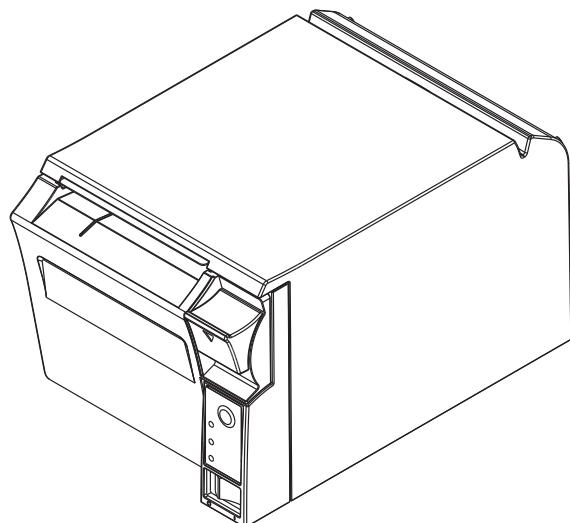


TM-T70II

Technical Reference Guide



Product Overview

Describes features and general specifications for the product.

Setup

Describes setup and installation of the product and peripherals.

Application Development Information

Describes how to control the printer and necessary information when you develop applications.

Handling

Describes how to handle the product.

Replacement of the TM-T70

Describes precautions for replacement.

Appendix

Describes interfaces, connectors and character code tables.

Cautions

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ESC/POS® Command System

EPSON ESC/POS is a proprietary POS printer command system that includes patented or patent-pending 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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For Safety

Key to Symbols

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

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

Warnings

WARNING



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

Cautions



- **Do not connect cables in ways other than those mentioned in this manual.**
Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
The product may break or cause injury if it falls.
- **Do not use this product 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.
- **To avoid injury, do not insert fingers or any part of the hand in the roll paper opening where the manual cutter is installed.**
- **Do not open the roll paper cover without taking the necessary precautions, as this can result in injury from the autocutter fixed blade.**
- **To ensure safety, unplug this product before leaving it unused for an extended period.**

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.

About this Manual

Aim of the Manual

This manual was created to provide information on development, design, and installation of POS systems and development and design of printer applications for developers.

Manual Content

The manual is made up of the following sections:

Chapter 1	Product Overview
Chapter 2	Setup
Chapter 3	Application Development Information
Chapter 4	Handling
Chapter 5	Replacement of the TM-T70
Appendix	Specifications of Interface and Connector Character Code Tables

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Product Overview

This chapter describes features and specifications of the product.

Features

The TM-T70II is a receipt printer with high speed printing and a small footprint. With its compact design, it can be placed in a narrow space, such as under a counter, and it also has full front access for easy operability.

High speed printing

- Issuing of batch receipts is possible.
Maximum print speed: 250 mm/s {9.84"/s} (200 mm/s {7.87"/s} for some models)
- Graphics are also printed with high-speed printing.
- Multi-tone graphic printing
- Coupon print function is supported.

Front operation

- Easy drop-in paper loading
- Front access operation of the power switch and operation panel
- Front access operation for receipt ejection

Software

- Command protocol is based on the ESC/POS Proprietary Command System.
- OPOS ADK and Windows printer driver are available.
- In addition to supporting several kinds of bar code printing, GS1-DataBar printing and two-dimensional symbol (PDF417, QR code, MaxiCode, Composite Symbology) printing are possible.
- Various layouts are possible by using page mode.
- A maintenance counter function is supported.
- Paper-saving function is supported.

Environmental

- TM-T70II is ENERGY STAR qualified. (Some models may be exempted.)

Others

- Various interface boards (EPSON UB series) can be used.
- The TM-T70II Software & Documents Disc (drivers, utility software, and manuals)

Product Configuration

Interface

- Serial interface model (RS-232)
- Parallel interface model (IEEE1284)
- USB interface model (full-speed)
- Ethernet interface model (100BASE-TX/10BASE-T)
- Wireless LAN interface model (IEEE802.11a/b/g/n)



For this printer, never use a LAN interface board or a wireless LAN interface board with a buzzer function.

Otherwise, the printer or the interface board may be damaged.

The name of interface boards with a buzzer function has "A" at the end.

Example) UB-E**A, UB-R**A (*: alphanumeric character)

Buzzer

- Model with the buzzer function
- Model without the buzzer function



The optional external buzzer and the internal buzzer cannot be used together at the same time.

Color

- ECW (Epson Cool White)
- EDG (Epson Dark Gray)

Accessories

Included

- Roll paper (for operation check)
- Power switch cover
- AC adapter*
- AC cable*

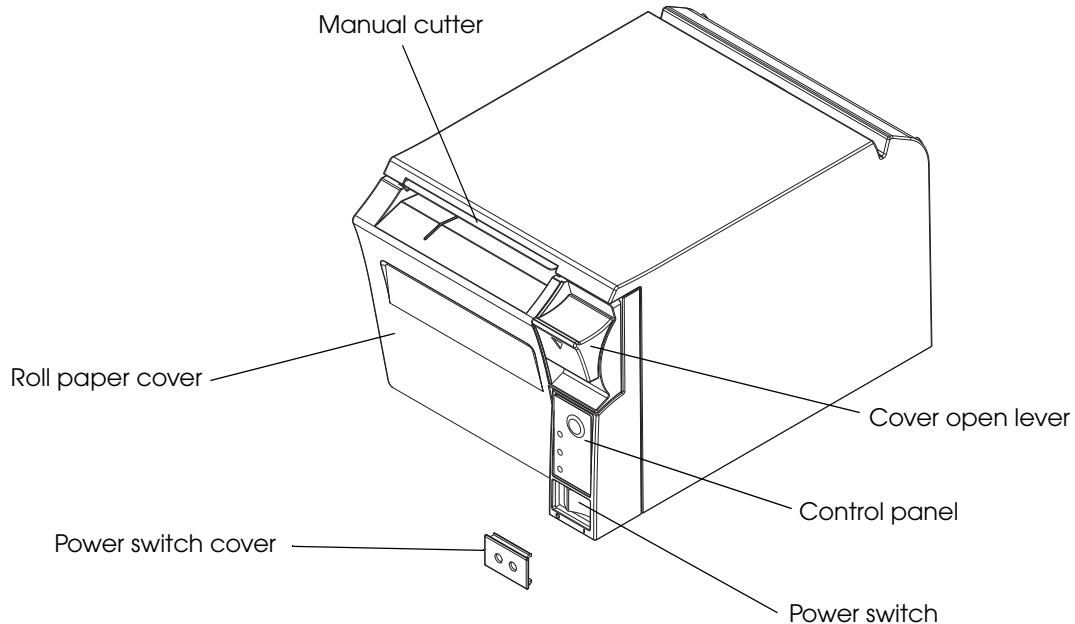
- Locking wire saddle*
- The TM-T70II Software & Documents Disc (drivers, utility software, and manuals)*
- Setup Guide
- Warranty certificate*

* May not be included depending on the model.

Options

- AC adapter
- AC cable
- Connector cover (Model: OT-CC702W/OT-CC702B)
Protects cables and interface connected to the printer.
- Affixing tapes for fixing the printer (Model: DF-10)
- Interface boards (UB series)
- Optional external buzzer (Model: OT-BZ20)

Parts Name and Function



Power Switch

Turns the printer on or off. The marks on the switch: (⌂ / |)



Before turning on the printer, be sure to check that the AC adapter is connected to the power supply.



Before turning the printer off, it is recommended to send a power-off command to the printer. If you use the power-off sequence, the latest maintenance counter values are saved. (Maintenance counter values are usually saved every two minutes.)
For detailed information about ESC/POS commands, see the ESC/POS Command Reference.

Power Switch Cover

Install the power switch cover that comes with the TM-T70II onto the printer to prevent inadvertent changing of the power switch, to prevent tampering, and to improve the appearance of the printer.

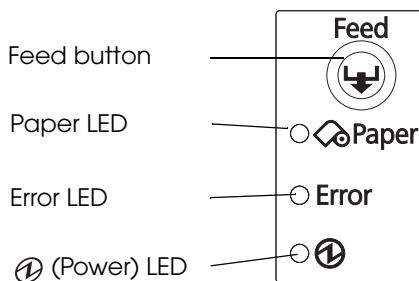
To reset the printer when the power switch cover is installed, insert a long, thin object (such as the end of a paper clip) into the hole in the power switch cover and press the power switch.



If an accident occurs with the power switch cover attached, unplug the power cord immediately.

Continued use may cause fire or shock.

Control Panel



Feed button

Pressing this button once feeds the roll paper by one line. Holding this button down feeds the roll paper continuously.

LEDs

Paper LED (orange)

- Lights when there is little remaining.
- Off when there is a sufficient amount of roll paper remaining.
- Flashes when a self-test is in progress or when macro execution standby state.

Error LED (orange)

Lights or flashes when the printer is offline.

- Lights after the power is turned on or after a reset (offline). Automatically goes out after a while to indicate that the printer is ready.

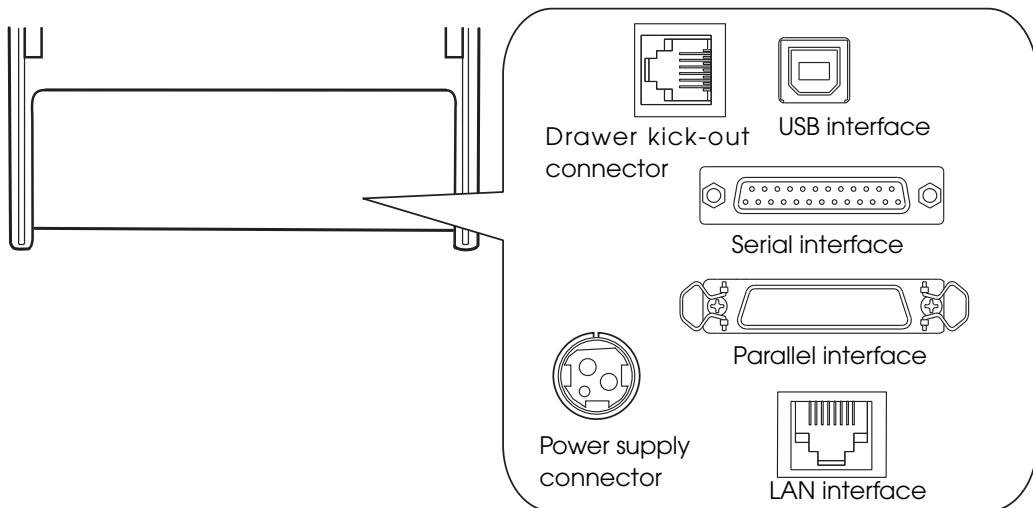
- Lights when the end of the roll paper is detected, and when printing has stopped (offline). If this happens, replace the roll paper.
- Flashes when an error occurs. (For details about the flash codes, see "Error Status" on page 21.)
- Goes out during regular operation (online).

POWER LED (green)

- Lights when the power supply is on.
- Goes out when the power supply is turned off.

Connectors

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



- Drawer kick-out connector: Connects the cash drawer or the optional external buzzer.
- Power supply connector: Connects the AC adapter.
- Interface connector: Connects the printer with the host computer interface.

CAUTION

For details on the various interfaces and how to connect the power supply connector and cash drawer, see "Connecting the Printer to the Host Computer" on page 44 and "Connecting the Cash Drawer" on page 68.

Offline

The printer automatically goes offline under the following conditions:

- During power on (including resetting with the interface) until the printer is ready
- During the self-test

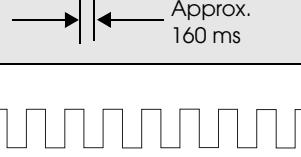
- When the roll paper cover is open
- While roll paper is fed using the Feed button
- When the printer stops printing due to a paper-end (if an empty paper supply is detected by the roll paper end sensor or if the driver has been set to stop printing when a roll paper near-end is detected)
- During a macro execution standby state
- When an error has occurred

Error Status

There are three possible error types: automatically recoverable errors, recoverable errors, and unrecoverable errors.

Automatically Recoverable Errors

Printing is no longer possible when automatically recoverable errors occur. They can be recovered easily, as described below.

Error	Error description	Error LED flash code	Recovery measure
Roll paper cover open error	The roll paper cover was opened during printing.		Recovers automatically when the roll paper cover is closed.
Print head temperature error	A high temperature outside the head drive operating range was detected.		Recovers automatically when the print head cools.

Recoverable Errors

Printing is no longer possible when recoverable errors occur. They can be recovered easily by sending an error recovery command after eliminating the cause of the error.

Error	Error description	Error LED flash code	Recovery measure
Autocutter error	Autocutter does not work correctly.		Remove the jammed paper or foreign matter in the printer, close the roll paper cover, send the error recover command.

CAUTION

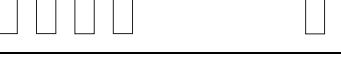
The error recovery command is valid only if a recoverable error (excluding automatically recoverable errors) occurs.

Unrecoverable Errors

Printing is no longer possible when unrecoverable errors occur. The printer must be repaired.



Turn off the power immediately when unrecoverable errors occur.

Error	Error description	Error LED flash code
		 Approx. 160 ms
Memory R/W error	After R/W checking, the printer does not work correctly.	
High voltage error	The power supply voltage is extremely high.	
Low voltage error	The power supply voltage is extremely low.	
CPU execution error	The CPU is executing an incorrect address.	
Internal circuit connection error	Internal circuits are not connected correctly.	 Approx. 2.56 s

NV Memory (Non-Volatile Memory)

The printer's NV memory stores data even after the printer power is turned off. NV memory contains the following memory areas for the user:

- NV graphics memory
- User NV memory
- Memory switches
- R/E (Receipt Enhancement)
- User-defined page
- Maintenance counter



As a guide, NV memory rewriting should be 10 times or less a day when you program applications.

NV Graphics Memory

Graphics, such as shop logos to be printed on receipts, can be stored. Even with a serial interface model whose communication speed is low, high speed graphics printing is possible.

Use the TM-T70II Utility to register graphics. You can also use the TM-T70II Utility or the NV graphics information print mode to confirm the registered graphics.

NOTE

- For detailed information about the TM-T70II Utility, see the TM-T70II Utility User's Manual.
- For information about how to use the NV graphics information print mode, see "[NV Graphics Information Print Mode](#)" on page 85.

User NV Memory

You can store and read text data for multiple purposes, such as for storing a note including customizing or maintenance information of the printer. Use ESC/POS commands to store and read the text data.

NOTE

For information about ESC/POS commands, see the ESC/POS Command Reference.

Memory Switches

With the memory switches, which are software switches for the printer, you can configure various settings of the printer. For information about the memory switches, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

R/E (Receipt Enhancement)

Graphics, such as shop logos to be printed on top or bottom of receipts can be registered.

For information about R/E, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

User-defined Page

You can store character data in the user-defined page (character code table: page 255) so that you can also print characters not resident in the printer.

NOTE

- For the character code table, see "[Character Code Tables](#)" on page 112.
- User-defined page is not supported by South Asia font models.

Maintenance Counter

With this function, printer information, such as the number of lines printed, the number of autocuts, and printer operation time after the printer starts working, is automatically stored in NV memory. You can read the information with the Status API of the APD or OPOS ADK to use it for periodical checks or part replacement.

NOTE

Maintenance Counter can be checked with the TM-T70II Utility or in a self-test.

Product Specifications

Printing method	Thermal line printing
Cutting method	Partial cut (cutting with one point in left edge left uncut)
Roll paper (single-ply) width	80 mm width paper printing: 79.5 ± 0.5 mm { 3.13 ± 0.02 "} 58 mm width paper printing: 57.5 ± 0.5 mm { 2.26 ± 0.02 "}
Interface	Serial (RS-232), Parallel (IEEE1284), LAN (10BASE-T/100BASE-TX), USB (Full-speed), Wireless LAN (IEEE802.11a/b/g/n)
Buffer	Receive buffer 4 KB/45 bytes (selectable using the memory switch)
	Downloaded buffer 12 KB (both for user-defined characters and downloaded images)
	Macro buffer 2 KB
	NV graphics memory 256 KB
	Download graphics memory 208 KB
	User NV memory 1 KB
Barcode/two-dimensional code printing	UPC-A, UPC-E, JAN 8 (EAN 8), JAN 13 (EAN 13), CODE 39, ITF, CODABAR (NW-7), CODE 93, CODE 128, GS1-128, GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, PDF417, QR CODE, MaxiCode, Composite Symbology
DKD Function	2 drives
Supplied voltage	DC 24 V ± 7%
Life	Mechanism 17 million lines
	Thermal head 120 million pulses, 120 km
	Autocutter 1.7 million cuts
	MTBF 360,000 hours
	MCBF 65 million lines
Temperature/humidity	Operating: 5 to 45°C {41 to 113°F}, 10 to 90% RH Storage: -10 to 50°C {14 to 122°F}, 10 to 90% RH
Overall dimensions (H × W × D)	114 × 125 × 194 mm {4.49 × 4.92 × 7.64"} 1

Weight (mass)	Approx. 1.7 kg {3.75 lb} (Roll paper excluded)
---------------	--

Printing Specifications

		80 mm width paper printing	58 mm width paper printing
Printing method		Thermal line printing	
Dot density	ANK models	180 dpi	-
	Simplified Chinese models	203 dpi	-
	Traditional Chinese models	203 dpi	
	South Asia font models	203 dpi	-
Printing direction		Unidirectional with friction feed (Reverse feed is not supported.)	
Maximum printable width	ANK models	72.2 mm {2.84"}, 512 dots	-
	Simplified Chinese models	72 mm {2.83"}, 576 dots	-
	Traditional Chinese models	72 mm {2.83"}, 576 dots	52 mm {2.05"}, 416 dots
	South Asia font models	72 mm {2.83"}, 576 dots	-
Characters per line	ANK models	Font A: 42, Font B: 56	-
	Simplified Chinese models	Font A: 48, Font B: 64, Kanji font: 24	-
	Traditional Chinese models	Font A: 48, Font B: 64, Kanji font: 24	Font A: 34, Font B: 46, Kanji font: 17
	South Asia font models	Font A: 48, Font B: 64, Special font A: 48, Special font B: 64	-
Line spacing	ANK models	4.23 mm {1/6"} (initial setting, programmable by command)	-
	Simplified Chinese models	3.75 mm {1/5"} (initial setting, programmable by command)	-
	Traditional Chinese models	3.75 mm {1/5"} (initial setting, programmable by command)	
	South Asia font models	3.75 mm {1/5"} (initial setting, programmable by command)	-

Character spacing	ANK models	0.28 mm {0.0110"} (2 dots)	-
	Simplified Chinese models	0.25 mm {0.0098"} (2 dots)	-
	Traditional Chinese models	0.25 mm {0.0098"} (2 dots)	
	South Asia font models	0.25 mm {0.0098"} (2 dots)	-
Maximum print speed*	250 mm/s {9.84"/s} (200 mm/s {7.87"/s} for some models)		

-: Not supported

dpi: dots per inch

*: When the printer prints with the default print density level at 24 V and 25°C {77°F}.

NOTE

- Printing speed may be slower, depending on the such items as the data transmission speed.

Character Specifications

Number of characters

ANK models	Font A (initial setting)	Alphanumeric characters: 95
	Font B	Extended graphics: 128 × 43 pages (including user-defined page) International characters: 18 sets
Simplified Chinese models	Font A (initial setting)	Alphanumeric characters: 95
	Font B	Extended graphics: 128 × 43 pages (including user-defined page) International characters: 18 sets
Traditional Chinese models	Kanji font	GB18030-2000: 28,553
	Kanji font	Big5: 13,535
South Asia font models	Font A (initial setting)	Alphanumeric characters: 95
	Font B	Extended graphics: 128 × 42 pages (user-defined page is not supported)
	Special font A	
	Special font B	International characters: 18 sets

Character structure

	80 mm width paper printing	58 mm width paper printing
Font A (initial setting)	12 × 24 (including 2-dot horizontal spacing)	
Font B	9 × 17 (including 2-dot horizontal spacing)	
Kanji font	24 × 24	
Special font A	12 × 24 (including 2-dot horizontal spacing)	
Special font B	9 × 24 (including 2-dot horizontal spacing)	

Character size

		Standard/Double-height/Double-width/Double-width, double-height W × H (mm)	
		80 mm width paper printing	58 mm width paper printing
Font A	ANK models	1.41 × 3.39/1.41 × 6.77/2.82 × 3.39/ 2.82 × 6.77	-
	Simplified Chinese models	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/ 2.50 × 6.00	-
	Traditional Chinese models	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/2.50 × 6.00	
	South Asia font models	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/ 2.50 × 6.00	-
Font B	ANK models	0.99 × 2.40/0.99 × 4.80/1.98 × 2.40/ 1.98 × 4.80	-
	Simplified Chinese models	0.88 × 2.13/0.88 × 4.25/1.75 × 2.13/ 1.75 × 4.25	-
	Traditional Chinese models	0.88 × 2.13/0.88 × 4.25/1.75 × 2.13/1.75 × 4.25	
	South Asia font models	0.88 × 2.13/0.88 × 4.25/1.75 × 2.13/ 1.75 × 4.25	-
Kanji font	Simplified Chinese models	3.00 × 3.00/3.00 × 6.00/6.00 × 3.00/ 6.00 × 6.00	-
	Traditional Chinese models	3.00 × 3.00/3.00 × 6.00/6.00 × 3.00/6.00 × 6.00	

Special font A	South Asia font models	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/ 2.50 × 6.00	-
Special font B	South Asia font models	0.88 × 3.00/0.88 × 6.00/1.75 × 3.00/ 1.75 × 6.00	-

-: Not supported

Note:

Space between characters is not included.

Characters can be scaled up to 64 times as large as the standard size.

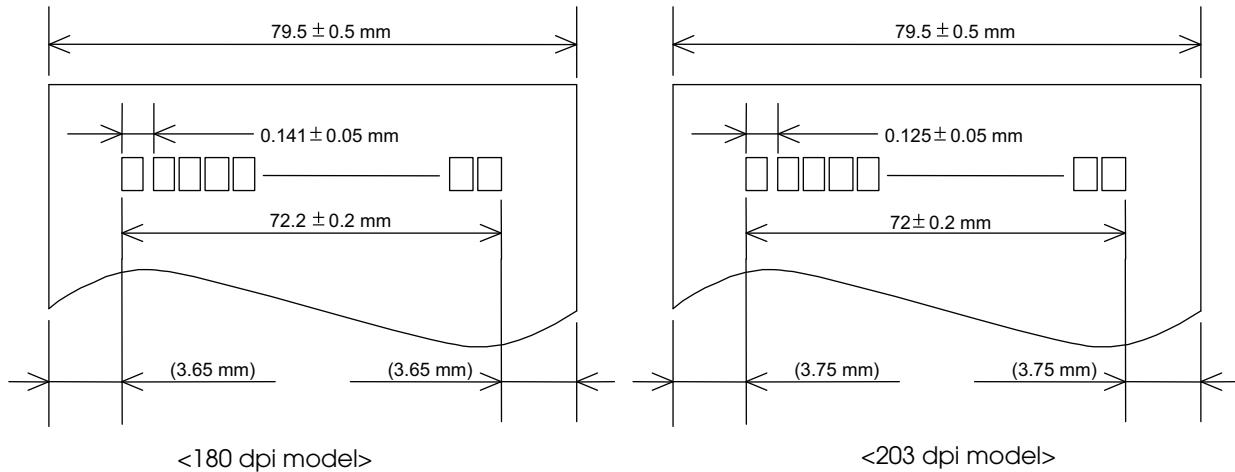
Characters per line

		Standard/Double-height/Double-width/Double-width, double-height W × H (mm)	
		80 mm width paper printing	58 mm width paper printing
Font A	ANK models	42/42/21/21	-
	Simplified Chinese models	48/48/24/24	-
	Traditional Chinese models	48/48/24/24	34/34/17/17
	South Asia font models	48/48/24/24	-
Font B	ANK models	56/56/28/28	-
	Simplified Chinese models	64/64/32/32	-
	Traditional Chinese models	64/64/32/32	46/46/23/23
	South Asia font models	64/64/32/32	-
Kanji font	Simplified Chinese models	24/24/12/12	-
	Traditional Chinese models	24/24/12/12	17/17/8/8
Special font A	South Asia font models	48/48/24/24	-
Special font B	South Asia font models	64/64/32/32	-

-: Not supported

Printable Area

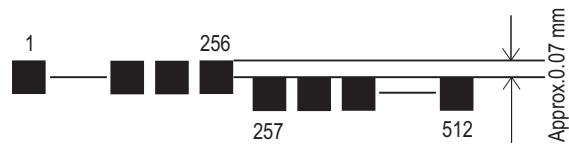
80 mm paper width printing



CAUTION

<180 dpi model>

In 2-divided energizing, the print position within the printable area of the thermal elements for dots 1 to 256 and 257 to 512 is shifted approximately 0.07 mm {0.0028"} as shown in the figure below in the paper feed direction.

