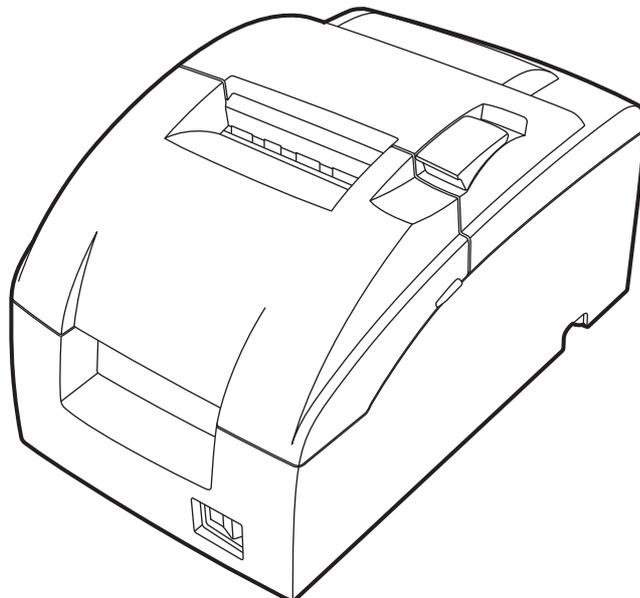


EPSON

TM-U330

Technical Reference Guide



Cautions

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ESC/POS Command System

Epson ESC/POS is a proprietary POS printer command system that includes patented or patentpending commands. ESC/POS is compatible with most Epson POS printers and displays.

ESC/POS is designed to reduce the processing load on the host computer in POS environments. It comprises a set of highly functional and efficient commands and also offers the flexibility to easily make future upgrades.

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About This Manual

Aim of the Manual

This manual was created to provide information on the TM-U330 printer for anyone who is developing hardware, installations, or programs. Programmers will also want to consult other documents.

Contents of the Manual

Chapter 1, "General Information."	General description of features plus specifications.
Chapter 2, "System Planning."	Contains introduction of control methods and each connection form.
Chapter 3, "Setup."	Contains information on such matters as memory switches, error processing for using TM-U330.
Chapter 4, "Troubleshooting."	Contains useful information for using.
Chapter 5, "Application Development Information."	Contains useful information for programming.
Appendix "Character Code Table."	Contains the supported character tables.

Important Safety Information

This section contains important information intended to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

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:

Warnings must be observed carefully to avoid serious bodily injury.

CAUTION:

Cautions must be observed to avoid minor injury to yourself, damage to your equipment, or loss of data.

Note:

Notes have important information and useful tips on the operation of your equipment.

Safety Precautions

WARNING:

-  *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 qualified service personnel 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.*
-  *Be sure to use the specified power source. Connection to an improper power source may cause 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. Continued use may lead to fire. Unplug the AC cable immediately and contact qualified service personnel for advice.*
-  *Do not use aerosol sprayers containing flammable gas inside or around this product. Doing so may cause fire.*

CAUTION:

- Do not connect cables in ways other than those mentioned in this manual. Different connections may cause equipment damage and burning.
- Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.
- Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage or fire.
- 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.
- Take care not to injure your fingers on the manual cutter
 - When you remove printed paper
 - When you perform other operations, such as loading/replacing roll paper
- To ensure safety, unplug this product before leaving it unused for an extended period.
- Before moving the product, unplug it and unplug all cables connected to it.

Notes on Usage

- Do not open the cover during printing or when the autocutter is being operated.
- Do not install the printer in a dusty place.
- Protect the printer from impact.
- Cords or other foreign objects must not be caught on the printer.
- Do not apply excessive force to the printer case.
- Do not place food or beverages such as coffee on the case of the printer.

Notes on Installation

When using the printer, be sure that the printer is installed horizontally.

Caution Labels

The caution labels on the product indicate the following precautions.

CAUTION:

The print head and the motor can be very hot during printing and immediately after printing. Touching it may cause burns.

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.

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Chapter 1

General Information

1.1 Features

The TM-U330 is a high reliable 24-pin impact dot matrix printer that provide precision text and graphics.

The TM-U330 has the same footprint as TM-U220.

1.1.1 General

- ❑ Compact and lightweight.
- ❑ 2 model types are provided. (See "Printer types" (page 1-2))
- ❑ Excellent reliability and long life due to adoption of a stepping motor both for moving the carriage and for paper feeding.
- ❑ Supports paper roll with black mark

1.1.2 Printer handling

- ❑ Easy drop-in paper loading and easy maintenance
- ❑ Cable connectors are housed in the bottom of the printer.
- ❑ Built-in two drawer kick interface connectors
- ❑ Built-in autocutter (for type B)

1.1.3 Printing

- ❑ High-speed printing through logic-seeking control
- ❑ Two-color printing (black and red)
- ❑ Can print on various paper wide range (76 / 69.5 / 57.5 mm)

1.1.4 Software

- ❑ Command protocol is based on the ESC/POS proprietary command system.
- ❑ OPOS ADK and Windows printer driver are available.
- ❑ The Epson ePOS SDK is provided for iOS, Android and Windows application, and Web application development.
The Epson ePOS SDK is a software development kit that integrates the ePOS-Print SDK and the ePOS-Device SDK.

1.2 Product Structure

1.2.1 Printer types

TM-U330 has 2 model types: B, D. The features are as following.

TM-U330B: Autocutter is installed

TM-U330D: Autocutter is not installed

Interface type:

Serial interface model: Built-in USB + RS-232C

Parallel interface model: Built-in USB + Bidirectional parallel (IEEE1284)

LAN interface model: Ethernet (10BASE-T, 100BASE-TX)

1.2.2 Standard Parts Included with the Printer

- Exclusive ribbon cassette [ERC-45(B/R)]
- Power switch cover
- AC adapter
- AC cable *
- Wire saddle *
- User's Manual

* May not be included depending on the printer model.

1.2.3 Related materials for TM-U330

TM-U330 has the related materials listed in the following table.

Category	Name	Description
Options	DF-10	Affixing tape for fixing the printer
	DM-D110, DM-D210	Direct connection customer display (available only for some serial interface models and some USB models) (See the below NOTE also.)
POS accessories	DM-D series	These are customer displays. (Line Display)

Please contact your dealer to get these.

1.3 Consumables

1.3.1 Ribbons

This printer needs a ribbon cassette to print receipts. We provide 2 ribbon cassettes:

- ❑ EPSON ribbon cassette, ERC-45 (B) (Life: 3,000,000 characters / Color: Black)
- ❑ EPSON ribbon cassette, ERC-45 (B/R) (Life: 1,500,000 characters / Color: Black)
(Life: 750,000 characters / Color: Red)



Note:

These ribbon cassette life numbers are under the Epson test conditions.

1.3.2 Roll paper

We provide roll paper and carbon roll paper with 1 copy for this printer. The widths are 76 mm, 69.5 mm, and 57.5 mm {3.00"/2.74"/2.26"}.



Note:

The paper 69.5 mm wide is usable only when the mark sensor is disabled.

1.4 Product Specifications Overview

Print method	serial impact dot matrix
Paper width	76 mm / 69.5 mm / 57.5 mm {3.00"/2.74"/2.26"}
Auto cut type (TM-U330B only)	Partial cut (cutting with one point on right edge left uncut)
Character sets	95 alphanumeric, 2 international character sets Extended graphics: 128 × 3 pages GB18030-2022 (Lv.2): 28806 (for Simplified Chinese characters model)
Font size (width x height)	Alphanumeric Font A: 9 × 24 Alphanumeric Font B: 7 × 24 Chinese font: 24 × 24 Font B is the default of alphanumeric.
Interface (compatible)	Serial interface model: Built-in USB + RS-232C Parallel interface model: Built-in USB + Bidirectional parallel (IEEE1284) LAN interface model: Ethernet (10BASE-T, 100BASE-TX)
Buffer	Receive buffer: Selectable as 4 KB or 40 bytes using a Memory switch 1-2. Non-volatile graphics data buffer: 256 KB User NV memory: 8 KB
Barcode/Two-dimensional symbol *	Code39, Code128, QR code
Power supply	Included AC adapter
Operating voltage	DC+24 V±7%
Power consumption (except for drawer kick driving)	Operating: Approximately 32.6 W Standby: Approximately 1.8 W
Temperature	During operation: 0 to 50°C {41 to 122°F}. (At 34°C {93°F} or higher, there are humidity restrictions; refer to "Environmental Conditions" (page 1-11) During storage: -10 to 50°C {14 to 122°F} (excludes paper and ribbon)
Humidity	During operation: 10 to 90% (no condensation) During storage: 10 to 90% (no condensation; excludes paper and ribbon)
Weight (mass)	TM-U330B: Approximately 2.8 kg {6.17 lb} TM-U330D: Approximately 2.6 kg {5.73 lb}

*: - Supported by the firmware version 1.01 ESC/POS or later.

- Since the recognition rate for barcodes and 2D symbols varies depending on ink ribbon density and gradation, module width, environmental temperature, paper type, and reader performance, the reader might be unable to recognize some barcodes and 2D symbols. Please check the recognition rate before using this product.

- When printing bar codes, HRI characters must be added.

1.5 Printing and paper Specifications

Printing method		Serial impact dot matrix		
Head wire configuration		24-pin serial configuration		
Printing direction		Bidirectional printing (logic seeking)		
Print speed *		Alphanumerics: Approximately 5.0 lps (printing 42 columns per line at 17.1 cpi) Chinese: Approximately 5.0 lps (printing 80 dpi font, 22 columns per line at 10 cpi) (except data transmission and processing time)		
Paper width		76 mm {3.00"}	69.5 mm {2.74"}	57.5 mm {2.26"}
Printing width	120 dpi base	300 dots	270 dots	225 dots
	240 dpi base	600 dots	540 dots	450 dots
	180 dpi base	450 dots	405 dots	337 dots
Characters per line	Alphanumeric Font A	33 cpl	30 cpl	25 cpl
	Alphanumeric Font B	42 cpl	38 cpl	32 cpl
	Chinese (180/90 dpi)	16 cpl	15 cpl	12 cpl
	Chinese (80 dpi)	22 cpl	20 cpl	16 cpl
Character spacing		Alphanumeric: 0 dot Chinese: 3 dots The spacing of alphanumeric and Chinese are changeable by ESC/POS command.		
Paper feeding method		Friction feed		
Paper feed speed		35 lps {Approximately 5.8"/s} (during continuous feeding)		
Line spacing		Initial setting: Approximately 4.23 mm {1/6"} Can be set in units of approximately 0.141 mm {1/180"} by ESC/POS command		

*: This printer adjusts print speed when it prints graphic data, etc.



Note:

lps: lines per second

cpl: Characters per line

cpi: Characters per inch (25.4 mm)

Character Dimensions, Characters Per Inch, Characters Per line

Character configuration		Character dimensions W x H (mm)	Dot spacing between characters	Paper width (mm) and Characters per line (cpl)			Characters per inch (cpi)
Horiz. x Vert.	Character type			76	69.5	57.5	
Font B (7 x 24)	ANK	1.48 x 3.38	0	42	38	32	17.1
Font A (9 x 24)	ANK	1.91 x 3.38	0	33	30	25	13.3
Kanji Font (24 x 24)	Kanji (180/90dpi)	3.38 x 3.38	3 *	16	15	12	7.5
	Kanji (80dpi)	2.54 x 3.38	3 *	22	20	16	10

*: Change using the FS S command (default 3).



Note:

Font B is the default. (7 x 24)

1.5.1 Autocutter (for Type B)

Cutting method: By separated-blade scissors

Cutting type: Partial cut (one point uncut)



Note:

It is recommended to feed approximately 2.116 mm or more in advance before printing to prevent dot displacement after cutting.

