04, you can connect an optional Wireless LAN unit to the USB Type-A connector to support wireless LAN (IEEE802.11b/g/n).

Be aware of the following matters if using a wireless LAN connection.

Cautions for Use

- Connect the Wireless LAN unit to the USB Type-A connector before turning the printer on.
- Do not connect a device other than the Wireless LAN unit to the UB-E04's USB Type-A connector.
- If you connect a device other than the Wireless LAN unit to the UB-E04's USB Type-A connector, or if you remove the Wireless LAN unit while the printer is operating, the printer will experience an unrecoverable error. In that case, re-connect the Wireless LAN unit to the USB Type-A connector, and then turn on the power again.

- To prevent the Wireless LAN unit from being removed accidentally by some external force, be sure to attach the connector cover to TM printers where a connector cover can be installed.
- Wireless LAN connections using the Wireless LAN unit have not been confirmed to operate with all wireless LAN devices, and operation with all wireless LAN devices cannot be guaranteed. Thoroughly research the specifications of the wireless LAN device you want to connect before using it.
- Wireless LAN operations may not be able to connect properly depending on the radio waves of the surroundings. In particular, wireless LAN operations in ad hoc mode may not connect properly depending on the combination of the device to be connected. Therefore, be sure to thoroughly check and evaluate the device before using it.
- The UB-E04 cannot use wired LAN and wireless LAN at the same time. If using the wireless LAN, do so without connecting a LAN cable.

Cautions about Interference

- Use the included USB extension cable to connect the UB-E04 and the Wireless LAN unit. If you insert the Wireless LAN unit directly into the UB-E04, it will cause interference with other cables and negatively affect transmissions.
- Perform adjustments so that the unit does not use the same channel as other wireless LAN devices nearby.
- Keep the following points in mind when using the Wireless LAN unit in an environment with devices that generate radio interference, such as a kitchen microwave.
 - Install the printer as far away from devices that generate radio interference as possible.
 - Use the USB extension cable included with the Wireless LAN unit, and install the Wireless LAN unit as far away from devices that generate radio interference as possible.
 - Install a shielding plate between the printer and a device that generates radio interference.
 - When setting the auto-channel of the access point, be sure to set it so it does not generate radio interference.
- If the Wireless LAN unit generates interference for other devices, such as your TV or radio, use the following methods to remove the interference.
 - Install the product away from the TV or radio.
 - Connect this product to an outlet different from the outlet the TV or radio is connected to.

Cautions about Security

Important Cautions about Your Privacy Protection

A wireless LAN uses radio waves instead of a LAN cable to transmit information between the computer and the wireless access point. Therefore, LAN connections can easily be made within the radio waves' range. However, radio waves easily go beyond obstacles such as walls and can create security problems such as the following.

Communication data can be received by stealth

A third party may intentionally intercept the radio waves to illicitly read your transmission information, including the print data output to the printer, e-mail contents, and personal information such as passwords and credit card numbers.

Illegal access

A third person can access the network and cause damage such as the following:

- Stealing of personal information and confidential information (Information leaks)
- Stealing the identity of a certain person to transmit illicit information (Identity theft)
- Replacing intercepted information and transmitting it (Falsification)
- Inserting a computer virus to destroy data or the system (Destruction)

Security Settings

The wireless LAN card and access point have a security settings function to deal with these problems. You can reduce the possibility these problems will occur by performing security settings before use.

CAUTION

Even with security settings, there is a possibility the security can be breached using particular methods.

We recommend that you have full understanding regarding security problems and perform security settings at your own judgment and liability.

Security settings are performed immediately after purchase (Initial setting: WPA2-PSK).

Limitations

- You cannot stop the transmission of radio waves. If you need to stop the transmission of radio waves, turn off the TM printer.
- The following limitations exist when using ad hoc mode.
 - The authentication type cannot be set to WPA2-PSK or WPA2-Enterprise.
 - When you print the status sheet, even if there is not a device to connect to nearby, the Link Status is shown as Connect.
- The channels that can be set vary by country.

About this Manual

Aim of the Manual

This manual is aimed to provide all the necessary information for development engineers to develop, design, and install POS system, or to develop and design printer applications.

Manual Content

The manual is made up of the following sections:

- Chapter 1 [Product Overview](#)
- Chapter 2 [Set up](#)
- Chapter 3 [Application Development Information](#)
- Chapter 4 [Programming Samples](#)
- Chapter 5 [Product Specifications](#)
- Chapter 6 [Appendix](#)

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Product Overview

This chapter describes the features of this product, as well as the parts name and function of each part.

Features

The UB-E04 is an Ethernet interface board for Epson TM printers.

The features of the UB-E04 are as follows:

Ethernet

- 10Base-T, 100Base-TX Ethernet
- Full duplex/half-duplex (Supports auto negotiation)
- Supports Auto-MDIX

Wireless LAN

- You can connect an optional Wireless LAN unit to the USB Type-A connector to support wireless LAN.
- It is IEEE802.11b/g/n (2.4 GHz) compliant.
- It supports infrastructure mode and 802.11 ad hoc mode.
- It also supports WEP (64/128 bit), WPA2-PSK, and WPA2-Enterprise.

**CAUTION**

Do not connect a device other than the Wireless LAN unit to the USB Type-A connector.

Network Function

- It supports TCP/IP protocol.
- It supports DHCP and APIPA.
- It supports ENPC and SNMP. You can use ENPC and SNMP to acquire the printer status.
- It supports IPv4.

Setting

- The settings utility, EpsonNet Config, is available. Please download it from the Epson Web site and use it.
- You can use your Web browser to access EpsonNet Config (Web version) to browse and set network parameters.
- You can use the push button to initialize the current network parameters or print settings.

Others

- It supports the XML print function (ePOS-Print) via HTTP/HTTPS communication.
- It is equipped with a CPU low-power consumption mode.
- It supports IEEE802.3az (Energy Efficient Ethernet: EEE).