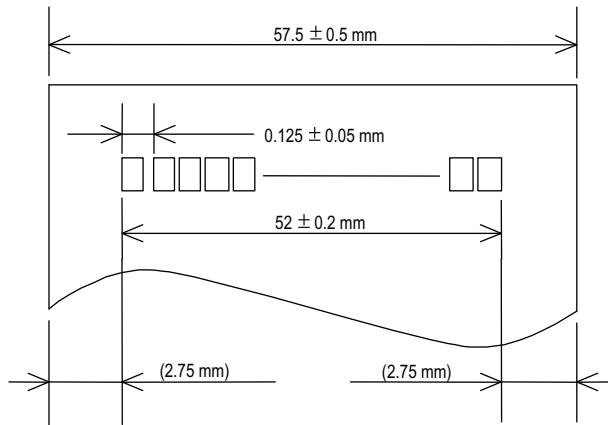


<203 dpi model>

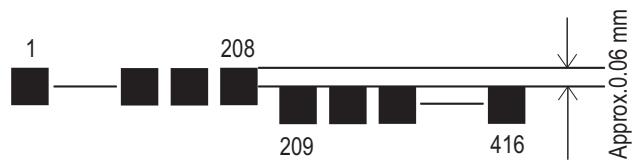
In 2-divided energizing, the print position within the printable area of the thermal elements for dots 1 to 288 and 289 to 576 is shifted approximately 0.06 mm {0.0024"} as shown in the figure below in the paper feed direction.



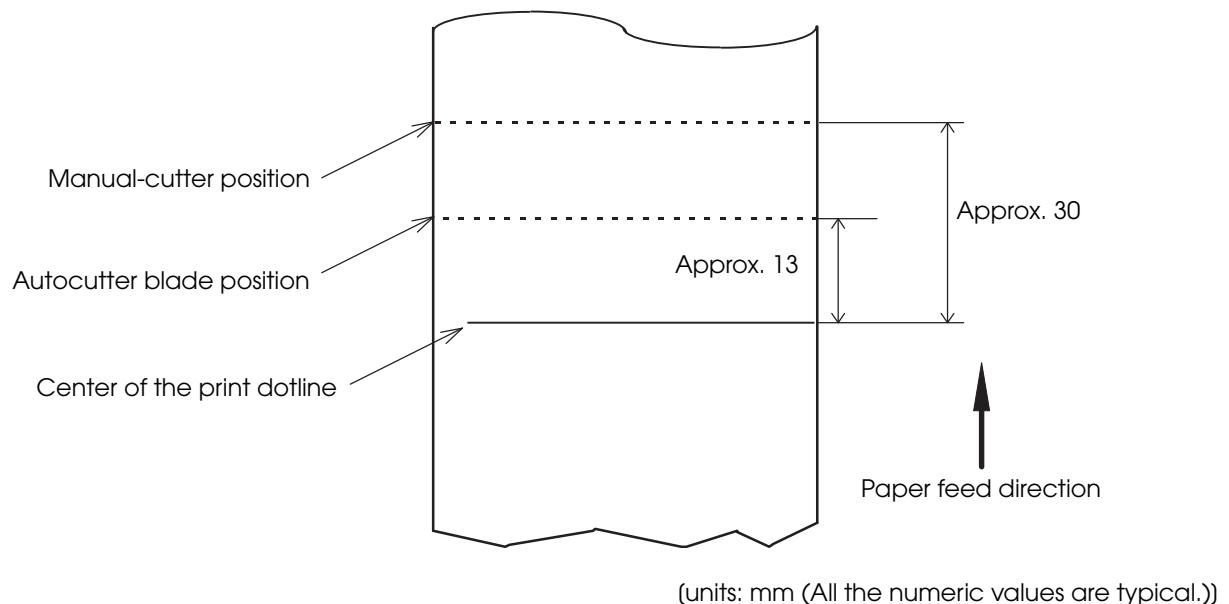
58 mm paper width printing

**CAUTION**

In 2-divided energizing, the print position within the printable area of the thermal elements for dots 1 to 208 and 209 to 416 is shifted approximately 0.06 mm {0.0024"} as shown in the figure below in the paper feed direction.



Printing and Cutting Positions



(units: mm (All the numeric values are typical.))

CAUTION

The values above may vary slightly as a result of paper slack or variations in the paper.
Take the notice into account when setting the cutting position of the autocutter.

Paper Specifications

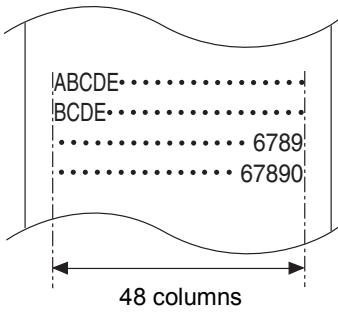
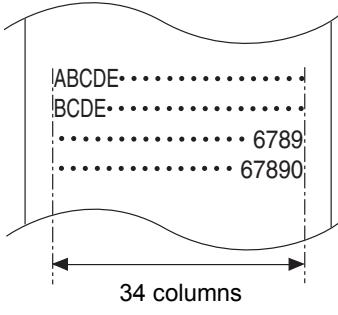
	80 mm width paper printing	58 mm width paper printing
Paper types	Specified thermal paper	
Form	Roll paper	
Size	Roll paper diameter	83 mm {3.27"} maximum
	Roll paper spool	Inside: 12 mm {0.47"}, Outside: 18 mm {0.71"}
	Roll width when taken up	80 + 0.5/-1.0 mm
	Paper width	79.5 ± 0.5 mm
Specified roll paper type	NTP080-80	NTP058-80

Specified original paper type	TF50KS-E, TF60KS-E (NIPPON Paper Industries Co., Ltd.) PD160R, PD190R (OJI Paper Mfg. Co., Ltd.) P220AGB-1 (Mitsubishi Paper Mills Limited.) P300, P310, P350 (Kanzaki Specialty Papers) AF50KS-E (Jujo Thermal Oy) F5041 (Mitsubishi HiTec) KT55F20, KT48F20 (Koehler Paper Group)
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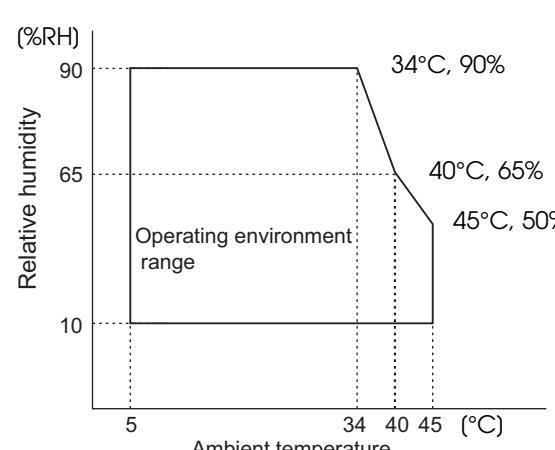
CAUTION

- Paper must not be pasted to the roll paper spool.
- The remaining amount of the roll paper when a roll paper near-end is detected differs depending on the spool type.
- For the best print quality for each paper type, it is recommended to set the print density.
(See "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.)

Electrical Characteristics

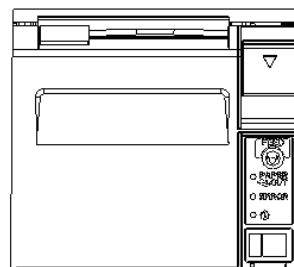
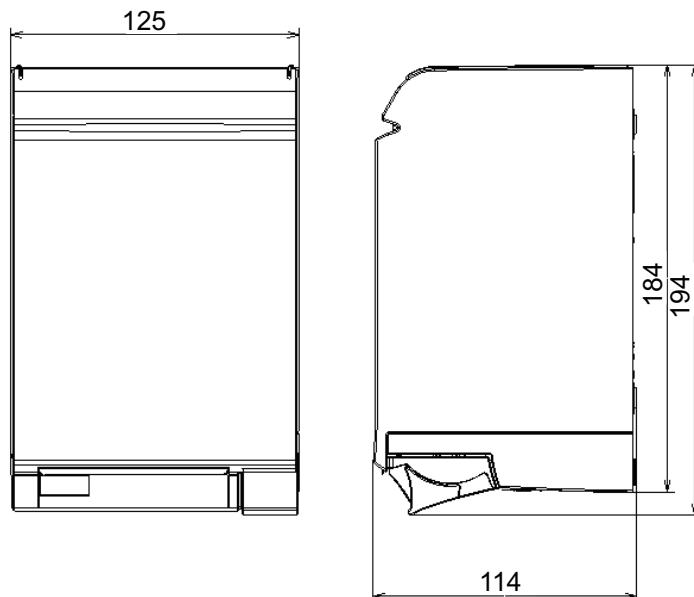
Supply voltage	DC 24 V ± 7%
Current consumption (at 24 V, 25°C, normal print density)	<p>Standby</p> <p>Mean: Approximately 0.1 A Maximum 1 A for drawer kick-out driving.</p>
Operating (80 mm width paper printing)	<p>Mean: Approximately 2.0 A (180 dpi model) Mean: Approximately 1.5 A (203 dpi model)</p> <p>Note: When print ratio is approximately 18%.</p> <ul style="list-style-type: none"> • Font A • 48 columns • ASCII character continuous printing for 50 lines (repeats 20H-7FH) • 5 line feeding • Autocutting 
Operating (58 mm width paper printing)	<p>Mean: Approximately 1.4 A (203 dpi model)</p> <p>Note: When print ratio is approximately 18%.</p> <ul style="list-style-type: none"> • Font A • 34 columns • ASCII character continuous printing for 50 lines (repeats 20H-7FH) • 5 line feeding • Autocutting 

Environmental Conditions

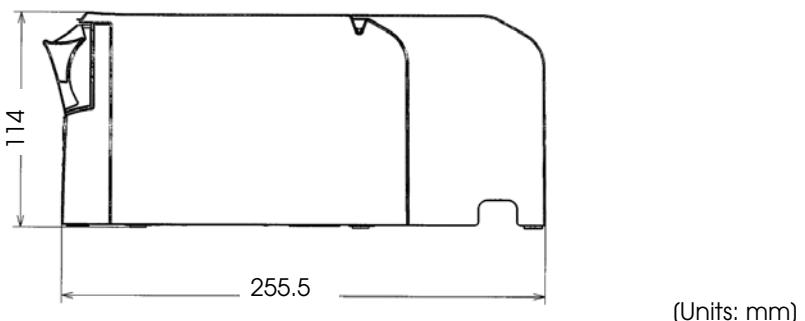
Temperature/ Humidity	Operating 5 to 45°C {41 to 113°F}, 10 to 90% RH (See the operating temperature and humidity range below.)												
Storage (Factory packing)	-10 to 50°C {14 to 122°F}, 10 to 90% RH (except for paper)												
	 <p>The graph illustrates the operating environment range for relative humidity based on ambient temperature. The x-axis represents ambient temperature in degrees Celsius (°C), ranging from 5 to 45. The y-axis represents relative humidity in percent (%RH), ranging from 10 to 90. The operating environment range is defined by the following points:</p> <table border="1"> <thead> <tr> <th>Ambient Temperature (°C)</th> <th>Relative Humidity (%RH)</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>10</td> </tr> <tr> <td>34</td> <td>90</td> </tr> <tr> <td>40</td> <td>65</td> </tr> <tr> <td>45</td> <td>50</td> </tr> <tr> <td>45+</td> <td>50</td> </tr> </tbody> </table>	Ambient Temperature (°C)	Relative Humidity (%RH)	5	10	34	90	40	65	45	50	45+	50
Ambient Temperature (°C)	Relative Humidity (%RH)												
5	10												
34	90												
40	65												
45	50												
45+	50												
Acoustic noise (Operating)	<p>Approximately 55 dB (Bystander position)</p> <p>Note: The values above are measured in the Epson evaluation condition.</p> <p>The acoustic noise differs depending on the paper used, printing contents, or the setting values such as print speed or print density.</p>												

External Dimensions and Mass

- Height: Approximately 114 mm {4.49"}
- Width: Approximately 125 mm {4.92"}
- Depth: Approximately 194 mm {7.64"}
- Mass: Approximately 1.7 kg {3.75 lb} (except for roll paper)

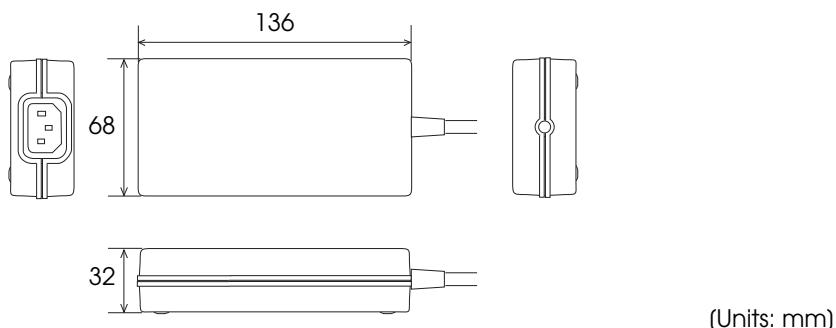


<When the Optional OT-CC702W/OT-CC702B is installed>



Option Specifications

AC Adapter (PS-180)



(Units: mm)

Electric characteristics	Input conditions	input voltage (rating): AC 90 to 264 V (AC 100 V -10% to AC 230 V +15%)
		Frequency (rating): 50/60 Hz ± 3 Hz
		Power consumption (rating): 100 VA
Output conditions	Output voltage (rating):	DC 24 V ± 5%
	Output current (rating):	2.0 A
	Output electric power (rating):	48 VA
	Output peak current:	4.5 A
Case specifications	Dimensions (H × W × D)	68 × 136 × 32 mm {2.68 × 5.35 × 1.26"} (excluding projections)
	Weight	Approx. 0.4 kg {14.11 oz} (excluding the AC cable)
	Color	Black (matte)

Material

No specific brominated flame retardants, such as PBBE and PBB, are used in this product.

AC cable selection

Select an AC cable that satisfies the following conditions.

- Safety standard product
- Plug with PE terminal

Ground connections

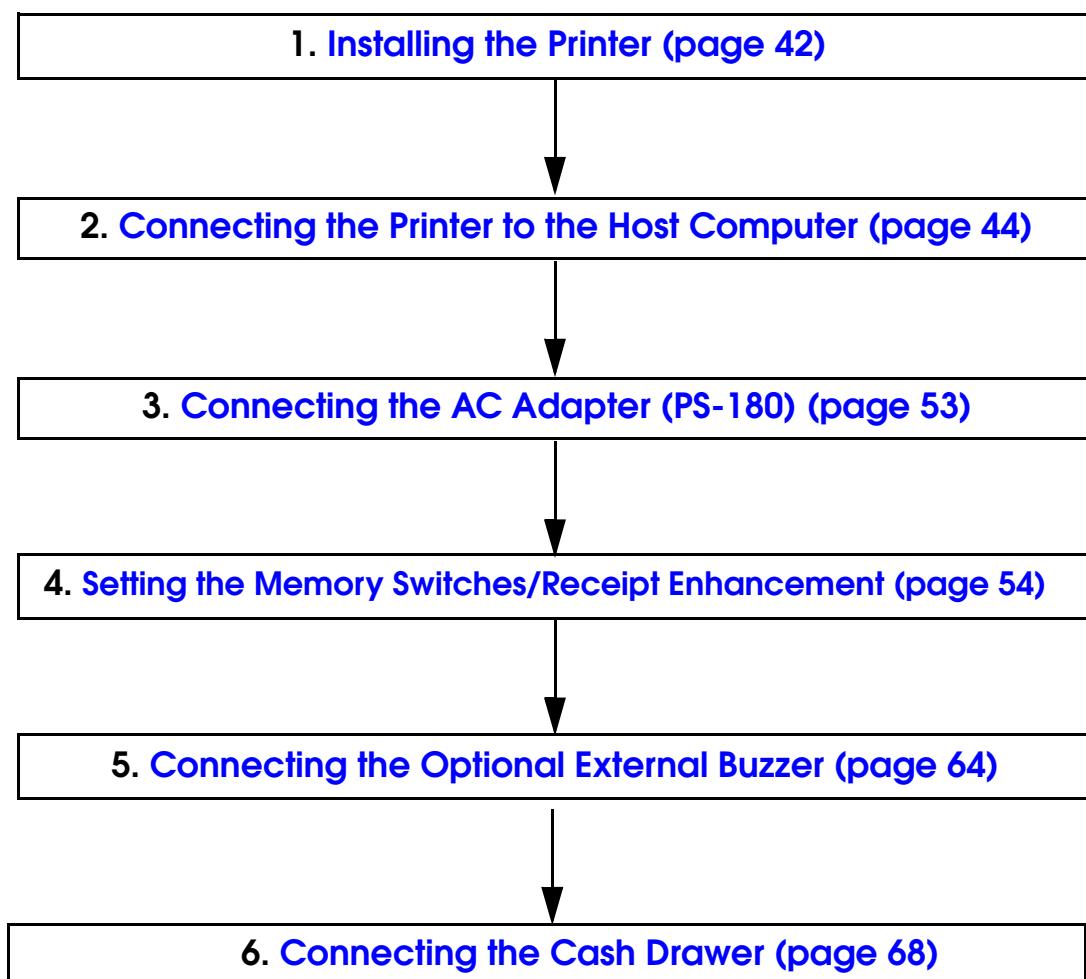
Be sure to ground for safety.

Setup

This chapter describes setup and installation of the product and peripherals.

Flow of Setup

This chapter consists of the following sections along with the setup flow of the product and peripherals.



Installing the Printer

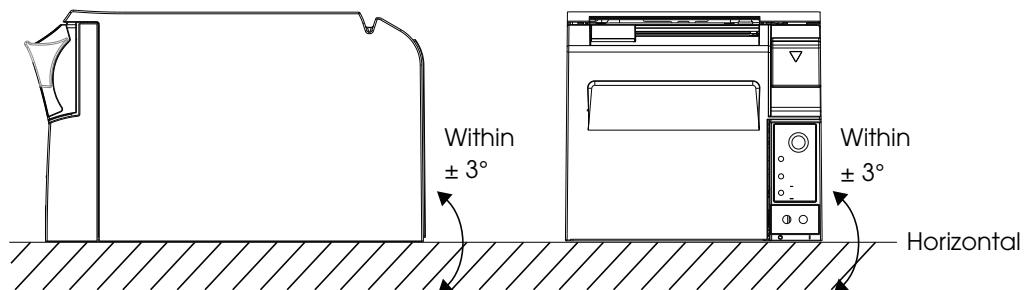
You can install this printer only horizontally.

Fix the printer so that it does not move around when you open the roll paper cover and cut roll paper. A tape for fixing the printer is available as an option. (See "Affixing Position of DF-10" on page 43.)

As shown in the figure below, install the printer with a maximum tilt of 3°.

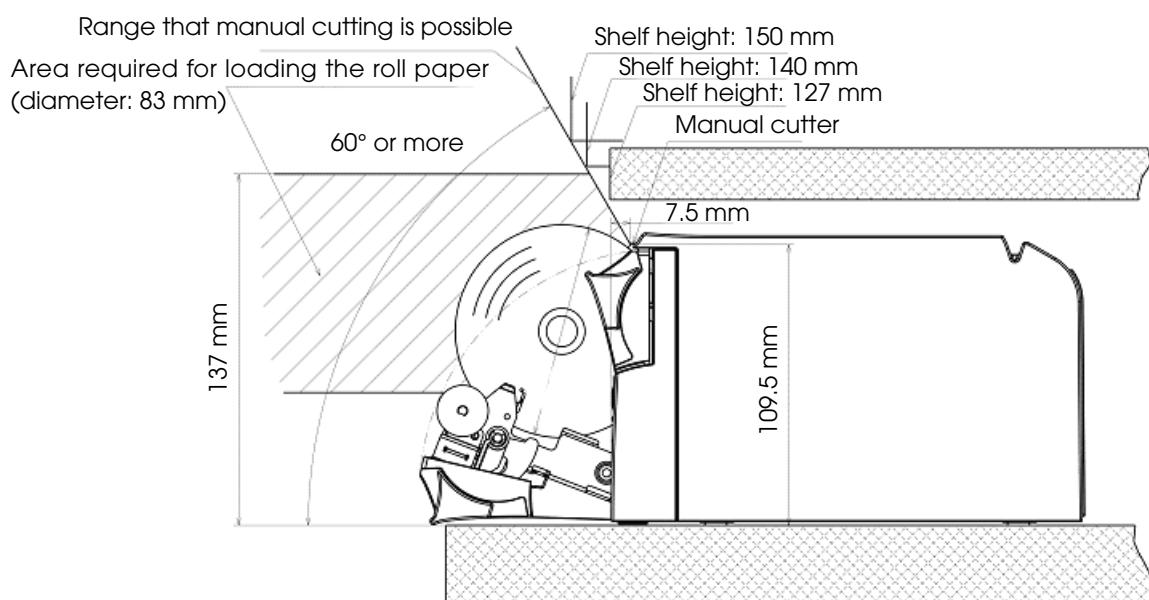
Installing the printer with a tilt of more than 3° may cause the following problems.

- Roll paper near end cannot be detected.
- The roll paper cover will not close after installing roll paper.
- Roll paper cannot be taken out.



If the printer installation does not fit within the specifications shown in the figure below, the following problems may occur.

- Cannot set the roll paper in the printer
- Cannot cut the paper with the manual cutter

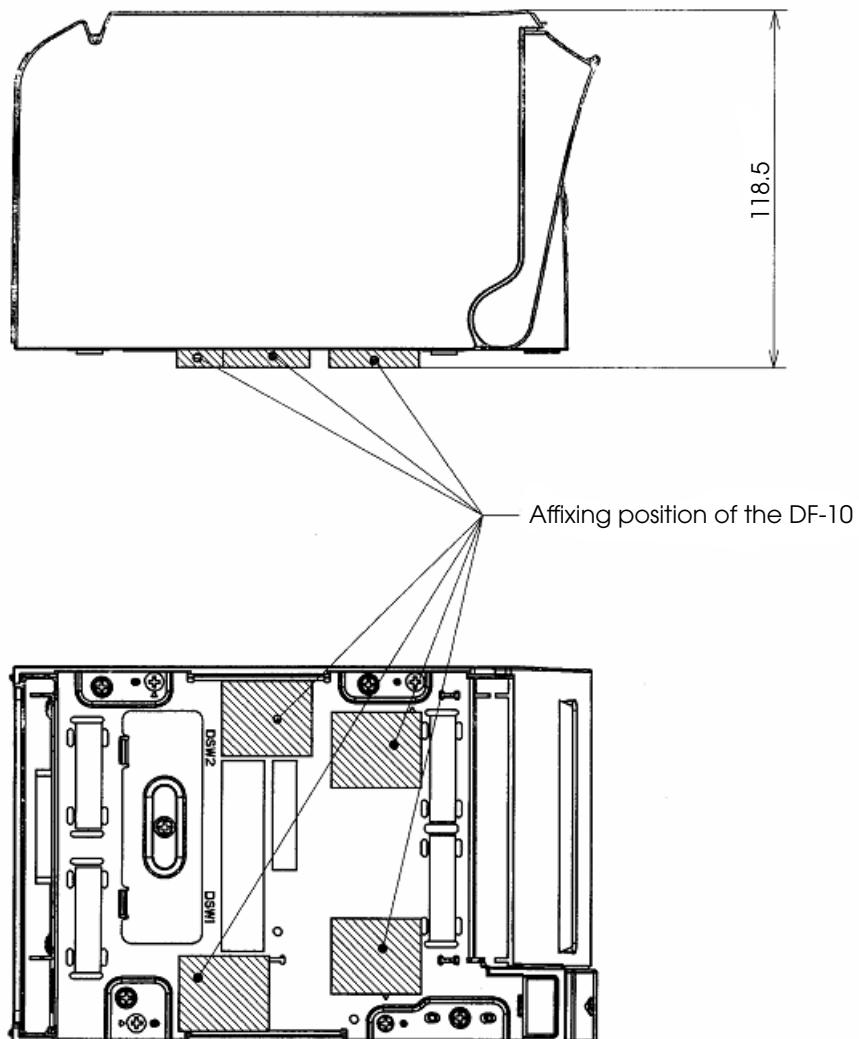


Important Notes on Installation

- The printer must be installed horizontally.
- Do not place the printer in dusty locations.
- Do not catch cables or foreign matter under the printer.
- Do not put anything that has a force of more than 32.7 N {3 kgf} on the top of the printer.