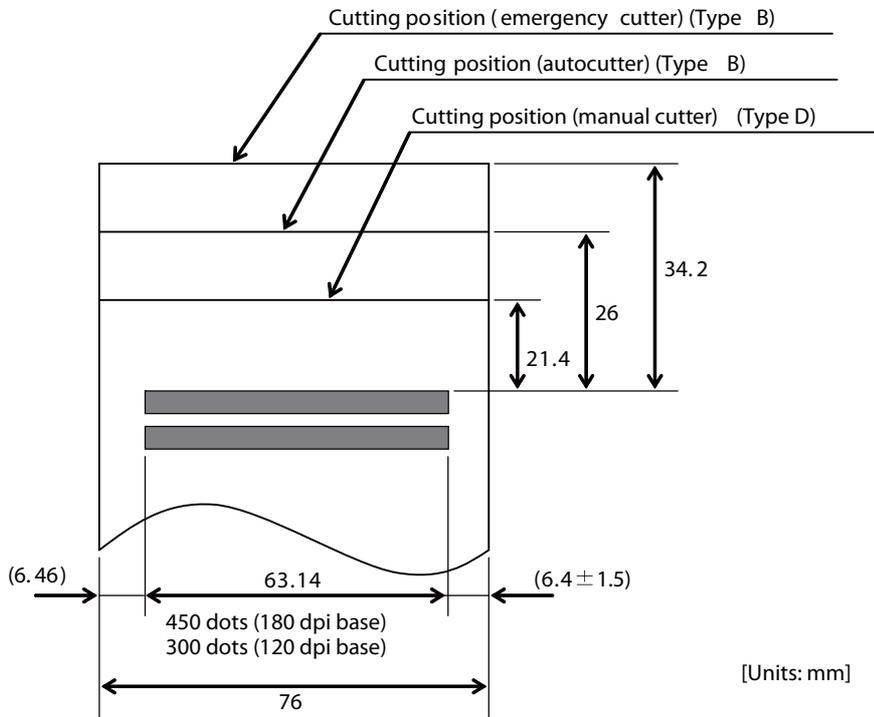
1.5.2 Paper Roll Supply

Supply method:	Drop-in method
Paper roll end detection:	Detection method: Mechanical microswitch Detection position: Positioned within the paper path for the roll paper; detects the end of the roll paper
Near-end detector:	Detection method: Mechanical microswitch Inner diameter of the roll paper core: 10.5 to 12.5 mm Near-end adjustment: Adjusting screw Remaining amount: Fixed position #1 approximately 8 mm #2 approximately 5 mm (The adjusting screw has two positions.) See "Adjusting Position of Roll Paper Near End Detector (factory option)" (page 3-22).

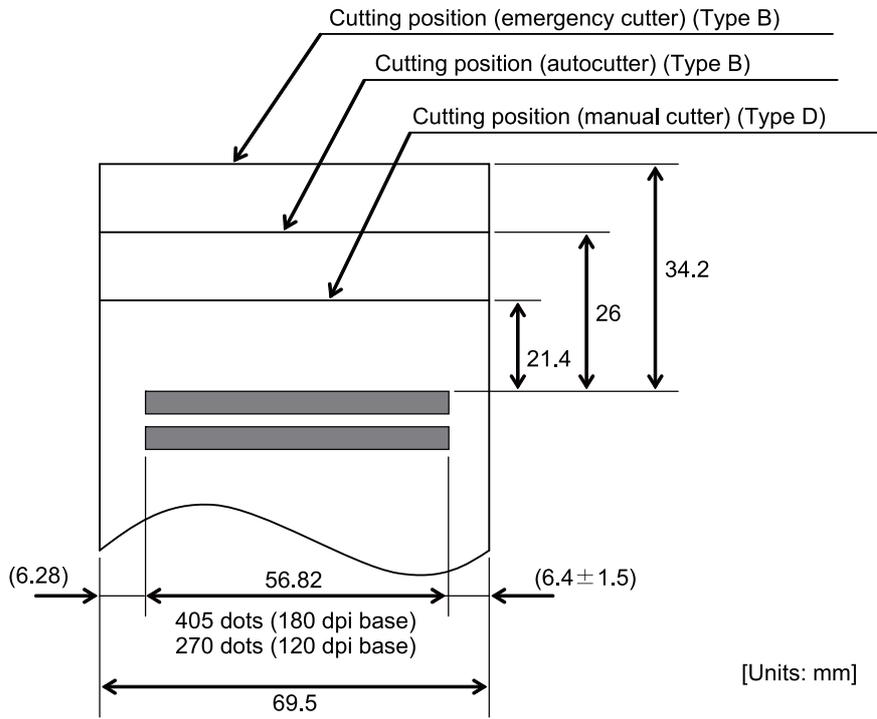
1.5.2.1 Paper Specifications

Roll paper width:	76±0.5 mm (3"±0.02") / 69.5±0.5 mm (2.74"±0.02") / 57.5±0.5 mm (2.26"±0.02")
Maximum diameter:	83 mm (3.27")
Core:	When there is no near-end detector, always be sure to use roll paper that is not glued to the core.
Normal paper specifications:	Paper thickness: 1 sheet: 0.06 to 0.085mm {0.0024 to 0.0033"} Weight: 52.3 to 64 g/m ² {14 to 17 lb} (45 to 55 kg/1000 sheets 1091 × 788mm)
Carbon paper specifications:	Number of copies: Original 1 sheet + one copy sheet Thickness: 0.05 to 0.08 mm {0.002 to 0.0031"} (thickness of one sheet); Recommended paper: Paper by Mitsubishi - Carbonless paper (blue) Top sheets: N40Hi (paper thickness: 0.06mm {0.0024"}, mass: 47.2 g/m ² {12.6 lb} Bottom sheet N60 (paper thickness: 0.08mm {0.0031"}, mass: 68.0 g/m ² {18 lb}
	The copying capability is affected by the ambient temperature, and is guaranteed for the temperature ranges of 5 - 50°C {41 - 122°F}.

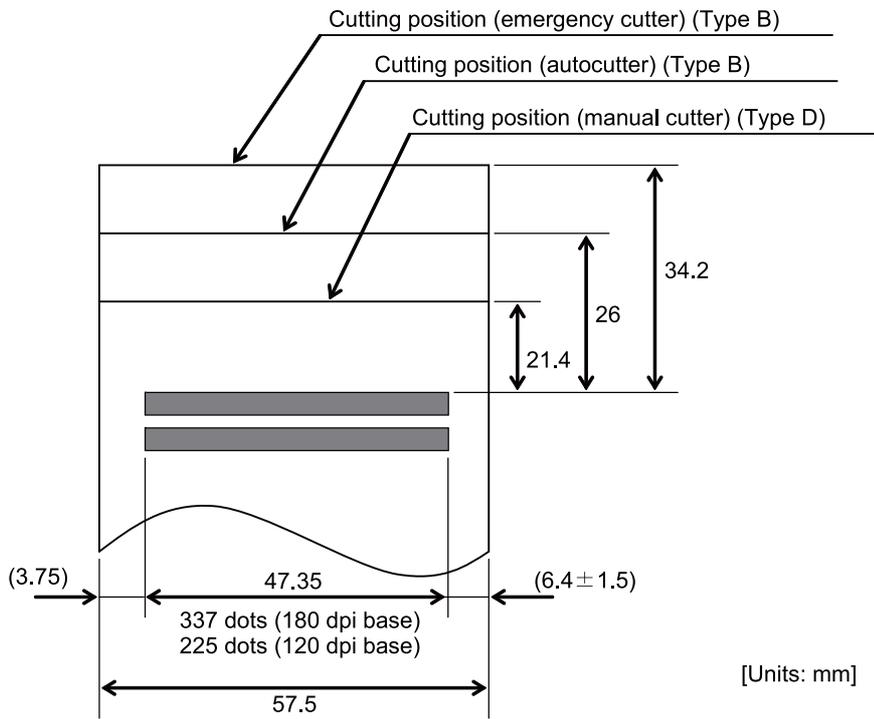
1.5.2.2 Printable Area



Printable area for 76 mm width paper



Printable area for 69.5 mm width paper



Printable area for 57.5 mm width paper

1.6 Other Specifications

1.6.1 Reliability

Life: Mechanism: 10,000,000 lines

Print head: 200 million characters (using an average of 1 dot/wire per character).
(The printing pattern is Epson test pattern).

Autocutter: 1,000,000 cuts

End of life is defined as the point at which the printer reaches the beginning of the wear-out period.

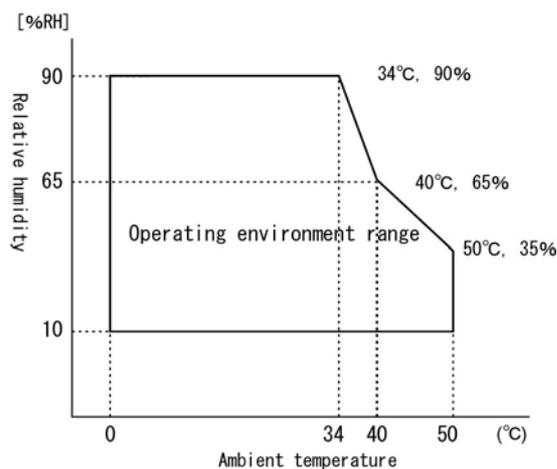
MTBF: 180,000 hours
Failure is defined as a Random Failure occurring at the time of the Random Failure Period.

MCBF: 24,000,000 lines
This is an average failure interval based on failures relating to Wearout and Random Failures up to the life of 10 million lines.

1.6.2 Environmental Conditions

Temperature: During operation: 0 to 50 °C {41 to 122 °F}.
(At 34 °C {93°F} or higher, there are humidity restrictions as listed below.)

Humidity: During operation: 10 to 90% (no condensation)
During storage: 10 to 90% (no condensation; excludes paper and ribbon)



Operating temperature and humidity range

Vibration resistance:

When packed:
Frequency: 5 to 55 Hz
Acceleration: 19.6m/s² {2 G}
Sweep: 10 minutes (half cycle)
Duration: 1 hour
Directions: x, y, and z

No external or internal damage should be found after the vibration test, and the unit should operate normally.

Impact resistance:

When packed:
Package: EPSON standard package
Height: 60 cm (2 feet)
Directions: 1 corner, 3 edges, and 6 surfaces

No external or internal damage should be found after the drop test, and the unit should operate normally.

When unpacked:
Height: 5 cm (2")
Directions: Lift one edge and release it (for all 4 edges).

When the printer is not printing, no external or internal damage should be found after the drop test.

1.6.3 Installation

Install the printer horizontally as a basic position. The printer also must be installed so that it does not move or vibrate during paper cutting or the drawer kick operation. Affixing tape is available as an option.

1.7 External Dimensions and Mass

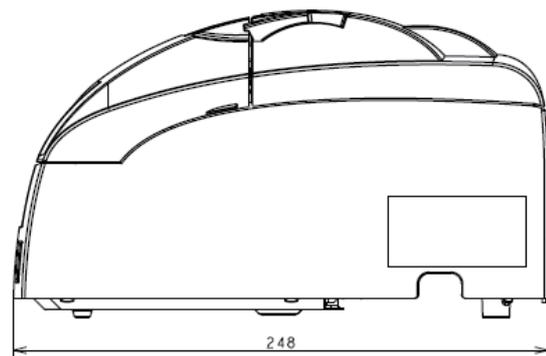
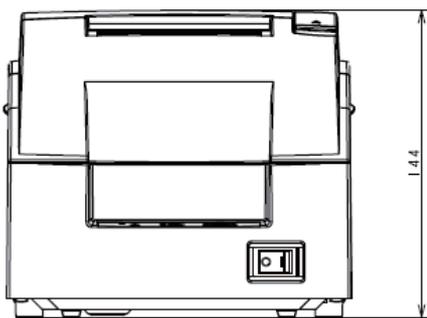
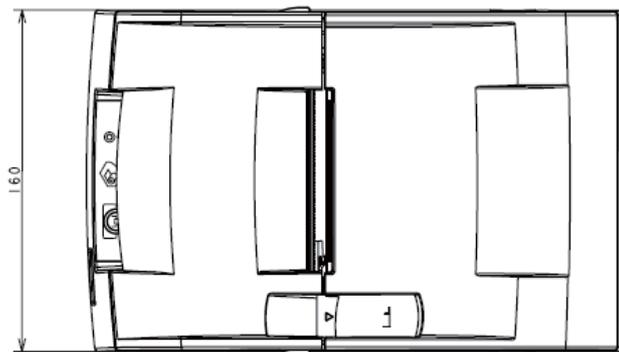
1.7.1 External Dimensions and Mass

Model type	External Dimensions			Mass
	Width	Height	Depth	
Type B	160 mm {Approximately 6.3"}	144 mm {Approximately 5.7"}	248 mm {Approximately 9.8"}	Approximately 2.8 kg
Type D	160 mm {Approximately 6.3"}	144 mm {Approximately 5.7"}	248 mm {Approximately 9.8"}	Approximately 2.6 kg

(All the numeric values are typical.)