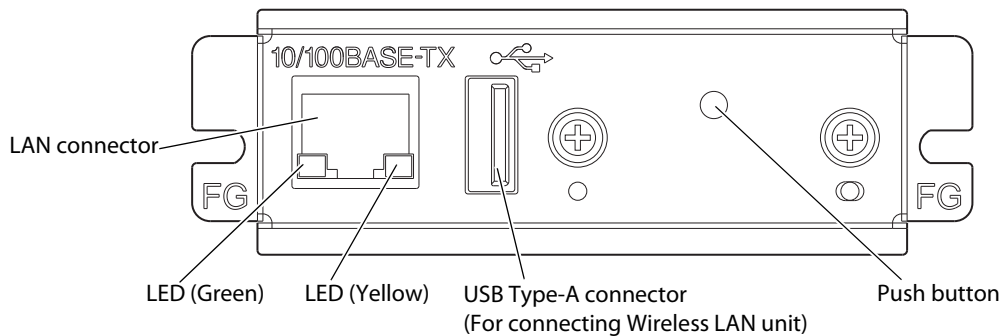
NOTE

What is the CPU low-power consumption mode?

If there is no data transmission or receiving and the push button is not operated for 3 seconds or longer, the UB-E04 transitions to CPU low-power consumption mode. While in CPU low-power consumption mode, the UB-E04 uses less power than usual. You cannot disable the CPU low-power consumption mode function.

To use the EEE power-reducing function, you must have a computer that supports EEE available.

Parts Name and Function



LAN connector

You can connect a LAN cable (RJ45 plug) to the LAN connector. When connecting the LAN cable, insert it all the way until you hear the click.



CAUTION

Do not insert a customer display cable, drawer kick cable, or a general public circuit cable into the LAN connector.

LED

The two LEDs light up in the following situations. However, both are off during the CPU low-power consumption mode.

The green LED: when the Ethernet link is established.

The yellow LED: when transmitting or receiving data.

USB Type-A Connector (For connecting Wireless LAN unit)

You can connect an optional Wireless LAN unit to the USB Type-A connector.

Push button

The push button has the following functions.

Press the push button with a thin object such as a tweezers.

Status sheet printing

When the TM printer is ready to print (with paper loaded and the power on), press and hold the push button for 3 seconds or longer to print the network parameters status.

Setting initialization

While holding the push button, turn the printer's power on and continue to hold the push button until the initialization start message is printed (approx. 10 seconds) to restore all settings to their factory default.

CAUTION

After turning the printer's power on, it can take about 15 to 20 seconds until the UB-E04 functions are enabled. If printing the status sheet, turn the printer on and wait for 20 seconds or longer, then press the push button.
However, in case of the initial bootup after the setting initialization, it may take about 1 minute longer for the initial setting until the bootup.



Set up

The following explains the procedure for network settings (set up) in order to connect the product to your network.

NOTE

For the set up of the optional Wireless LAN unit, see the Wireless LAN unit's manual.

Set up methods

There are three methods for set up.

Method 1: Set up using EpsonNet Config

This method involves installing the network configuration tool, EpsonNet Config, on your computer for setting.

As it does not require any settings in advance to allow set up, you can easily perform set up using a computer already connected to the network.

To download EpsonNet Config, see "[Downloads](#)" on page 30.

Method 2: Set up using EpsonNet Config (Web version)

This method involves opening the Web application equipped in the UB-E04 from a Web browser to perform settings.

Because you specify the printer's IP address to open it, you need to set your computer to the same network segment as the printer.

With EpsonNet Config (Web version), you can set more items than with EpsonNet Config.

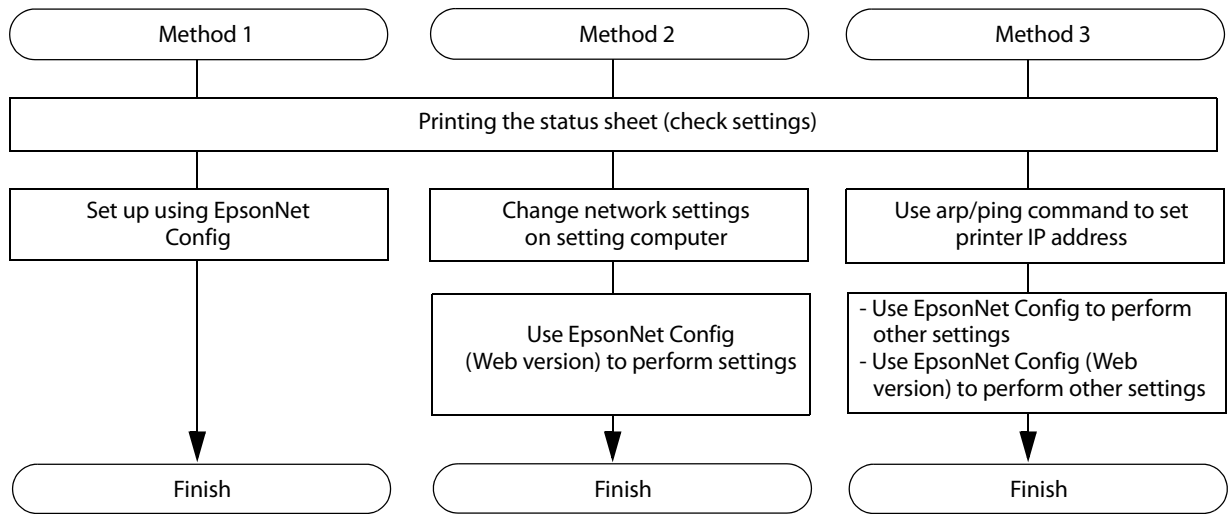
Method 3: Set up using arp/ping commands

This method involves setting the printer's IP address in the setting computer's arp/ping commands, then using the setting tool to change the other settings.

The setting computer must be in the same segment as the printer. Also, settings can be done only when the printer's arp+ping IP setting is set to Enable.

Use EpsonNet Config or EpsonNet Config (Web version) for settings other than the IP address.

