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EPSON

USB Plus Power Interface Board

UB-U04

Specification

STANDARD	
Rev. No.	B
Notes	

Copied Date	
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REVISION SHEET

Sheet 1 of 1

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	Nishimura	Aruga	Furuhata	I	A				
B	Changed	Watanabe	--	Osada	II	B				
					III	A				
					IV	A				
					1	A				
					2	B				
					3	A				
					4	A				
					5	A				
					6	A				
					7	A				
TITLE UB-U04 Specification (STANDARD)			Front Part					Contents	Appendix	Total
			Cover	Rev. Sheet	Scope	General Features	Table of Contents			
			1	2	--	3	1			

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REVISION SHEET

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REV	SHEET	CHANGED CONTENTS
A	All	Newly enacted.
B	II	Cautions Added 8. (Cautions on usage restrictions). Trademarks Changed "EPSON® is a registered trademark of Seiko Epson Corporation." to "EPSON is a registered trademark of Seiko Epson Corporation in Japan and other countries/regions."
	2	2.3 Connector Pin Assignments Table 2.1 Connector Pin Assignments (Pin No. 6) Signal name: Changed "NC" to "VBUS." Function: Changed "Unused" to "Power for signals."
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Points That Must Be Observed To Assure Product Safety

To assure the safe operation of this product, carefully observe the specifications as well as the notes provided below.

Seiko Epson Corporation will not bear any responsibility for any damage or injuries arising from use of this product that is not in accordance with the specifications and the notes provided below.

- 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.
- 2) Be sure to connect the devices with the specified cables.
Improper connection may cause fire or shock.
- 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, horizontal base.
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 DESCRIPTION

1. Application

This specification applies to the UB-U04 interface board.

2. Features

- 1) High speed communication with 12 Mbps (bps: bits per second)
- 2) The interface connector on the UB-U04 supplies also the power, not only the USB data.

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1. OVERVIEW

1.1 Structure

The UB-U04 interface board is installed in an EPSON TM printer to provide a USB interface function. The interface connector on the UB-U04 also supplies the power as well as USB data.

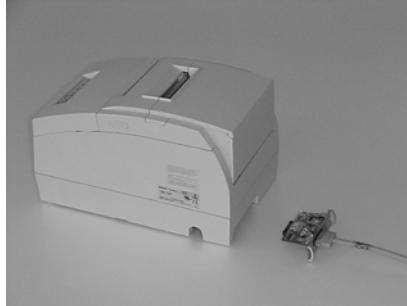


Figure 1.1 UB-U04 Interface Board Structure

1.2 TM Printers that can be Equipped with the UB-U04

The UB-U04 is compatible with all TM printers that support the UB board, except that TM-J8000 and RP-U420.

- NOTES:
1. If the UB-U04 is installed in a TM printer equipped with a DM-D connector, the DM-D connector on the TM printer cannot be used.
 2. It is recommended to turn the power off using the **DLE DC4** command (Execute power off sequence) from the host computer. Then turn the printer power off at the switch.

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2. ELECTRICAL SPECIFICATIONS

2.1 USB Function Specifications

USB Specification:	USB Specification 1.1
Speed:	USB full-speed mode 12 Mbps (bps: bits per second)
Type:	USB bulk transfers
Power:	USB self-powered function device
Bus current (+5V):	0 mA (All power is supplied from the TM series printer.)
USB packet size:	USB bulk OUT (TM) 8 bytes USB bulk IN (TM) 64 bytes

2.2 Receiving Status Information from the Printer Through the USB Interface

It is possible to send information on the status of the TM printer to the host computer using the USB bulk transfer mode when using the USB interface board. It is not possible to send status data to the host from the printer automatically, because USB bulk transfer is controlled by the host. The status information buffer size of the printer is more than 100 bytes. Any status information in excess of the buffer size is lost. In order to avoid losing any of the status data that is to be sent, the host needs to read the status regularly.