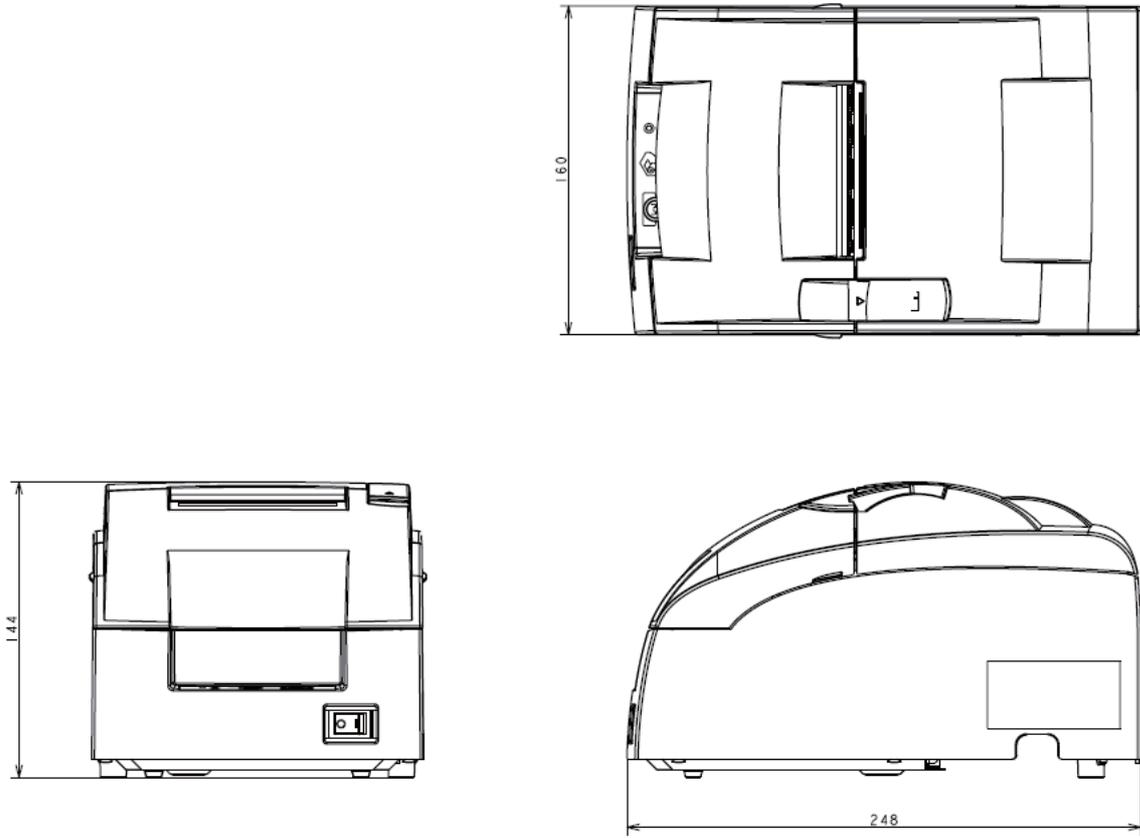
Color: EPSON standard color (ECW, EDG)

1.7.1.1 Overview (Type B)



[Unit: mm]

1.7.1.2 Overview (Type D)



[Unit: mm]

Chapter 2

System Planning

This section provides you information for system planning.

2.1 Control Method

Use a driver, ESC/POS commands, or Epson ePOS SDK to control the printer.

2.1.1 Selecting a Driver

Choose one of the drivers listed in "Printer Drivers" (page 2-2), depending on the application operating environment.

For information about the driver operating environment, see the installation manual for each driver.

2.1.2 ESC/POS Commands

ESC/POS is the Epson original printer command system. With ESC/POS commands, you can directly control all the TM printer functions, but detailed knowledge of printer specifications or combination of commands is required.

For information about ESC/POS commands, see the product specification. You need a non-disclosure agreement with Epson to get the product specification. Contact the dealer for more details.

2.1.3 Epson ePOS SDK

The Epson ePOS SDK is an SDK for developing iOS, Android and Windows applications, and Web applications. You can use the Epson ePOS SDK to control the printer with simple code. Additionally, you can control customer displays, bar code scanners and other POS peripherals connected to this product, and TM printers connected to the network.

The following packages are provided.

- Epson ePOS SDK for iOS
- Epson ePOS SDK for Android
- Epson ePOS SDK for Universal Windows apps
- Epson ePOS SDK for JavaScript



Note:

For detailed information about Epson ePOS SDK, see the User's Manual of Epson ePOS SDK.

2.2 Software and Manuals

The following software and manuals are provided for application development.

2.2.1 How to Get Software and Manuals

You can obtain software and manuals from the following URL.

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

2.2.2 Printer Drivers

Software	Manual
EPSON Advanced Printer Driver (APD): In addition to ordinary Windows driver functions, this driver has controls specific to POS, such as controls for paper cut, a cash drawer, or customer display. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	<input type="checkbox"/> APD Install Manual <input type="checkbox"/> APD Printer Manual <input type="checkbox"/> APD Printer Specification <input type="checkbox"/> Status API Manual <input type="checkbox"/> Sample Program Guide
OPOS ADK: This OCX driver can control POS peripherals using OLE technology ^{*1} . Because controlling POS peripherals with original commands is not required on the application side, efficient system development is possible.	<input type="checkbox"/> OPOS Installation Manual <input type="checkbox"/> User's Manual <input type="checkbox"/> Application Development Guide <input type="checkbox"/> UnifiedPOS Retail Peripheral Architecture ^{*2} <input type="checkbox"/> Sample Program Guide
EPSON TM Virtual Port Driver: This driver is a Serial-USB and Parallel-USB conversion driver to make an EPSON TM/BA/EU printer connected via USB accessible from a POS application through virtual COM ports and a virtual LPT port. Without making changes in the POS application that controls devices connected through serial or parallel interfaces, devices connected via USB can be directly controlled with ESC/POS commands.	TM Virtual Port Driver User's Manual

*1 OLE technology developed by Microsoft divides software into part blocks. The OPOS driver is presupposed to be used with a development environment, such as Visual Basic, unlike ordinary Windows drivers. It is not a driver to be used for printing from commercial applications.

*2 This guide describes general information on how to control printers using the OPOS ADK (in the chapter "POS Printer" and "Appendix"). It does not describe Epson's specific functions.

2.2.3 Utilities

CAUTION:

After using the following utilities via the USB interface, be sure to disconnect the USB cable, turn off the printer, and then turn it back on.

- EpsonNet Config
- Deployment Tool
- Printer Network Setting (included in APD)

Software	Manual
<p>TM-U330 Utility: Use for checking and setting the following functions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Current settings <input type="checkbox"/> Storing logos <input type="checkbox"/> Paper reduction <input type="checkbox"/> Printing control <input type="checkbox"/> Interface <input type="checkbox"/> Backup/restore <input type="checkbox"/> Operation check <input type="checkbox"/> Cut Positioning 	TM-U330 Utility User's Manual
<p>EpsonNet Config: Use for wireless LAN setting. For Windows and Mac.</p>	EpsonNet Config manual (operation guide) or EpsonNet Config online help
<p>Monitoring Tool: Use to check a list of status for the Epson printers connected to the network. Use with Monitoring Tool and TM-U330 Utility to check the status and make settings from the administrator's computer for the printer that is directly connected to the network, or the printer that is connected to the client computer over a network by USB.</p>	Monitoring Tool User's Manual
<p>Deployment Tool: Use to configure network settings and printer/driver settings in a batch. It enables deploying more than one printer/driver efficiently and quickly for initial installation.</p>	Deployment Tool User's Manual

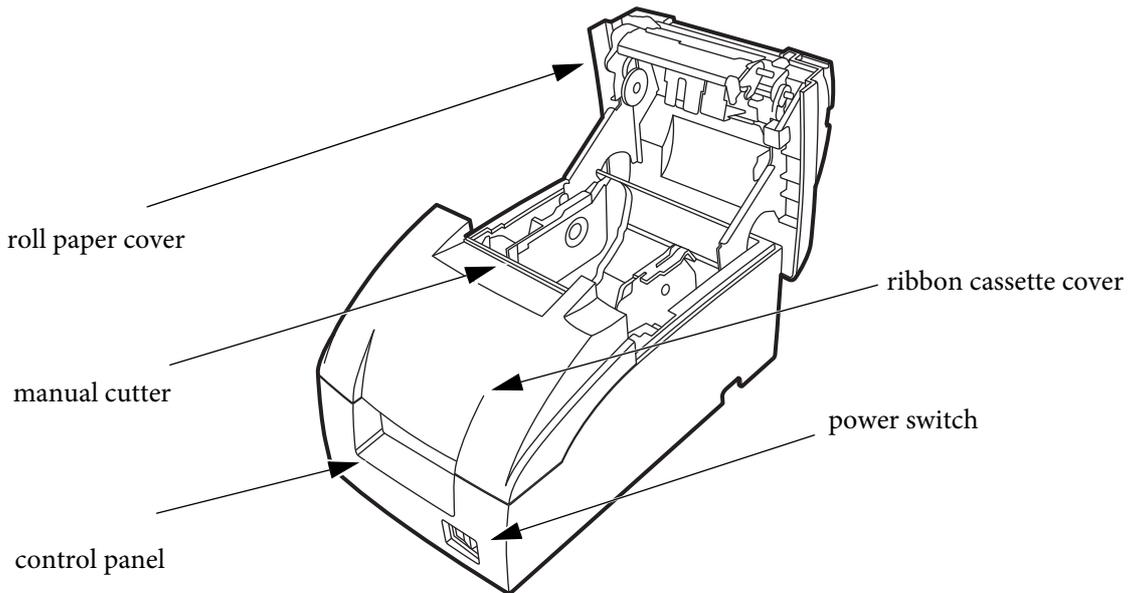
2.3 Connecting the Optional Customer Display

You can connect the customer display to this product.
For more information, refer to "DM-D110/DM-D210 Technical Reference Guide".

Setup

3.1 Part Name and Basic Operation

3.1.1 Part name

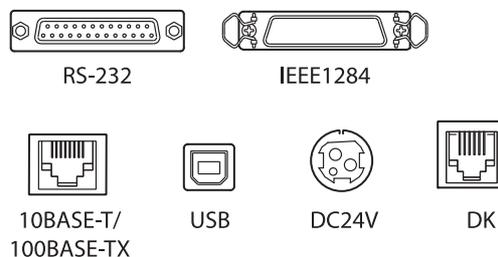


3.1.1.1 Connectors

WARNING:

Do not connect a telephone line to the drawer kick connector or the display module connector; otherwise the printer and the telephone line may be damaged.

You can connect up to four cables to the printer. They all connect to the connector panel (on the bottom rear of the printer), which is shown below.

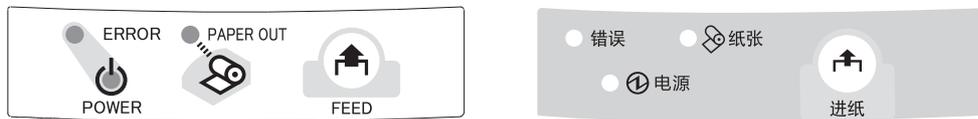


Note:

This illustration shows the serial interface model. The other interface connector looks slightly different.

3.1.2 The Control Panel

The layout varies according to the model.



- POWER LED
- ERROR LED
- PAPER OUT LED
- FEED button

3.1.2.1 LED

POWER

- On: Power supply is stable.
- Off: Power supply is not stable.

ERROR

When this light is on but not blinking, it means that the printer is offline. Check to see if a cover is open.
When this light is blinking, there is an error. See “LED Blinking Pattern” in Chapter 4.

PAPER OUT

- On: The roll paper near end (*1) or real end is detected.
- Off: Paper is loaded (normal condition).
- Flashing: Self-test waiting state for test print.

 **Note:**

The roll paper near-end sensor is available as a factory option. If the printer is not equipped with the roll paper near-end sensor, the roll paper near-end is always detected as paper present. See "Adjusting Position of Roll Paper Near End Detector (factory option)" (page 3-22) for information on adjusting the detector.

3.1.2.2 Control Panel Buttons

The control panel has paper button that you may have to use, although most paper handling functions will be handled by your software.

FEED

Use this button to feed roll paper or to start a roll paper self test. (See "Self Test Procedure" (page 3-23).)