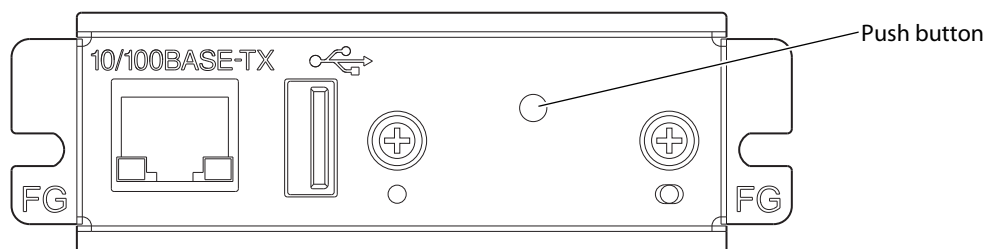
Flow of Setup



Printing the status sheet (Check Settings)

Turn on the printer equipped with the UB-E04, then after 20 seconds or longer, press and hold the push button to the right of the LAN connector for about 3 seconds to print the status sheet. Once printing starts, release the push button.

Press the push button with a thin object such as a tweezers.



Example status sheet

```

*** Dynamic Status Sheet ***
UB-E04
  Hard Version   :XX.XX
  Soft Version  :XX.XX

Ethernet Status
  MAC Address   :XX-XX-XX-XX-XX-XX
  Physical Layer :Auto-negotiation
  Link Status   :Disconnect

Wi-Fi Status
  MAC Address   :unknown
  SSID          :EPSON_Printer
  Network Mode  :Infrastructure
  Comm Standard :802.11b/g/n
  Encryption Type :WPA-PSK (AES)
  Link Status   :Unknown
  Channel       :Unknown
  Transmission  :Unknown
  Access Point  :Unknown
  Signal Level  :Unknown

TCP/IP Status
  Acquiring     :Manual
  IP Address    :192.168.192.168
  SubnetMask    :255.255.255.0
  Default Gateway :0.0.0.0

Other Status
  TimeServer    :Invalid
  Stored Date/Time:2014/01/01 00:00:00
  Wi-Fi Device ID :Unknown
  
```

CAUTION

After turning the printer's power on, it can take about 15 to 20 seconds until the UB-E04 functions are enabled. Do not start pushing the push button during this time.

Set up using EpsonNet Config

Execute EpsonNet Config, select the target printer from the displayed device list, then check and change the settings.

If the printer is still set to factory defaults, the printer's MAC address is listed up, even if the computer does not have the same network address.

Download EpsonNet Config from the Epson website.

1 Connect the printer to the same network as the computer where you installed EpsonNet Config.

2 Start up EpsonNet Config.

The tool automatically detects printers connected to the network and displays a list.

It may take up to a minute for the printer to be displayed in the list.

If it is not displayed, check that [Filter] is set to "(All)" or "Network-connected devices", then click [Refresh]. Or, select [Tools], then [Option], and check the settings of [Search Parameters].

3 Select the target printer, then click [Configuration].

If you cannot determine the target printer from the product name or the IP address, use the MAC address. You can check the printer's MAC address on the status sheet.

4 Change the printer's settings based on the network setting information you received from the network administrator.

Select an item from the menu and change the setting.

5 Once you set the necessary items, click [Transmit].

The changed contents are sent to the printer and the printer settings are changed.

NOTE

For details about EpsonNet Config, see the manual (operation guide) installed together with the tool or the online help.

Set up using EpsonNet Config (Web version)

Specify the printer's IP address in the web browser and open EpsonNet Config (Web version) to check and change settings.

If performing set up using EpsonNet Config (Web version), you need to set the network settings of the setting computer to the same network segment as the printer to be connected to.

CAUTION

By factory default, all UB-E04 devices are set to the same IP address (192.168.192.168). If setting multiple printers for which the IP address has not been changed, turn on one printer at a time and perform settings. If the power is on for multiple printers on a single network, they will compete for the IP address and you cannot perform set up.

- 1 Connect the setting computer and the printer to the same network.**
- 2 Perform network settings on the computer so that it is in the same segment as the printer's IP address.**

Subnet mask: Same subnet mask as the printer

IP address: Same segment (same network address) as the printer, different host address

Check the values set in the printer on the status sheet.

E.g.)

	Printer	Setting computer
Subnet mask	255.255.255.0	255.255.255.0
IP address	192.168.192.168	192.168.192.2

- 3 Start up your Web browser and input the printer's IP address into the address field.**