2.3 Connector Pin Assignments

Table 2.1 Connector Pin Assignments

Pin No.	Signal name	Signal direction	Function
1	PG	--	Power ground
2	+24V	Input	Power for printer
3	SG	--	Signal ground
4	D+	Input/Output	USB data transmission
5	D-	Input/Output	USB data transmission
6	VBUS	--	Power for signals
7	+24V	Input	Power for printer
8	PG	--	Power ground

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2.4 Power Supply Specifications

Rated voltage for +5 V line: Comforts to the USB standard

Rated voltage for +24 V line: 24 VDC $\pm 5\%$

Current consumption for +24 V line:

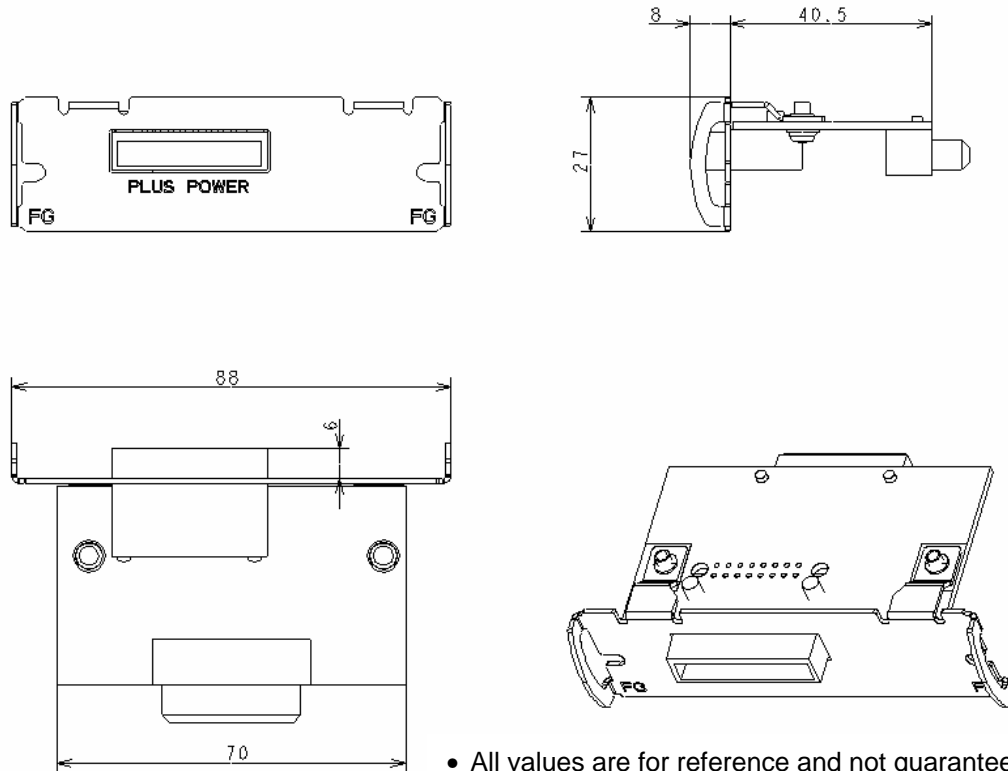
Depends on the TM printer into which the UB-U04 is installed.

- NOTES:
1. Do not connect/disconnect the cable to/from the UB-U04 connector while the TM series printer is still powered on.
 2. Do not connect the power supply connector of the TM series printer to the power.

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3. MECHANICAL SPECIFICATIONS

3.1 External Dimensions



- All values are for reference and not guaranteed in actual use.
- All dimensions are typical value.

[Units: mm]

Figure 3.1 External Dimensions of UB-U04

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3.2 Connector

- 1) Pin assignments: See Table 2.1.
- 2) Type: 69913-104 (FCI)



Figure 3.2 External View of the Connector

3.3 Notes on Usage

The length of the cable must be less than 3.8 meters {12.5'} and as short as possible.

Design the case so that the frame ground must contact the SHELL of the cable connector and the host side connector properly. As one of the design examples for proper contact, the plate shown in Figure 3.3 is recommended for use.