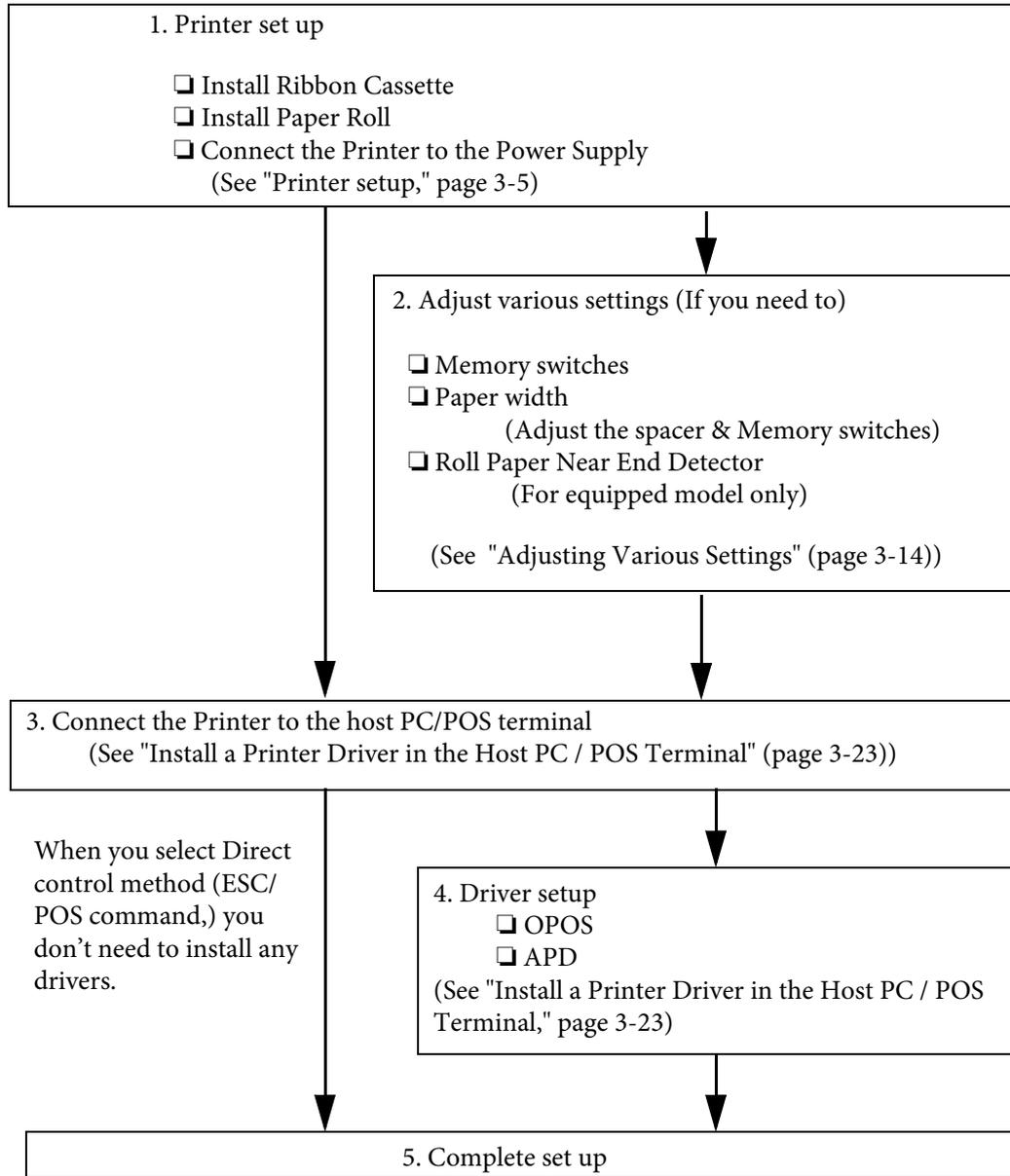
 **Note:**

The FEED button can be disabled by using an ESC/POS command.

3.2 Setup Flow

You have to set up your printer to use it. And you can adjust some features by customizing them. This section describes the setup.

The set up flow of preparing to use printer is below.



Note:

When you use OPOS (OCX driver from EPSON) or the Advanced Printer Driver, you need to install the driver. When you use ESC/POS commands, you don't have to install drivers. For information on these drivers, see "Control Method" on page 2-1 and "Install a Printer Driver in the Host PC / POS Terminal" (page 3-23).

The following sections describe the setup. The flow of preparing to use printer is listed below.

1. Printer setup

- Install Ribbon Cassette ("Installing or Replacing the Ribbon Cassette" (page 3-5))
- Install Paper Roll ("Installing the Roll Paper" (page 3-7))
- Connect the Printer to the Power Supply ("Connecting the AC Adapter" (page 3-9))

2. Adjust various setting (If you need to)

When you use this printer with a serial interface, you have to adjust the communication settings. See "Memory Switches" (page 3-14) for how to set them.

- Memory switches ("Memory Switches" (page 3-14))
The Memory switches set serial communication conditions, roll paper width, cover open status handling, etc...
- Paper width ("Adjusting Roll paper width" (page 3-21))
The paper width is set by the spacer & Memory switch setting.
- Roll Paper Near End Detector (For model equipped with the detector)
("Adjusting Position of Roll Paper Near End Detector (factory option)" (page 3-22))

3. Connect the Printer to the Host PC/POS Terminal (and Cash Drawer)
("Install a Printer Driver in the Host PC / POS Terminal" (page 3-23))

4. Driver set up (If you use driver)
("Install a Printer Driver in the Host PC / POS Terminal" (page 3-23))

5. Complete the setup

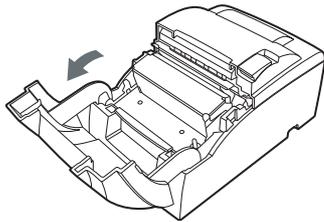
3.3 Printer setup

3.3.1 Installing or Replacing the Ribbon Cassette

  **CAUTION:**

The print head becomes very hot during printing. Allow it to cool before you replace the ribbon cassette.

1. Open the ribbon cassette cover.

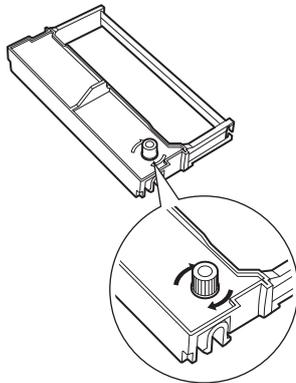


2. Turn the knob 2 or 3 times in the direction of the arrow.

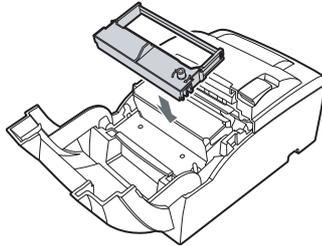
 **CAUTION:**

Use the EPSON ERC-45 ribbon cassette for your printer.

Never turn the ribbon cassette's feed knob in the opposite direction of the arrow marked on the cassette; otherwise the ribbon cassette may be damaged.



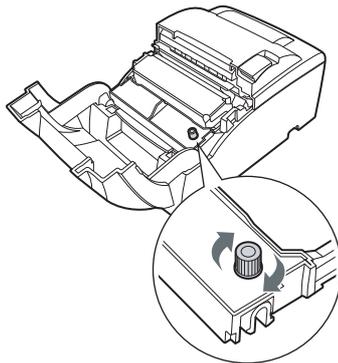
3. Insert the ribbon in the position and push the ribbon cassette down until it clicks.
Make sure the ribbon is installed between the print head and the platen without wrinkles or creases.



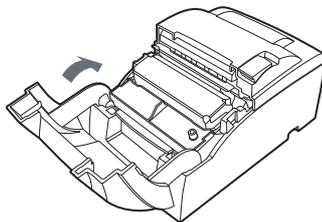
4. Again turn the ribbon cassette's knob 2 or 3 times in the direction of the arrow.

  **CAUTION:**

Be careful not to touch the print head with your fingers when turning the ribbon cassette knob because the print head is hot and you might be burned.



5. Close the ribbon cassette cover.

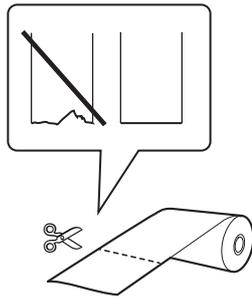


3.3.2 Installing the Roll Paper

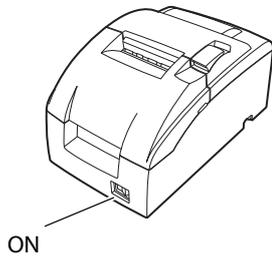
⚠ CAUTION:

- ❑ Be sure to use roll paper that meets the specifications.
- ❑ Be sure not to touch the manual cutter. Otherwise your fingers might be injured.

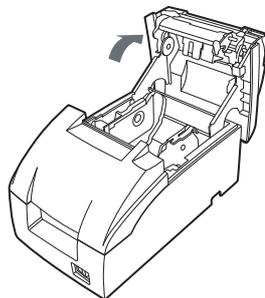
1. Using scissors, cut the leading edge of the roll paper.



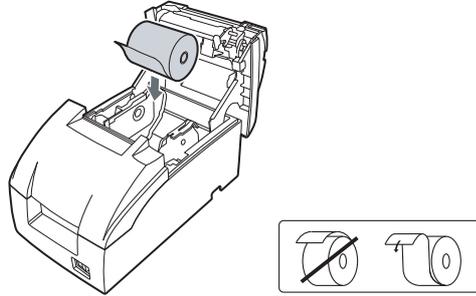
2. Turn on the printer.



3. Open the roll paper cover.

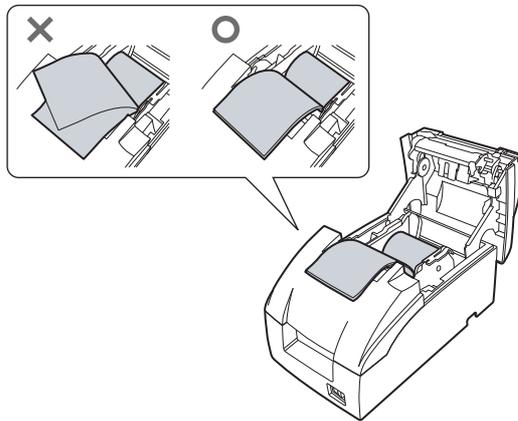


4. Insert the roll paper.
Note the direction the paper comes off the roll.

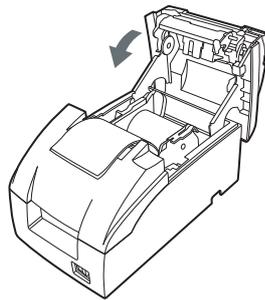


Note:

When using 2-ply roll paper, be sure that the top and bottom sheets are aligned at the paper exit.



5. Close the roll paper cover.



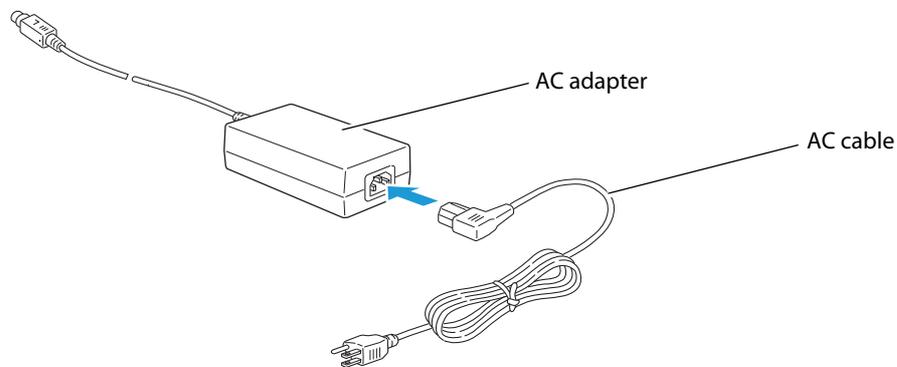
3.3.3 Connecting the AC Adapter

⚠ WARNING:

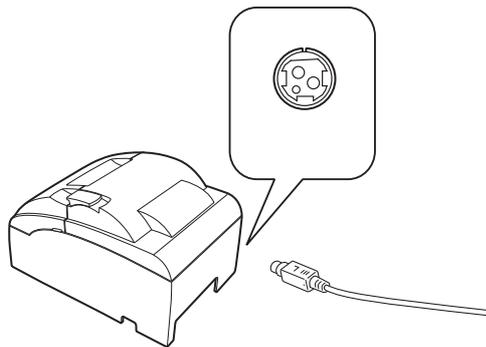
- ❑ Never insert the AC cable plug into a socket that does not meet the rated voltage requirements of the printer.
Doing so may result in damage to the printer.
- ❑ Should a fault ever occur, immediately turn off the power to the printer and unplug the AC cable from the wall socket.