Affixing Position of DF-10

When you use the affixing tapes for fixing the printer (Model: DF-10), paste them as shown in the figure below.



Connecting the Printer to the Host Computer

CAUTION

- Be sure to install the printer driver before connecting the printer to the host computer.
- The printer uses a modular connector specifically designed for the cash drawer. Do not connect the connector to an ordinary telephone line.

For Serial Interface

Serial interface connection diagram

When this printer is connected to a host computer by the serial interface, two connection forms are possible:

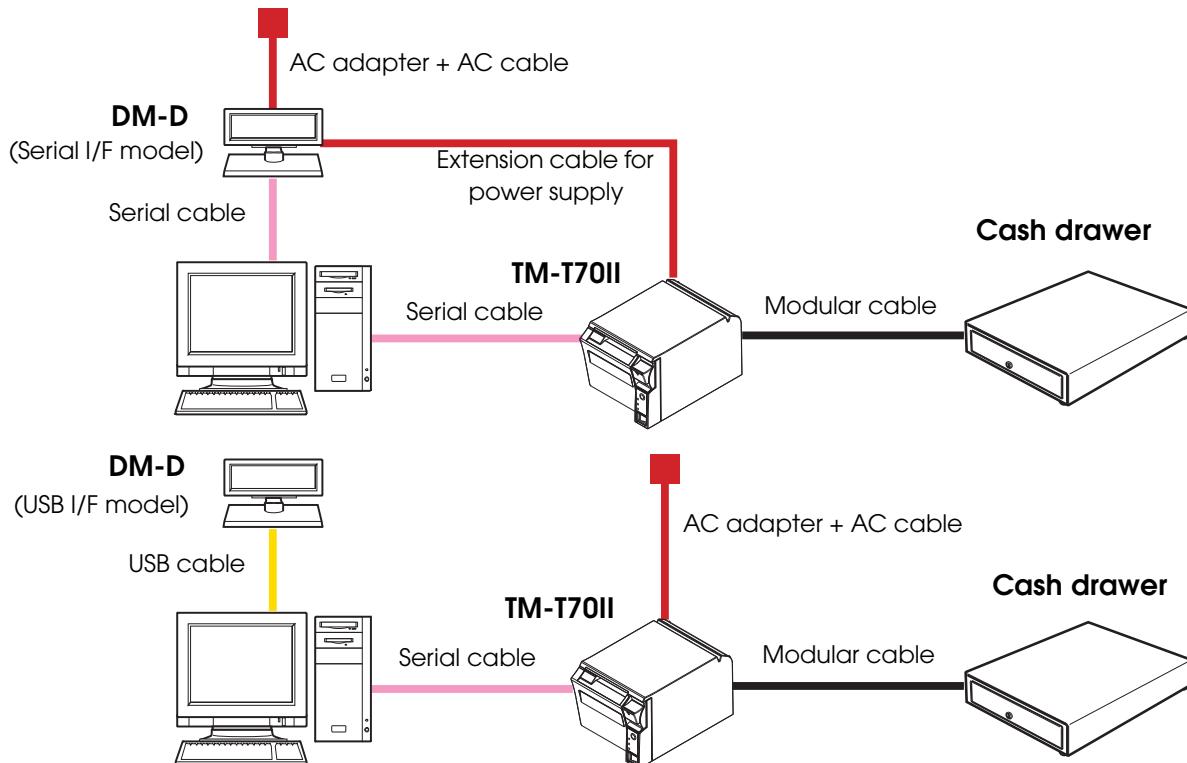
- Stand alone
- Y connection

NOTE

- The modular cable is mounted on the cash drawer.
- Use the extension cable for power supply bundled with the customer display.

Stand alone

This printer is connected to the host computer via the serial port. When a customer display (DM-D) is to be connected, connect it to the host computer via the serial port or USB port.

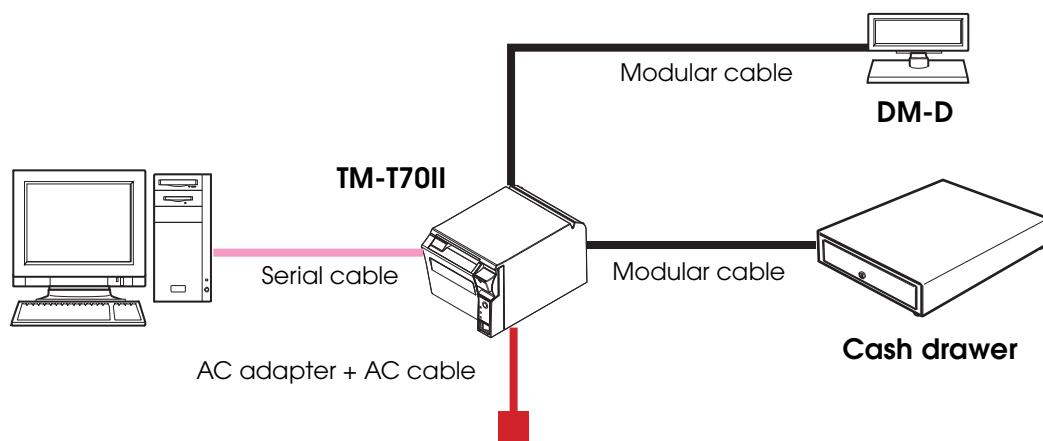


Y connection (only for models with a customer display (DM-D) connector)

This printer is connected to the host computer via the serial port. When a customer display (DM-D) is to be connected, connect it to the printer via the modular cable.

CAUTION

- Make sure to pull out the power cable before connecting cables.
- When connecting a customer display to the printer, connect the modular jack from the customer display to the DM-D connector.
- Set the communication conditions of the customer display as follows:
 - * Baud rate: 19200 bps
 - * Bit length: 8-bit
 - * Parity: no parity
 - * Stop bit: 1



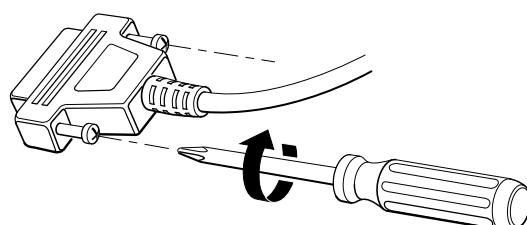
2

Connecting the serial interface (RS-232) cable

WARNING

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

- 1 Insert the interface cable connector firmly into the interface connector on the connector panel.
- 2 When using connectors equipped with screws, tighten them to secure the connectors firmly.



- 3** When using interface cables equipped with a grounding 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.

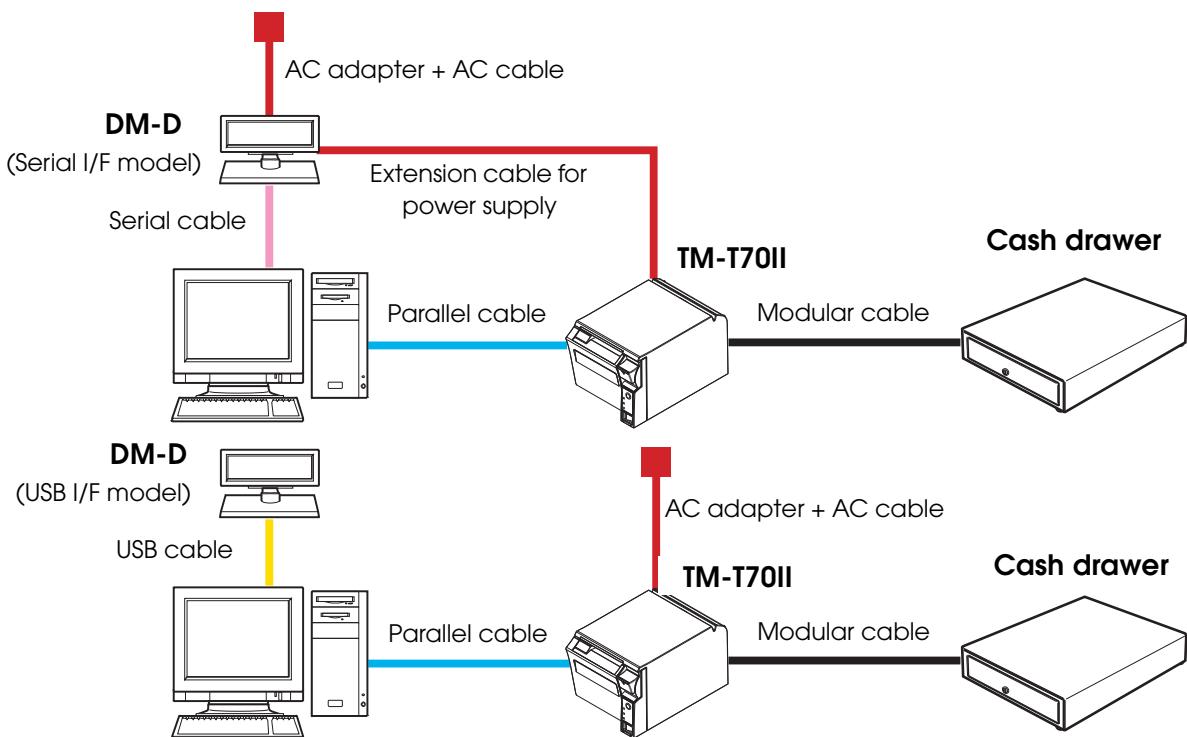
For Parallel Interface

Parallel interface connection diagram

This printer is connected to the host computer via the parallel port. When a customer display (DM-D) is to be connected, connect it to the host computer via the serial port or USB port.

NOTE

- The modular cable is mounted on the cash drawer.
- Use the extension cable for power supply bundled with the customer display.



Connecting the parallel interface cable

- 1 Insert the interface cable connector 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 When using 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.

For USB Interface

USB interface connection diagram

When this printer is connected to the host computer by the USB interface, two connection forms are possible:

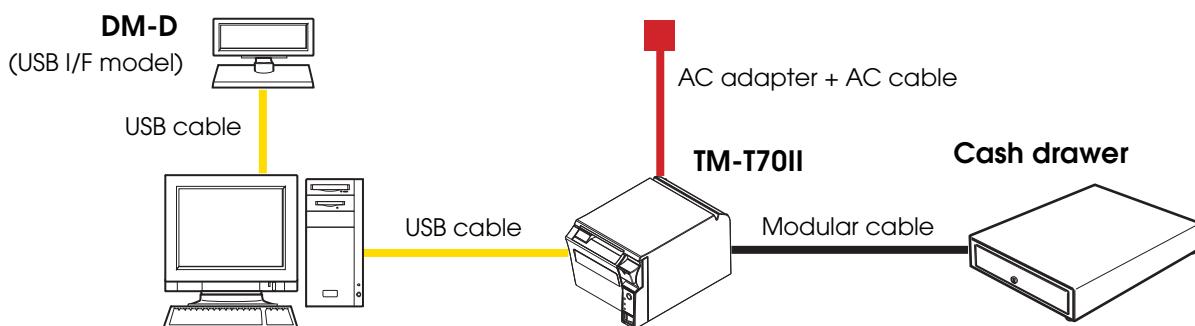
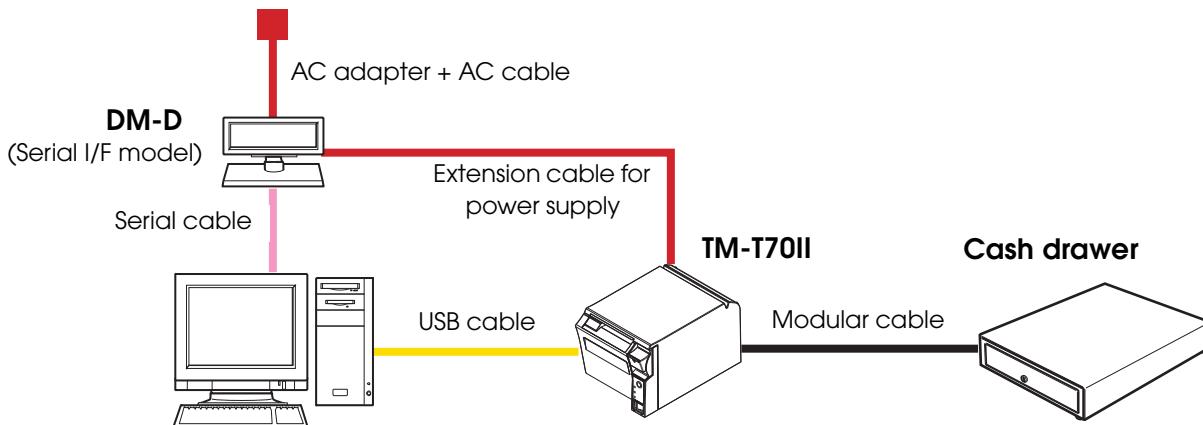
- Stand alone
- Y connection

NOTE

- The modular cable is mounted on the cash drawer and the customer display.
- Use the extension cable for power supply bundled with the customer display.

Stand alone

This printer is connected to the host computer via the USB port. When a customer display (DM-D) is to be connected, connect it to the host computer via the serial port or USB port.

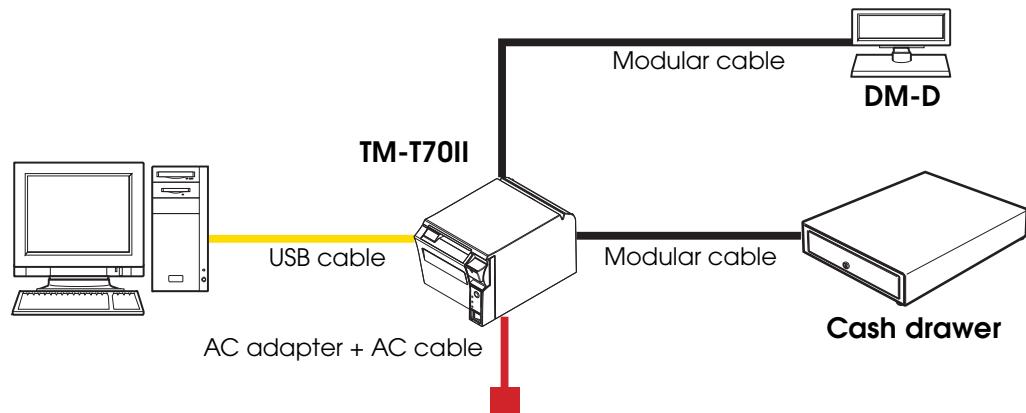


Y connection (only for models with a customer display (DM-D) connector)

This printer is connected to the host computer via the USB port. When a customer display (DM-D) is to be connected, connect it to the printer via the modular cable.

CAUTION

- Make sure to pull out the power cable before connecting cables.
- When connecting a customer display to the printer, connect the modular jack from the customer display to the DM-D connector.
- Set the communication conditions of the customer display as follows:
 - * Baud rate: 19200 bps
 - * Bit length: 8-bit
 - * Parity: no parity
 - * Stop bit: 1



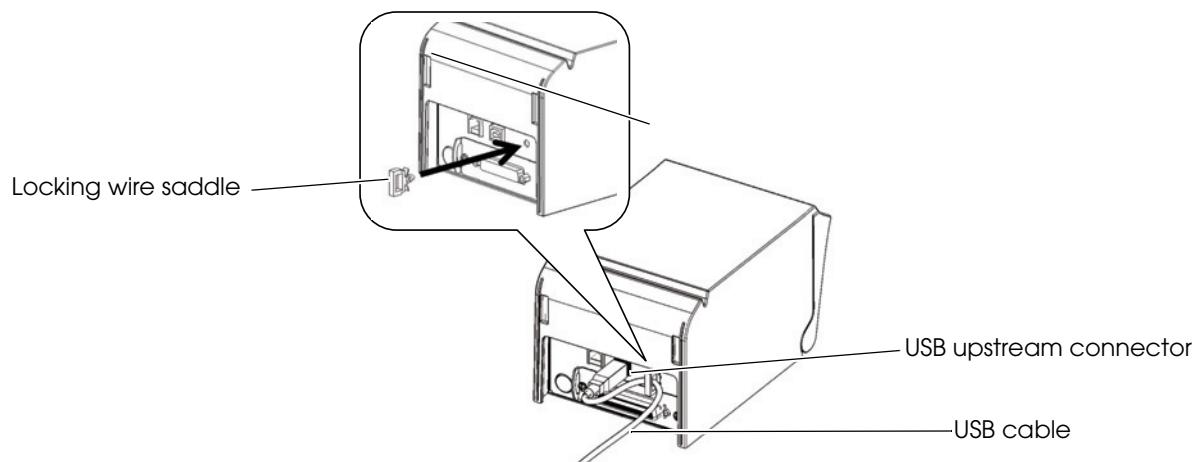
2

Connecting the USB interface cable

- 1 Attach the locking wire saddle at the location shown in the figure below.
- 2 Put the USB cable through the locking wire saddle.

CAUTION

Putting the USB cable through the locking wire saddle, as shown in the figure below, prevents the cable from coming unplugged.



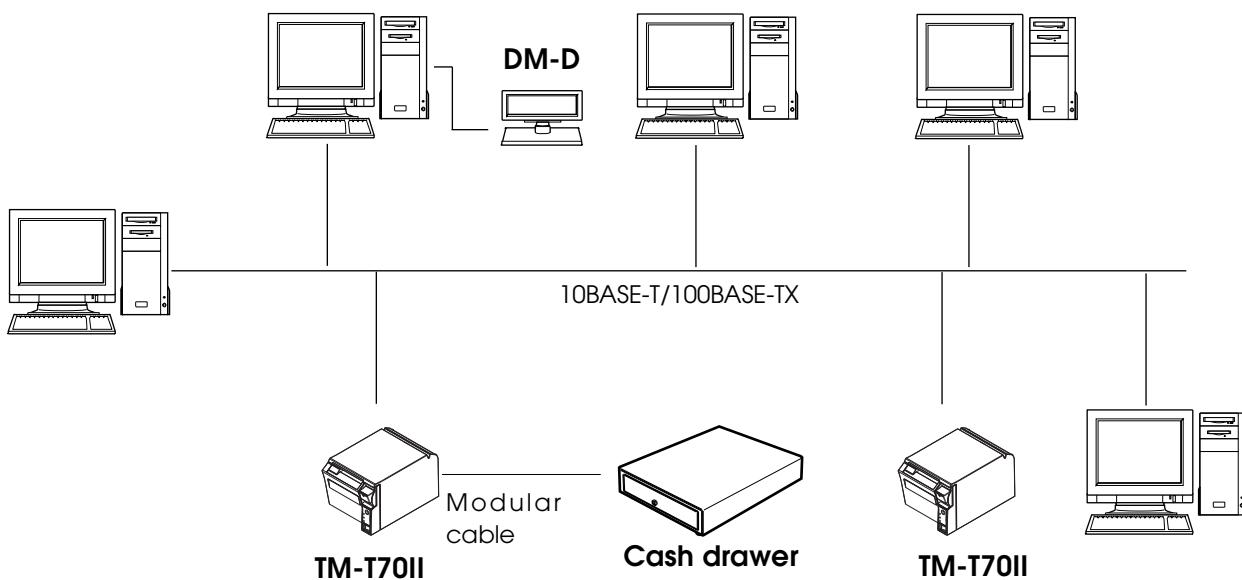
- 3 Connect the USB cable from the host computer to the USB upstream connector.

For LAN Interface

Connect the printer to a network by a LAN cable via a hub.

For the setting method of the IP address, see the TM-T70II Software User's Manual.

LAN interface connection diagram



CAUTION

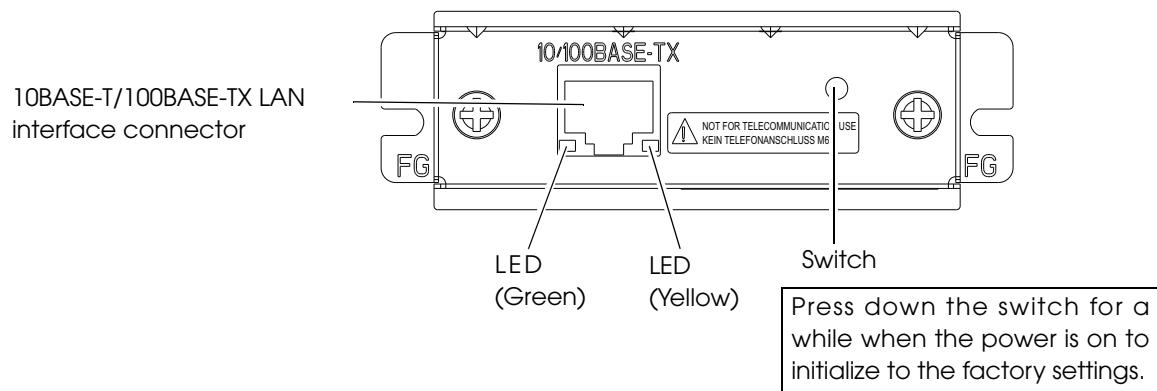
A customer display (DM-D series) cannot be connected to the printer when the printer is connected to the host computer. To connect the customer display, connect the printer to the host computer via the serial interface or the USB interface.

Connecting the LAN interface cable

CAUTION

- When LAN 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-out cable, or the standard telephone line cable to the 10BASE-T/100BASE-TX LAN connector.

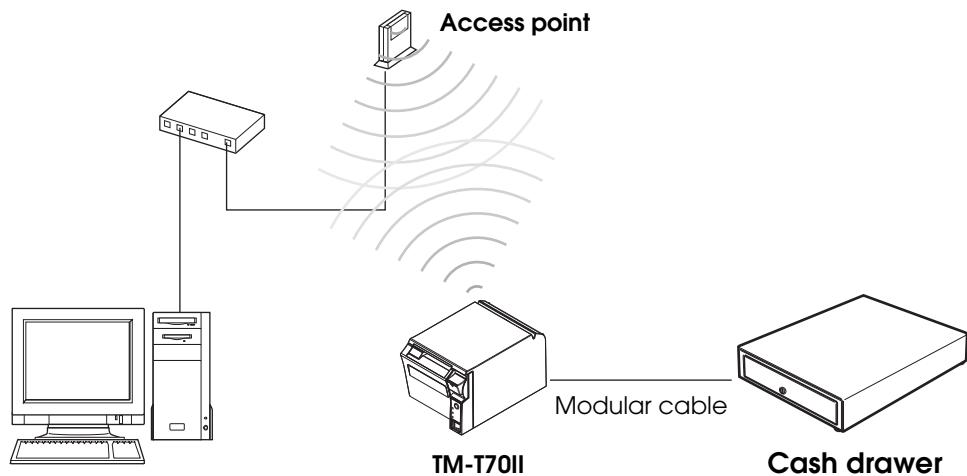
Connect a 10BASE-T/100BASE-TX cable to the 10BASE-T/100BASE-TX LAN connector by pressing firmly until the connector clicks into place.



For Wireless LAN Interface

For details on how to set up a wireless LAN interface, see the TM-T70II Software User's Manual.

Wireless LAN interface connection diagram



Connecting the AC Adapter (PS-180)

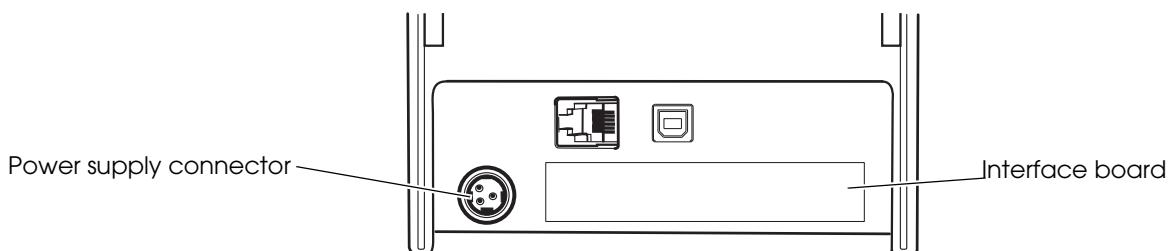
Use the PS-180 or an equivalent product as the AC adapter.



- Always use the EPSON PS-180 or an equivalent product as the AC adapter.
Using a nonstandard power supply can result in electric shock and fire.
- Should a fault ever occur in the EPSON PS-180 or equivalent product, immediately turn off the power to the printer and remove the power supply cable from the wall socket.