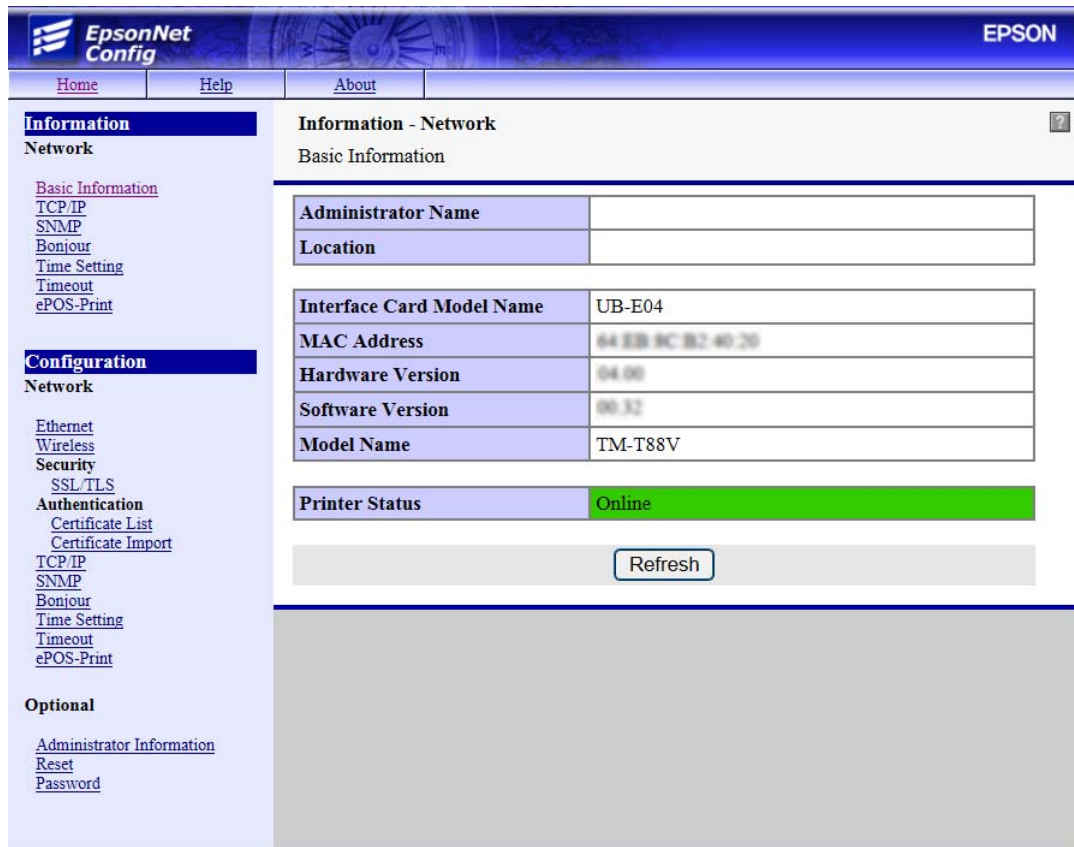
E.g.) <http://192.168.192.168>

NOTE

Under initial settings, when you access EpsonNet Config (Web version) from your browser, an authentication warning message may be displayed.

- 4 Input your user name and password on the authentication window.**

Input "epson" for both the user name and password. You can change the password in the [Optional] setting menu, under [Password].



5 Change the settings based on the network setting information you received from the network administrator.

Select an item from [Configuration] and change the setting.

6 After changing the necessary parameters, click the [Send] button.

The changes are sent to the printer.

7 Click the [Reset] button on the Web page displayed after sending.

The sent contents are enabled.

Depending on the changes, such as the IP address, the connection with the setting computer may be cut and the EpsonNet Config window may not be displayed. To reconnect, you need to set the network settings of the setting computer to the same network segment as the printer for which settings were changed.

Set up using arp/ping commands

You can change the printer's IP address by changing the ARP table (table of IP address and MAC addresses) managed by the OS on the setting computer.

Check that the setting computer is connected to the network in the same segment as the printer, and that the arp+ping IP setting for the UB-E04 is set to Enable. (The factory default is Enable.)

You can check the UB-E04 settings on the status sheet.

1 Delete the IP address you want to set to the printer from the ARP table.

arp -d (IP address)

E.g.) arp -d 192.168.0.10

2 Add the printer's MAC address and the IP address you want to set to the ARP table.

arp -s (IP address) (MAC address)

E.g.) arp -s 192.168.0.10 00-26-AB-7B-00-00

3 Execute the ping command and enable settings.

ping (IP address you want to set)

E.g.) ping 192.168.0.10

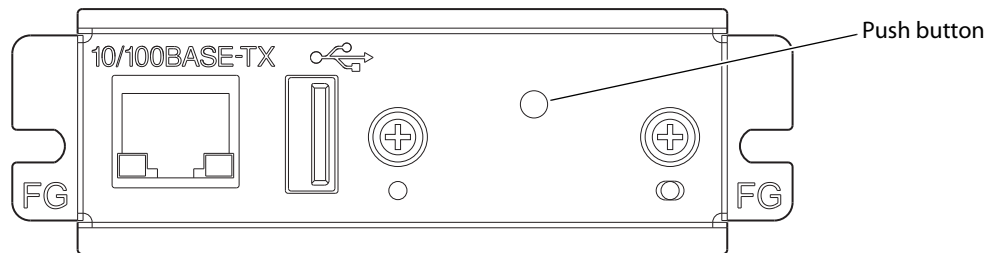
When a message like "Reply From 192.168.0.10: Bytes=32 Time < 10ms TTL=255" is displayed, the IP address setting is complete.

Use EpsonNet Config or EpsonNet Config (Web version) for settings other than the IP address.

Initializing

If you become unable to connect to the UB-E04, you can use the following procedure to initialize settings and restore the device to factory default.

- 1 Turn off the printer's power.**
- 2 With the push button pressed, turn on the printer's power.**
Press the push button with a thin object such as a tweezers.



- 3 Continue to hold the push button until the initialization start message below is printed (approx. 10 seconds).**

```
Resetting to Factory Default!  
Please Wait...  
  
WARNING: DO NOT  
TURN OFF POWER
```

CAUTION

Do not turn the printer's power off until initialization is complete.

After about 20 seconds, a message notifying the completion of the reset is printed.

```
Reset to Factory Default Finished!
```

After the completion message, a status sheet is printed.

EpsonNet Config (Web version)

This section describes the items that can be displayed and set using EpsonNet Config (Web version), the Web application equipped in the UB-E04.

Information Menu

On the Information menu, you can check the following settings. For the details of each protocol or the settings other than the Information menu, check the Configuration menu.

Basic Information

You can check the items below.

(Administrator name, installation location, interface card model number, MAC address, hardware version, software version, connected printer name, wireless connection channel, wireless transmission speed, MAC address of the wireless connection access point, wireless radio wave strength, printer status)

TCP/IP

You can confirm TCP/IP protocol IP address settings.

SNMP

You can confirm SNMP protocol settings.

Bonjour

You can confirm Bonjour protocol settings.

Time Setting

You can confirm SNTP protocol time server settings.

Timeout

You can confirm LPR/Port9100 protocol Timeout duration settings.

ePOS-Print

You can check the ePOS-Print version.

Configuration Menu

On the Configuration menu, you can check and set the following items.

Ethernet

You can check and set the communication standard.

(Auto / 10Base-T Half Duplex / 10Base-T Full Duplex / 100Base-TX Half Duplex / 100Base-TX Full Duplex)

Wireless

This is required when using the Wireless LAN unit. You can check and set the following wireless settings.

- Settings of wireless transmission standards (Auto / 802.11b/g/n)
- Network mode settings (Infrastructure / Ad hoc)
- SSID name input
- Channel setting *Used only in ad hoc mode.
- Encryption code setting (WPA2-PSK / WPA2-Enterprise / WPA-PSK (AES) / WEP (128bit) / WEP (64 bit) / None)
- WPA Pre-Shared Key setting *WPA wireless password setting
- Default WEP Key selection (Key 1 / 2 / 3 / 4)
- WEP key1 to 4 setting *WEP wireless password setting
- Authentication algorithm setting (OpenSystem / Shared key / Auto)
- Power saving function settings (Disable/Enable)

*If using "WPA2-Enterprise" in the above encryption method, the following settings are required.