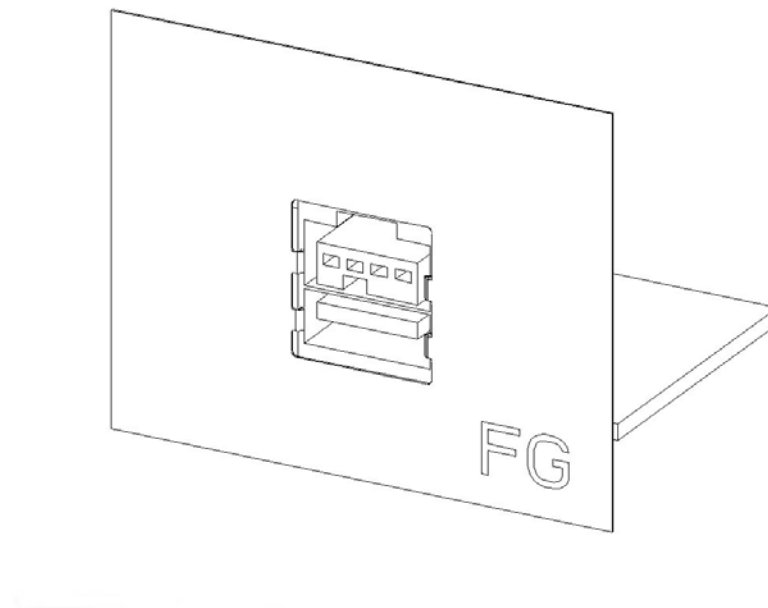


Figure 3.3 Example Design of the Connector Plate

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4. ENVIRONMENTAL CONDITIONS

1) Temperature	Operating:	0 to 50°C {32 to 122°F}
	Storage:	−10 to 50°C {14 to 122°F}
2) Humidity	Operating	10 to 90% RH (non-condensing)
	Storage	10 to 90% RH (non-condensing)

5. EMI STANDARDS APPLIED

1) Europe:	CE Marking Directive 89/336/EEC EN55022 class B EN55024 IEC61000-4-2 IEC61000-4-3 IEC61000-4-4 IEC61000-4-5 IEC61000-4-6 IEC61000-4-11
2) North America	EMI FCC/ICES-003 Class A
3) JAPAN	EMI VCCI Class A
4) Oceania	EMC AS/NZS 3548 Class B

Note that the printers in which this board is installed do not conform to the following CE Marking:

Directive 90/384/EEC

EN45501

6. HOW TO SET UP THE TM PRINTER

When using this interface board, you must set the interface of the TM printer “parallel.”
See the specification for each TM printer for details about these settings.

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7. DRIVERS

UB-U04 can be used with the driver in the host computer.

7.1 Operation Environment

See each driver's manual.

7.2 Driver Structure

EPSON provides the following drivers.

- USB Driver
- Printer Driver and USB Port Monitor
- OPOS Driver for USB

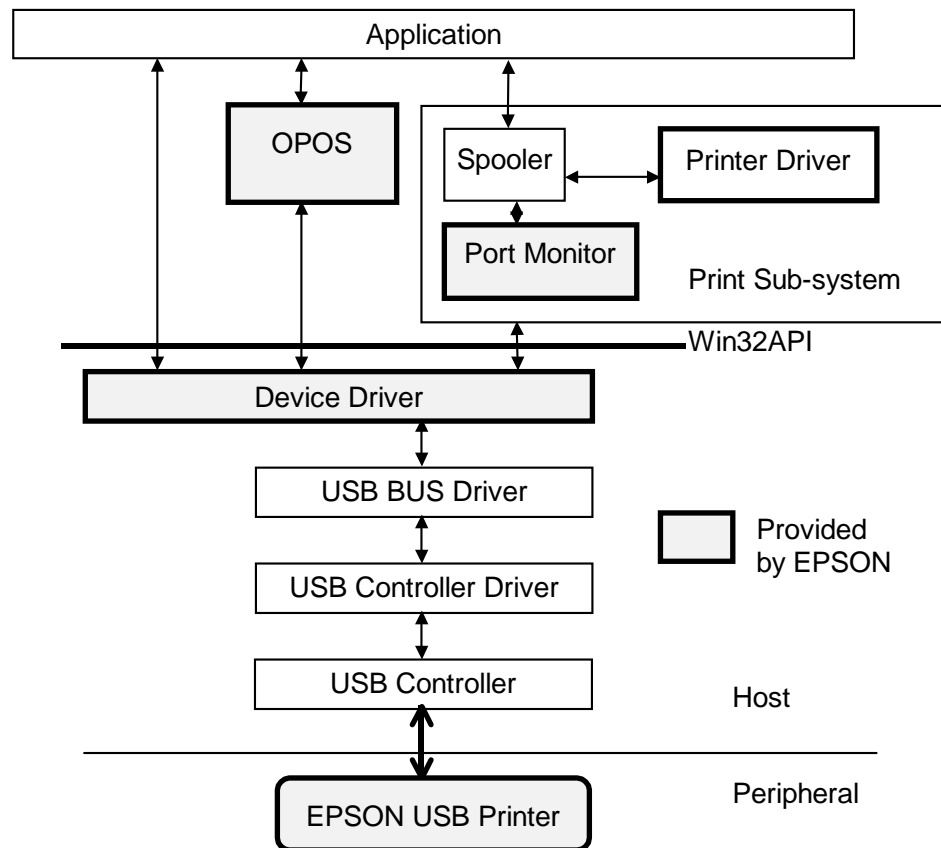


Figure 7.1 Drivers Structure

The USB driver is absolutely necessary. The user can communicate by using OPOS or a printer driver in the user's application.

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