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EPSON

10BASE-T/100BASE-TX
ETHERNET INTERFACE BOARD FOR TM PRINTERS

UB-E02

Specification

STANDARD	
Rev. No.	B
Notes	

Copied Date	, ,
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REVISION SHEET

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The table below indicates which pages in this specification have been revised.
Before reading this specification, be sure you have the correct version of each page.

Revisions		Design Section			Sheet Rev. No.					
Rev.	Document	WRT	CHK	APL	Sheet	Rev.	Sheet	Rev.	Sheet	Rev.
A	Enactment	Shima	-	Ebina	I	A				
B	Change	Shima	-	Ebina	II	A				
					III	A				
					IV	A				
					1	B				
					2	A				
					3	A				
					4	A				
					5	A				
					6	A				
					7	A				
					8	B				
					9	B				
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REVISION SHEET

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B	1	1.1 Printers that can use the UB-E02 Add TM-T285 for no support printer.
	8	3.5.1 Item List Change the default setting of ARP+PING to enable.
	9	3.6 Start up period Change the description.
		3.8 Setting the TM printer Change the description.
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UB-E02 Specifications (STANDARD)		

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- 1) Do not drop conductive material such as a paper clip onto the circuit board.
Short circuiting pins on the board may cause heat damage due to excess current or may melt the bonding wire.
- 3) Never disassemble or modify this product.
Tampering with this product may result in injury, fire, or electric shock.
- 4) Be sure to set this equipment on a firm, stable,.
Product may break or cause injury if it falls.
- 5) Do not use in locations subject to high humidity or dust levels.
Excessive humidity and dust may cause equipment damage, fire, or shock.
- 6) Do not place heavy objects on top of this product. Never stand or lean on this product.
Equipment may fall or collapse, causing breakage and possible injury.
- 7) To ensure safety, please unplug this product prior to leaving it unused for an extended period.

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GENERAL FEATURES

1. Application

This specification applies to the UB-E02 Ethernet interface board for TM printers.

2. Features


The UB-E02 has the following features:

- 1) 10BASE-T and 100BASE-TX Ethernet, Full duplex/Half duplex communication
- 2) TCP/IP Port 9100, LPR, ENPC, SNMP protocols are supported
- 3) UIB standard compatible for EPSON TM printers
- 4) OPOS, JavaPOS, APD compatible

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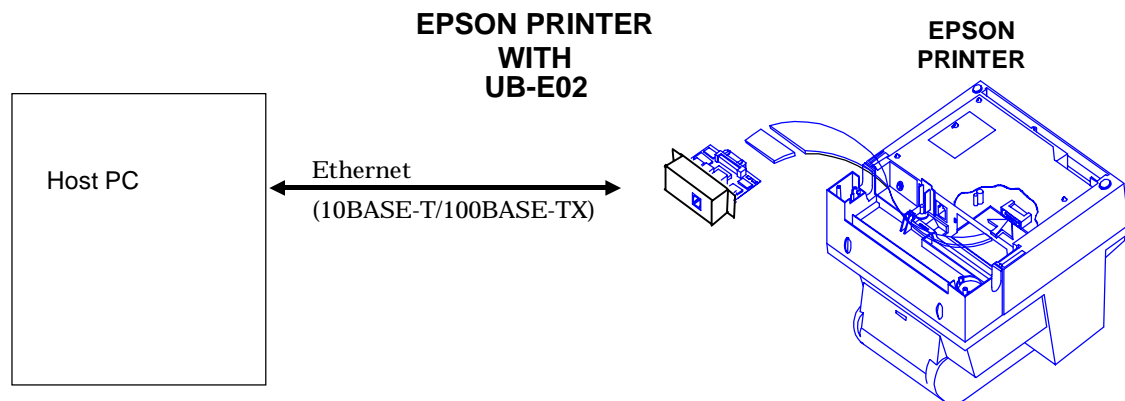
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1. STRUCTURE

The UB-E02 is installed in the TM-series printers as an interface board to provide 10BASE-T and 100BASE-TX Ethernet communications.