- EAP authentication setting (EAP-TLS / PEAP-TLS / PEAP-MSCHAPv2)
- Client-signed certificate (Client-Signed Certificate1 / Client-Signed Certificate2 / Client-Signed Certificate3)
- User ID input
- Password input
- Server authentication setting (Disable / Enable)
- Server ID input
- CA-signed certificate setting (CA Certificate1 / CA Certificate2 / CA Certificate3 / CA Certificate4 / CA Certificate5 / CA Certificate6 / CA Certificate7 / CA Certificate8 / CA Certificate9 / CA Certificate10)
- Anonymous Name -input alias used when establishing communication with RADIUS server
- Encryption strength setting
(Low: AES256-SHA / DES-CBC3-SHA / AES128-SHA / RC4-SHA)
(Medium: AES256-SHA / DES-CBC3-SHA / AES128-SHA / RC4-SHA)
(High: AES256-SHA / DES-CBC3-SHA)

Security

This is required when using the Wireless LAN unit as well as WPA2™ Enterprise.

SSL/TLS

You can check and set the SSL/TLS.

- Selection of the server certificate type

(Selfsigned Certificate / CA signed Certificate1 / CA signed Certificate2 / CA signed Certificate3)

- Encryption strength setting (Medium / Low / High)
- Setting for automatic redirect from HTTP to HTTPS (Enable / Disable)
- Confirmation of each certificate

Authentication

This is required when using the Wireless LAN unit as well as WPA2™ Enterprise.

Certificate List

You can check and set the following items for self-signed certificates.

- Self-signed certificate setting
- CA signed certificate settings 1 to 3
- CA certificate settings 1 to 10

Certificate Import

You can check and set the following items for certificate imports.

- File format settings (PEM / DER Certification / Password Protection PKCS#12 Certificate)
- File name input
- Password input

* If you import and select an invalid certificate, you will no longer be able to start up EpsonNet Config (Web version).

In that case, use EpsonNet Config to select a certificate other than the invalid one (for example, a Selfsigned Certificate), and import the correct certificate with EpsonNet Config (Web version) again.

TCP/IP

IP v4 Address

This sets the IP address when setting the manual.

- Setting for IP address acquisition method (Manual / Auto)
- IP address setting
- Subnet mask address setting
- Default gateway address setting
- APIPA setting (Enable / Disable)
- ARP+Ping setting (Enable / Disable)

DNS/DDNS

This sets the DNS server address (IPv4).

- Setting for automatic acquisition of the DNS server address (Disable / Enable)
- DNS server address setting

This sets the host name and domain name.

- Setting for automatic acquisition of the host name and domain name (Disable / Enable)
- Host name input
- Domain name input
- Setting of the function for registering the network I/F address in the DNS server (Disable / Enable)

SNMP

Community

This sets the community name used in notifications. You can set up to 16 ASCII characters.

- Read Only community name fixed as "public" *Cannot be changed
- Read/Write community name input

IP Trap

This sets the IP trap.

IP Trap1

- Trap setting (Disable / Enable)
- Trap address setting
- Community name input

IP Trap2

- Trap setting (Disable / Enable)
- Trap address setting
- Community name input

Bonjour

This sets Bonjour.

- Bonjour setting (Disable / Enable)
- Name input for when using Bonjour*
- Printer name setting for when using Bonjour*
- Installation location input

* You can use upper and lower case alphabet characters, numerals and hyphens, however, only use upper and lower case alphabet characters for the initial character.

Time Setting

You can check and set the time server.

- Use of time server (Disable / Enable)
- Time server address setting
- Time setting for refresh interval (Can be set between 1 min to 10,080 min) - Default is 60 min.
- Confirmation of time server status (Invalid / Success / Synchronize / Failure)
- Error setting

Timeout

This sets the timeout time for printing.

- LPR time-out setting - Default is 90 sec.
- RAW (Port9100) time-out setting - Default is 90 sec.

ePOS-Print

You can check and set ePOS-Print.

- Version confirmation
- ePOS-Print setting (Disable / Enable)
- Device ID setting
- Printer type setting (Thermal(180dpi) / Thermal(203dpi) / Impact / Impact(24pin))
- Setting for character code table type
(Page 0)
(Page 0, 2, 16)
(Page 0-5, 16-19 (GB2312))
(Page 0-5, 16-19)
(Page 0-5, 16-19, 20-21, 26)
(Page 0-5, 16-19, 20-21, 26, 30-31)
(Page 0-5, 16-19, 20-21, 26, 30-31, 11-15, 32-53)

NOTE

You can select the following functions on the [Optional] menu.

- **Administrator Information:** This registers the administrator name and the location where the printer is installed.
- **Reset:** This resets the interface card or restores it to initial settings.
- **Password:** This changes the password.

Protection with a password

You can set a password for protecting the set content.

User Name	"epson" (User name cannot be changed.)
Password	Default : None Settable characters : ASCII characters (Alphanumerics and symbols) Number of settable characters: 20 characters

NOTE

You can use the password set for the EpsonNet Config (Web version) function as the password for when using EpsonNet Config to perform settings.

MAC Address Confirmation

You can check the UB-E04's MAC address using the following procedures.

- Printing the status sheet
- Label attached on the product
- A printer self-test (May not be supported by some TM printers.)
- Using EpsonNet Config to confirm
- Using a Web browser to confirm (EpsonNet Config (Web version) function)

Application Development Information

Controlling the Printer

UB-E04 supports ePOS-Print XML. Users can control the printer with ePOS-Print XML, in addition to ESC/POS which is supported by the printer.

ePOS-Print XML

ePOS-Print XML is the Epson original control command system for POS printers defined in XML. With ePOS-Print XML commands, you can print in environments where http communication is available and from OS applications. For detailed information about ePOS-Print XML, see the ePOS-Print XML User's Manual.

CAUTION

To use ePOS-Print XML or SDK for JavaScript, set ePOS-Print to Enable in EpsonNet Config (Web Version) beforehand. For details about EpsonNet Config (Web Version), see ["EpsonNet Config \(Web version\)" on page 23](#).

Software

The following software is provided for application development.