Connecting the AC Adapter

- 1** Make sure the printer's power supply is turned off and the AC adapter's power cable has been removed from the wall socket.
- 2** Insert the connector of the power supply cable onto the power supply connector (stamped **24V**). **2**



- Be sure to remove the AC adapter's cable from the wall socket whenever connecting or disconnecting the AC adapter.
Failure to do so may result in damage to the AC adapter or the printer.
- Make sure the wall socket power supply satisfies the rated voltage requirements of the AC adapter. Never insert the power supply cable plug into a socket that does not meet the rated voltage requirements of the AC adapter.
Doing so may result in damage to both the power supply and the printer.



Before removing the DC cable connector from the PS-180, make sure the power supply cable has been removed from the AC adapter, then grasp the arrow-marked section of the connector and pull straight out.

Setting the Memory Switches/Receipt Enhancement

With the memory switch and R/E (receipt enhancement) function, which are software settings for this printer, you can set the various functions.

For an outline of the functions, see the following section. Use the methods shown in the table below; TM-T70II Utility, Memory Switch Setting Mode, or ESC/POS commands, to set the memory switches and R/E functions.

Item\Method	TM-T70II Utility	Memory Switch Setting Mode	ESC/POS Commands
Receive buffer capacity	✓	✓	✓
BUSY condition	✓	✓	✓
Processing when data receive error	✓	✓	✓
Auto line feed	✓	✓	✓
USB power-saving function	✓	✓	✓
Release condition of receive buffer BUSY	✓	✓	✓
Paper sensor to output paper-end signals default ^{*1}	✓		✓
Error signal output	✓	✓	✓
Customized Values	Print density	✓	✓
	Multi-tone print density	✓	✓
	Print speed	✓	✓
	Number of head energizing parts		✓
	Thai character print mode ^{*2}		✓
	Character code table default	✓	✓
	International character default	✓	✓
	Interface selection		✓
	Autocutting after closing cover	✓	✓
	Paper reduction	✓	✓
	Font A auto replacement		✓
	Font B auto replacement		✓
	Buzzer	✓	✓
	TM-T88V command-compatible mode ^{*3}		✓
Communication condition of serial interface	✓	✓	✓
Communication condition of USB interface	✓	✓	✓

	Item\Method	TM-T70II Utility	Memory Switch Setting Mode	ESC/POS Commands
Receipt Enhancement	Auto top logo	✓*4		✓
	Auto bottom logo	✓		✓
	Auto top/bottom logo extended functions	✓*4		✓

dpi: dots per inch

*1: Enabled only for the parallel interface

*2: Enabled only for South Asia font models

*3: Enabled only for ANK models

*4: Excluding some functions.

NOTE

- For information about the TM-T70II Utility, see the TM-T70II Utility User's Manual.
- For information about how to use the memory switch setting mode, see "[Memory Switch Setting Mode](#)" on page 87.
- For information about ESC/POS commands, see the ESC/POS Command Reference.

Functions

Receive buffer capacity

- 4 KB (initial setting)
- 45 bytes

BUSY condition

- Receive buffer full/Offline (initial setting)
- Receive buffer full

CAUTION

- In either case above, the printer enters the BUSY state after power is turned on, and when a self-test is being run.
- If BUSY condition is set to "Receive buffer full," the printer will not become BUSY
 - * When the cover is open
 - * When paper is fed by the Feed button
 - * When printing has stopped for a paper out
 - * When macro execution ready state
 - * When error has occurred

Processing when data receive error

- Prints "?" (initial setting)
- Ignored

Auto line feed

- Always disabled (initial setting)
- Always enabled

USB power-saving function

- Disabled
- Enabled (initial setting)

CAUTION

The USB power-saving function is 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.

Release condition of receive buffer BUSY

- Releases when the remaining receive buffer capacity becomes 256 bytes (initial setting)
- Releases when the remaining receive buffer capacity becomes 138 bytes

CAUTION

This function is enabled only when Receive buffer capacity is set to 4 KB.

Paper sensor to output paper-end signals default (only for parallel interface models)

- Paper end sensor enabled, paper near-end sensor enabled
- Disabled (initial setting)

Error signal output

- Enabled (initial setting)
- Disabled

Print density

Selectable from levels 1 to 13 (70% ~ 130%)

Initial setting: level 7 (100%)

Depending on the paper type, it is recommended to set the print density as shown in the table below for the best print quality.

Original Paper type	Density Level
TF50KS-E, P220AGB-1, AF50KS-E	Level 5 (90%)
TF60KS-E, PD160R, PD190R, KT48F20, KT55F20, F5041	Level 7 (100%)
P300, P310, P350	Level 8 (105%)

CAUTION

When the print density level is increased, printing speed may be reduced.

Multi-tone print density

Selectable from levels 1 to 13 (70% ~ 130%)

Initial setting for ANK models: level 7 (100%)

Initial setting for Simplified Chinese models, Traditional Chinese models, and South Asia font models: level 11 (120%)

CAUTION

- First change the print density, and then configure the Multi-tone print density.
- If you set the density too high, the contrast becomes lower. Select the density level checking the overall tone balance of your image.

Print speed

Selectable from levels 1 to 13 (Slow ~ Fast)

Initial setting: level 13

NOTE

Depending on print conditions, such as print duty, print head temperature, and data transmission speed, print speed is automatically adjusted, which may cause white lines due to intermittent print (the motor sometimes stops). To avoid this, keep the print speed constant by setting it lower, or set the transmission speed higher for the serial interface.

Thai character print mode (only for South Asia font models)

- Thai 3 pass
- Thai 1 pass (initial setting)

Selecting the number of head energizing parts

- One-part energizing (initial setting)
- Two-part energizing

NOTE

- Usually, the number of head energizing parts does not need to be changed.
- When printing at the maximum speed, select "One-part energizing."

Character code table default

Selectable from 43 pages including user defined page

Initial setting: Page 0 (PC437: USA, Standard Europe)

NOTE

- For the character code table, see "[Character Code Tables](#)" on page 112.
- User-defined page is not supported by South Asia font models.

International character default

Selectable from 18 sets

Initial setting for Simplified Chinese models: China

Initial setting for ANK models, Traditional Chinese models, and South Asia font models: USA

NOTE

For the character code table, see "[International Character Sets](#)" on page 156.

Interface selection

Selectable from: automatic selection (initial setting), fixed to UIB interface, or fixed to built-in USB. The table below describes the modes you can set for the printer to control the dual interfaces.

Interface mode	UIB interface		Built-in USB
	Serial/Parallel	Interface other than Serial/Parallel	
Automatic selection	Available ^{*1}	Available ^{*2}	Available ^{*1,*2}
Fixed to UIB	Available	Available	Not available
Fixed to built-in USB	Not available	Not available	Available

NOTE

- Automatic selection
 - * *1: The interface of either the serial/parallel or built-in USB to which data is transmitted first is selected.
 - * *2: When the USB cable is connected with a host PC, the USB interface is selected.
- Once the interface is selected, the selection is enabled until the power is turned off or the printer is reset.

Autocutting after closing cover

- Cuts
- Does not cut (initial setting)

Paper reduction

Extra upper space reduction

- Disabled (initial setting)
- Enabled

Extra lower space reduction

- Disabled (initial setting)
- Enabled

Line space reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

Line feed reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

Barcode height reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

CAUTION

- Paper reduction is not performed for space dot lines of graphics printing data.
- When reducing barcode height, be sure to check reading a barcode with your barcode reader in advance.

Font A auto replacement

- Does not replace (initial setting)
- Font B

Font B auto replacement

- Does not replace (initial setting)
- Font A

Buzzer

NOTE

- For models without the internal buzzer function, the optional external buzzer (OT-BZ20) needs to be connected to use the buzzer function. For information about how to connect the optional external buzzer, see "[Connecting the Optional External Buzzer](#)" on page 64.
- When the optional external buzzer is enabled, a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.

Enables/disables

- Disabled
- Optional external buzzer is enabled
- Internal buzzer is enabled (initial setting)

Buzzer frequency (Error) (only for the optional external buzzer)

- Does not sound
- Sounds 1 time
- Sounds continuously (initial setting)

Sound pattern (Autocut) (only for the optional external buzzer)

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Autocut) (only for the optional external buzzer)

- Does not sound
- Sounds 1 time (initial setting)

Sound pattern (Pulse 1) (only for the optional external buzzer)

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Pulse 1)

- Does not sound (initial setting)
- Sounds 1 time

Sound pattern (Pulse 2) (only for the optional external buzzer)

Selectable from Patterns A to E

Initial setting: Pattern B

Buzzer frequency (Pulse 2)

- Does not sound
- Sounds 1 time (initial setting)

TM-T88V command-compatible mode (only for ANK models)

- Disabled (initial setting)
- Enabled

Communication condition of serial interface

Transmission speed

- 2400 bps
 - 4800 bps
 - 9600 bps (initial setting for Simplified Chinese models and Traditional Chinese models)
 - 19200 bps
 - 38400 bps (initial setting for ANK models (with TM-T88V command-compatible mode enabled))
 - 57600 bps
 - 115200 bps (initial setting for ANK models (with TM-T88V command-compatible mode disabled) and South Asia font models)
- (bps: bits per second)

Parity

- None (initial setting)
- Even
- Odd

Data bit

- 7 bits
- 8 bits (initial setting)

CAUTION

If set to 7 bits, printing from a printer driver is not possible.

Flow control

- DTR/DSR (initial setting)
- XON/XOFF

Communication condition of USB interface

- USB printer class
- USB vendor-defined class (initial setting)

Auto top logo

NOTE

TM-T70II Utility does not support the function for Number of lines to be deleted below top logo.

Key-code

Selectable from key-codes of registered logos

Alignment

- Left (initial setting)
- Center
- Right

Number of lines to be deleted below top logo

Auto bottom logo

Key-code

Selectable from key-codes of registered logos

Alignment

- Left (initial setting)
- Center
- Right

Auto top/bottom logo extended functions

NOTE

TM-T70II Utility does not support the following functions.

- Top logo print while paper feeding to the cutting position
- Top logo print while clearing the buffer to recover from a recoverable error
- Top logo print after paper feeding with the Feed button has finished

Top logo print while paper feeding to the cutting position

- Disabled
- Enabled (initial setting)

Top logo print when printer is powered on

- Disabled (initial setting)
- Enabled

Top logo print when roll paper cover is closed

- Disabled
- Enabled (initial setting)

Top logo print while clearing the buffer to recover from a recoverable error

- Disabled
- Enabled (initial setting)

Top logo print after paper feeding with the Feed button has finished

- Disabled (initial setting)
- Enabled

Connecting the Optional External Buzzer

When using the optional external buzzer (OT-BZ20), install the optional external buzzer.

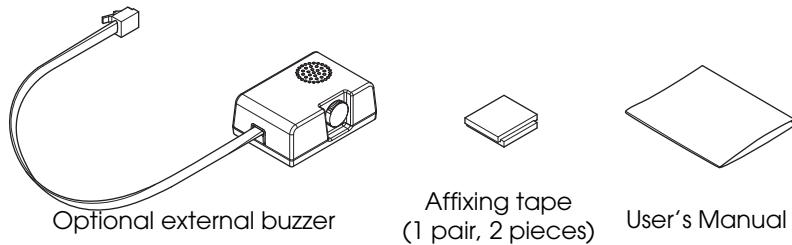
If your printer is not equipped with a buzzer, you can use the optional external buzzer (OT-BZ20) by connecting it to the drawer.

CAUTION

- The optional external buzzer and the drawer cannot be used together at the same time.
- If you configure the memory switch setting to enable the optional external buzzer, the drawer cannot be opened because the pulse is not sent to the drawer kick connector pin.
- Make sure to use the accessory affixing tape to attach the optional external buzzer to the printer.
- Be careful not to spill water, oil, solvent, or any other liquid over the printer. Doing so may result in malfunction of the printer.

Unpacking

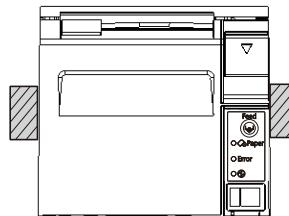
Open the package and confirm that it contains all of the parts listed in the illustration. If any parts are missing or damaged, please contact your dealer for assistance.



Installation Position

This product is recommended to be installed in the following position.

- Either side of the printer.



CAUTION

- Do not install the optional external buzzer at the roll paper exit.
- To prevent liquid from entering inside, it is recommended to install the optional external buzzer so that the volume adjustment knob is positioned sideways or downward. (For details of the volume adjustment knob, see "Adjusting the Buzzer Volume" on page 67.)

Installation Procedures

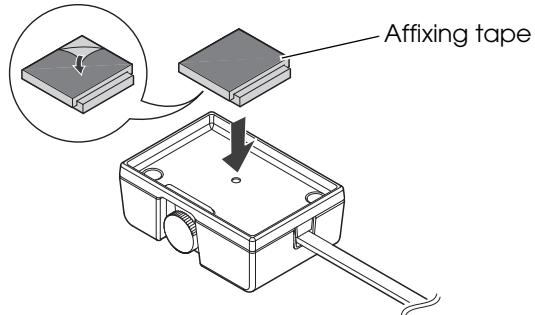
1 Turn off the printer.

CAUTION

Connect and disconnect the optional external buzzer while the printer is turned off. If you connect it while the printer is turned on, the buzzer does not function correctly.

2 Clean and dry the printer case where the optional external buzzer will be installed.

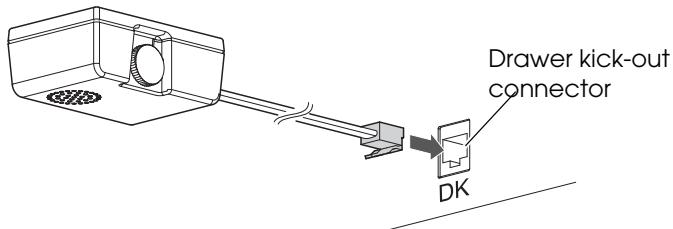
3 With 2 pieces of the affixing tape combined, peel off the sticker on one side, and paste it around the center of the attaching surface of the optional external buzzer.



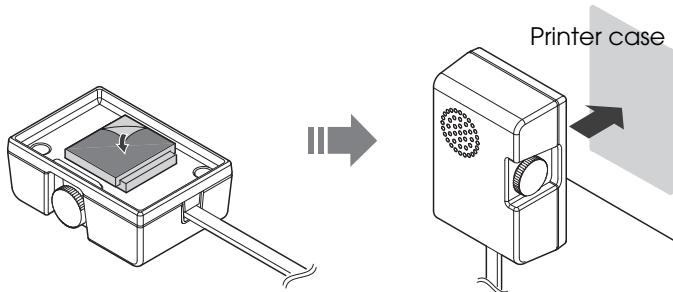
4 Connect the cable of the optional external buzzer to the drawer kick-out connector on the printer.

CAUTION

- Be sure to connect to the drawer kick-out connector on the applicable printer.
- Do not connect both the optional external buzzer and the drawer by using a splitter or similar device.



- 5** Peel off the sticker on the other side of the affixing tape, and attach and fix the optional external buzzer to the printer case.



- 6** Turn on the printer.

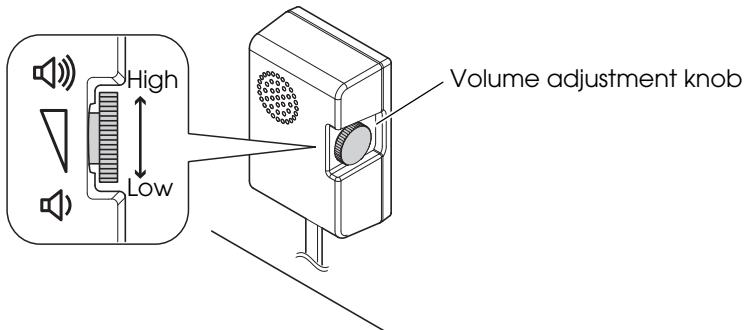
- 7** Make settings for the optional external buzzer on the printer.

CAUTION

- To use this product, be sure to enable the optional external buzzer with the printer setting.
- When the optional external buzzer is enabled with the printer setting, the drawer cannot be driven.

Adjusting the Buzzer Volume

Turn the volume adjustment knob to adjust the buzzer volume.



Setting the Optional External Buzzer

You need to set the memory switches for buzzer enable/disable setting, sound pattern setting, and frequency setting. For information about the memory switches, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

Connecting the Cash Drawer

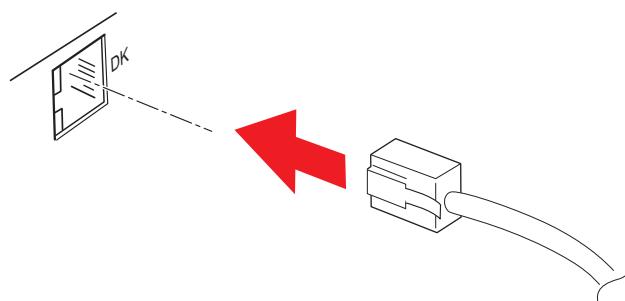
Use the cash drawer handled by EPSON or your dealer.

Connecting the Drawer Kick-out Cable

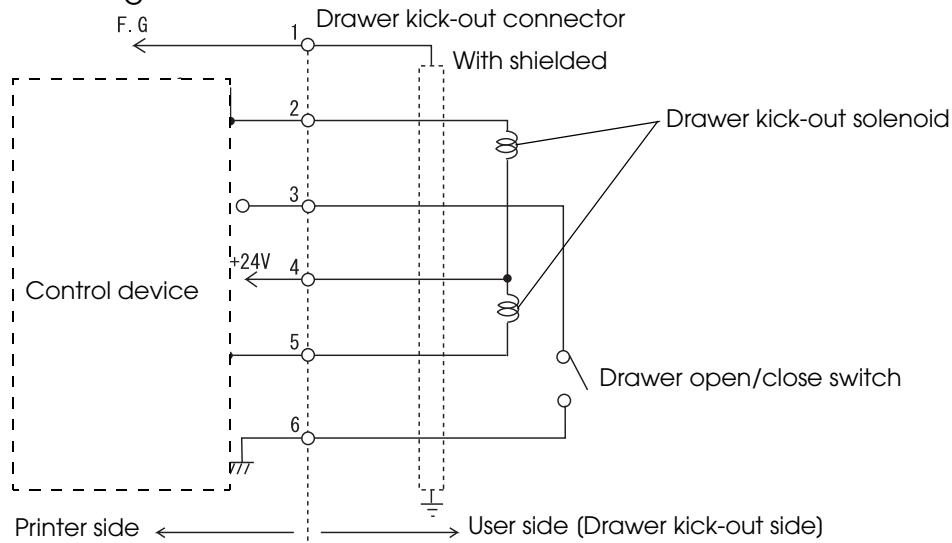
WARNING

- **Specifications of drawers differ depending on makers or models. When you use a drawer other than specified, make sure its specification meets the following conditions.**
Otherwise, devices may be damaged.
 - * The load, such as a drawer kick-out solenoid, must be connected between pins 4 and 2 or pins 4 and 5 of the drawer kick-out connector.
 - * When the drawer open/close signal is used, a switch must be provided between drawer kick-out connector pins 3 and 6.
 - * The resistance of the load, such as a drawer kick-out solenoid, must be $24\ \Omega$ or more or the input current must be 1 A or less.
 - * Be sure to use the 24 V power output on drawer-kick out connector pin 4 for driving the equipment.
- **Use a shield cable for the drawer connector cable.**
- **Two driver transistors cannot be energized simultaneously.**
- **Leave intervals longer than 4 times the drawer driving pulse when sending it continuously.**
- **Be sure to use the printer power supply (connector pin 4) for the drawer power source.**
- **Do not insert a telephone line into the drawer kick-out connector.**
Doing so may damage the telephone line or printer.

Connect the connector of the drawer kick-out cable to the printer.



Drawer connection diagram



Setting the Internal Buzzer (for Models with an Internal Buzzer)

Models with the buzzer function can beep the buzzer when the drawer is opened, by setting the properties of the driver or outputting a pulse signal by a command. The internal buzzer cannot change the buzzer volume and sound pattern but can change the buzzer frequency. When using the internal buzzer, you need to enable the internal buzzer with the memory switch.

The buzzer setting is performed by setting the memory switches for the buzzer and specifying connector pin numbers to which a command outputs a pulse signal, as shown in the table below. For information about the memory switches, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54

Memory switch	Specified connector pin	ON	OFF	Initial setting
Buzzer frequency (Pulse 1)	Drawer kick out connector pin 2	Buzzer beeps.	Buzzer does not beep.	OFF
Buzzer frequency (Pulse 2)	Drawer kick out connector pin 5	Buzzer beeps.	Buzzer does not beep.	ON

CAUTION

Since the buzzer drive signal and the cash drawer drive signal are common in the printer, do not use the same connector pin numbers to output the signal for the buzzer and the cash drawer.

NOTE

- For detailed information about ESC/POS commands, see the ESC/POS Command Reference.
- For detailed information about the driver control, see the manual for each driver.

Application Development Information

This chapter describes how to control the printer and gives information useful for printer application development.

How to Control the Printer

Use a driver or ESC/POS commands to control the printer.

Selecting a Driver

Choose one of the drivers listed in "Software and Manuals" on page 78, depending on the application operating environment. For information about the driver operating environment, see the installation manual for each driver.

When you newly develop an application

- Use APD if you want to print TrueType fonts or print much graphics.
- OPOS ADK is recommended for system extensibility. An OPOS driver is provided for various peripherals and it is now a POS industry standard. It enables POS system efficiency, reduction of development cost, and effective use of application assets.

NOTE

You can use all functions including ones not supported by OPOS ADK or APD, by using ESC/POS commands through your driver. Use the DIRECT I/O function of OPOS ADK, the control A command of APD, or Status API to send ESC/POS commands from each driver. (See "ESC/POS command functions" on page 72.)

ESC/POS Command

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 compared to using a driver.

The ESC/POS command functions are listed as follows. For detailed information about ESC/POS commands, see the ESC/POS Command Reference.

ESC/POS command functions

Commands for printing
Print and line feed
Print and feed <i>n</i> lines
Print data in page mode
Print and return to standard mode (in page mode)
Commands for line spacing
Set line spacing
Select default line spacing
Commands for print character
Select character code table
Select an international character set
Set right-side character spacing
Set all character fonts and styles
Turn underline mode on/off
Turn emphasized mode on/off
Select character font
Select character size
Turn smoothing mode on/off
Turn upside-down print mode on/off
Turn 90° clockwise rotation mode on/off
Turn white/black reverse print mode on/off
Turn double-strike mode on/off
Select/cancel user-defined character set

Define user-defined characters
Cancel user-defined characters
Cancel print data in page mode
Commands for panel buttons
Enable/disable panel buttons
Commands for paper sensors
Select paper sensor(s) to stop printing
Select paper sensor(s) to output paper-end signals
Commands for print positions
Horizontal tab
Set horizontal tab positions
Set left margin
Set print area width
Select justification
Set absolute print position
Set relative print position
Set print area in page mode
Select print direction in page mode
Set absolute vertical print position in page mode
Set relative vertical print position in page mode
Commands for bit image
Transmit the NV graphic memory capacity
Print the graphics data in the print buffer
Transmit the remaining capacity of the NV graphics memory
Transmit the remaining capacity of the download graphics memory
Transmit the key code list for defined NV graphics
Delete all NV graphics data
Delete the specified NV graphics data
Define the NV graphics data (raster format)
Print the specified NV graphics data

Transmit the key code list for defined download graphics
Delete all download graphics data
Delete the specified download graphics data
Define the downloaded graphics data (raster format)
Print the specified download graphics data
Store the graphics data in the print buffer (raster format)
Select bit-image mode
Define downloaded bit image
Print downloaded bit image
Define Windows BMP NV graphics data
Define Windows BMP download graphics data
Commands for status
Enable/disable Automatic Status Back (ASB)
Transmit status
Transmit real-time status
Commands for barcode
Print barcode
Set barcode height
Set barcode width
Select print position of HRI characters
Select font for HRI characters
Commands for two-dimensional code
PDF417: Set the number of columns in the data region
PDF417: Set the number of rows
PDF417: Set the width of module
PDF417: Set the row height
PDF417: Set the error correction level
PDF417: Select the options
PDF417: Store the data in the symbol storage area
PDF417: Print the symbol data in the symbol storage area

PDF417: Transmit the size information of the symbol data in the symbol storage area
QR Code: Select the model
QR Code: Set the size of module
QR Code: Select the error correction level
QR Code: Store the data in the symbol storage area
QR Code: Print the symbol data in the symbol storage data area
QR Code: Transmit the size information of the symbol data in the symbol storage area
MaxiCode: Select the mode
MaxiCode: Store the data in the symbol storage area
MaxiCode: Print the symbol data in the symbol storage area
MaxiCode: Transmit the size information of the symbol data in the symbol storage area
Two-dimensional GS1 DataBar: Set the width of module
Two-dimensional GS1 DataBar: Set the maximum width of GS1 DataBar Expanded Stacked
Two-dimensional GS1 DataBar: Store the data in the symbol storage area
Two-dimensional GS1 DataBar: Print the symbol data in the symbol storage area
Two-dimensional GS1 DataBar: Transmit the size information of the symbol data in the symbol storage area
Composite Symbology: Set the width of module
Composite Symbology: Set the maximum width of GS1 DataBar Expanded Stacked
Composite Symbology: Select font for HRI characters
Composite Symbology: Store the data in the symbol storage area
Composite Symbology: Print the symbol data in the symbol storage area
Composite Symbology: Transmit the size information of the symbol data in the symbol storage area
Commands for macro functions
Start/end macro definition
Execute macro
Commands for mechanical control
Select cut mode and cut paper
Commands for customization
Set values for the memory switch

Transmit the setting of the memory switch
Set the customized setting values
Transmit the customized setting values
Set the configuration item for the serial interface
Transmit the configuration item for the serial interface
Set conditions for USB interface communication
Transmit conditions for USB interface communication
Delete the specified record of NV user memory
Store the data in the specified record of NV user memory
Transmit the data in the specified record of NV user memory
Transmit capacity of the NV user memory currently being used
Transmit the remaining capacity of the NV user memory
Transmit the key code list
Delete all data in the NV user memory
Commands for sub-functions
Initialize printer
Transmit printer ID
Set horizontal and vertical motion units
Select peripheral device
Generate pulse to drawer
Generate pulse to drawer in real-time
Execute power-off sequence
Buzzer control
Clear buffer(s)
Enable/disable real-time command
Send real-time request to printer
Select page mode
Select standard mode
Set the process ID response
Execute test print

Select the print speed
Select the number of parts for the thermal head energizing
Initialize maintenance counter
Transmit maintenance counter
Commands for receipt enhancement
Cancel set values for top/bottom logo printing
Transmit set values for top/bottom logo printing
Set top logo printing
Set bottom logo printing
Make extended settings for top/bottom logo printing
Enable/disable top/bottom logo printing

Software and Manuals

The following software and manuals are provided for application development.