3.3.3.1 Connecting the AC cable

1. Make sure the printer is turned off.
2. Connect the AC cable to the AC adapter.



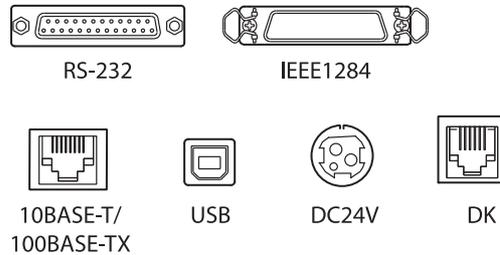
3. Connect the DC cable of the AC adapter to the power supply connector.



4. Insert the AC plug into a wall socket.

3.3.4 Connecting the Printer to the Host PC / POS Terminal

All cables are connected to the connector panel located on the lower rear side of the printer.



Connector panel



Note:

The figure above shows the connector panel for the serial interface model printer. The shape of the interface connector varies according to the type of interface used.

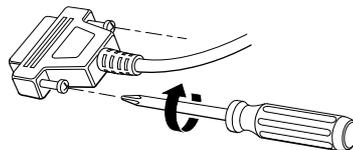
Be sure to turn off the power supply for both the printer and the host computer unit before connecting the various cables.

You need an appropriate serial, parallel, USB, or Ethernet interface cable to connect your computer to the printer. For the serial model, it is important that you use a null modem cable, not any other serial cable, and for the parallel model use an IEEE 1284 cable.

3.3.4.1 Serial Interface

Before connecting any of the cables, make sure that both the printer and the host PC are turned off.

1. Plug the cable connector securely into the printer's interface connector.
2. If the cable connector has screws on it, tighten the screws on both sides of the connector.



3. If your interface connector has a grounding wire, attach it to the printer using the screw labeled FG, which is next to the interface connector.
4. Attach the other end of the cable to the host PC.

3.3.4.2 Parallel Interface

1. Press the connector on the end of the interface cable firmly into the interface connector on the connector panel.
2. Press down the clips on either side of the connector to lock it in place.
3. For interface cables equipped with a ground line, attach the ground line to the screw hole marked "FG" on the printer.
4. Connect the other end of the interface cable to the host computer.

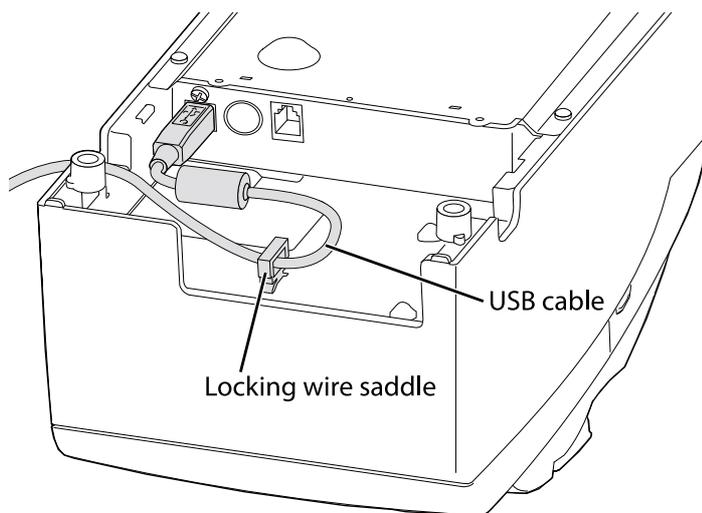
3.3.4.3 USB Interface

1. Attach the locking wire saddle at the location shown in the figure below.
2. Hook the USB cable through the locking wire saddle, as shown in the figure below.



Note:

Hooking the USB cable through the locking wire saddle, as shown in the figure below, will prevent the cable from coming unplugged.



Attaching locking wire saddle

3. Connect the USB cable from the host computer to the USB upstream connector.

3.3.4.4 Ethernet interface

CAUTION:

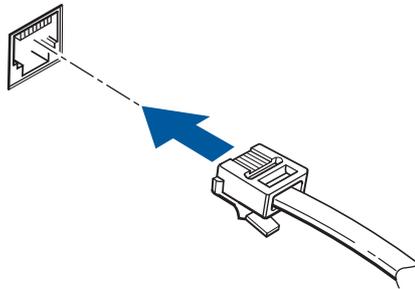
- ❑ When Ethernet cables are installed outdoors, make sure devices without proper surge protection are cushioned by being connected through devices that do have surge protection. Otherwise, the devices can be damaged by lightning.
- ❑ Never attempt to connect the customer display cable, drawer kick cable, or the standard telephone line cable to the Ethernet connector.



Note:

The display module connector on the TM printer cannot be used when the UB-E** is installed.

Connect an Ethernet cable to the Ethernet connector by pressing firmly until the connector clicks into place.



3.3.4.5 Connecting a Drawer

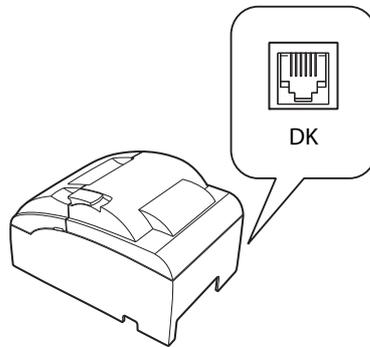
CAUTION:

Be sure to connect a drawer that meets printer specifications. Connecting a drawer of the wrong specifications may result in damage to both the drawer and the printer.

Never connect the telephone line to the drawer kick connector (labeled "DK"). Doing so may result in damage to both the telephone line and the printer.

Never connect the drawer cable to the customer display connector (labeled "DM-D"). Doing so may result in damage to both the drawer cable and the printer.

1. Connect the drawer cable to the drawer kick connector (labeled "DK") on the connector panel.



Connecting drawer

2. The connecting is finished.

3.4 Adjusting Various Settings

This printer is able to be adjusted for the items below:

- Memory switch (serial communication conditions, roll paper width, cover open status handling, etc...)
- Roll paper width (76mm / 69.5mm / 59.5mm)
Adjusting the spacer & memory switch
- Position of roll paper near end detector (factory option)

The current settings can be confirmed by a self test. (See "Self Test" (page 3-23).)

3.4.1 How to Confirm Current Settings

You can use a self-test to confirm the current settings. See "Self Test" on page 3-23.

3.4.2 Memory Switches

This printer has "Memory switch" set which is software switches. The memory switch set consists of the following:

- Msw1, Msw2, Msw5, Msw8
- Customize value
- Serial communication condition
- USB communication condition



Note:

Settings of the memory switch are stored in the NV memory; therefore, even if the printer is turned off, the settings are maintained. Excessive use of this function may destroy the NV memory. As a guideline, do not use this function more than 10 times a day.

When you use OPOS or APD, generally you don't need to adjust memory switch because OPOS or APD are able to set these items automatically.

The memory switch can also be set by using the TM-U330 Utility.

Msw1

SW	Function	Off	On	Default
1-1	(reserved)	-	-	Off
1-2	Receive buffer capacity	4 KB	40 bytes	Off
1-3	Condition for BUSY	Receive buffer full or Offline	Receive buffer full	Off
1-4	Data processing for receive error	Replaced with "?"	Ignored	Off
1-5	Automatic line feed	Disabled	Enabled	Off
1-6	(reserved)	-	-	Off
1-7	#6 pin of RS-232	Not used	Used for reset signal	Off
1-8	#25 pin of RS-232	Not used	Used for reset signal	Off



Note:

[Msw1-4], [Msw1-7], [Msw1-8]: Valid only for serial interface

[Msw1-5]: Valid only for parallel interface

[Msw1-8]: Fixed to On with LAN interface model

Msw2

SW	Function	Off	On	Default
2-1	(reserved)	-	-	On
2-2	Autocutter function	Disabled	Enabled	On (TM-U330B) Off (TM-U330D)
2-3	Character code system for the simplified Chinese (for Simplified Chinese characters model)	GB18030	GB2312	Off
2-4	(reserved)	-	-	Off
2-5	(reserved)	-	-	Off
2-6	(reserved)	-	-	Off
2-7	(reserved)	-	-	Off
2-8	(reserved)	-	-	Off

Msw5

SW	Function	Off	On	Default
5-1	USB power-saving	Enabled	Disabled	Off
5-2	(reserved)	-	-	Off
5-3	Paper sensor to output paper end signals	Enabled both paper end sensor and near-end sensor	Disabled	Off
5-4	(reserved)	-	-	Off
5-5	(reserved)	-	-	Off
5-6	(reserved)	-	-	Off
5-7	(reserved)	-	-	Off
5-8	(reserved)	-	-	Off

**Note:**

[Msw5-1]: Valid only when the USB interface communication condition is set to the Vendor-defined class and the system configuration is set so that the USB driver can support the USB power-saving function.

Msw8

SW	Function	Off	On	Default
8-1	Black mark sensor	Disabled	Enabled	Off
8-2	(reserved)	-	-	Off
8-3	Status when paper end	Offline	Online	Off
8-4	(reserved)	-	-	Off
8-5	Selection of the cover open status	Paper end	Cover open	Off
8-6	Error signal output when an error occurs	Enabled	Disabled	Off
8-7	Recovery conditions from receive buffer BUSY	Remaining 138 bytes	Remaining 256 bytes	Off
8-8	Printer cover open during operation	Automatic recoverable error	Recoverable error	Off

**Note:**

Msw 8-5:

When Off is selected, a bit of the "roll paper end sensor" in each status that is transmitted from the printer is changed every time the roll paper cover is open or closed. When On is selected, a bit of the "roll paper cover open / close" in each status that is transmitted from the printer is changed every time the roll paper cover is open or closed.

Msw 8-8:

When Off is selected, a bit of the "automatic recoverable error" in each status that is transmitted from the printer is changed every time the roll paper cover is open. When On is selected, a bit of the "mechanical error" in each status that is transmitted from the printer is changed every time the roll paper cover is open.

Customize value

Function	Selectable value		Default
Roll paper width	57.5 mm, 69.5 mm, 76 mm		76 mm
Roll paper text control mode	Mode 1, Mode 2, Mode 3		Mode 1
Select interface type	Fixed UIB, fixed Built-inUSB, auto change between UIB/Built-inUSB		Auto change between UIB/Built-inUSB
Execute commands while offline	Enable/Disable		Disable
Set amount of cut justification for paper	-37 to 598 mm		0 mm
Auto paper saving function Reduce top margin	Do not reduce margin space	Reduce margin space	Do not reduce margin space
Auto paper saving function Reduce bottom margin	Do not reduce margin space	Reduce margin space	Do not reduce margin space
Auto paper saving function Amount of reduction	Do not reduce	Reduce by 25%	Do not reduce
	Reduce by 50%	Reduce by 75%	
Auto paper saving function Amount of reduction for carriage returns	Do not reduce	Reduce by 25%	Do not reduce
	Reduce by 50%	Reduce by 75%	



Note:

When the mark sensor is enabled, you cannot set a paper width of 69.5 mm.

When the mark sensor is enabled, the Auto paper saving function is disabled.

Serial communication condition

Function	Selectable value		Default value
Baud rate	1200 bps	2400 bps	115200 bps
	4800 bps	9600 bps	
	19200 bps	38400 bps	
	57600 bps	115200 bps	
Parity	None	Odd	None
	Even	-	
Handshake	DSR/DTR	XON/XOFF	DSR/DTR
Data length	7 bit	8 bit	8 bit

USB interface communication condition

Function	Selectable value		Default value
Class	Vendor-defined class	Printer class	Vendor-defined class
IEEE1284 Device ID	Do not send IEEE1284 Device ID	Send IEEE1284 Device ID	Send

3.4.3 Memory Switch Setting Mode

The following items are specified in the memory switch setting mode:

- Serial Interface Settings
- Interface Selection
- USB Interface Settings
- Command Execution (Offline)
- Autocutter
- Black Mark Sensor
- Interface Signal Settings

3.4.3.1 Starting the memory switch setting mode

Use the following procedure to start the memory switch setting mode.

1. Open the roll paper cover.
2. Turn the power on while pressing the paper FEED button.
3. Press the FEED button twice while ERROR LED is lit.
4. Close the cover. The printer prints the enabled settings of the memory switches and instructions.
5. Follow the instructions to process the switch setting.

**Note:**

In Memory switch setting mode, the flashing paper out LED indicates user operations are necessary.

3.4.3.2 Ending memory switch setting mode

To finish Memory switch setting mode, turn off the printer, or select "Exit" to return to the first selection guide.

3.4.3.3 Operating procedure

The procedures used for this process are described below.