1.1 Printers that can use the UB-E02

The UB-E02 interface is electrically and mechanically compatible with all TM printers, which accept the UB-type interface, but except TM-J8000, TM-T285 and RP-U420.

1.2 Line Display Connection

When UB-E02 is connected, the DM-D connector on the TM unit cannot be used.

1.3 AC Adapter Connection

The PA and PB series AC adapter in the same pack of TM-U200 and TM-U210 cannot be used.

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1.4. Features

1.4.1 Overview

- 10BASE-T and 100BASE-TX Ethernet communication, full duplex/ half duplex (Auto-negotiation or manual setting)
- Complies with TCP/IP protocol (LP, LPR and socket communications)
- Compatible with the TM family of Epson printers
- Interface board size: 70x58mm (2.76x2.28inch)

1.4.2 Printing Functions

- Printing by standard protocols (printing of network objects through a device driver)

OS	Printing Protocol	
	OS Standard	Additional
Microsoft Windows NT4.0/2000/XP	LPR	-
Microsoft Windows 98		LPR
Printing from Unix	LP, LPR	-


- Socket printing by unique socket communications (port 9100 for OPOS)

1.4.3 Monitoring and Settings Functions

- Various settings and status displayed by Web browser
- IP address setting by arp + ping
- Supports DHCP
- Supports APIPA
- Ping response
- Status printing function
- Setting initialization by push button
- Status monitoring by ENPC
- Status monitoring by SNMP

1.4.4 Maintenance Functions

- The module firmware is updated over the network

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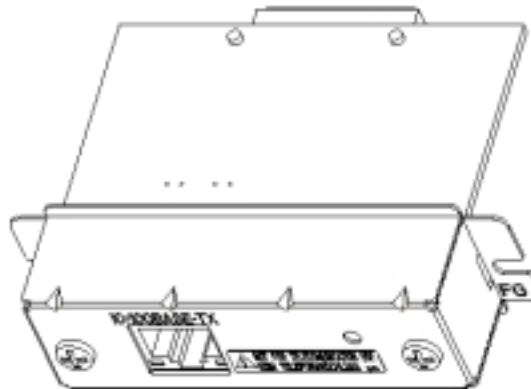
2. HARDWARE SPECIFICATIONS

2.1 Physical communications standard:

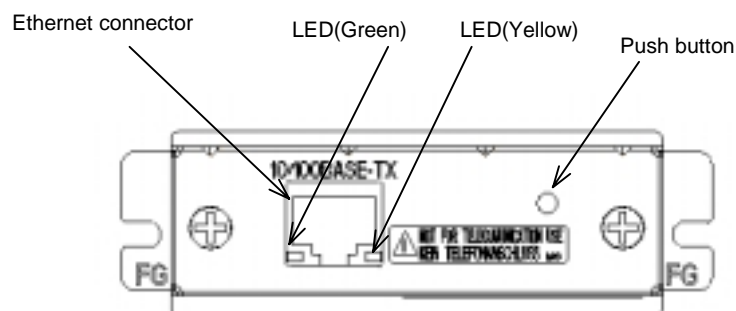
10BASE-T, 100BASE-TX Ethernet communication
Full duplex, half duplex

2.2 External size

- 1) Interface board size: 70 x 58 mm {2.76 x 2.28 inch}
- 2) External appearance



3) Connector placement



2.3 Environmental Specifications

1) Operating Conditions

Temperature: 0 to 50°C {32 to 122°F}
Humidity: 10 to 90%RH(non-condensation)

2) Storage Conditions

Temperature: -10 to 50°C {14 to 122°F}
Humidity: 10 to 90%RH(non-condensation)

2.4 Conforming standards

Europe:

CE marking

EN55022 Class B

EN55024

IEC61000-4-2

IEC61000-4-3

IEC61000-4-4

IEC61000-4-5

IEC61000-4-6

IEC61000-4-11

The TM printers, which are equipped with the UB-E02, can not qualify for the following standard.