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.	<ul style="list-style-type: none">• APD Install Manual• APD TM/BA/EU Printer Manual• APD Printer Specification• Devmode API/PRINTERINFO Manual• Status API Manual• Sample Program Guide• TM-T70II Software User's Manual
EPSON 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.	<ul style="list-style-type: none">• OPOS Installation Manual• User's Manual• Application Development Guide• UnifiedPOS Retail Peripheral Architecture^{*2}• Sample Program Guide
EPSON OPOS ADK for .NET: OPOS ADK for .NET allows you to develop applications that are compatible with Microsoft POS for .NET. When developing applications, use a separate development environment such as Microsoft Visual Studio .NET.	<ul style="list-style-type: none">• OPOS ADK for .NET Installation Guide• UnifiedPOS Retail Peripheral Architecture^{*2}• User's Reference (SetupPOS)• Application Development Guide (POSPrinter TM-T70II)
JavaPOS ADK (Windows/Linux): JavaPOS is the standard specification which defines an architecture and device interface (API) to access various POS devices from a Java based system. Using JavaPOS standard API allows control with Java-based applications of functions inherent to each device. A flexible design with Java language and JavaPOS enables many different types of computer systems, such as stand alone or network configuration, to use a same application. You can use JavaPOS to build applications and drivers independently of platforms. This allows flexible configurations using thin clients to meet the system requirements.	JavaPOS ADK Installation Guide

Software	Manual
<p>EPSON TM Virtual Port Driver: This driver is a Serial-USB/Ethernet and Parallel-USB/Ethernet conversion driver to make an EPSON TM/BA/EU printer connected via USB/Ethernet 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/Ethernet can be directly controlled with ESC/POS commands.</p>	TM Virtual Port Driver User's Manual
<p>TM-T70II Mac Printer Driver: Mac printer driver allows you to control the TM-T70II using Common UNIX Printing System (CUPS) on Mac OS X. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer controls are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing. It also provides API and dialogues for print setting, sample applications, and logo setting utility.</p>	TM-T70II Mac Printer Driver User's Manual
<p>Epson TM/BA Series Thermal Printer Driver: This driver allows you to control the TM-T70II using Common UNIX Printing System (CUPS) on GNU/Linux. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer control are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing.</p>	<ul style="list-style-type: none"> • Epson TM/BA Series Thermal Printer Driver Installation Manual • Epson TM/BA Series Thermal Printer Driver Manual • TM-T70II Thermal Printer Driver 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-A"). It does not describe Epson's specific functions.

Utilities

Software	Manual
TM-T70II Utility: Use for the following functions: <ul style="list-style-type: none">• Checking current settings• Operation check• Storing logos• Coupon settings• Paper reduction settings• Automatic paper cut settings• Printing control settings• Font settings• Optional buzzer settings• Communication I/F settings• Backup/restore	<ul style="list-style-type: none">• TM-T70II Software User's Manual• TM-T70II Utility User's Manual
EpsonNet Config: Use for IP address or wireless LAN setting.	<ul style="list-style-type: none">• EpsonNet Config Operations Guide• UB-E03 Technical Reference Guide• UB-R04 Technical Reference Guide
EpsonNet Simple Viewer: Use for checking the status of EPSON printers connected to a network and EPSON TM/BA printers connected to computers on a network.	EpsonNet Simple Viewer User's Manual
TM / BA /EU Printer Remote Configuration Tool: This is a package of EpsonNet Simple Viewer and TM-T70II Utility. First install this software in the computer with the administrator's authority, and set up the firewall. Next, install the printer driver in each client computer and set up the firewall. Then you can check the status of and configure the printer connected to a client computer on the network from the computer with the administrator's authority.	TM / BA /EU Printer Remote Configuration Tool User's Manual A package of EpsonNet Simple Viewer and TM-T70II Utility.
BMP File Converter: Use to convert the BMP image files used in Windows into a data format which can be interpreted by EPSON POS printers (TM series). Conversion to multi-tone or black and white image command is possible. After execution a binary file with the command string is created.	Readme.txt File

How to Get Drivers, Manuals, and the Utility

Drivers, manuals, and the TM-T70II Utility can be installed by the TM-T70II installer in the included TM-T70II Software & Documents Disc.

You can also obtain them from one of the following URLs.

For customers in North America, go to the following web site:

<http://www.epsonexpert.com/> and follow the on-screen instructions.

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

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

Setting/Checking Modes

Besides the ordinary print mode, the printer has the following modes to set or check settings of the printer.

- Self-test Mode
- Hexadecimal Dumping Mode ([page 84](#))
- NV Graphics Information Print Mode ([page 85](#))
- Receipt Enhancement Information Print Mode ([page 86](#))
- Memory Switch Setting Mode ([page 87](#))

Self-test Mode

You can confirm the following information by running the self-test mode.

- Control ROM version
- Interface type
- Receive buffer size
- Busy conditions (depending on the interface type)
- Mounted multilingual fonts
- Thai character print mode (only for South Asia font models)
- Auto line feed (with a parallel interface)
- Print density
- TM-T88V command-compatible mode (only for ANK models)
- Maintenance counter information (head running length, number of times of autocutting)
- Memory switch settings

Follow the steps below to run this mode.

- 1 Close the roll paper cover.
- 2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing current status of the printer.

NOTE

With the LAN interface, before printing starts, it takes 6 seconds if the IP address is fixed and 13 seconds if the IP address is obtained with the automatic setting. (It may take longer depending on the response time from the host.)

When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

“Select Modes by pressing Feed button.

Continue SELF-TEST: Less than 1 second

Mode Selection : 1 second or more”

3 Press the Feed button while the printer is in the self-test wait mode.

If you select the SELF-TEST, the printer prints a rolling pattern using only the built-in character set.

If you select the mode selection, follow the instructions printed by the printer.

After printing the following message, the printer is initialized and returned to the normal mode.

“*** completed***”

Hexadecimal Dumping Mode

In the hexadecimal dumping mode, the printer prints the data transmitted from a host computer in hexadecimal numbers and their corresponding characters.

Follow the steps below to run this mode.

CAUTION

- If there is no character corresponding to print data, “.” is printed.
- If print data is less than one line, press the Feed button to print the line.
- Applications that confirm printer status may not work correctly during the hexadecimal dumping mode. The printer returns only the status for “Transmit real-time status.”

- 1 Open the roll paper cover.
- 2 While pressing the Feed button, turn on the printer.
- 3 Close the roll paper cover.

The printer starts printing data received from then on in hexadecimal numbers and their corresponding characters.

Printing example:

```
Hexadecimal Dump
To terminate hexadecimal dump,
press Feed button three times.

1B 21 00 1B 26 02 40 40 1B 69 . ! . . & . @ @ . i
1B 25 01 1B 63 34 00 1B 30 31 . % . . c 4 . . 0 1
41 42 43 44 45 46 47 48 49 4A A B C D E F G H I J

*** completed ***
```

Turn off the printer or press the Feed button three times to return to the normal mode.

NV Graphics Information Print Mode

You can confirm the following information by running the NV graphics information print mode:

- Capacity of the NV graphics
- Used capacity of the NV graphics
- Unused capacity of the NV graphics
- Number of NV graphics that are registered
- Key code, number of dots in X direction, number of dots in Y direction, number of colors to be defined.
- NV graphics data

NOTE

For detailed information about NV graphics, see "["NV Graphics Memory" on page 23](#).

Follow the steps below to run this mode.

- 1 Close the roll paper cover.
- 2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing current status of the printer.

NOTE

With the LAN interface, before printing starts, it takes 6 seconds if the IP address is fixed and 13 seconds if the IP address is obtained with the automatic setting. (It may take longer depending on the response time from the host.)

- 3 After the printing has been completed, press the Feed button for more than one second.
The printer starts printing instructions.
- 4 After the printing has been completed, press the Feed button.
- 5 Then press the Feed button for more than one second.

Turn the power off and on to return to the normal mode.

R/E (Receipt Enhancement) Information Print Mode

You can confirm the following information by running the R/E information mode:

- Automatic top logo setting
- Automatic bottom logo setting
- Extended settings for automatic top/bottom logo

Follow the steps below to run this mode.

- 1** Close the roll paper cover.
- 2** While pressing the Feed button, turn the power on. (Keep pressing the Feed button until the printer starts printing.)
The printer prints current status of the printer.

NOTE With the LAN interface, before printing starts, it takes 6 seconds if the IP address is fixed and 13 seconds if the IP address is obtained with the automatic setting. (It may take longer depending on the response time from the host.)
- 3** After the printing has been completed, press the Feed button for more than one second.
The printer starts printing instructions.
- 4** After the printing has been completed, press the Feed button twice.
- 5** Then press the Feed button for more than one second.

Turn the power off and on to return to the normal mode.

Memory Switch Setting Mode

You can configure the memory switches of the printer.

- Receive buffer capacity
- Processing when data receive error
- USB power-saving function
- Error signal output
- Multi-tone print density
- Character code table default
- Interface selection
- Auto paper reduction
- Buzzer control
- Communication condition of USB interface
- BUSY condition
- Auto line feed
- Release condition of receive buffer BUSY
- Print density
- Print speed
- International character default
- Autocutting after closing cover
- Font auto replacement
- Communication condition of serial interface
- TM-T88V command-compatible mode (only for ANK models)

NOTE

For detailed information about memory switches, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

3

Starting the memory switch setting mode

Follow the steps below to run this mode.

- 1** Close the roll paper cover.
- 2** Turn on the printer while pressing the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer prints current status of the printer.

NOTE

With the LAN interface, before printing starts, it takes 6 seconds if the IP address is fixed and 13 seconds if the IP address is obtained with the automatic setting. (It may take longer depending on the response time from the host.)

- 3** After the printing has been completed, press the Feed button for more than one second.
The printer starts printing instructions.

- 4** After the printing has been completed, press the Feed button three times.
- 5** Then press the Feed button for more than one second.
The printer starts printing instructions for settings. Follow the instructions.

After one setting has been completed, the printer stores the setting and then starts initializing.
After that, the printer returns to the normal mode.

Setting the memory switch

Follow the steps below to run this mode.

Enter the memory switch setting mode.

1. Check that the roll paper is set and that the printer is turned off.
2. While pressing the Feed button, turn on the printer. Keep pressing the Feed button until the printer starts printing.
3. When the printer finishes printing the printer status, press the Feed button. Keep pressing the Feed button until the printer starts printing.
4. Press the Feed button three times.
5. Then press the Feed button. Keep pressing the Feed button until the printer starts printing.

The printer starts printing instructions for settings. Follow the instructions.



Select the setting item

Select the setting item by the number of times the Feed button is pressed as follows.

When the Feed button is not pressed (0 times) or it is pressed more than 12 times, this mode finishes.

- | | |
|--|---|
| <input type="checkbox"/> 1: Print Current Settings | <input type="checkbox"/> 6: Default Character |
| <input type="checkbox"/> 2: Print Density | <input type="checkbox"/> 7: Embedded Font Replacement |
| <input type="checkbox"/> 3: Serial Interface Settings | <input type="checkbox"/> 8: Interface Selection |
| <input type="checkbox"/> 4: Automatic Paper Reduction | <input type="checkbox"/> 9: USB Interface Settings |
| <input type="checkbox"/> 5: Auto Paper Feed&Cut at cover close | <input type="checkbox"/> 10: Printing Speed |
| | <input type="checkbox"/> 11: Other Settings |

When the button is pressed less than or more than shown on the left, the setting has not been changed.



Set the conditions

You can make settings for each condition per setting item by the number of times the Feed button is pressed.

- | | |
|---|--|
| <input type="checkbox"/> Print Current Settings | <input type="checkbox"/> Embedded Font Replacement (page 91) |
| <input type="checkbox"/> Print Density (page 90) | <input type="checkbox"/> Interface Selection (page 91) |
| <input type="checkbox"/> Serial Interface Settings (page 90) | <input type="checkbox"/> USB Interface Settings (page 91) |
| <input type="checkbox"/> Automatic Paper Reduction (page 90) | <input type="checkbox"/> Printing Speed (page 92) |
| <input type="checkbox"/> Auto Paper Feed&Cut at cover close (page 90) | <input type="checkbox"/> Other Settings (page 92) |
| <input type="checkbox"/> Default Character (page 91) | |



Finish the memory switch setting mode

Turn off the printer. Print out the new settings and save them to the NV memory. Software is reset, and the printer is ready to print.

Setting conditions

- Print Density

Number of times to press the Feed button	Settings
0	No change
1	Monochrome
2	Multi-Tone

- Serial Interface Settings

Number of times to press the Feed button	Settings
0	No change
1	Baud Rate
2	Parity
3	Handshaking
4	Data Bits
5	Data Receive Error

- Automatic Paper Reduction

Number of times to press the Feed button	Settings
0	No change
1	Upper Margin
2	Lower Margin
3	Blank Line Spacing
4	Blank Space
5	Barcode Height

- Auto Paper Feed&Cut at cover close

Number of times to press the Feed button	Settings
0	No change
1	Enable
2	Disable

- Default Character

Number of times to press the Feed button	Settings
0	No change
1	Code Page
2	International Character Set

- Embedded Font Replacement

Number of times to press the Feed button	Settings
0	No change
1	Font A Replacement
2	Font B Replacement

- Interface Selection

Number of times to press the Feed button	Settings
0	No change
1	UIB
2	Built-in USB
3	Auto

- USB Interface Settings

Number of times to press the Feed button	Settings
0	No change
1	Class
2	USB Power Saving

- Printing Speed

Number of times to press the Feed button	Settings
0	No change
1	Level 1 (Slow)
2	Level 2
3	Level 3
4	Level 4
5	Level 5
6	Level 6
7	Level 7
8	Level 8
9	Level 9
10	Level 10
11	Level 11
12	Level 12
13	Level 13 (Fast)

- Other Settings

Number of times to press the Feed button	Settings
0	No change
1	TM-T88V Compatible Mode
2	Buzzer Control
3	Interface Settings

Handling

This chapter describes basic handling of the printer.

Installing and Replacing Roll Paper

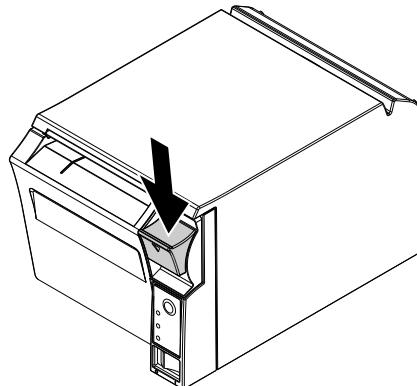


- **Do not open the roll paper cover during printing.**
The printer may be damaged.
- **Do not touch the manual cutter with your hands when installing or replacing the roll paper.**
Otherwise, you may be injured because the manual cutter blade is sharp.

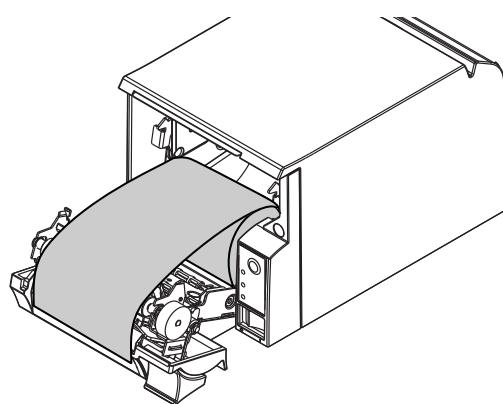
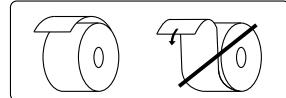


- Use roll paper that meets the printer specification. For details about paper specification, see "Paper Specifications" on page 34.
- Paper must not be pasted to the roll paper spool.

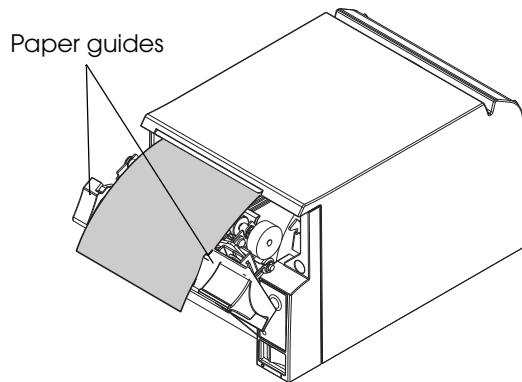
- 1 Press the cover open lever to open the roll paper cover.



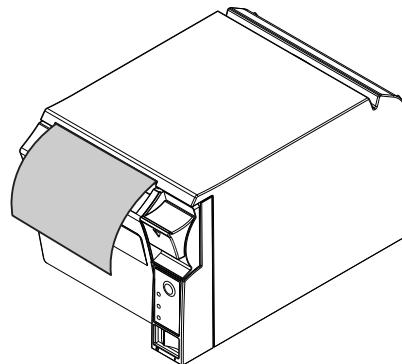
- 2 Remove the used roll paper core, if any.
- 3 In the correct direction of the roll paper, install the roll paper.



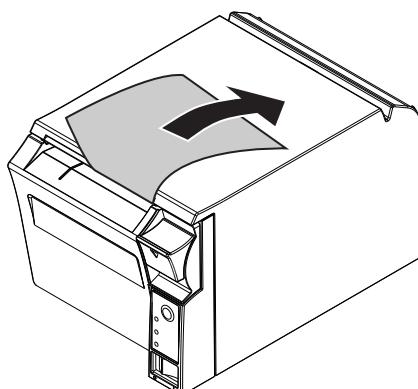
- 4** Pull out some roll paper, and make sure that the roll paper is set between the paper guides.



- 5** Close the roll paper cover.



- 6** Tear off the roll paper.



Removing Jammed Paper



Do not touch the thermal head (See "Cleaning the Thermal Head" on page 95.) because it can be very hot after printing.

- 1 Turn off the printer and press the cover open lever to open the roll paper cover.
- 2 Remove the jammed paper, reinstall the roll, and close the roll paper cover.

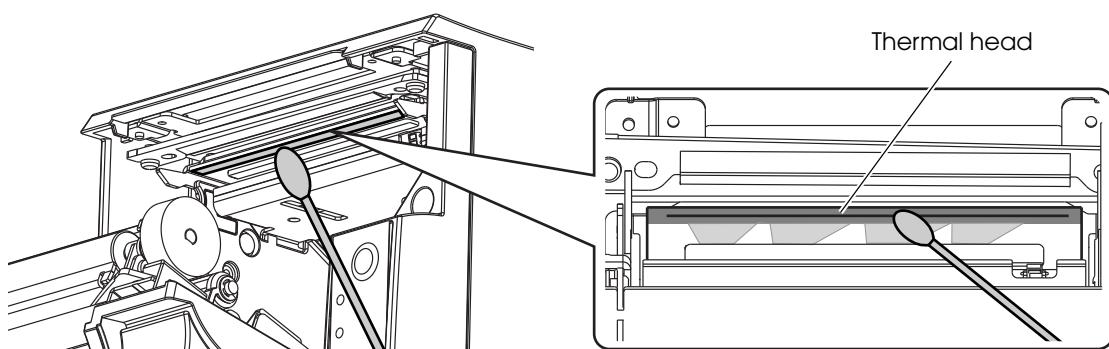
Cleaning the Thermal Head

Epson recommends cleaning the thermal head periodically (generally every 3 months) to maintain receipt print quality.



After printing, the thermal head can be very hot. Do not touch it and let it cool before you clean it. Do not damage the thermal head by touching it with your fingers or any hard object.

Turn off the printer and open the printer cover. Clean the thermal elements of the thermal head with a cotton swab moistened with an alcohol solvent (ethanol or IPA).



Preparing for Transport

Follow the steps below to transport the printer.

- 1** Turn off the printer.
- 2** Confirm that  LED is off.
- 3** Remove the power supply connector.
- 4** Remove the roll paper.
- 5** Pack the printer upright.

Replacement of the TM-T70

The TM-T70II is designed so that it can smoothly replace the TM-T70. This chapter describes precautions for the replacement.

Compatibility

Printing

The printing and character specifications are the same as those of the TM-T70. Without special configurations, the TM-T70II prints the same results as the TM-T70 prints.

Print Density

The print density of the TM-T70II can be set with the memory switch as can the TM-T70.

NOTE

For detailed information about the memory switch, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

Number of Head Energizing Parts

For the TM-T70II, the initial setting of the number of head energizing parts is "One-part energizing." You can change the setting with the memory switch (See "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.); however it does not usually need to be changed.

	TM-T70II	TM-T70
Number of head energizing parts	<ul style="list-style-type: none"> • One-part energizing • Two-part energizing 	<ul style="list-style-type: none"> • 58 mm width paper printing One-part energizing/Two-part energizing/Auto energizing • 80 mm width paper printing One-part energizing/Two-part energizing

Printable Area (for 80 mm Width Paper/58 mm Width Paper)

The printable area (left/right margins, print start position from the autocutting position, print start position from the manual cutting position) of the TM-T70II is the same as that of the TM-T70.

Cutting Method

The TM-T70II uses the partial cutting method (cutting with one point in left edge left uncut) as does the TM-T70.

Manual Paper Feed

Manual paper feed is not possible with the TM-T70II while it is possible with the TM-T70 after printing pauses.

Receive Buffer

You can set the receive buffer of the TM-T70II to 4 KB or 45 bytes with the memory switch, while you can set the receive buffer of the TM-T70 with the DIP switch. The buffer full condition and buffer full release condition of the TM-T70II are the same as those of the TM-T70.

Memory Capacity

The sizes of the download buffer and NV graphics data of the TM-T70II are the same as those of the TM-T70.

Electrical Characteristics

The operating voltage of the TM-T70II is DC $24 \pm 7\%$, the same as the TM-T70. The current consumption differs, depending on the print duty.

DIP Switches

TM-T70II does not have DIP switches; however, various functions can be set with memory switches. For detailed information about the memory switches, see "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.

Printer Status

The TM-T70II goes to the same status under the same conditions as the TM-T70. You can replace the TM-T70II with the TM-T70 without modifying applications.

Logo Registration

The TM-T70II can register logos in the NV memory (NVRAM) with the TM-T70II Utility, while the TM-T70 can register logos with the TM Flash LOGO Setup Utility for NVRAM (TM-Flogo).

NOTE

For detailed information about the TM-T70II Utility, see the TM-T70II Utility User's Manual.

Driver Compatibility

You can operate the TM-T70II with a driver for the TM-T70 (APD Ver.3xx or later or APD Ver.4.54 or later).

CAUTION

You cannot operate the TM-T70 with a driver for the TM-T70II.

Advanced Printer Driver

When the TM-T70 was controlled by APD Ver. 4.00 ~ 4.53, you need to install APD Ver.4.54 or later versions.