Entering Memory Switch Setting Mode

1. Open the roll paper cover and turn the power on while pressing the paper FEED button.
2. Press the paper FEED button twice while ERROR LED is lit.
3. Close the cover.

The printer prints the setting guideline.



Selecting Items to Set

After briefly pressing the FEED button (less than one second) for the number of times shown in the print result, hold down the button for more than one second, and then select the setting items. The setting selected as the setting item, the current settings and initial settings are printed. Depending on the setting item, you may need to continue making the setting item before the settings are printed.

- 0: Exit
- 1: Print Current Settings
- 2: Serial Interface Settings
- 3: Interface Selection
- 4: USB Interface Settings
- 5: Command Execution (Offline)



Selecting the set value

Select a setting by briefly pressing the FEED button (less than one second) for the number of times applicable to the setting, and then hold down the button for more than one second to confirm your selection. After saving the settings, the Memory switch setting mode is printed, and the Paper LED flashes.



Ending Memory Switch Setting Mode

Turn off the printer, or select "Exit" to return to the first selection guide.

3.4.3.4 Setting items for Memory switch setting mode

Setting Items			Options	
1st page	2nd page	3rd page		
1: Print Current Settings			-	
2: Serial Interface Settings	1: Baud Rate		1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600, bps, <u>115200 bps</u>	
	2: Parity		<u>None</u> , Odd, Even	
	3: Handshaking		<u>DTR/DSR</u> , XON/XOFF	
	4: Data Bits		7 bits, <u>8 bits</u>	
3: Interface Selection			UIB, Built-in USB, <u>Auto</u>	
4: USB Interface Settings	1: Class		<u>Vendor Class</u> , Printer Class	
5: Command Execution (Offline)			Enable, <u>Disable</u>	
6: Other settings	1: Autocutter		TM-U330B: <u>Enable</u> , Disable TM-U330D: Enable, <u>Disable</u>	
	2: Black Mark Sensor		Enable, <u>Disable</u>	
	3: Interface Settings	1: Output Paper-end Signals		<u>Enable</u> , Disable
		2: Error Signal		<u>Enable</u> , Disable
		3: Pin 6 Reset Signal		Enable, <u>Disable</u>
		4: Pin 25 Reset Signal		Enable, <u>Disable</u>

3.4.4 Adjusting Roll paper width

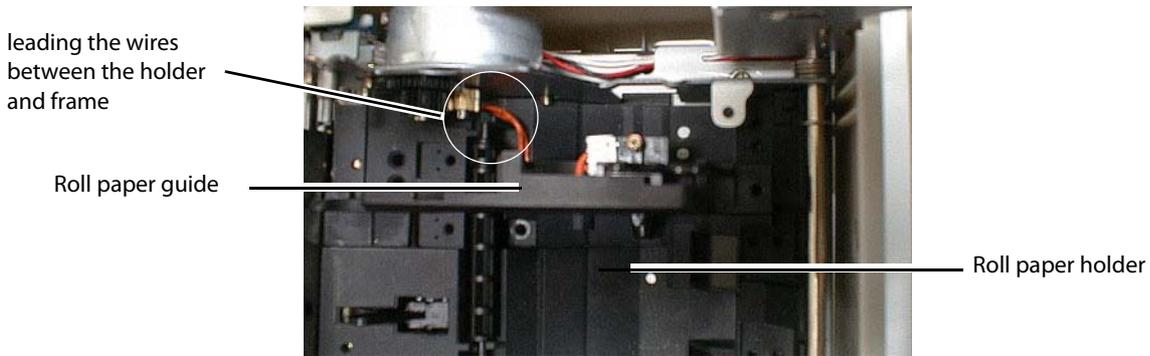
The TM-U330 accommodates 76 mm {3"}, 69.5 mm {2.74"}, 57.5 mm {2.26"} wide paper rolls.



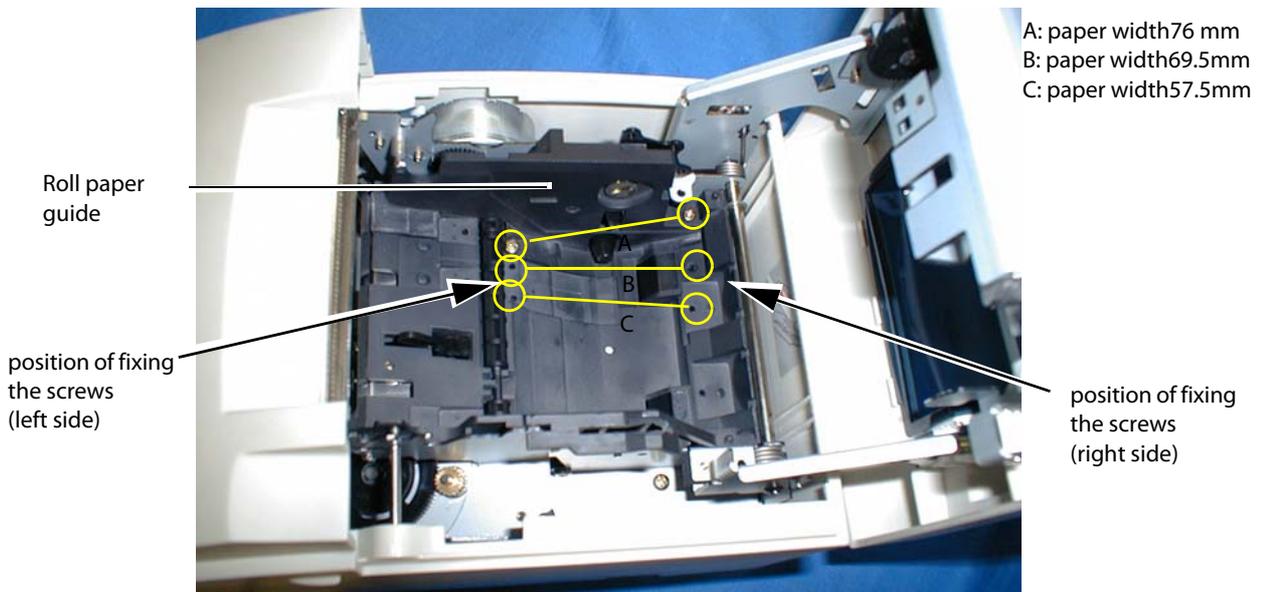
Note:

When you use a near-end detector equipped model, be sure not to pinch the lead wires of the near-end detector between the roll paper guide and the roll paper holder, and to push the lead wires inside so that the lead wire of the paper-end detector does not contact the motor gear.

When replacing the wires, be sure that the wires do not catch between the roll paper guide and the roll paper holder.



1. Make sure the power supply is disconnected.
2. Open the roll paper cover.
3. Take off the roll paper guide from the printer by loosening the two screws.



4. Push the roll paper guide on the appropriate width (See figure above.)

5. Tighten the spacer with two screws included with the guide. (See figure above.)
6. Set the memory switch (customize value) for the paper width. (See "Memory Switches" (page 3-14))

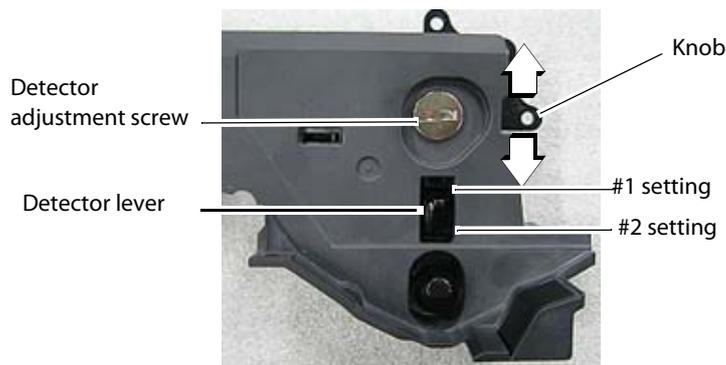
3.4.5 Adjusting Position of Roll Paper Near End Detector (factory option)

Below are two reasons for the roll paper to require an NE detector adjustment.

- ❑ To adjust the location of detection for the diameter of the roll paper core.
- ❑ To adjust the amount of remaining paper.

The procedure is as following.

1. Make sure the power supply is disconnected.
2. Open the roll paper cover, and remove the paper roll.
3. Loosen the detector adjustment screw with a coin or similar tool.
4. Adjust the detector by sliding the lever in the direction shown below.



Seeing at outside for roll paper spacer

The table below shows the point at which the near-end detector is triggered. Note that this figure is a calculated value, and there may be some variations, depending on the printer.

Detection point of roll paper near-end

Detector position (attaching point of the detector adjustment lever)	Trigger point (included the thickness of paper roll core)
#1 setting	Approx. 8 mm
#2 setting	Approx. 5 mm

5. Tighten the detector adjustment screw.
6. Check to be sure that the detecting lever moves freely.

3.5 Install a Printer Driver in the Host PC / POS Terminal

EPSON provides printer drivers for the TM-U330. The drivers are OPOS and Advanced Printer Driver (APD). They are for the Windows® environment.

3.5.1 OPOS

When you install and set up, please refer to the User's Manual, the file is automatically created at the installation of OPOS ADK.

3.5.2 Advanced Printer Driver (APD)

When you install and set up the APD, please refer to the “EPSON Advanced Printer Driver Install Manual.”

3.6 Self Test

The self test lets you know if your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, control software version, and the memory switch settings.

This test is independent of any other equipment or software, so it is a good idea to run it when you first set up the printer and if you have any trouble. If the self tests work correctly, the problem is in the other equipment or the software, not the printer.

3.6.1 Self Test Procedure

1. Make sure the printer is turned off and the roll paper cover is closed properly.
2. While holding down the FEED button, turn on the printer using the switch on the front of the printer. The self test prints the printer settings and then prints the following, cuts the paper, and pauses. (The PAPER OUT light blinks.)

**If you want to continue
SELF-TEST printing,
please press FEED button.**

3. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.
4. The self test automatically ends and cuts the paper after printing the following:

***** completed *****

The printer is ready to receive data as soon as it completes the self test.



Note:

If you want to pause the self test manually, press the FEED button. Press the FEED button again to continue the self test.

Chapter 4

Troubleshooting

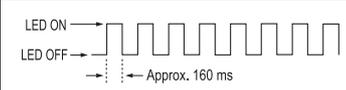
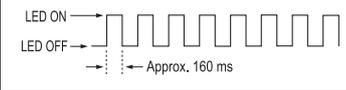
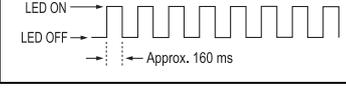
This section describes general troubleshooting.

4.1 LED Blinking Pattern

4.1.1 Error Types

The printer stops all printer operations for the selected paper section, goes offline, and the ERROR LED blinks when an error is detected.

4.1.1.1 Errors that automatically recover

ERROR	Description	ERROR LED Blinking Pattern	Recovery
Roll paper cover open error (when recoverable error is selected) (*1)	The roll paper cover is opened when printing.		Recovers automatically when the cover is closed.
Print head temperature error (*2)	The temperature of the print head is extremely high.		Recovers automatically when the print head cools.
Black Mark (BM) Error	The mark is undetectable if paper is fed for 598 mm or more.		B, D type: Open/close the roll paper cover.

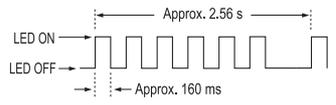
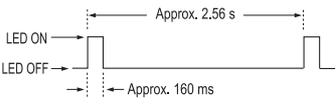
 **Note:**

(*1) This conditions are selected by MSW 8-5, 8-8. When MSW 8-5 (mapping of the cover open status) is off, the error hasn't occurred but there is a "paper end error" instead. If MSW 8-8 is off, this error is handled as an automatically recoverable error.

(* 2) Print head temperature error is not abnormal.