Development Kit

Manual	Description
ePOS-Print SDK	This is a developer kit to control applications, native applications for smart devices, and printers. This includes libraries, manuals, and sample programs.
for Android	
for iOS	
for Windows Store Apps	
for JavaScript	

Utilities

Software	Description	Operating environments
EpsonNet Config	This is a network configuration tool for Epson network products.	Windows, Mac

Others

Manual	Description
ePOS-Print XML User's Manual	Describes ePOS-Print XML statements. This manual comes with sample programs.

Downloads

You can obtain software and manuals from one of the following URLs.

For customers in North America, go to the following web site and follow the on-screen instructions.

<http://www.epsonexpert.com/>

For customers in other countries, go to the following web site:

<http://download.epson-biz.com/?service=pos>

Programming Samples

This chapter describes information related to programming a TM printer on which the wireless LAN system is set up.

Printing to a TM printer (page 31)

Direct printing by PORT9100 (page 32)

Monitoring of the ASB status (page 34)

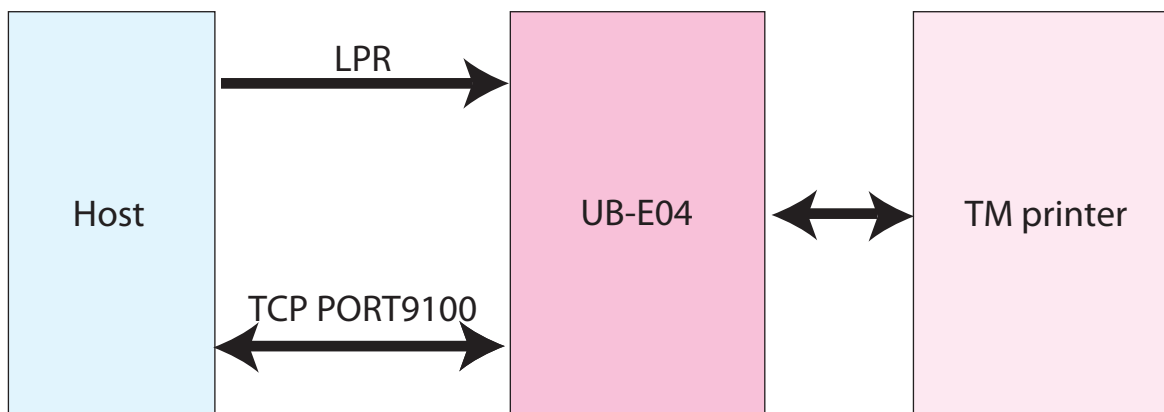
Multiple connection requests (page 34)

Printing to a TM printer

The UB-E04 is equipped with LPR protocol as a general printing protocol. It is easy to print by using LPR because the printing is also supported by the operating system.

However, the command statuses sent by the printer are ignored because the printing by protocols applies only to output of the printer.

The UB-E04 supports direct printing via the TCP PORT9100. It is possible to control the printer directly by an application with the ESC/POS commands through writing and reading to the TCP PORT9100.



Direct printing by PORT9100

For Windows Console

The following program is a sample of printing "EPSON UB-E04" to a TM printer with the UB-E04 from the Windows shell, through the Ethernet connection.

```
/* TCP9100 programming sample for win32
 * HOW TO BUILD
 * cl wtcp.cpp wsock32.lib
 */
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <winsock.h>

int main(int argc, char* argv[])
{
    WSADATA data;
    SOCKET sock;
    struct linger Linger;
    struct sockaddr_in addr;
    char buf[64];
    int n;

    if (argc != 2) {
        printf("usage: wtcp <IP_ADDRESS>\n");
        exit(1);
    }

    /* Initialize windows socket */
    WSAStartup(0x0101, &data);

    /* Create socket */
    if ((sock = socket(AF_INET, SOCK_STREAM, 0)) == INVALID_SOCKET) {
        fprintf(stderr, "Error socket(): %d\n", WSAGetLastError());
        exit(1);
    }

    /* Set connection timeout */
    Linger.l_onoff = 1;
    Linger.l_linger = 60;
    setsockopt(sock, SOL_SOCKET, SO_LINGER, (char*)&Linger, sizeof(struct linger));

    /* initialize the parameter */
    memset(&addr, 0, sizeof(addr));
    addr.sin_family = AF_INET;
    addr.sin_port = htons(9100);
    addr.sin_addr.s_addr = inet_addr(argv[1]);

    /* connect */
    if (connect(sock, (struct sockaddr*)&addr, sizeof(addr)) < 0) {
        fprintf(stderr, "Error connect(): %d\n", WSAGetLastError());
        exit(1);
    }
    printf("connected\n");

    /* send data */
    send(sock, "EPSON UB-E04\n", 13, 0);

    /* gracefully close */
    shutdown(sock, 1); /* SD_SEND */
    while(1) {
        n = recv(sock, buf, 64, 0);
        if (n == SOCKET_ERROR || n == 0) {
            break;
        }
    }
    shutdown(sock, 2); /* SD_BOTH */

    /* close socket */
    closesocket(sock);

    return 0;
}
```


For Linux

The following program is a sample of printing "EPSON UB-E04" to a TM printer with the UB-E04 from the Linux shell, through the Ethernet connection.

```

/* TCP9100 programming sample for LINUX
 * HOW TO BUILD
 * cc ltcp.c
 */
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <netdb.h>

int main(int argc, char* argv[])
{
    int sock;
    struct sockaddr_in addr;

    if (argc != 2) {
        printf("usage: ltcp <ip address>\n");
        exit(1);
    }

    /* create socket */
    sock = socket(AF_INET, SOCK_STREAM, 0);
    if (sock < 0) {
        perror("socket()");
        exit(1);
    }

    /* initialize the parameter */
    memset(&addr, 0, sizeof(addr));
    addr.sin_family = AF_INET;
    addr.sin_port = htons(9100);
    addr.sin_addr.s_addr = inet_addr(argv[1]);

    /* connect */
    if (connect(sock, (struct sockaddr*)&addr, sizeof(addr)) < 0) {
        perror("connect()");
    }
    printf("connected\n");

    /* send data */
    send(sock, "EPSON UB-E04\n", 13, 0);

    /* close socket */
    close(sock);

    return 0;
}

```

Monitoring of the ASB Status

The ASB status function of the printer is used for the UB-E04 to monitor the state of the printer. Therefore, when the transmission data from the application includes the command to nullify the ASB status function, the UB-E04 cannot control the state of the printer.