OPOS ADK

If the TM-T70 was controlled by an OPOS ADK, you can replace it with the TM-T70II without modifying the OPOS ADK.

USB Power-Saving Function

With the TM-T70II, you can enable the USB power-saving function with the memory switch.

Maintenance Counter

For the TM-T70II, "Number of lines fed (when the print head was replaced)" is added.

Buzzer

For an application that can beep an internal buzzer of the TM-T70, the application can also beep an internal buzzer or optional external buzzer of the TM-T70II without any changes of the application. TM-T70II is available with an internal buzzer or without the buzzer. Even if you purchase the one without the buzzer, you can attach an optional external buzzer. You can beep

the buzzer with the pulse signal using a command. (See "Setting the Internal Buzzer (for Models with an Internal Buzzer)" on page 69, "Connecting the Optional External Buzzer" on page 64.)

NOTE

For detailed information about ESC/POS commands, see the ESC/POS Command Reference.

Overall Dimensions

You can place the TM-T70II in the same location as the TM-T70, since its overall dimensions and weight are about the same as or smaller than those of the TM-T70.

Additional Functions and Functional Improvements

Print Speed

The TM-T70II has increased its print speed up to a maximum of 250 mm/s (200 mm/s for some models).

	TM-T70II	TM-T70
Maximum print speed	250 mm/s (200 mm/s for some models)	170 mm/s
Print speed setting	Levels 1 to 13	Levels 1 to 9

Note: When the printer prints text (built-in fonts) with the default print density level at 24 V and 25°C {77°F}.

CAUTION

Depending on print conditions such as print duty, print head temperature, and data transmission speed, print speed is automatically adjusted.

Barcodes

With the TM-T70II, printing the following barcodes, two-dimensional symbols and composite symbology is additionally possible.

- GS1-128
- GS1 DataBar Omnidirectional
- GS1 DataBar Truncated
- GS1 DataBar Stacked
- GS1 DataBar Stacked Ominidirectional
- GS1 DataBar Limited
- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked
- MaxiCode
- Composite Symbology

Number of Characters

For the TM-T70II, character code tables and international characters are added.

	TM-T70II	TM-T70
Character code tables	128 × 43 pages (including user-defined page)	128 × 11 pages (including user-defined page)
International characters	18 sets	16 sets

Image Tone Setting

The TM-T70II allows you to specify tone of images (2 tones/Multi-tone).

Interface

The USB interface is added to the main unit of the TM-T70II as standard equipment.

USB Class

When using the built-in USB interface or USB Plus Power, USB printer class can be used beside the USB vendor-defined class. This setting can be done with the memory switch. (See "[Setting the Memory Switches/Receipt Enhancement](#)" on page 54.)

Coupon Printing

The TM-T70II allows you to print coupons registered and set with the TM-T70II Utility.

NOTE

For detailed information about the TM-T70II Utility, see the TM-T70II Utility User's Manual.

Memory Switches

For the TM-T70II, the following memory switches are added.

- Multi-tone print density
- Initial value of the character code table
- Initial value of the international character set
- Buzzer
- USB class
- Interface mode
- Paper autocutting after closing the cover
- Automatic paper-saving (upper space reduction)
- Automatic paper-saving (lower space reduction)
- Automatic paper-saving (line space reduction rate)
- Automatic paper-saving (line feed reduction rate)
- Automatic paper-saving (barcode height reduction rate)
- Font A replacement
- Font B replacement



For detailed information about the memory switches, see "Setting the Memory Switches/
Receipt Enhancement" on page 54.

R/E Information Print Mode

The TM-T70II has a Receipt Enhancement (R/E) Information Print mode that lets you confirm the following information:

- Automatic top logo setting
- Automatic bottom logo setting
- Extended settings for automatic top/bottom logo

Reliability

The TM-T70II has improved reliability.

		TM-T70II	TM-T70
Life	Printer mechanism	17 million lines	15 million lines
	Print head	120 million pulses, 120 km	100 million pulses, 100 km
	Autocutter	1.7 million cuts	1.5 million cuts
MCBF		65 million lines	52 million lines

Appendix

Specifications of Interface and Connector

NOTE

For detailed information about LAN or wireless LAN, see one of the following:

- LAN: UB-E03 Technical Reference Guide
- Wireless LAN: UB-R04 Technical Reference Guide

RS-232 Serial Interface

Interface board specifications (RS-232-compliant)

Item		Specifications
Data transfer method		Serial
Synchronization		Asynchronous
Handshake		Select one of the following with the memory switch (see " Setting the Memory Switches/Receipt Enhancement " on page 54): <ul style="list-style-type: none"> • DTR/DSR • XON/XOFF
Signal level	MARK	-3 V to -15 V logic "1"/OFF
	SPACE	+3 V to +15 V logic "0"/ON
Bit length		Select one of the following with the memory switch (see " Setting the Memory Switches/Receipt Enhancement " on page 54): <ul style="list-style-type: none"> • 7 bits • 8 bits
Transmission speed (bps: bits per second)		<ul style="list-style-type: none"> • Select one of the following with the memory switch (see "Setting the Memory Switches/Receipt Enhancement" on page 54): 2400/4800/9600/19200/38400/57600/115200 bps
Parity selection		Select one of the following with the memory switch (see " Setting the Memory Switches/Receipt Enhancement " on page 54): <ul style="list-style-type: none"> • None • Odd • Even
Stop bit		1 or more bits However, the stop bit for data transfer from the printer is fixed to 1 bit.
Connector	Printer side	DSUB 25-pin (female) connector

Functions of each connector pin

Pin no.	Signal name	Signal direction	Function
1	FG	—	Frame ground
2	TXD	Output	Transmission data
3	RXD	Input	Reception data
4	RTS	Output	Equivalent to DTR signal (pin 20)
6	DSR	Input	This signal indicates whether the host computer can receive data. SPACE indicates that the host computer can receive data. MARK indicates that the host computer cannot receive data. When DTR/DSR control is selected, the printer transmits data after confirming this signal (except if transmitted using some ESC/POS commands). When XON/XOFF control is selected, the printer does not check this signal.
7	SG	—	Signal ground
20	DTR	Output	1) When DTR/DSR control is selected, this signal indicates whether the printer is BUSY. <ul style="list-style-type: none">• SPACE status Indicates that the printer is ready to receive data. <ul style="list-style-type: none">• MARK status Indicates that the printer is BUSY. Set BUSY conditions with memory switch 1-3. 2) When XON/XOFF control is selected, the signal indicates that the printer is properly connected and ready to receive data from the host. The signal is always SPACE, except in the following cases: <ul style="list-style-type: none">• During the period from when power is turned on to when the printer is ready to receive data.• During the self-test.
25	INT	Input	This signal can be used as a reset signal for the printer. The printer is reset if the signal remains at SPACE for a pulse width of 1 ms or more.

XON/XOFF

When XON/XOFF control is selected, the printer transmits the XON or XOFF signals as follows. The transmission timing of XON/XOFF differs, depending on the setting of memory switch 1-3.

Signal	Printer status	Memory switch 1-3	
		1 (ON)	0 (OFF)
XON	1) When the printer goes online after turning on the power (or reset using the interface)	Transmit	Transmit
	2) When the receive buffer is released from the buffer full state	Transmit	Transmit
	3) When the printer switches from offline to online	—	Transmit
	4) When the printer recovers from an error using some ESC/POS commands	—	Transmit
XOFF	5) When the receive buffer becomes full	Transmit	Transmit
	6) When the printer switches from online to offline	—	Transmit

Code

The hexadecimal numbers corresponding to the XON/XOFF codes are shown below.

- XON code: 11H
- XOFF code: 13H

CAUTION

- When the printer goes from offline to online and the receive buffer is full, XON is not transmitted.
- When the printer goes from online to offline and the receive buffer is full, XOFF is not transmitted.

IEEE 1284 Parallel Interface

Modes

The IEEE 1284 parallel interface supports the following two modes.

Mode	Communication direction	Other information
Compatibility mode	Host → Printer communication	Centronics-compliant
Reverse mode	Printer → Host communication	Assumes a data transfer from an asynchronous printer

Compatibility Mode

Compatibility mode allows data transmission from host to printer only: Centronics-compatible.

Specification

Data transmission	8-bit parallel
Synchronization	Externally supplied <u>STROBE</u> signals
Handshaking	<u>ACK</u> and <u>BUSY</u> signals
Signal levels	TTL-compatible connector
Connector	ADS-B36BLFDR176 (HONDA) or equivalent product
Reverse communication	Nibble or byte mode

Reverse Mode

The transfer of status data from the printer to the host proceeds in the nibble or byte mode.

This mode allows data transfer from an asynchronous printer under the control of the host. Data transfers in the nibble mode are made via the existing control lines in units of four bits (a nibble). In the byte mode, data transfer proceeds by making the 8-bit data lines bidirectional. Both modes fail to proceed concurrently in the compatibility mode, thereby causing half-duplex transmission.

Interface signals

Pin	Source	Compatibility Mode	Nibble Mode	Byte Mode
1	Host	<u>Strobe</u>	HostClk	HostClk
2	Host/Ptr	Data0 (LSB)	Data0 (LSB)	Data0 (LSB)
3	Host/Ptr	Data1	Data1	Data1
4	Host/Ptr	Data2	Data2	Data2
5	Host/Ptr	Data3	Data3	Data3
6	Host/Ptr	Data4	Data4	Data4
7	Host/Ptr	Data5	Data5	Data5
8	Host/Ptr	Data6	Data6	Data6
9	Host/Ptr	Data7 (MSB)	Data7 (MSB)	Data7 (MSB)
10	Printer	<u>Ack</u>	PtrClk	PtrClk
11	Printer	Busy	PtrBusy/Data3,7	PtrBusy
12	Printer	Perror	AckDataReq/Data2,6	AckDataReq
13	Printer	Select	Xflag/Data1,5	Xflag
14	Host	<u>AutoFd</u>	HostBusy	HostBusy
15		NC	ND	ND
16		GND	GND	GND
17		FG	FG	FG
18	Printer	Logic-H	Logic-H	Logic-H
19		GND	GND	GND
20		GND	GND	GND
21		GND	GND	GND
22		GND	GND	GND
23		GND	GND	GND
24		GND	GND	GND
25		GND	GND	GND
26		GND	GND	GND
27		GND	GND	GND

Pin	Source	Compatibility Mode	Nibble Mode	Byte Mode
28		GND	GND	GND
29		GND	GND	GND
30		GND	GND	GND
31	Host	$\overline{\text{Init}}$	$\overline{\text{Init}}$	$\overline{\text{Init}}$
32	Printer	$\overline{\text{Fault}}$	$\overline{\text{DataAvail}/\text{Data}0,4}$	$\overline{\text{DataAvail}}$
33		GND	ND	ND
34	Printer	DK_STATUS	ND	ND
35	Printer	+5 V	ND	ND
36	Host	$\overline{\text{SelectIn}}$	1284-Active	1284-Active

NC: Not Connected

ND: Not Defined

CAUTION

- A signal name with a rule above it indicates an “L” active signal.
- Bidirectional communications cannot take place, unless all signal names for both sides correspond to each other.
- Connect all signal lines using a twisted-pair cable. Connect the return side to the signal ground level.
- Make sure the signals satisfy electrical characteristics.
- Set the leading edge and trailing edge times to 0.5 μ s or less.
- Do not ignore Ack or BUSY signals during a data transfer. Ignoring such signals may result in data corruption.
- Make the interface cables as short as possible.

USB (Universal Serial Bus) Interface

Outline

- Full-speed transmission at 12 Mbps [bps: bits per second]
- Plug & Play, Hot Insertion & Removable

USB transmission specifications

USB function

Overall specifications	According to USB 2.0 specifications
Transmission speed	USB Full-Speed (12 Mbps)
Transmission method	USB bulk transmission method
Power supply specifications	USB self power supply function
Current consumed by USB bus	2 mA
USB packet size (with full-speed connection)	
USB bulk OUT (TM)	64 bytes
USB bulk IN (TM)	64 bytes

Status transmission from printer with USB interface

In order to ensure that there is no lack of status data, it is necessary to periodically retrieve status data at the host computer.

Unlike RS-232 transmission, it cannot spontaneously interrupt data transmission to the host computer.

The printer has a 128-byte status data buffer. Statuses that exceed the buffer capacity are cancelled.

Character Code Tables

CAUTION

- The character code tables show only character configurations. They do not show the actual print pattern.
- "SP" in the table shows a space.

Common to All Pages

When International character set (See "International Character Sets" on page 156.) 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 8	(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	:	J 74	Z 90	j 106	z 122	
B		ESC 11	+	;	K 75	[91	k 107	{ 123}	
C	FF 12	FS 28	,	< 44	L 76	\ 92	l 108	 124	
D	CR 13	GS 29	- 45	= 61	M 77] 93	m 109	}	125
E		RS 14	.	> 46	N 78	^ 94	n 110	~ 126	
F			/	?	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]	ß [176]	ł [192]	Ĳ [208]	ä [224]	Ξ [240]
1	ü [129]	æ [145]	í [161]	ö [177]	ł [193]	Ŧ [209]	þ [225]	± [241]
2	é [130]	Æ [146]	ó [162]	ö [178]	ŧ [194]	Ĳ [210]	ѓ [226]	≥ [242]
3	â [131]	ô [147]	ú [163]	ı [179]	Ւ [195]	Ĳ [211]	π [227]	≤ [243]
4	ä [132]	ö [148]	ñ [164]	ı [180]	- [196]	Ŀ [212]	Σ [228]	ƒ [244]
5	à [133]	ò [149]	ñ [165]	‡ [181]	† [197]	Ƒ [213]	σ [229]	ј [245]
6	å [134]	û [150]	ä [166]	॥ [182]	ƒ [198]	Ր [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	ø [167]	॥ [183]	॥ [199]	॥ [215]	τ [231]	≈ [247]
8	ê [136]	ÿ [152]	ڇ [168]	ڻ [184]	ڻ [200]	ڻ [216]	Փ [232]	° [248]
9	ë [137]	ö [153]	ڒ [169]	ۼ [185]	ڒ [201]	ڶ [217]	ߠ [233]	• [249]
A	è [138]	Ü [154]	¬ [170]	॥ [186]	Ĳ [202]	Ր [218]	Ղ [234]	• [250]
B	ї [139]	¢ [155]	½ [171]	ڶ [187]	߱ [203]	߱ [219]	߰ [235]	߲ [251]
C	î [140]	£ [156]	¼ [172]	ڶ [188]	߱ [204]	߱ [220]	߰ [236]	߱ [252]
D	ѝ [141]	¥ [157]	ି [173]	ଉ [189]	= [205]	߱ [221]	߰ [237]	୨ [253]
E	Ӑ [142]	₩ [158]	« [174]	ڣ [190]	ڶ [206]	߱ [222]	߰ [238]	߱ [254]
F	Ӓ [143]	ƒ [159]	» [175]	߱ [191]	߱ [207]	߱ [223]	߱ [239]	SP [255]

Page 1 (Katakana)

HEX	8	9	A	B	C	D	E	F
0	- 128	ト 144	SP 160	- 176	タ 192	ミ 208	ニ 224	エ 240
1	- 129	ト 145	・ 161	フ 177	チ 193	ム 209	フ 225	メ 241
2	■ 130	ト 146	フ 162	イ 178	ツ 194	メ 210	チ 226	年 242
3	■ 131	ト 147	フ 163	ウ 179	テ 195	モ 211	ヒ 227	月 243
4	■ 132	- 148	、 164	イ 180	ト 196	ヤ 212	ム 228	日 244
5	■ 133	- 149	・ 165	オ 181	ナ 197	ル 213	ル 229	時 245
6	■ 134	- 150	ヲ 166	カ 182	ニ 198	ヨ 214	ム 230	分 246
7	■ 135	- 151	ア 167	キ 183	ヌ 199	ラ 215	ム 231	秒 247
8	- 136	フ 152	イ 168	ク 184	ネ 200	リ 216	ス 232	テ 248
9	- 137	フ 153	ウ 169	ケ 185	ノ 201	ル 217	ム 233	市 249
A	- 138	ル 154	イ 170	コ 186	ル 202	レ 218	◆ 234	区 250
B	- 139	フ 155	オ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	- 140	フ 156	タ 172	シ 188	フ 204	リ 220	● 236	村 252
D	- 141	フ 157	ユ 173	ス 189	ハ 205	ン 221	○ 237	人 253
E	- 142	フ 158	ヨ 174	セ 190	ホ 206	〃 222	/ 238	屋 254
F	ト 143	ノ 159	ツ 175	リ 191	ヌ 207	・ 223	\ 239	SP 255

Page 2 (PC850: Multilingual)

HEX	8	9	A	B	C	D	E	F
0	Ç [128]	É [144]	á [160]	ß [176]	ł [192]	ð [208]	ó [224]	- [240]
1	ü [129]	æ [145]	í [161]	ö [177]	ł [193]	đ [209]	þ [225]	± [241]
2	é [130]	æ [146]	ó [162]	ö [178]	ł [194]	ê [210]	ô [226]	= [242]
3	â [131]	ô [147]	ú [163]	ł [179]	ł [195]	ë [211]	ò [227]	¾ [243]
4	ä [132]	ö [148]	ñ [164]	ł [180]	- [196]	è [212]	õ [228]	¶ [244]
5	à [133]	ò [149]	ñ [165]	å [181]	ł [197]	í [213]	õ [229]	§ [245]
6	å [134]	û [150]	ä [166]	â [182]	ã [198]	í [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	ø [167]	å [183]	ă [199]	î [215]	b [231]	· [247]
8	ê [136]	ÿ [152]	ë [168]	ø [184]	ł [200]	ï [216]	p [232]	° [248]
9	ë [137]	ö [153]	ø [169]	ł [185]	ł [201]	ż [217]	ú [233]	.. [249]
A	è [138]	ü [154]	- [170]	ł [186]	ł [202]	ł [218]	û [234]	· [250]
B	ĩ [139]	ø [155]	½ [171]	ł [187]	ł [203]	■ [219]	ù [235]	1 [251]
C	î [140]	£ [156]	¼ [172]	ł [188]	ł [204]	■ [220]	ý [236]	3 [252]
D	ì [141]	ø [157]	i [173]	¢ [189]	= [205]	ł [221]	ý [237]	2 [253]
E	ää [142]	x [158]	« [174]	¥ [190]	ł [206]	ł [222]	- [238]	■ [254]
F	å [143]	f [159]	» [175]	ł [191]	ł [207]	■ [223]	- [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	ã 176	ł 192	Ĳ 208	ä 224	Ξ 240
1	Ü 129	À 145	í 161	ó 177	ł 193	Ŧ 209	Þ 225	± 241
2	é 130	È 146	ó 162	õ 178	Ŧ 194	Ȑ 210	Γ 226	≥ 242
3	â 131	Ô 147	ú 163	ı 179	Ւ 195	Ĳ 211	Ȑ 227	≤ 243
4	ã 132	Õ 148	ñ 164	ı 180	- 196	ȶ 212	Σ 228	ƒ 244
5	à 133	Ò 149	Ñ 165	‡ 181	† 197	Ƒ 213	ѹ 229	ј 245
6	Á 134	Ú 150	à 166	Ĳ 182	Ƒ 198	Ȑ 214	ȝ 230	÷ 246
7	ç 135	Ù 151	ö 167	¶ 183	¶ 199	Ȑ 215	ȶ 231	≈ 247
8	ê 136	Ì 152	ÿ 168	¶ 184	Ĳ 200	† 216	ɸ 232	° 248
9	Ê 137	Ӯ 153	ò 169	Ĳ 185	Ր 201	յ 217	θ 233	• 249
A	è 138	Ü 154	¬ 170	Ĳ 186	Ĳ 202	Ր 218	Ω 234	• 250
B	Í 139	₵ 155	½ 171	Ր 187	Ȑ 203	Ȑ 219	δ 235	√ 251
C	ô 140	£ 156	¼ 172	Ĳ 188	Ȑ 204	■ 220	ѡ 236	ն 252
D	ì 141	Ù 157	í 173	Ĳ 189	= 205	Ȑ 221	ɸ 237	² 253
E	Ã 142	Pt 158	« 174	‡ 190	Ȑ 206	Ȑ 222	ɛ 238	▮ 254
F	Â 143	Ó 159	» 175	ı 191	Ȑ 207	■ 223	ռ 239	SP 255

Page 4 (PC863: Canadian-French)

HEX	8	9	A	B	C	D	E	F
0	ç [128]	é [144]	í [160]	ł [176]	ł [192]	ł [208]	ä [224]	≡ [240]
1	ü [129]	è [145]	’ [161]	ł [177]	ł [193]	ł [209]	ß [225]	± [241]
2	é [130]	ê [146]	ó [162]	ł [178]	ł [194]	ł [210]	Γ [226]	≥ [242]
3	â [131]	ô [147]	ú [163]	ł [179]	ł [195]	ł [211]	π [227]	≤ [243]
4	å [132]	ë [148]	” [164]	ł [180]	— [196]	ł [212]	Σ [228]	ƒ [244]
5	à [133]	ï [149]	· [165]	ł [181]	ł [197]	ł [213]	σ [229]	ј [245]
6	¶ [134]	û [150]	³ [166]	ł [182]	ł [198]	ł [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	— [167]	ł [183]	ł [199]	ł [215]	τ [231]	≈ [247]
8	ê [136]	ø [152]	î [168]	ł [184]	ł [200]	ł [216]	∅ [232]	° [248]
9	ë [137]	ô [153]	¬ [169]	ł [185]	ł [201]	ł [217]	θ [233]	• [249]
A	è [138]	ü [154]	¬ [170]	ł [186]	ł [202]	ł [218]	Ω [234]	• [250]
B	ï [139]	¢ [155]	½ [171]	ł [187]	ł [203]	ł [219]	δ [235]	∫ [251]
C	î [140]	£ [156]	¼ [172]	ł [188]	ł [204]	ł [220]	ѡ [236]	n [252]
D	= [141]	Ù [157]	¾ [173]	ł [189]	= [205]	ł [221]	∅ [237]	2 [253]
E	À [142]	Û [158]	« [174]	ł [190]	ł [206]	ł [222]	ε [238]	■ [254]
F	§ [143]	f [159]	» [175]	ł [191]	ł [207]	ł [223]	Ը [239]	SP [255]

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

Page 11 (PC851: Greek)

HEX	8	9	A	B	C	D	E	F
0	Ç [128]	I [144]	İ [160]	ş [176]	L [192]	T [208]	ζ [224]	- [240]
1	ü [129]	SP [145]	İ [161]	ş [177]	Ł [193]	Y [209]	η [225]	± [241]
2	é [130]	ø [146]	ó [162]	ö [178]	T [194]	Φ [210]	θ [226]	U [242]
3	â [131]	ô [147]	ú [163]	ı [179]	ł [195]	X [211]	ł [227]	Ψ [243]
4	ä [132]	ö [148]	å [164]	ı [180]	- [196]	Ψ [212]	κ [228]	χ [244]
5	à [133]	ÿ [149]	B [165]	K [181]	† [197]	Ω [213]	λ [229]	§ [245]
6	À [134]	Û [150]	Γ [166]	Λ [182]	Π [198]	α [214]	μ [230]	ψ [246]
7	ç [135]	Ù [151]	Δ [167]	M [183]	P [199]	β [215]	v [231]	- [247]
8	ê [136]	¶ [152]	E [168]	N [184]	Ľ [200]	γ [216]	ξ [232]	º [248]
9	ë [137]	Ö [153]	Z [169]	॥ [185]	Ľ [201]	Ј [217]	о [233]	-- [249]
A	è [138]	Ü [154]	H [170]	॥ [186]	Ľ [202]	Γ [218]	π [234]	ω [250]
B	İ [139]	á [155]	½ [171]	॥ [187]	Ľ [203]	■ [219]	ρ [235]	Ü [251]
C	î [140]	£ [156]	Θ [172]	॥ [188]	Ľ [204]	■ [220]	σ [236]	Ü [252]
D	Ē [141]	é [157]	I [173]	≡ [189]	= [205]	δ [221]	ς [237]	ώ [253]
E	Ā [142]	ñ [158]	« [174]	ø [190]	Ľ [206]	ε [222]	τ [238]	■ [254]
F	Ή [143]	İ [159]	» [175]	ı [191]	Σ [207]	■ [223]	- [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	í 176	L 192	SP 208	ó 224	- 240
1	Ü 129	Ć 145	í 161	í 177	ł 193	SP 209	ß 225	SP 241
2	é 130	ć 146	ó 162	ó 178	ł 194	ê 210	ô 226	ł 242
3	â 131	ô 147	ú 163	ı 179	ł 195	ë 211	ð 227	ñ 243
4	ä 132	ö 148	ñ 164	ı 180	- 196	è 212	ğ 228	~ 244
5	à 133	ò 149	ñ 165	å 181	ł 197	ı 213	ǵ 229	§ 245
6	ê 134	û 150	ğ 166	â 182	ş 198	í 214	μ 230	÷ 246
7	ç 135	ù 151	gó 167	å 183	ş 199	î 215	ñ 231	~ 247
8	ê 136	í 152	h 168	ş 184	ll 200	ï 216	ñ 232	º 248
9	ë 137	ö 153	h 169	ı 185	ř 201	j 217	ú 233	.. 249
A	è 138	ü 154	SP 170	ı 186	ll 202	ř 218	û 234	· 250
B	ĩ 139	gó 155	½ 171	ı 187	ř 203	■ 219	ù 235	SP 251
C	î 140	ł 156	j 172	ı 188	ř 204	■ 220	ü 236	3 252
D	ì 141	ğ 157	ş 173	ż 189	= 205	SP 221	ü 237	2 253
E	ää 142	×	« 158	ż 174	ř 206	ì 222	· 238	■ 254
F	ç 143	ž 159	» 175	ı 191	ř 207	■ 223	· 239	SP 255