4.1.1.2 Recoverable Errors

When a recoverable error occurs, after the cause of the error is removed, the printer can recover from the error by receiving an error recovery command without turning off the power:

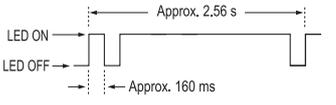
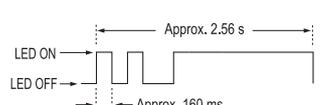
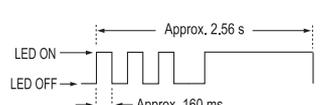
ERROR	Description	ERROR LED Blinking Pattern	Recovery
Roll paper cover open error (*1)	The roll paper cover is opened when printing.		Recovers by error recovery command with the cover closed
Autocutter error (TM-U330B only)	The autocutter does not work correctly		Recovers by error recovery command. (See "Autocutter Jam" (page 4-4))
Home position detection error (This is "Mechanical error")	The home position cannot be detected due to a paper jam		Recovers by error recovery command

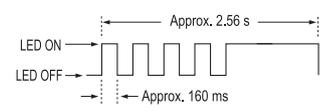
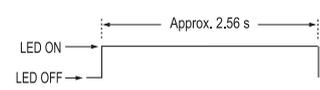
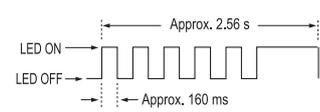


Note:

(*1) These conditions are selected by MSW 8-5 and 8-8. When MSW 8-5 (mapping of the cover open status) is OFF, the error does not occur and a "paper end error" occurs instead. If MSW 8-8 is ON, this error is handled as a recoverable error.

4.1.1.3 Errors that are impossible to recover:

ERROR	Description	ERROR LED Blinking Pattern	Recovery
R/W error in memory or gate array	After R/W checking, the printer does not work correctly. Writing to, reading out, or erasing the NV memory for image scanning results does not work correctly.		Impossible to recover
High voltage error	The power supply voltage is extremely high.		Impossible to recover
Low voltage error	The power supply voltage is extremely low.		Impossible to recover

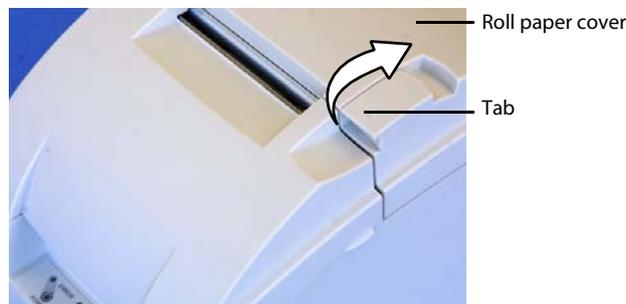
ERROR	Description	ERROR LED Blinking Pattern	Recovery
CPU execution error	The CPU executes an incorrect address or I/F board is not connected.		Impossible to recover
Circuit error	There is an error in the head temperature or the motor driver IC temperature.		Impossible to recover
UIB error	There is an error in the I/F board.		Impossible to recover

4.2 Removing a Paper Jam

CAUTION:

Be sure not to touch the manual cutter. Otherwise your finger might be injured.

1. Turn the power off.
2. Open the roll paper cover by using the tab, as shown in the below illustration.



3. Remove the jammed paper.

Note:

When you turn the power off by mistake during the printing operation, the cutter blade may stop in the paper feed line. So the paper may not be fed in the first operation normally when you turn the power on. If the phenomenon happens again after removing the jammed paper, try the solution "Autocutter Jam" (page 4-4).

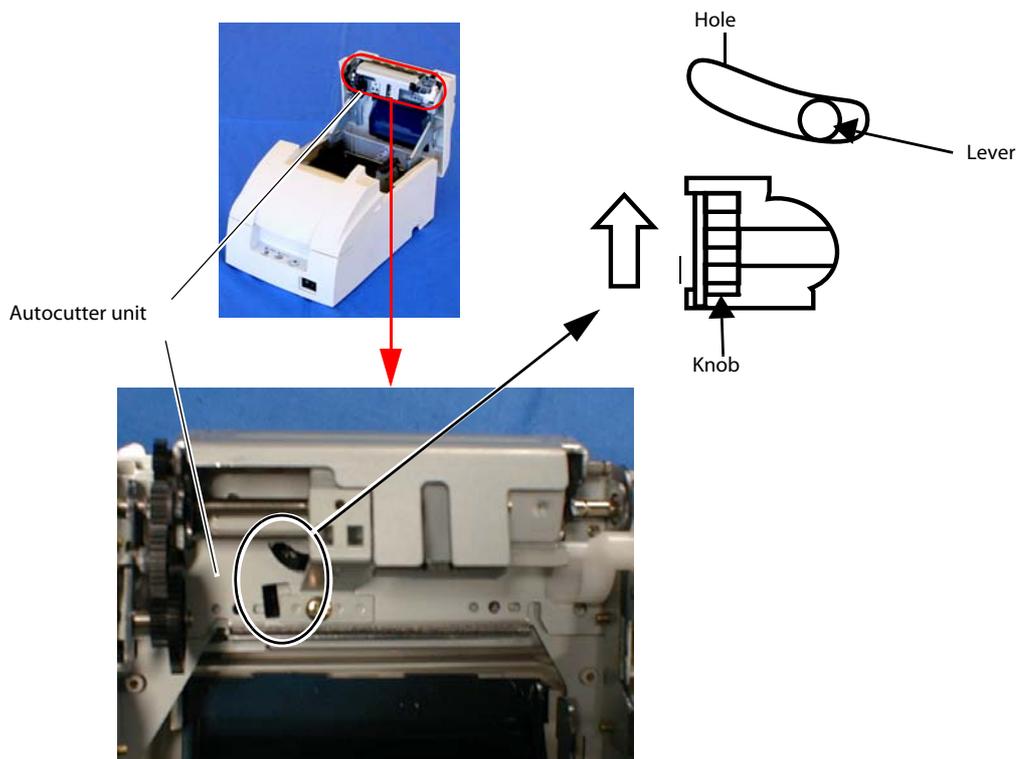
4.3 Autocutter Jam

If a foreign object such as a push pin or paper clip drops in the autocutter and causes the auto cutter to lock up, the printer enters an error state and begins the recovery operation automatically.

If the problem is not serious, the autocutter returns to its normal position without any intervention by the user.

If the autocutter does not return to its normal position by itself, follow the steps below to fix the problem:

1. Open the roll paper cover, and remove the jammed object if there is one.
2. Turn off the printer, and close the roll paper cover, and turn it back on. Then the cutter blade returns to the normal position. If you would like not to turn off the printer, send an error recovery command and initialize printer command instead.
3. If the cutter blade doesn't return to the normal position, return the cutter blade to the normal position by rotating the autocutter knob in the direction of the arrow. When it is returned to the normal position, a lever comes into the center of hole in the autocutter frame.



4. Close the roll paper cover.

4.4 Printer prints “?” or Incorrect Data With Serial Interface

If one of the following errors occurs during serial interface communication, the printer prints “?” or ignores the data, depending on the setting of the memory switch Msw1-4.

- Parity error
- Framing error
- Overrun error

4.5 Print Speed is Slow When Using Windows Printer Driver

When the printer prints a Windows font using the EPSON Advanced Printer Driver, the print speed is slow. To improve the print speed, use a printer font.

4.6 Printer doesn't cut roll paper with the autocutter

TM-U330D does not have an autocutter unit. If you use the model, you can't use the autocutter function. Use the manual cutter.

Chapter 5

Application Development Information

This section contains usable information to develop POS systems that use this printer.

5.1 Various Status Categories

This printer is able to send various status reports to the host PC. This section describes about the kind of statuses and handling.

Status Categories	Description
Drawer kick connector pin status	Cash drawer is open or closed.
Roll Paper cover status	Roll paper cover is open or closed
Paper feeding button status	Paper feed button is pressed or not
Error status	Various error information (Off-line / On-line), (detail of the error; Mechanical error, autocutter error, auto-recovery error, unrecoverable error)
Paper remaining amount status	It provides status of paper remaining amount (Near-end or Paper end)



Note

Near-end status (paper remain status) is supported only by printers equipped with a near-end detector. The near-end detector is a factory option.

This printer has an Automatic status back (ASB) function that automatically transmits changes in printer status. It is available in any control method (APD, OPOS, ESC/POS command.)

The status format depends on each control method. Refer to each manual for detail.

The statuses are useful for the following situations.

- When an error status is sent to the host PC, the host PC can display an error message or solution message for operator.
- When “Paper near end” or “Paper end” status is sent to the host PC, the host PC can display a warning message for operator to replace roll paper.

5.1.1 Printer Status on APD

When you use APD to get printer’s status, you have to install “Status API” and use it. Refer to “Status API User’s Manual” and the sample program of Status API for details.

5.1.2 OPOS



Note

This section describes the summary of status handling. Refer to “OPOS ADK Application Development Guide General Functions” for details.

5.1.2.1 Checking the printer state

The state of the printer can be checked through properties supported by the printer. For example, if the user wants to check if the printer cover is open, the CoverOpen property can be used.

```

If OPOSPOSPrinter1.CoverOpen = True Then
    MsgBox "Cover is open!"
End If
    
```

This and many other events can also be checked by firing a StatusUpdateEvent.

```

[Event management]
Private Sub OPOSPOSPrinter1_StatusUpdateEvent(ByVal Data As Long)
    If Data = PTR_SUE_COVER_OPEN Then
        MsgBox "Cover is open!"
    End If
End Sub
    
```

StatusUpdateEvent can return information on the following items.

STATUS INFORMATION

PTR_SUE_COVER_OPEN	Cover is open.
PTR_SUE_COVER_OK	Cover is closed.
PTR_SUE_REC_EMPTY	Receipt paper is out.
PTR_SUE_REC_NEAREMPTY	Receipt paper is near the end. (The near end detector is factory option. When the printer does not have one, the status does not occur.)
PTR_SUE_REC_PAPEROK	Receipt paper is OK.
PTR_SUE_IDLE	Printer State is idle.

When the FlagWhenIdle property is set to TRUE, PTR_SUE_IDLE is sent to inform the application that the printer is idle. Other than when data is being sent, the printer is in an idle state, so if FlagWhenIdle is TRUE, an event will be fired when printing is finished. After the event is fired, FlagWhenIdle will be set to FALSE. By using this value, the information below can be found out.

*Finding out when multiple asynchronous print jobs have finished printing. When multiple asynchronous print jobs have been sent to the printer, it is possible to know when they have finished printing. After setting the AsyncMode property to TRUE and running the PrintNormal method, change the FlagWhenIdle property to TRUE. When all data has finished printing, the printer becomes idle and a StatusUpdateEvent is fired to the application with the value of PTR_SUE_IDLE.

5.1.2.2 Printer Errors and Status

A change in printer status when asynchronous data is being sent is made available to the program by the firing of an `ErrorEvent` and `StatusUpdateEvent`. When the printer changes status while nothing is happening, the change is told to the program by a `StatusUpdateEvent` only.

As an example, assume that the printer cover becomes open. Usually, when data is not being sent to the printer and the cover is opened, a `StatusUpdateEvent` is fired to the application. After the `AsyncMode` property is set to `TRUE` and a method is used to print data, if the cover is opened while the data is being sent, the program is notified by an `ErrorEvent`. `ErrorEvents` are fired when the error has interrupted the data that is being sent. Only `StatusUpdateEvent` will fire when the error does not effect the data and the data will continue being sent as normal.

Reasons for the `ErrorEvent` being fired and the corresponding error names are listed below.

ResultCode/ ResultCodeExtended Reason

OPOS_E_ILLEGAL	There is an abnormality with the device. (Includes the following 1 error)
OPOS_E_EXTENDED	Error determined by the device's SO (Includes the following 4 errors)
OPOS_EPTR_COVER_OPEN	Cover is open.
OPOS_EPTR_REC_EMPTY	Receipt paper is empty.
OPOS_E_FAILURE	Hard error (Includes the following 6 errors).
OPOS_EPTR_UNRECOVERABLE	Error that cannot be recovered from.
OPOS_EPTR_CUTTER	Error with the auto cutter.
OPOS_EPTR_MECHANICAL	Mechanical error.
OPOS_EPTR_OVERHEAT	Head overheat error.
OPOS_EX_DEVBUSY	Device busy error.
OPOS_EPTR_REC_CARTRIDGE_REMOVED	Receipt cartridge is removed.
OPOS_EPTR_REC_CARTRIDGE_EMPTY	Receipt cartridge is empty.
OPOS_EPTR_REC_HEAD_CLEANING	Receipt head starts cleaning.

After an error occurs, more detailed information about the error can be obtained from the `ErrorLevel`, `ErrorStation`, and `ErrorString` properties.

5.1.2.3 ESC/POS commands

When you use ESC/POS commands to control the printer, you can get the status by using “status command” including Auto Status Back command (ASB.) Please refer to the product specification.

5.2 Cash Drawer Control

5.2.1 Advanced Printer Driver

5.2.1.1 Drawer Open

When you control a drawer which is connected to this printer using APD, you have 2 methods to open the drawer. The first method is using "Control font," second is using "Status API."