Take care not to transmit the command to nullify the ASB status function to monitor the state of the printer correctly by the UB-E04. Or retransmit the command that makes the ASB status function effective.

Multiple connection requests

The UB-E04 permits up to 6 connection requests, regardless of the LPR/Port9100 protocol. However, only the first connection received can actually print to the TM printer, and any other connection requests will go into standby until the connection currently printing is closed.

In an environment where multiple connection requests occur, if the printing host does not close the connection and leaves it open even after printing is finished, or the connection is cut off due to some error without performing close processing, then all other connection requests will not be processed until the connection time-out occurs.

Arrange the application so that the connection is closed immediately after printing is completed.



You can set the connection time-out using the network configuration tool (EpsonNet Config).
The default is 90 sec.

Product Specifications

This chapter describes the specifications of the UB-E04.

Software Specifications

Supported Protocols

The UB-E04 supports the following protocols.

Protocol	Explanation
IP, ARP, ICMP, UDP, TCP	Basic transmission protocols for various functions. (They are used by the various following higher protocols.)
LPR, TCP Socket Port	Protocols for printing.
DHCP, APIPA	Protocols used to automatically set information such as the IP address.
SNMP, ENPC	Protocols used to acquire product information.
HTTP/HTTPS	<ul style="list-style-type: none"> • Protocols used in the Web browser performing product settings. • Protocols for printing with ePOS-Print. • Protocols used for updating the UB-E04 firmware. (Only supported by HTTP)
DNS, DDNS, mDNS (Bonjour)	Protocols for name resolution.

Printing Protocols

The UB-E04 uses the following printing protocols.

- LPR: Transfers print data.

Port number	515
Maximum simultaneous connections	6
Number of connections that can print	1 (Other users must wait until the printing has completed.)
Timeout	Default: Approx. 90 sec. Can be set using the network configuration tool (EpsonNet Config).
Job cancellation	Not supported
Banner printing	Not supported
Print queue	Not supported

- **TCP Socket Port:** Transfers printing data and printer status by direct socket communications (bi-directional).

Port type	TCP communication port for direct printing
Port number	9100
Port communication direction	Bi-directional
Maximum simultaneous connections	6
Number of connections that can print	1 (Other users must wait until the printing has completed.)
Timeout	Default: Approx. 90 sec. Can be set using the network configuration tool (EpsonNet Config).
Job cancellation	Not supported

Automatic IP Address Assignment Protocols

The UB-E04 supports DHCP and APIPA, the protocols that assign an IP Address automatically. Automatic IP address assignment is performed with the protocols in the order of descending priorities shown in the table below. If automatic assignment with one protocol results in "disabled" or "failure," the subsequent protocol is used.

Protocol	Priority	Explanation
DHCP	1	Demands the assignments of the IP address, the subnet mask and the gateway address to the DHCP server and sets them.
APIPA	2	Assign only IP address from following IP addresses. 169.254.1.0 to 169.254.253.255 In this case, it is not possible to communicate on the network outside the router.
Manual assignment	3	When the automatic IP address assignment protocol is set to unused, the manually controlled address is set.

Protocol for acquiring status and setting

The following protocols are used to acquire the status and set for the UB-E04.

- **SNMP:** The general purpose MIB management tool, OPOS/APD, uses this to acquire and set the TM printer status.

SNMP Version	SNMP v1 (RFC1157) compliant (SNMPv2 and SNMPv3 not supported.)
Protocol	UDP/IP
Server Port Number	161
Trap Sending Port Number	162

Trap Destination	Up to 2 destination IP addresses can be registered. (Initially, nothing is set.)
Supported PDU type	Get Request, Get Next Request, Get Response, Set Request, Trap
Community	Each community name can be set with 16 ASCII characters or less.

- ENPC The network configuration tool (EpsonNet Config) and the dedicated driver software (such as OPOS/APD) use this to acquire and set the TM printer status.

Protocol	UDP/IP
UDP port number	3289
Compatible packet types	Probe, Initialize, Query, Setup, Notify

HTTP/HTTPS

EpsonNet Config (Web version) uses HTTP/HTTPS protocol on the dedicated Web page for acquiring and changing the UB-E04's network parameters.

HTTP version	HTTP/1.1
Server Port Number	80
Supported language	English
No. of possible simultaneous connections	1

System Bootup Time

The UB-E04 requires some bootup time for initializing the system after power-on or system reset. The network communication functions are unavailable during system bootup. The required bootup time is as follows.

When setting the IP address in the Manual mode: Approximately 15 seconds

When setting the IP address automatically with the DHCP server: Approximately 20 seconds

(The value may vary, depending on the response time of the DHCP server.)

NOTE

In case of after factory shipment or the initial bootup after the setting initialization, it may take about 1 minute longer for the initial setting until the bootup.

Supported TM Printers

The UB-E04 can be used in combination with the following TM printers.

TM-T88V, TM-T88IV, TM-T70II, TM-L90, TM-U220, TM-U330, TM-H6000IV, TM-H2000

Inquire with your dealer regarding new TM printers not listed above.

Environmental Specifications

Item		Specifications
Temperature / Humidity	Operating Conditions	0°C to 50°C {32°F to 122°F}, 10% to 90% RH non-condensing
	Storage Conditions (In shipping packaging)	-10°C to 50°C {14°F to 122°F}, 10% to 90% RH non-condensing

Limitations

The UB-E04 has the following limitations. For limitations on TM printers, see Technical Reference Guides for TM printers.

TM Printer Settings

- Set the printer receive buffer capacity to "Large".

Communication

- When printing a high volume of data such as graphics, the print speed may be slower.
- For cautions regarding wireless LAN communication, see "[Wireless LAN Connection](#)" on page 5.

Customer Display Use

- If using the UB-E04, you cannot use the TM printer's DM-D (customer display) connector. Also, be careful not to accidentally connect the Ethernet cable to the DM-D connector or drawer kick connector.

Open Source Software License

This product uses open source software in addition to Epson proprietary software. For information of the open source software used in this product, see the following URL.