EN45501

North America:

EMI FCC/ICES-003 Class A

Japan:

EMI VCCI Class A

Oceania:

EMI AS/NZS 3548/CISPR22 Class B

2.5 Button

Push button is provided which performs following functions;

1. Setting initialization


Holding the push button, while turning on the printer power, and continuing to hold it on for five seconds, causes all of the internal setting to return to their factory default values.

2. Status sheet printing

Holding the push button for three seconds while the printer is ready to print causes the modules internal setting parameters to be printed out.

2.6 Indicators

The RJ-45 connector contains two LED's one green indicating an Ethernet Link and one yellow indicating Ethernet traffic.

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3. SOFTWARE SPECIFICATIONS

3.1 Basic Communications Protocols

Protocol	Application
IP, ARP, ICMP, UDP, TCP	Basic communications protocols for various functions (used by the following higher-level protocols)

3.2 Printing Communications Protocols

Protocol	Application
LP, LPR	Transfer printing data
TCP Socket Port	Transfers printing data and printer status by direct socket communications (bi-directional)

3.2.1 LP, LPR

- Remote Printer Name: aux
- Maximum Simultaneous Connections: 10
- Number of connections that can print: 1 (other users wait until done)
- Time Out: 5 minutes
- Job deletion: not supported
- Banner printing: not supported

3.2.2 Socket Communications

- Port type: TCP communications port for direct printing
- Port number: 9100
- Port communication direction: bi-directional
- Time out: 5 minutes

3.3 Status Inquiry and Setting Protocols

Protocol	Application
HTTP	Display module status and make setting by Web browser.
SNMP	Get and/or set module settings or printer status.
ENPC	Get and /or set module settings or printer status.
TFTP	Used for the firmware update.

3.3.1 HTTP

- Port Number: 80
- User Name: Epson (Default)
- Password: ""
- Maximum Simultaneous Connections: 1
- HTTP Version: HTTP/1.1

3.3.2 SNMP

Definition of term

MIB: Management Information Base

PDU: Protocol Data Unit

- SNMP Version: SNMP v1 (RFC1157) compliant
SNMP v2 not supported
- Transport Protocol: UDP/IP
- Community: Each item may be up to 16 ASCII characters

Community	Object Attribute	Default
#1	Read Only	"public"
#2	Read/Write	None
Trap #1	Read/Write	None
Trap #2	Read/Write	None

- Trap Destination: Up to two settable IP Addresses
- MIB Support: Part of Print Server MIB
Part of Printer MIB
Part of Host Resource MIB
Part of MIB-II(RFC1213)
- PDU Support: Get Request
Get Next Request
Get Response
Set Request
Trap
- Server Port Number: 161
- Trap Sending Port Number: 162

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3.3.3 ENPC

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

3.4 Automatic IP Address Assignment Protocols

The UB-E02 supports the following protocols for automatic IP address assignment.

Automatic IP addressing is starting from DHCP. If IP address cannot be obtained, then start APIPA.

If APIPA is disabled or IP address cannot be obtained, use the internal setting parameters.

Protocol	Order	Application
DHCP	1	Acquire IP address
APIPA	2	Assign IP address
Manual setting	3	Uses the internal set parameters

3.4.1 IP Address Acquisition by DHCP

When a DHCP client boots up, it looks for a DHCP server to obtain an IP address, subnet mask, and other possible DHCP options configured on the server.

- Items to acquire: IP address, subnet mask, gateway address
- Number of DHCP Discover retries: 4 times
- DHCP Discover retry interval times: 4, 7, 15, 32 seconds
- Number of DHCP Request retries: 10 times
- DHCP Request retry interval: 15 seconds

3.4.2 IP Address Acquisition by APIPA

- Items to acquire IP address
- IP address rang 169.254.1.0 to 169.254.254.255

If the DHCP client is unable to find the information, it uses APIPA to automatically configure itself with an IP address from above range. In case of IP address is assigned by APIPA, it is not possible to communicate through a router.

3.4.3 Manual Setting

The UB-E02 interface board operates in accordance with the internal parameter settings.