Page 13 (PC857: Turkish)

HEX	8	9	A	B	C	D	E	F
0	Ç [128]	É [144]	á [160]	ß [176]	L [192]	ö [208]	Ó [224]	- [240]
1	ü [129]	æ [145]	í [161]	ö [177]	ł [193]	a [209]	ß [225]	± [241]
2	é [130]	æ [146]	ó [162]	ö [178]	T [194]	ê [210]	ô [226]	SP [242]
3	â [131]	ô [147]	ú [163]	ı [179]	ł [195]	ë [211]	ò [227]	¾ [243]
4	ä [132]	ö [148]	ñ [164]	ı [180]	- [196]	è [212]	õ [228]	¶ [244]
5	à [133]	ò [149]	ñ [165]	å [181]	þ [197]	€ [213]	õ [229]	§ [245]
6	å [134]	û [150]	ÿ [166]	â [182]	ã [198]	í [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	ÿ [167]	å [183]	ã [199]	î [215]	SP [231]	- [247]
8	ê [136]	í [152]	ç [168]	ø [184]	ll [200]	ï [216]	x [232]	° [248]
9	ë [137]	ö [153]	ø [169]	ı [185]	rr [201]	j [217]	ú [233]	.. [249]
A	è [138]	ü [154]	- [170]	 [186]	ll [202]	ř [218]	û [234]	• [250]
B	ï [139]	ø [155]	½ [171]	ı [187]	rr [203]	■ [219]	ù [235]	1 [251]
C	î [140]	£ [156]	¼ [172]	ı [188]	rr [204]	■ [220]	ì [236]	3 [252]
D	ł [141]	ø [157]	i [173]	¢ [189]	= [205]	ı [221]	ÿ [237]	2 [253]
E	ää [142]	ş [158]	« [174]	¥ [190]	rr [206]	ı [222]	- [238]	■ [254]
F	å [143]	ş [159]	» [175]	ı [191]	¤ [207]	■ [223]	‐ [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	Α [128]	Ρ [144]	Λ [160]	Ϛ [176]	Ϛ [192]	Ϛ [208]	Ϝ [224]	Ϙ [240]
1	Β [129]	Σ [145]	Κ [161]	Ϛ [177]	Ϛ [193]	Ϛ [209]	ά [225]	Ϯ [241]
2	Γ [130]	Τ [146]	λ [162]	Ϛ [178]	Ϛ [194]	Ϛ [210]	Ϛ [226]	϶ [242]
3	Δ [131]	Ϋ [147]	μ [163]	Ϛ [179]	Ϛ [195]	Ϛ [211]	Ϛ [227]	϶ [243]
4	Ε [132]	Φ [148]	ϐ [164]	Ϛ [180]	- [196]	Ϛ [212]	Ϛ [228]	Ϛ [244]
5	Ζ [133]	Χ [149]	ξ [165]	Ϛ [181]	Ϛ [197]	Ϛ [213]	Ϛ [229]	Ϛ [245]
6	Η [134]	Ψ [150]	ο [166]	Ϛ [182]	Ϛ [198]	Ϛ [214]	Ϛ [230]	Ϛ [246]
7	Θ [135]	Ω [151]	π [167]	Ϛ [183]	Ϛ [199]	Ϛ [215]	Ϛ [231]	Ϛ [247]
8	Ι [136]	α [152]	ρ [168]	Ϛ [184]	Ϛ [200]	Ϛ [216]	Ϛ [232]	Ϛ [248]
9	Κ [137]	β [153]	σ [169]	Ϛ [185]	Ϛ [201]	Ϛ [217]	Ϛ [233]	Ϛ [249]
A	Λ [138]	γ [154]	ϲ [170]	Ϛ [186]	Ϛ [202]	Ϛ [218]	Ϛ [234]	Ϛ [250]
B	Ϻ [139]	δ [155]	τ [171]	Ϛ [187]	Ϛ [203]	Ϛ [219]	Ϛ [235]	Ϛ [251]
C	Ϻ [140]	Ϛ [156]	ϻ [172]	Ϛ [188]	Ϛ [204]	Ϛ [220]	Ϛ [236]	Ϛ [252]
D	Ϛ [141]	ζ [157]	Փ [173]	Ϛ [189]	= [205]	Ϛ [221]	Ϛ [237]	2 [253]
E	Ϛ [142]	η [158]	χ [174]	Ϛ [190]	Ϛ [206]	Ϛ [222]	Ϛ [238]	Ϛ [254]
F	Ϛ [143]	θ [159]	Ѱ [175]	Ϛ [191]	Ϛ [207]	Ϛ [223]	Ѱ [239]	SP [255]

Page 15 (ISO8859-7: Greek)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	• 176	Ć 192	Π 208	Ü 224	Π 240
1	SP 129	SP 145	‘ 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	SP 130	SP 146	’ 162	₂ 178	Β 194	SP 210	β 226	ς 242
3	SP 131	SP 147	£ 163	₃ 179	Γ 195	Σ 211	γ 227	σ 243
4	SP 132	SP 148	€ 164	‐ 180	Δ 196	Τ 212	δ 228	τ 244
5	SP 133	SP 149	॥ 165	… 181	Ε 197	Υ 213	ε 229	υ 245
6	SP 134	SP 150	፤ 166	ѧ 182	Ζ 198	Փ 214	ζ 230	Փ 246
7	SP 135	SP 151	§ 167	· 183	Հ 199	Խ 215	η 231	Խ 247
8	SP 136	SP 152	↔ 168	՚ 184	Թ 200	Ψ 216	θ 232	ψ 248
9	SP 137	SP 153	@ 169	՚ 185	Ի 201	Ω 217	լ 233	Ո 249
A	SP 138	SP 154	‐ 170	՚ 186	Կ 202	Ի 218	կ 234	Լ 250
B	SP 139	SP 155	« 171	» 187	Ա 203	Ӿ 219	լ 235	Ӯ 251
C	SP 140	SP 156	‐ 172	՞ 188	Մ 204	ա 220	մ 236	օ 252
D	SP 141	SP 157	‐ 173	½ 189	Ն 205	է 221	վ 237	ւ 253
E	SP 142	SP 158	‐ 174	՚ 190	Շ 206	ն 222	չ 238	՘ 254
F	SP 143	SP 159	‐ 175	՞ 191	Օ 207	Ը 223	օ 239	Ը 255

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	° [176]	À [192]	Ð [208]	à [224]	ð [240]
1	SP [129]	‘ [145]	í [161]	± [177]	Á [193]	Ñ [209]	á [225]	ñ [241]
2	,	[130]	’ [146]	¢ [162]	² [178]	Â [194]	ò [210]	â [226]
3	ƒ [131]	“ [147]	£ [163]	³ [179]	Ã [195]	ó [211]	ã [227]	ó [243]
4	” [132]	” [148]	¤ [164]	‘ [180]	Ä [196]	ô [212]	ä [228]	ô [244]
5	… [133]	• [149]	¥ [165]	µ [181]	Å [197]	õ [213]	å [229]	õ [245]
6	† [134]	- [150]	‘ [166]	¶ [182]	Æ [198]	ö [214]	æ [230]	ö [246]
7	‡ [135]	- [151]	§ [167]	· [183]	ç [199]	× [215]	ç [231]	÷ [247]
8	^ [136]	~ [152]	-- [168]	- [184]	È [200]	ø [216]	è [232]	ø [248]
9	‰ [137]	™ [153]	© [169]	¹ [185]	É [201]	ù [217]	é [233]	ù [249]
A	Š [138]	š [154]	à [170]	º [186]	Ê [202]	ú [218]	ê [234]	ú [250]
B	⟨ [139]	⟩ [155]	« [171]	» [187]	Ë [203]	û [219]	ë [235]	û [251]
C	Œ [140]	œ [156]	¬ [172]	¼ [188]	Ì [204]	Ü [220]	ì [236]	ü [252]
D	SP [141]	SP [157]	- [173]	½ [189]	Í [205]	Ý [221]	í [237]	ý [253]
E	Ž [142]	ž [158]	® [174]	¾ [190]	Î [206]	þ [222]	î [238]	þ [254]
F	SP [143]	ÿ [159]	- [175]	¿ [191]	Ï [207]	ß [223]	ï [239]	ÿ [255]

Page 17 (PC866: Cyrillic #2)

HEX	8	9	A	В	С	D	E	F
0	А [128]	Р [144]	а [160]	҃ [176]	Л [192]	҂ [208]	р [224]	Ё [240]
1	Б [129]	С [145]	б [161]	҃ [177]	ҁ [193]	҄ [209]	с [225]	ё [241]
2	В [130]	Т [146]	В [162]	҃ [178]	Т [194]	҅ [210]	т [226]	Ҽ [242]
3	Г [131]	Ү [147]	Г [163]	ҁ [179]	Ւ [195]	҆ [211]	ү [227]	Ҽ [243]
4	Д [132]	Փ [148]	Д [164]	Ւ [180]	- [196]	Լ [212]	Փ [228]	Ի [244]
5	Ե [133]	Խ [149]	ե [165]	Ւ [181]	Ւ [197]	Փ [213]	Խ [229]	Ӯ [245]
6	Ж [134]	Ц [150]	Ж [166]	Ւ [182]	Ւ [198]	Ր [214]	Ց [230]	ӹ [246]
7	З [135]	Ч [151]	Յ [167]	Ւ [183]	Ւ [199]	Ւ [215]	Ч [231]	ӹ [247]
8	И [136]	Ш [152]	И [168]	Ւ [184]	Լ [200]	Ւ [216]	Շ [232]	՞ [248]
9	Й [137]	Ծ [153]	Յ [169]	Ւ [185]	Ր [201]	Հ [217]	Ծ [233]	՞ [249]
A	Կ [138]	Յ [154]	Կ [170]	Լ [186]	Լ [202]	Ր [218]	Յ [234]	՞ [250]
B	Լ [139]	Կ [155]	Լ [171]	Ւ [187]	Ր [203]	■ [219]	Կ [235]	Վ [251]
C	Մ [140]	Յ [156]	Մ [172]	Լ [188]	Ւ [204]	■ [220]	Յ [236]	Ն [252]
D	Ւ [141]	Յ [157]	Ւ [173]	Լ [189]	= [205]	■ [221]	Յ [237]	Ճ [253]
E	Օ [142]	Խ [158]	Օ [174]	Ւ [190]	Ւ [206]	■ [222]	Խ [238]	Ճ [254]
F	Ր [143]	Յ [159]	Ր [175]	Ւ [191]	Լ [207]	■ [223]	Յ [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	ã 176	ł 192	đ 208	ó 224	- 240
1	Ü 129	Ł 145	í 161	ĩ 177	ł 193	đ 209	ß 225	~ 241
2	é 130	í 146	ó 162	õ 178	ł 194	đ 210	ô 226	‘ 242
3	â 131	ô 147	ú 163	ı 179	ł 195	ë 211	ñ 227	ˇ 243
4	ä 132	ö 148	å 164	ფ 180	- 196	đ 212	ń 228	՞ 244
5	ü 133	ł 149	ą 165	ā 181	ł 197	ň 213	њ 229	§ 245
6	ć 134	ě 150	ž 166	â 182	ă 198	í 214	š 230	÷ 246
7	ç 135	ś 151	ż 167	ě 183	ă 199	î 215	š 231	՞ 247
8	ł 136	ś 152	ę 168	ş 184	ł 200	ě 216	ŕ 232	՞ 248
9	ë 137	ö 153	ę 169	॥ 185	ř 201	յ 217	ú 233	՞ 249
A	ő 138	ü 154	€ 170	॥ 186	լ 202	ր 218	ր 234	՞ 250
B	ő 139	ť 155	ž 171	լ 187	ր 203	■ 219	ő 235	ű 251
C	î 140	č 156	č 172	լ 188	ր 204	■ 220	ý 236	ř 252
D	ž 141	ł 157	ş 173	ž 189	= 205	լ 221	ý 237	ř 253
E	ä 142	×	« 158	ž 174	ր 206	ő 222	ť 238	■ 254
F	ć 143	č 159	» 175	ł 191	ք 207	■ 223	՞ 239	SP 255

Page 19 (PC858: Euro)

HEX	8	9	A	B	C	D	E	F
0	Ç [128]	É [144]	á [160]	ß [176]	ł [192]	ð [208]	ó [224]	- [240]
1	ü [129]	æ [145]	í [161]	ö [177]	ł [193]	ð [209]	þ [225]	± [241]
2	é [130]	Æ [146]	ó [162]	ö [178]	ł [194]	ê [210]	ô [226]	= [242]
3	â [131]	ô [147]	ú [163]	ł [179]	ł [195]	ë [211]	ò [227]	¾ [243]
4	ä [132]	ö [148]	ñ [164]	ł [180]	- [196]	è [212]	õ [228]	¶ [244]
5	à [133]	ò [149]	ñ [165]	å [181]	ł [197]	€ [213]	õ [229]	§ [245]
6	å [134]	û [150]	ä [166]	â [182]	ã [198]	í [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	ø [167]	å [183]	ă [199]	î [215]	þ [231]	· [247]
8	ê [136]	ÿ [152]	ë [168]	® [184]	ł [200]	ï [216]	þ [232]	° [248]
9	ë [137]	ö [153]	® [169]	ł [185]	ł [201]	ż [217]	ú [233]	.. [249]
A	è [138]	Ü [154]	¬ [170]	 [186]	ł [202]	ł [218]	û [234]	· [250]
B	ï [139]	ø [155]	½ [171]	ł [187]	ł [203]	■ [219]	ù [235]	¹ [251]
C	î [140]	£ [156]	¼ [172]	ł [188]	ł [204]	■ [220]	ý [236]	³ [252]
D	ì [141]	ø [157]	i [173]	¢ [189]	= [205]	ł [221]	ý [237]	² [253]
E	Ä [142]	× [158]	« [174]	¥ [190]	ł [206]	ł [222]	- [238]	■ [254]
F	À [143]	f [159]	» [175]	ł [191]	ł [207]	■ [223]	’ [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	ກ 128	ດ 144	ສP	ຍ 176	ຢ 192	ເ 208	້ 224	ບ 240
1	ັ 129	ດ 145	ກ 161	ຢ 177	ງ 193	ແ 209	້ 225	ບ 241
2	ລ 130	ເ 146	ປ 162	ດ 178	ຕ 194	ໄ 210	້ 226	ບ 242
3	ຈ 131	ກ 147	ຄ 163	ຕ 179	ຜ 195	ໆ 211	່ 227	ບ 243
4	ຫ 132	ຮ 148	ຂ 164	ດ 180	ວ 196	ໍ 212	ໄ 228	ບ 244
5	— 133	ຮ 149	ກ 165	ທ 181	ສ 197	໌ 213	້ 229	ບ 245
6	ຫ 134	ນ 150	ຈ 166	ສ 182	ໜ 198	໌ 214	໊ 230	ບ 246
7	ຫ 135	ຜ 151	ນ 167	ນ 183	ສ 199	້ 215	່ 231	ບ 247
8	ຫ 136	ຮ 152	ປ 168	ປ 184	ໜ 200	້ 216	່ 232	ບ 248
9	ຫ 137	ສ 153	ຫ 169	ປ 185	ໝ 201	່ 217	໊ 233	ບ 249
A	ຫ 138	ປ 154	ຢ 170	ຜ 186	ອ 202	່ 218	ໄ 234	ບ 250
B	ໜ 139	ຕ 155	ຢ 171	ຜ 187	ສ 203	່ 219	່ 235	ບ 251
C	← 140	ສ 156	ຢ 172	ຜ 188	້ 204	່ 220	ບ 236	ບ 252
D	↑ 141	ກ 157	ຢ 173	ຜ 189	ກ 205	້ 221	໊ 237	ບ 253
E	→ 142	ໜ 158	ສ 174	ກ 190	່ 206	້ 222	່ 238	ບ 254
F	↓ 143	ເ 159	ກ 175	ຢ 191	ກ 207	່ 223	ບ 239	SP 255

Page 21 (TIS11: Thai)

HEX	8	9	A	B	C	D	E	F
0	ດ 128	ກ 144	ເ 160	ສ 176	ກ 192	ວ 208	ເ 224	ດ 240
1	ຂ 129	ກ 145	ກ 161	໌ 177	ນ 193	ວ 209	ແ 225	ດ 241
2	ຂ 130	ກ 146	ປ 162	ແ 178	ຢ 194	ກ 210	ໄ 226	ຕ 242
3	ດ 131	ກ 147	ປ 163	ມ 179	ຮ 195	ກ 211	ໄ 227	ຖ 243
4	ດ 132	ກ 148	ຄ 164	ຕ 180	ຖ 196	ນ 212	ໄ 228	ດ 244
5	ຂ 133	ດ 149	ຄ 165	ຕ 181	ຜ 197	ນ 213	ກ 229	ດ 245
6	ດ 134	ດ 150	ຂ 166	ຖ 182	ກ 198	ນ 214	ກ 230	ນ 246
7	ດ 135	ດ 151	ິ 167	໌ 183	ວ 199	ນ 215	ດ 231	ຕ 247
8	ດ 136	ດ 152	ມ 168	ົ 184	ສ 200	ນ 216	ດ 232	ດ 248
9	ດ 137	ກ 153	ນ 169	ນ 185	ຜ 201	ນ 217	ດ 233	ສ 249
A	ດ 138	ທ 154	ປ 170	ປ 186	ສ 202	ນ 218	ດ 234	ງ 250
B	ດ 139	ລ 155	ຫ 171	ປ 187	ຫ 203	ນ 219	ດ 235	ບ 251
C	ດ 140	ຈ 156	ຜ 172	ຜ 188	ຜ 204	ນ 220	ດ 236	ດ 252
D	ດ 141	ຈ 157	ຜ 173	ຜ 189	ອ 205	ນ 221	ດ 237	ດ 253
E	ດ 142	ຫ 158	ຜ 174	ຜ 190	ຢ 206	ນ 222	ດ 238	ດ 254
F	ດ 143	ຫ 159	ຜ 175	ຜ 191	ຢ 207	ບ 223	ດ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	ັ [128]	າ [144]	ຳ [SP]	ິ [160]	ີ [176]	ຶ [192]	ື [208]	ຸ [224]
1	ັ [129]	າ [145]	ຳ [161]	ິ [177]	ີ [193]	ື [209]	ຸ [225]	ູ [240]
2	ັ [130]	າ [146]	ິ [162]	ິ [178]	ີ [194]	ຶ [210]	ື [226]	ົ [241]
3	ັ [131]	າ [147]	ິ [163]	ິ [179]	ີ [195]	ຶ [211]	ື [227]	ົ [242]
4	ັ [132]	າ [148]	ຳ [164]	ິ [180]	ີ [196]	ື [212]	ື [228]	ົ [243]
5	— [133]	າ [149]	ຳ [165]	ິ [181]	ີ [197]	ື [213]	ື [229]	ົ [244]
6	ັ [134]	າ [150]	ິ [166]	ິ [182]	ີ [198]	ື [214]	ື [230]	ົ [245]
7	ັ [135]	າ [151]	ິ [167]	ິ [183]	ີ [199]	ື [215]	ື [231]	ົ [246]
8	ັ [136]	າ [152]	ິ [168]	ິ [184]	ີ [200]	ື [216]	ື [232]	ົ [247]
9	ັ [137]	າ [153]	ິ [169]	ິ [185]	ີ [201]	ື [217]	ື [233]	ົ [248]
A	ັ [138]	າ [154]	ິ [170]	ິ [186]	ີ [202]	• [218]	ື [234]	ົ [249]
B	ັ [139]	າ [155]	ິ [171]	ິ [187]	ີ [203]	ື [219]	+ [235]	ົ [250]
C	← [140]	າ [156]	ິ [172]	ິ [188]	ີ [204]	ື [220]	€ [236]	ົ [251]
D	↑ [141]	າ [157]	ິ [173]	ິ [189]	ີ [205]	ື [221]	◦ [237]	ົ [252]
E	→ [142]	າ [158]	ິ [174]	ິ [190]	ີ [206]	ື [222]	ື [238]	ົ [253]
F	↓ [143]	າ [159]	ິ [175]	ິ [191]	ີ [207]	ື [223]	ື [239]	SP [254]
								[255]

Page 30 (TCVN-3: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	é 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	è 209	ó 225	ú 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	ê 210	õ 226	û 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	ẽ 211	ó 227	ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	ẽ 212	ø 228	ụ 244
5	SP 133	SP 149	SP 165	à 181	SP 197	é 213	ô 229	ڻ 245
6	SP 134	SP 150	SP 166	ã 182	ă 198	ê 214	õ 230	ڻ 246
7	SP 135	SP 151	SP 167	ã 183	â 199	ì 215	õ 231	ڻ 247
8	SP 136	SP 152	ă 168	á 184	ã 200	í 216	ô 232	ú 248
9	SP 137	SP 153	â 169	ä 185	ã 201	SP 217	ô 233	ụ 249
A	SP 138	SP 154	ê 170	SP 186	ã 202	SP 218	ڦ 234	ڻ 250
B	SP 139	SP 155	ô 171	ã 187	â 203	SP 219	ڦ 235	ڻ 251
C	SP 140	SP 156	đ 172	ã 188	è 204	í 220	ڦ 236	ڻ 252
D	SP 141	SP 157	ú 173	ã 189	SP 205	í 221	ڦ 237	ڻ 253
E	SP 142	SP 158	đ 174	ã 190	é 206	í 222	ڦ 238	ڻ 254
F	SP 143	SP 159	SP 175	SP 191	ẽ 207	ò 223	ù 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	É 208	SP 224	SP 240
1	SP 129	SP 145	Ã 161	SP 177	SP 193	È 209	Ô 225	Ü 241
2	SP 130	SP 146	Â 162	SP 178	SP 194	Ê 210	Õ 226	Ü 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	Ë 211	Ó 227	Ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	Ê 212	Ø 228	Ù 244
5	SP 133	SP 149	SP 165	À 181	SP 197	Ê 213	Ô 229	Ü 245
6	SP 134	SP 150	SP 166	Ã 182	Ã 198	Ê 214	Õ 230	Ü 246
7	SP 135	SP 151	Đ 167	Ã 183	Â 199	Ì 215	Õ 231	Ü 247
8	SP 136	SP 152	SP 168	Á 184	Ã 200	Í 216	Õ 232	Ü 248
9	SP 137	SP 153	SP 169	À 185	Ã 201	SP 217	Ô 233	Ù 249
A	SP 138	SP 154	Ê 170	SP 186	Ã 202	SP 218	Ø 234	Ý 250
B	SP 139	SP 155	Ô 171	Ã 187	Â 203	SP 219	Õ 235	Ý 251
C	SP 140	SP 156	Ð 172	Ã 188	Ê 204	Í 220	Õ 236	Ý 252
D	SP 141	SP 157	Ü 173	Ã 189	SP 205	Í 221	Ø 237	Ý 253
E	SP 142	SP 158	SP 174	Ã 190	Ê 206	Í 222	Ð 238	Ý 254
F	SP 143	SP 159	SP 175	SP 191	Ê 207	Ò 223	Ù 239	SP 255