<http://xxx.xxx.xxx.xxx/licenses.html>

For "xxx.xxx.xxx.xxx" in the above URL, input your printer's IP address.



Appendix

The following indicates the defaults for the UB-E04 network parameters, if they can be displayed and set using EpsonNet Config / EpsonNet Config (Web version), and if they are displayed on the status sheet.

Ethernet and Wireless LAN Shared Settings and Browsable Items

Articles	Parameters	Default	EpsonNet Config		EpsonNet Config (Web version)		Status Sheet
			Refer	Setting	Refer	Setting	
IP Address		192.168.192.168	Yes	Yes	Yes	Yes	Yes
Subnet Mask		255.255.255.0	Yes	Yes	Yes	Yes	Yes
Gateway Address		0.0.0.0	Yes	Yes	Yes	Yes	Yes
Acquiring the IP Address	Manual/Auto	Manual	Yes	Yes	Yes	Yes	Yes
APIPA	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No
Administrator Name	(max 256 characters)	" " (no value)	Yes	Yes	Yes	Yes	No
Location/Person	(max 256 characters)	" " (no value)	Yes	Yes	Yes	Yes	No
Password	(max 20 characters)	"epson"	No	Yes	No	Yes	No
Community Name 1	(read only)	"public"	Yes	No	Yes	No	No
Community Name 2	(max 31 characters)	" " (no value)	Yes	Yes	Yes	Yes	No
IP Trap1	Enable/Disable	Disable	No	No	Yes	Yes	No
IP Trap2	Enable/Disable	Disable	No	No	Yes	Yes	No
Community Name (IP Trap #1)	(max 31 characters)	" " (no value)	No	No	Yes	Yes	No
Community Name (IP Trap #2)	(max 31 characters)	" " (no value)	No	No	Yes	Yes	No
IP Trap #1 Address	–	0.0.0.0	No	No	Yes	Yes	No
IP Trap #2 Address	–	0.0.0.0	No	No	Yes	Yes	No
Socket Timeout	1 - 300 sec 0 (no timeout)	90 sec	Yes	Yes	Yes	Yes	No
Time Server Status	Invalid/Success/ Synchronize/Failure	Invalid	Yes	No	Yes	No	Yes
Time Server Address	–	0.0.0.0	Yes	Yes	Yes	Yes	No
ePOS-print	Enable/Disable	Disable	No	No	Yes	Yes	No
Printing Method	Impact Impact (24pin) Thermal (180dpi) Thermal (203dpi)	Thermal (180dpi)	No	No	Yes	Yes	No
Character Code Table	(*)	Page 0-5, 16-19	No	No	Yes	Yes	No

(*) The following are the parameters that can be set for Character Code Table.

- Page 0
- Page 0, 2, 16
- Page 0-5, 16-19 (GB2312)

- Page 0-5, 16-19
- Page 0-5, 16-19, 20-21, 26
- Page 0-5, 16-19, 20-21, 26, 30-31
- Page 0-5, 16-19, 20-21, 26, 30-31, 11-15, 32-53

Ethernet Settings and Browsible Items

Articles	Parameters	Default	EpsonNet Config		EpsonNet Config (Web version)		Status Sheet
			Refer	Setting	Refer	Setting	
arp+ping IP setting	Enable/Disable	Enable	Yes	Yes	Yes	Yes	No
Communication mode setting	Auto Negotiation 10BASE-T Half 10BASE-T Full 100BASE-TX Half 100BASE-TX Full	Auto negotiation	Yes	Yes	Yes	Yes	Yes
MAC Address	–	(refer to UB-E04's Label)	Yes	No	Yes	No	Yes

Wireless LAN Settings and Browsible Items

Articles	Parameters	Default	EpsonNet Config		EpsonNet Config (Web version)		Status Sheet
			Refer	Setting	Refer	Setting	
SSID	(max 32 characters)	"EPSON_Printer"	Yes	Yes	Yes	Yes	Yes
WPA/WPA2 Pre-Shared Key (Pass Phrase)	8-63 ASCII characters or max 64 Hexadecimal characters	"EpsonNet"	No	Yes	No	Yes	No
MAC Address	–	(refer to WLAN option's Label)	Yes	No	Yes	No	Yes
Network mode	Infrastructure/Ad-Hoc	Infrastructure	Yes	Yes	Yes	Yes	Yes
WLAN Communication Standard	(Infrastructure) 802.11b/g/n or Auto (Ad-Hoc) 802.11b/g or Auto	(Infrastructure) 802.11b/g/n	Yes	Yes	Yes	Yes	Yes
Channel (*)	1-13	1	Yes	Yes	Yes	Yes	Yes
Security Type	None WEP(64) WEP(128) WPA2-PSK WPA2-Enterprise	WPA2-PSK	Yes	Yes	Yes	Yes	Yes
Authentication Algorithm	Open System Shared Key Auto	Open System	Yes	Yes	Yes	Yes	No
Default WEP Key	key1-key4	key1	Yes	Yes	Yes	Yes	No
WLAN Power Save	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No

(*) Channel can only be set when using Ad-Hoc. Furthermore, the channels that can be used vary by country.

UB-E03 and UB-E04

The comparison table between the UB-E03 and the UB-E04 is shown below.

		UB-E03	UB-E04
Communication function	Communication mode	10Base-T, 100Base-TX Full duplex, Half duplex, Auto duplex	
	Communication protocols	IP, ARP, ICMP, UDP, TCP, LPR, TCP Socket Port	
Setting function	Automatic IP Address Assignment Protocols	DHCP, APIPA	
	Protocol for acquiring status and setting	SNMP, ENPC, HTTP, HTTPS	
	Network configuration utility	EPSON TMNet WinConfig	EpsonNet Config
	Password-protected internal settings	None	Yes
External/environment	Substrate size	70 mm × 58 mm {2.76 × 2.28"}	
	Operating temperature / humidity	0°C to 50°C {32°F to 122°F} / 10% to 90% RH (non-condensing)	
Added functions	ePOS-Print support	Not supported	Supported
	USB Type-A connector (For connecting Wireless LAN unit)	None	Yes
	IEEE802.3az support	Not supported	Supported