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3.5 Internal Settings

3.5.1 Item List

Articles	Parameters	Initial Value	Browser		Utility		Status sheet printing
			Setting	Refer	Setting	Refer	
IP address		192.168.192.168	Yes	Yes	Yes	Yes	Yes
Subnet mask		255.255.255.0	Yes	Yes	Yes	Yes	Yes
Gateway		0.0.0.0	Yes	Yes	Yes	Yes	Yes
DHCP	Enable/Disable	Disable	Yes	Yes	Yes	Yes	Yes
APIPA	Enable/Disable	Disable	Yes	Yes	Yes	Yes	Yes
ARP+Ping	Enable/Disable	Enable	Yes	Yes	Yes	Yes	No
Community name 1	Max.16 Chars.	"public"	No	Yes	No	Yes	Yes
Community name 2	Max.16 Chars.	None	Yes	Yes	Yes	Yes	Yes
IP Trap 1 Enable	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No
IP Trap 2 Enable	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No
Community name (IP Trap #1)	Max.16 Chars.	None	Yes	Yes	Yes	Yes	No
Community name (IP Trap #2)	Max.16 Chars.	None	Yes	Yes	Yes	Yes	No
IP trap #1 address		None	Yes	Yes	Yes	Yes	No
IP trap #2 address		None	Yes	Yes	Yes	Yes	No
Password	Max.16 Chars.	None	Yes	No	Yes	No	No
Physical Layer setting	Auto negotiation / 10Base-T Half / 10Base-T Full / 100Base-TX Half / 100Base-TX Full	Auto negotiation	Yes	Yes	Yes	Yes	Yes
Hardware version			No	Yes	No	Yes	Yes
Firmware version			No	Yes	No	Yes	Yes
MAC Address			No	Yes	No	Yes	Yes

3.5.2 Internal Parameter Setting Methods

Using ENPC protocol

Using an HTTP browser

Using arp and ping commands (only IP address is settable)

3.5.3 Setting with ENPC

A dedicated utility, which can set miscellaneous with the ENPC protocol, is provided by EPSON.

3.5.4 Setting with HTTP Browser

An HTTP browser can make setting when connected to the module.

The new IP address takes affect when the printer power is turned off and back on.

3.5.5 Setting the IP Address with arp + ping

This function is available when it has been enabled.

The setting can be made from a host in the same segment as the module.

The host must support both arp and ping commands.

The new IP address takes effect when the module responds to the ping command.

Example1: using Windows

```
arp -s 123.456.789.123 00-00-85-06-00-01  
ping 123.456.789.123
```

Example2: using Sun OS

```
arp -s 123.456.789.123 00:00:85:06:00:01 temp  
ping 123.456.789.123
```

3.5.6 How to check the Mac Address

The Mac address of the UB-E02 can be checked with the following methods:

- Printing the status sheet
- Label attached to the UB-E02
- Using HTTP browser
- Printer self-test (however, the self-test function is limited for each model.)

3.6 Start up period

To initialize UB-E02 and network connection, there is start up period after power of printer is turned on or UB-E02 is reset. The start up period depends on the IP address setting as following.

In case of manual IP address setting: around 6 seconds

In case of auto IP address setting: around 13 seconds (Depend on the DHCP server response time. It might take some more time.)

During this period, all network functions do not work.

3.7 Version Upgrading

The module can upgrade its own firmware over the network.

3.7.1 Supported protocol

- TFTP

3.7.2 Upgrade Methods

- Using TFTP command (Windows NT4.0/2000/XP)

3.8 Setting the TM printer


- When using this interface board, the interface of the TM printer must be selected as "parallel" with the appropriate settings.

In case of TM-T90/L90/J2000/J2100/J7000/J7100/J7500/J7600, set the reset signal of pin 25 to "enable."

Refer to the specification for each TM printer for these settings for details.

- The start up period is needed after turn the printer on. Refer to "3.6 Start up period".

To execute the printer self-test, keep the feed button pressing while this period.

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