Below is an example of a program (Visual Basic) to open a cash drawer using Control font.

```
'Execute open cash drawer1.
Printer.Font.Name = "control"
Printer.Print "A"           'This "A" means "open the drawer1 with 50msec pulse.'
```

Below is an example of a program (Visual Basic) to open a cash drawer using Status API.

```
'call api to open the drawer1
rtn = BiOpenDrawer(m_hApi, EPS_BI_DRAWER_1, EPS_BI_PULSE_100)
        'This calling means "open the drawer1 with 100msec pulse.'
```

Note: Program needs to call "BiOpenMonPrinter" before calling "BiOpenDrawer."

5.2.1.2 Checking Drawer Status

You can get drawer status by using Status API. Below are examples of programs which check the drawer status.

```
'get the current printer status
rtn = BiGetStatus(m_hApi, getstatus)
If rtn < 0 Then
    ErrMsg (rtn) 'Error handling
    Exit Sub
End If

If (getstatus And ASB_DRAWER_KICK) = ASB_DRAWER_KICK Then
    MsgBox("Drawer is opened") 'Pin No.3 is high
Else
    MsgBox("Drawer is closed")
End If
```

There are other checking methods (BiBiSetStatusBackFunction, BiSetStatusBackWnd) in Status API. Refer to the Status API User's Manual and the sample programs for detail.

5.2.2 OPOS

Programming examples of how to use API function relating to a Cash Drawer are shown below.

5.2.2.1 Drawer Open/Close

Using the OpenDrawer method opens the cash drawer. The DrawerOpened property can be used to check the current state of the drawer. To pause the program until the drawer is closed, the WaitForDrawerClose method is used.

Below is an example of a program to open and close a cash drawer.

```
If Not OPOSCashdrawer1.DrawerOpened Then
    OPOSCashdrawer1.OpenDrawer
    OPOSCashdrawer1.WaitForDrawerClose 10000, 1000, 100, 100
End If
```

5.2.2.2 Checking Drawer Status

There are methods other than explained in section 5.2.2.1 that can be used to check drawer status. A StatusUpdateEvent is fired whenever the drawer is opened or closed.

Below are examples of programs that use events to check if the drawer has been opened or closed.

```
[Main Program]

Global DrawerFlag As Boolean
If Not OPOSCashdrawer1.DrawerOpened Then
    DrawerFlag = True
    OPOSCashdrawer1.OpenDrawer
    While (DrawerFlag = True)
        This part uses timer management to check the status of DrawerFlag.
        DoEvents
    Wend
End If

[Event Management]

Private Sub OPOSCashdrawer1_StatusUpdateEvent(ByVal As Long)
    If Data = False Then
        DrawerFlag = False
    End If
End Sub
```

5.2.3 ESC/POS

When you drive a cash drawer which is connected to this printer, please refer to “FAQ about ESC/POS command.” About “FAQ about ESC/POS command,” please contact your dealer or EPSON.

5.3 NV memory

This printer has NV memory (Non-volatile). The data of NV memory remains after you turn off the power. The NV memory is available in two ways.

1. NV Bit-image

Please refer "NV Bit-image Printing" (page 5-7) for detail of the function.

2. User NV memory

There is free area in the NV memory that the user can use. You can use this free area for notations, to write other character information, or for many other purposes. The data remains after you turn off the power. Use ESC/POS commands to read and write this data. The following are examples of purposes.

- Date of the printer for maintenance
- ID definition for developer or POS system



Note

When you use User NV memory area by using OPOS or APD, you have to use "Direct I/O method" or "Control A font." Please contact EPSON or your dealer for details.

Note the following when writing to and erasing NV memory.

- ❑ The following restrictions apply when performing NV memory operations (including data storage and deletion).
 - The paper FEED button must not be used to feed paper.
 - The real-time command must not be executed.
 - The ASB status will not be sent, even when the ASB function is set to enabled.
- ❑ The printer sometimes enters the Busy state while data is written to NV memory. It is important not to send data from the host computer while the printer is in the Busy state, as it will be incapable of processing any received data.
- ❑ Frequent use of the functions for defining data to and deleting data from NV memory can damage the memory. As a rule in using the various commands, avoid writing to NV memory more than a 10 times per day.

5.4 NV Bit-image Printing

This printer has “NV Bit-image” Function. This function provides printing bit-image (e.g. a shop logo.) This function is available for any control method (APD, OPOS, ESC/POS command.)

EPSON provides tools, “TM-U330 Utility” and “TMFLogo” that enable registration of a bitmap image in the NV memory of an EPSON TM series printer. The bitmap image in the NV memory can be printed with the printer by using each control method.

	Printable Size	Printing method
NV Bit-image	<width> Less than paper width. <height> There is a limitation Height length = NV memory Size / width length	<u>Store</u> Store bitmap to NVRAM by TMFLogo utility in device specific settings on the SetupPOS utility. If you store the bitmap in a NVRAM, it is not necessary to restore unless the NV memory is deleted.
		<u>Print</u> Depends on each control method.



Note

The available NV memory size for the TM-U330 is 256KB.

Example: The NV memory can store 20 graphics data when the file size of a graphic is 12 KB.

5.4.1 Advanced Printer Driver

5.4.1.1 How to print “NV Bit-image”

APD prints a stored “NV Bit-image” by using “Control font.” See the User’s Manual of Advanced Printer Driver for detail.

5.4.1.2 Printable bitmap format in APD

The printable bitmap formats are formats that meet all the following condition.

- ❑ When using “NV Bit-image”
 - Depends on the “TM-U330 Utility”. (.BMP format)

5.4.2 OPOS

EPSON OPOS ADK provides a tool, “TMFLogo” that enables registration of a bitmap image in the NVRAM of an EPSON TM series printer. The tool can be used from the device specific settings of the SetupPOS utility. The bitmap image in the NVRAM can be printed with a printer by using the DirectIO method. Concerning the available NVRAM size for the TM-U330, refer to the ADG for TM-U330 in the OPOS ADK.



Note

You need to install the TM-U330 Utility to use the TMFLogo.

5.4.2.1 Printing method

Print stored bitmap by DirectIO method.

- *Command : PTR_DI_PRINT_FLASH_BITMAP

The available NVRAM size for the TM-U330 is 256KB.

5.4.2.2 LetterQuality

It is possible to change the speed and quality of a bitmap by using the XXXLetterQuality property.

RecLetterQuality = TRUE 'print Receipt's bitmap in quality mode.

RecLetterQuality = FALSE 'print Receipt's bitmap in speed mode.

5.4.2.3 Setting of printing position by escape sequence

POS Printers support escape sequences that can be treated as printing data. The following commands are the escape sequence command for setting of printing position.

Name	Data	Remarks
Center	ESC cA	Aligns following text in the center.
Right justify	ESC rA	Aligns following text at the right.
Normal	ESC N	Restores printer characteristics to normal condition.



Note1: manner of "ESC |cA" and "ESC |rA"

Characteristics are reset at the end of each print method or by a "Normal" sequence, so these escape sequences cannot be used in the following manner.

OPOSPOSPrinter1.PrintNormal PTR_S_RECEIPT, Chr(27) + "H1B" + " |cA" + "123"

OPOSPOSPrinter1.PrintNormal PTR_S_RECEIPT, "456" + Chr(13) + Chr(10)

The "123" characters will be printed in the center, but not under "456". When using a new method to print characters, it is necessary to add the desired escape sequence again.



Note2 : limitation of "ESC |cA" and "ESC |rA"

*During rotated printing mode (Left90, right90), these escape sequences will not work.

*These will not work if they are not the first character of a line.

*It is not possible to use these on PrintBitmap method.

5.4.2.4 Printable bitmap format in OPOS

The printable bitmap formats are formats that meet all the following conditions.

- BMP files
- Monochrome, 16-color (4 bit), 256-color (8 bit)
- Uncompressed

5.4.3 ESC/POS command

See the product specification about the method.

5.5 Printing for journal used

This printer can print on carbon paper (original + 1 copy.) This is available to use for journal. If you use this printer “Type B“ model, you can cut each a receipt and the copy at same time.

5.6 FAQ List

The questions shown in the list below begin with “Q” and their replies with “A.”

1. Sentences beginning with “Q” provide information relating to a question or problem.
2. The instructions described in the “A” sentence answer the question or solve the problem.

5.6.1 Q. Drawer kick does not operate properly.

5.6.1.1 A. Drawer specifications differ, depending on the manufacturer and the part number.

We recommend to use a Drawer that is made by EPSON. These conditions also apply to any other devices that use the drawer kick connector. Any devices that do not satisfy all the following conditions must not be used.

[Conditions]

- A load must be provided between drawer kick connector pins 4 and 2 or between pins 4 and 5. (*1)
- When the drawer open/close signal is used, a switch must be provided between drawer kick connector pins 3 and 6. (*2)
- The resistance of the load must be 24 W or more, or the input current must be 1 A or less. (*3)
- Be sure to use drawer kick connector pin 4 (24 V power output) to drive the device. Never connect any other power supply to the drawer kick connector. (*4)

NOTES:

(*1)Operating the printer with incorrectly installed devices voids the warranty.

(*2)Connecting devices other than the drawer open/close switch voids the warranty.

(*3)If a device with a resistance of less than 24 Ω or an input current of over 1 A is used, the resulting overcurrent may damage the device.

(*4)Connecting a power supply other than that specified voids the warranty.

5.6.2 Q. Unable to print a part of Page 0 in Visual Basic.

Unable to print a part of Page 0 (for example **ä, ú, ë**) in Visual Basic.

5.6.2.1 A. Follow the procedure

When programming with Visual Basic, limitations prevent data from 81h through 9Fh and from E0h through FEh from being sent as characters. However, you can use the following procedure to send this data.

```
Dim Send_data(0) As Byte  
Send_data(0) = &h81 '1 byte of sending data  
MSComm1.Output = Send_data
```

Appendix A

Character Code Table

Common to all pages

When International character set is USA:

HEX	0	1	2	3	4	5	6	7
0	NUL 0	DLE 16	SP 32	0 48	@ 64	P 80	^ 96	p 112
1		XON 17	! 33	1 49	A 65	Q 81	a 97	q 113
2			" 34	2 50	B 66	R 82	b 98	r 114
3		XOFF 19	# 35	3 51	C 67	S 83	c 99	s 115
4	EOT 4	DC4 20	\$ 36	4 52	D 68	T 84	d 100	t 116
5	ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117
6	ACK 6		& 38	6 54	F 70	V 86	f 102	v 118
7			' 39	7 55	G 71	W 87	g 103	w 119
8		CAN 24	(40	8 56	H 72	X 88	h 104	x 120
9	HT 9) 41	9 57	I 73	Y 89	i 105	y 121
A	LF 10		* 42	: 58	J 74	Z 90	j 106	z 122
B		ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	 124
D	CR 13	GS 29	- 45	= 61	M 77] 93	m 109	} 125
E		RS 30	· 46	> 62	N 78	^ 94	n 110	~ 126
F			/ 47	? 63	O 79	_ 95	o 111	SP 127

Page 0 (PC437: USA, Standard Europe)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	SP 176	SP 192	SP 208	α 224	≡ 240
1	ü 129	æ 145	í 161	SP 177	SP 193	SP 209	β 225	± 241
2	é 130	Æ 146	ó 162	SP 178	SP 194	SP 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	SP 179	SP 195	SP 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	SP 180	SP 196	SP 212	Σ 228	SP 244
5	à 133	ò 149	Ñ 165	SP 181	SP 197	SP 213	σ 229	SP 245
6	ã 134	û 150	ä 166	SP 182	SP 198	SP 214	μ 230	÷ 246
7	ç 135	ù 151	o 167	SP 183	SP 199	SP 215	τ 231	≈ 247
8	ê 136	ÿ 152	z 168	SP 184	SP 200	SP 216	φ 232	° 248
9	ë 137	ö 153	˘ 169	SP 185	SP 201	SP 217	θ 233	• 249
A	è 138	Ü 154	˘ 170	SP 186	SP 202	SP 218	Ω 234	• 250
B	ï 139	ϕ 155	½ 171	SP 187	SP 203	SP 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	SP 188	SP 204	SP 220	ω 236	η 252
D	ï 141	¥ 157	ı 173	SP 189	SP 205	SP 221	φ 237	² 253
E	Ä 142	ƒ 158	« 174	SP 190	SP 206	SP 222	ε 238	■ 254
F	Å 143	f 159	» 175	SP 191	SP 207	SP 223	∩ 239	SP 255

International Character Sets

Country	ASCII code (hexadecimal number)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0 U.S.	#	\$	@	[\]	^	`	{		}	~
15 China	#	¥	@	[\]	^	`	{		}	~