Page 32 (PC720: Arabic)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	ڦ 160	ڻ 176	ڦ 192	ڦ 208	ڦ 224	ڦ 240
1	SP 129	ڻ 145	ڦ 161	ڻ 177	ڦ 193	ڦ 209	ڦ 225	ڦ 241
2	é 130	ڦ 146	ڦ 162	ڻ 178	ڦ 194	ڦ 210	ڦ 226	ڦ 242
3	â 131	ô 147	ڦ 163	ڦ 179	ڦ 195	ڦ 211	ڦ 227	ڦ 243
4	SP 132	ڦ 148	ڦ 164	ڦ 180	- 196	ڦ 212	ڦ 228	- 244
5	à 133	- 149	ڦ 165	ڦ 181	ڦ 197	ڦ 213	ڦ 229	ڦ 245
6	SP 134	û 150	ڦ 166	ڦ 182	ڦ 198	ڦ 214	ڦ 230	- 246
7	ç 135	ù 151	ڦ 167	ڦ 183	ڦ 199	ڦ 215	ڦ 231	ڦ 247
8	ê 136	ڦ 152	ڦ 168	ڦ 184	ڦ 200	ڦ 216	ڦ 232	ڦ 248
9	ë 137	ڦ 153	ڦ 169	ڦ 185	ڦ 201	ڦ 217	ڦ 233	ڦ 249
A	è 138	ڦ 154	ڦ 170	ڦ 186	ڦ 202	ڦ 218	ڦ 234	ڦ 250
B	ڦ 139	ڦ 155	ڦ 171	ڦ 187	ڦ 203	ڦ 219	ڦ 235	ڦ 251
C	ڦ 140	ڦ 156	ڦ 172	ڦ 188	ڦ 204	ڦ 220	ڦ 236	ڦ 252
D	SP 141	ڦ 157	ڦ 173	ڦ 189	= 205	ڦ 221	ڦ 237	ڦ 253
E	SP 142	ڦ 158	ڦ 174	ڦ 190	ڦ 206	ڦ 222	ڦ 238	ڦ 254
F	SP 143	ڦ 159	ڦ 175	ڦ 191	ڦ 207	ڦ 223	ڦ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ć [128]	Ē [144]	Ā [160]	܂ [176]	܂ [192]	܂ [208]	܂ [224]	- [240]
1	Ü [129]	݂ [145]	܂ [161]	܂ [177]	܂ [193]	܂ [209]	܂ [225]	܂ [241]
2	é [130]	܂ [146]	܂ [162]	܂ [178]	܂ [194]	܂ [210]	܂ [226]	“ [242]
3	ā [131]	܂ [147]	܂ [163]	܂ [179]	܂ [195]	܂ [211]	܂ [227]	܂ [243]
4	ä [132]	܂ [148]	܂ [164]	܂ [180]	- [196]	܂ [212]	܂ [228]	܂ [244]
5	ǵ [133]	܂ [149]	܂ [165]	܂ [181]	܂ [197]	܂ [213]	܂ [229]	܂ [245]
6	å [134]	܂ [150]	” [166]	܂ [182]	܂ [198]	܂ [214]	܂ [230]	܂ [246]
7	ć [135]	܂ [151]	܂ [167]	܂ [183]	܂ [199]	܂ [215]	܂ [231]	” [247]
8	ł [136]	܂ [152]	܂ [168]	܂ [184]	܂ [200]	܂ [216]	܂ [232]	܂ [248]
9	ē [137]	܂ [153]	܂ [169]	܂ [185]	܂ [201]	܂ [217]	܂ [233]	܂ [249]
A	܂ [138]	܂ [154]	܂ [170]	܂ [186]	܂ [202]	܂ [218]	܂ [234]	܂ [250]
B	܂ [139]	܂ [155]	܂ [171]	܂ [187]	܂ [203]	܂ [219]	܂ [235]	܂ [251]
C	܂ [140]	܂ [156]	܂ [172]	܂ [188]	܂ [204]	܂ [220]	܂ [236]	܂ [252]
D	܂ [141]	܂ [157]	܂ [173]	܂ [189]	= [205]	܂ [221]	܂ [237]	܂ [253]
E	܂ [142]	܂ [158]	܂ [174]	܂ [190]	܂ [206]	܂ [222]	܂ [238]	܂ [254]
F	܂ [143]	܂ [159]	܂ [175]	܂ [191]	܂ [207]	܂ [223]	,	܂ [255]

Page 34 (PC855: Cyrillic)

HEX	8	9	A	В	С	D	E	F
0	һ [128]	љ [144]	а [160]	ѡ [176]	լ [192]	լ [208]	յ [224]	- [240]
1	ћ [129]	љ [145]	Ӑ [161]	ѡ [177]	Ӆ [193]	Ӆ [209]	ր [225]	Ӧ [241]
2	Ӯ [130]	Ӯ [146]	Ӯ [162]	ѡ [178]	Ӯ [194]	Ӎ [210]	ӎ [226]	Ӧ [242]
3	Ӯ [131]	Ӯ [147]	Ӯ [163]	Ӆ [179]	Ӯ [195]	Ӎ [211]	Ҫ [227]	Ӡ [243]
4	ё [132]	һ [148]	Ҫ [164]	Ւ [180]	- [196]	Ҥ [212]	Ҫ [228]	Ӡ [244]
5	Ӭ [133]	һ [149]	Ҫ [165]	Х [181]	Ւ [197]	Ҥ [213]	Ҭ [229]	Ӧ [245]
6	Ҽ [134]	Ӯ [150]	Դ [166]	Խ [182]	Կ [198]	Օ [214]	Ҭ [230]	Ӧ [246]
7	Ҽ [135]	Ӯ [151]	Ճ [167]	И [183]	Կ [199]	Օ [215]	ӽ [231]	Ӭ [247]
8	Ծ [136]	ӽ [152]	Ե [168]	И [184]	Լ [200]	Պ [216]	ӽ [232]	Ӭ [248]
9	Ծ [137]	ӽ [153]	Ե [169]	Ւ [185]	Ր [201]	Ջ [217]	ӽ [233]	Ӧ [249]
A	ի [138]	Ա [154]	Փ [170]	Ւ [186]	Լ [202]	Ր [218]	ӽ [234]	Ӧ [250]
B	Ի [139]	Ա [155]	Փ [171]	Ւ [187]	Ր [203]	■ [219]	Վ [235]	Ч [251]
C	Ӯ [140]	Յ [156]	Ր [172]	Ւ [188]	Ւ [204]	■ [220]	Վ [236]	Ч [252]
D	Ӯ [141]	Յ [157]	Ր [173]	Ӯ [189]	= [205]	Պ [221]	բ [237]	Ը [253]
E	յ [142]	՚ [158]	« [174]	Ӯ [190]	Ւ [206]	յ [222]	բ [238]	■ [254]
F	յ [143]	՚ [159]	» [175]	՚ [191]	Ռ [207]	■ [223]	՞ [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	ç [128]	é [144]	á [160]	í [176]	l [192]	ll [208]	a [224]	≡ [240]
1	ü [129]	æ [145]	í [161]	í [177]	l [193]	τ [209]	þ [225]	± [241]
2	é [130]	æ [146]	ó [162]	í [178]	τ [194]	π [210]	Γ [226]	≥ [242]
3	â [131]	ô [147]	ú [163]	l [179]	f [195]	ll [211]	π [227]	≤ [243]
4	ä [132]	ö [148]	á [164]	h [180]	- [196]	ε [212]	Σ [228]	ƒ [244]
5	à [133]	b [149]	í [165]	h [181]	† [197]	f [213]	σ [229]	j [245]
6	å [134]	û [150]	ó [166]	ll [182]	f [198]	π [214]	μ [230]	÷ [246]
7	ç [135]	ý [151]	ú [167]	π [183]	ll [199]	‡ [215]	τ [231]	≈ [247]
8	ê [136]	ý [152]	ð [168]	h [184]	ll [200]	† [216]	φ [232]	° [248]
9	ë [137]	ö [153]	r [169]	ll [185]	Γ [201]	‡ [217]	θ [233]	• [249]
A	è [138]	ü [154]	¬ [170]	ll [186]	ll [202]	Γ [218]	Ω [234]	• [250]
B	ð [139]	ø [155]	½ [171]	π [187]	π [203]	■ [219]	δ [235]	√ [251]
C	ð [140]	£ [156]	¼ [172]	ll [188]	ll [204]	■ [220]	ø [236]	n [252]
D	p [141]	ø [157]	i [173]	ll [189]	= [205]	■ [221]	φ [237]	2 [253]
E	Ã [142]	þt [158]	« [174]	‡ [190]	ll [206]	■ [222]	ε [238]	■ [254]
F	å [143]	f [159]	» [175]	l [191]	ll [207]	■ [223]	ŋ [239]	SP [255]

Page 36 (PC862: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	א [128]	ב [144]	ָ [160]	ְ [176]	ֲ [192]	ִ [208]	ַ [224]	ֵ [240]
1	כ [129]	ד [145]	ִ [161]	ְ [177]	ֲ [193]	ֵ [209]	ַ [225]	ֶ [241]
2	ל [130]	ג [146]	ְ [162]	ְ [178]	ְ [194]	ְ [210]	ְ [226]	ָ [242]
3	ת [131]	ַ [147]	ֻ [163]	ְ [179]	ְ [195]	ְ [211]	ְ [227]	ְ [243]
4	ְ [132]	ְ [148]	ְ [164]	ְ [180]	- [196]	ְ [212]	ְ [228]	ְ [244]
5	ְ [133]	ְ [149]	ְ [165]	ְ [181]	ְ [197]	ְ [213]	ְ [229]	ְ [245]
6	ְ [134]	ְ [150]	ְ [166]	ְ [182]	ְ [198]	ְ [214]	ְ [230]	ְ [246]
7	ְ [135]	ְ [151]	ְ [167]	ְ [183]	ְ [199]	ְ [215]	ְ [231]	ְ [247]
8	ְ [136]	ְ [152]	ְ [168]	ְ [184]	ְ [200]	ְ [216]	ְ [232]	ְ [248]
9	ְ [137]	ְ [153]	ְ [169]	ְ [185]	ְ [201]	ְ [217]	ְ [233]	ְ [249]
A	ְ [138]	ְ [154]	ְ [170]	ְ [186]	ְ [202]	ְ [218]	ְ [234]	ְ [250]
B	ְ [139]	ְ [155]	ְ [171]	ְ [187]	ְ [203]	ְ [219]	ְ [235]	ְ [251]
C	ְ [140]	ְ [156]	ְ [172]	ְ [188]	ְ [204]	ְ [220]	ְ [236]	ְ [252]
D	ְ [141]	ְ [157]	ְ [173]	ְ [189]	= [205]	ְ [221]	ְ [237]	ְ [253]
E	ְ [142]	ְ [158]	ְ [174]	ְ [190]	ְ [206]	ְ [222]	ְ [238]	ְ [254]
F	ְ [143]	ְ [159]	ְ [175]	ְ [191]	ְ [207]	ְ [223]	ְ [239]	ְ [255]

HEX	8	9	A	B	C	D	E	F
0	° 128	ؒ 144	SP 160	ؑ 176	ؔ 192	ؚ 208	- 224	ؘ 240
1	ؒ 129	ؐ 145	- 161	ؑ 177	ؕ 193	؜ 209	ؙ 225	ؘ 241
2	ؒ 130	ؔ 146	ؖ 162	ؓ 178	ؗ 194	؜ 210	ؙ 226	ؘ 242
3	ؑ 131	ؒ 147	ؖ 163	ؓ 179	ؑ 195	ؔ 211	ؙ 227	ؘ 243
4	ؔ 132	ؒؒ 148	ؖؒ 164	ؓؒ 180	ؔؒ 196	ؚؔ 212	ؚؖ 228	ؘؚ 244
5	- 133	ؒؔ 149	ؖؖ 165	ؓؓ 181	ؔؕ 197	ؔ؜ 213	ؙؖ 229	ؘؙ 245
6	ؑ 134	ؒؒؒ 150	SP 166	ؖؒؒ 182	ؓؒؒ 198	ؔؖؒ 214	ؖؖؒ 230	ؘؖؒ 246
7	ؒؒ 135	ؒؒؒ 151	ؖؒؒؒ 167	ؓؒؒؒ 183	ؑؒؒؒ 199	ؖؖؒؒ 215	ؘؖؒؒ 231	ؘؖؒؒ 247
8	ؒؒؒ 136	ؒؒؒؒ 152	ؖؒؒؒؒ 168	ؓؒؒؒؒ 184	ؑؒؒؒؒ 200	ؖؖؒؒؒ 216	ؘؖؒؒؒ 232	ؘؖؒؒؒ 248
9	ؒؒؒؒؒ 137	ؒؒؒؒؒؒ 153	ؖؒؒؒؒؒؒ 169	ؓؒؒؒؒؒؒ 185	ؑؒؒؒؒؒؒ 201	ؖؖؒؒؒؒؒ 217	ؘؖؒؒؒؒؒ 233	ؘؖؒؒؒؒؒ 249
A	ؒؒؒؒؒؒؒ 138	ؒؒؒؒؒؒؒؒ 154	ؖؒؒؒؒؒؒؒؒ 170	ؓؒؒؒؒؒؒؒؒ 186	ؑؒؒؒؒؒؒؒؒ 202	ؖؖؒؒؒؒؒؒؒ 218	ؘؖؒؒؒؒؒؒؒ 234	ؘؖؒؒؒؒؒؒؒ 250
B	ؒؒؒؒؒؒؒؒؒ 139	SP 155	ؖؒؒؒؒؒؒؒؒؒ 171	ؓؒؒؒؒؒؒؒؒؒ 187	ؔؒؒؒؒؒؒؒؒؒ 203	ؖؖؒؒؒؒؒؒؒؒؒ 219	ؘؖؒؒؒؒؒؒؒؒؒ 235	ؘؖؒؒؒؒؒؒؒؒؒ 251
C	ؒؒؒؒؒؒؒؒؒؒ 140	SP 156	ؖؒؒؒؒؒؒؒؒؒؒ 172	ؓؒؒؒؒؒؒؒؒؒؒ 188	ؔؒؒؒؒؒؒؒؒؒؒ 204	ؖؖؒؒؒؒؒؒؒؒؒؒ 220	ؘؖؒؒؒؒؒؒؒؒؒؒ 236	ؘؖؒؒؒؒؒؒؒؒؒؒ 252
D	ؒؒؒؒؒؒؒؒؒؒؒ 141	ؒؒؒؒؒؒؒؒؒؒؒؒ 157	ؖؒؒؒؒؒؒؒؒؒؒؒؒ 173	ؓؒؒؒؒؒؒؒؒؒؒؒؒ 189	ؔؒؒؒؒؒؒؒؒؒؒؒؒ 205	ؖؖؒؒؒؒؒؒؒؒؒؒؒؒ 221	ؘؖؒؒؒؒؒؒؒؒؒؒؒؒ 237	ؘؖؒؒؒؒؒؒؒؒؒؒؒؒ 253
E	ؒؒؒؒؒؒؒؒؒؒؒؒؒ 142	ؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 158	ؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 174	ؓؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 190	ؔؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 206	ؖؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 222	ؘؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 238	ؘؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 254
F	ؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 143	ؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 159	ؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 175	ؓؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 191	ؔؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 207	ؖؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 223	ؘؖؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒؒ 239	SP 255

Page 38 (PC869: Greek)

HEX	8	9	A	B	C	D	E	F
0	SP 128	Ι 144	Ϊ 160	Ϊ 176	Լ 192	Τ 208	ζ 224	- 240
1	SP 129	Ϊ 145	Ϊ 161	Ϊ 177	Լ 193	Υ 209	η 225	± 241
2	SP 130	Ծ 146	Ծ 162	Ծ 178	Տ 194	Փ 210	θ 226	Ս 242
3	SP 131	SP 147	Ւ 163	Ւ 179	Ւ 195	Խ 211	լ 227	Փ 243
4	SP 132	SP 148	Ա 164	Ի 180	- 196	Ψ 212	Կ 228	Խ 244
5	SP 133	՚ 149	Բ 165	Կ 181	Ւ 197	Ω 213	λ 229	§ 245
6	Ա 134	Ӯ 150	Ր 166	Ա 182	Ո 198	ա 214	մ 230	ψ 246
7	€ 135	Ց 151	Ճ 167	Մ 183	Ր 199	Յ 215	Վ 231	… 247
8	• 136	Ջ 152	Ե 168	Ն 184	Լ 200	Կ 216	ξ 232	▫ 248
9	՞ 137	Զ 153	Զ 169	Հ 185	Ր 201	յ 217	օ 233	.. 249
A	՚ 138	Յ 154	Ւ 170	Ո 186	Լ 202	Ր 218	Պ 234	Ո 250
B	՚ 139	ա 155	½ 171	Շ 187	Ր 203	■ 219	ր 235	ü 251
C	՚ 140	ֆ 156	թ 172	Շ 188	Ր 204	■ 220	ս 236	ü 252
D	Ե 141	է 157	Ի 173	Շ 189	= 205	ծ 221	չ 237	ώ 253
E	- 142	ն 158	« 174	Օ 190	Ռ 206	չ 222	տ 238	■ 254
F	՚ 143	լ 159	» 175	Ղ 191	Ը 207	■ 223	՚ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	▀ 128	L 144	SP 160	° 176	Ŕ 192	Đ 208	ŕ 224	đ 240
1	▀ 129	Ł 145	À 161	ą 177	Ā 193	Ń 209	á 225	ń 241
2	▀ 130	T 146	~ 162	‘ 178	Â 194	Ñ 210	â 226	ň 242
3	I 131	ł 147	Ł 163	ż 179	Ā 195	Ó 211	ă 227	ó 243
4	H 132	- 148	¤ 164	‘ 180	Ä 196	Ô 212	ä 228	ô 244
5	J 133	† 149	Ł 165	ě 181	Ľ 197	Õ 213	í 229	ő 245
6	Γ 134	■ 150	Ś 166	Ś 182	Ć 198	Ö 214	ć 230	ö 246
7	█ 135	■ 151	§ 167	~ 183	Ç 199	× 215	ç 231	÷ 247
8	© 136	Ł 152	-- 168	‘ 184	Č 200	Ř 216	č 232	ř 248
9	॥ 137	ř 153	š 169	š 185	É 201	Ü 217	é 233	ü 249
A	॥ 138	Ł 154	ſ 170	ſ 186	Ę 202	Ú 218	ę 234	ú 250
B	॥ 139	ř 155	ń 171	ń 187	Ě 203	Ü 219	ë 235	ü 251
C	॥ 140	ř 156	ž 172	ž 188	Ě 204	Ü 220	ě 236	ü 252
D	¢ 141	= 157	- 173	~ 189	Í 205	Ý 221	í 237	ý 253
E	¥ 142	॥ 158	ž 174	ž 190	Î 206	Ĵ 222	î 238	ť 254
F	፣ 143	® 159	ż 175	ż 191	Ď 207	ڦ 223	ڏ 239	ڻ 255

Page 40 (ISO8859-15: Latin9)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	º 176	À 192	Ð 208	à 224	ð 240
1	SP 129	SP 145	i 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	SP 130	SP 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	SP 131	SP 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	SP 132	SP 148	€ 164	Ž 180	Ä 196	Ô 212	ä 228	ô 244
5	SP 133	SP 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	SP 134	SP 150	Š 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	SP 135	SP 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	SP 136	SP 152	š 168	ž 184	È 200	Ø 216	è 232	ø 248
9	SP 137	SP 153	@ 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	SP 138	SP 154	¤ 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	SP 139	SP 155	« 171	» 187	Ë 203	Ü 219	ë 235	û 251
C	SP 140	SP 156	¬ 172	Œ 188	Ì 204	Ü 220	ì 236	ü 252
D	SP 141	SP 157	- 173	œ 189	Í 205	Ý 221	í 237	ý 253
E	SP 142	SP 158	® 174	ÿ 190	Î 206	Þ 222	î 238	þ 254
F	SP 143	SP 159	- 175	¸ 191	Ï 207	ß 223	ï 239	ÿ 255

HEX	8	9	A	B	C	D	E	F
0	SP 128	ڦ 144	ڻ 160	ڦ 176	ڦ 192	ڦ 208	ڦ 224	- 240
1	SP 129	ڦ 145	ڦ 161	ڦ 177	ڦ 193	ڦ 209	ڦ 225	ڦ 241
2	' 130	ڦ 146	ڦ 162	ڦ 178	ڦ 194	ڦ 210	ڦ 226	ڦ 242
3	ڦ 131	ڦ 147	ڦ 163	ڦ 179	ڦ 195	ڦ 211	ڦ 227	- 243
4	ڦ 132	ڦ 148	ڦ 164	ڦ 180	- 196	ڦ 212	ڦ 228	ڦ 244
5	ڦ 133	ڦ 149	ڦ 165	ڦ 181	ڦ 197	ڦ 213	ڦ 229	ڦ 245
6	ڦ 134	ڦ 150	ڦ 166	ڦ 182	ڦ 198	ڦ 214	ڦ 230	ڦ 246
7	ڦ 135	ڦ 151	ڦ 167	ڦ 183	ڦ 199	ڦ 215	ڦ 231	ڦ 247
8	ڦ 136	ڦ 152	ڦ 168	ڦ 184	ڦ 200	ڦ 216	ڦ 232	ڦ 248
9	ڦ 137	ڦ 153	ڦ 169	ڦ 185	ڦ 201	ڦ 217	ڦ 233	ڦ 249
A	ڦ 138	ڦ 154	ڦ 170	ڦ 186	ڦ 202	ڦ 218	ڦ 234	ڦ 250
B	ڦ 139	ڦ 155	ڦ 171	ڦ 187	ڦ 203	ڦ 219	ڦ 235	ڦ 251
C	ڦ 140	ڦ 156	ڦ 172	ڦ 188	ڦ 204	ڦ 220	ڦ 236	ڦ 252
D	ڦ 141	ڦ 157	ڦ 173	ڦ 189	= 205	ڦ 221	ڦ 237	ڦ 253
E	ڦ 142	ڦ 158	ڦ 174	ڦ 190	ڦ 206	ڦ 222	ڦ 238	ڦ 254
F	ڦ 143	ڦ 159	ڦ 175	ڦ 191	SP 207	ڦ 223	ڦ 239	SP 255

Page 42 (PC1118: Lithuanian)

HEX	8	9	A	B	C	D	E	F
0	Ç [128]	É [144]	á [160]	ž [176]	ł [192]	ą [208]	ä [224]	Ξ [240]
1	ü [129]	æ [145]	í [161]	ÿ [177]	ł [193]	č [209]	þ [225]	± [241]
2	é [130]	Æ [146]	ó [162]	ž [178]	ł [194]	ę [210]	Γ [226]	≥ [242]
3	â [131]	ô [147]	ú [163]	ł [179]	ł [195]	é [211]	π [227]	≤ [243]
4	ä [132]	ö [148]	ñ [164]	ł [180]	- [196]	j [212]	Σ [228]	" [244]
5	à [133]	ò [149]	ñ [165]	ą [181]	ł [197]	š [213]	σ [229]	" [245]
6	å [134]	û [150]	a [166]	č [182]	ł [198]	ų [214]	μ [230]	÷ [246]
7	ç [135]	ù [151]	ø [167]	ę [183]	ū [199]	ū [215]	τ [231]	≈ [247]
8	ê [136]	ÿ [152]	ż [168]	é [184]	ł [200]	ž [216]	φ [232]	° [248]
9	ë [137]	ö [153]	ń [169]	ł [185]	ł [201]	ż [217]	θ [233]	• [249]
A	è [138]	Ü [154]	¬ [170]	ł [186]	ł [202]	ł [218]	Ω [234]	· [250]
B	ĩ [139]	¢ [155]	½ [171]	ł [187]	ł [203]	■ [219]	δ [235]	ſ [251]
C	î [140]	£ [156]	¼ [172]	ł [188]	ł [204]	■ [220]	ѡ [236]	n [252]
D	ì [141]	¥ [157]	i [173]	ł [189]	= [205]	■ [221]	ø [237]	² [253]
E	Ā [142]	þ [158]	« [174]	š [190]	ł [206]	ł [222]	ɛ [238]	■ [254]
F	À [143]	f [159]	» [175]	ł [191]	ž [207]	■ [223]	ñ [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	ଅ [128]	ପ [144]	ା [160]	ବ [176]	ଲ [192]	ା [208]	ପ [224]	ୟ [240]
1	ବ [129]	ଚ [145]	ବ [161]	ବ [177]	ତ [193]	୬ [209]	ଚ [225]	ୟ [241]
2	ବ [130]	ତ [146]	ବ [162]	ବ [178]	ତ [194]	େ [210]	ତ [226]	ୟ [242]
3	ଗ [131]	ୟ [147]	ଗ [163]	ି [179]	ଫ [195]	େ [211]	ୟ [227]	ୟ [243]
4	ଦ [132]	ଫ [148]	ଦ [164]	ି [180]	- [196]	ି [212]	ଫ [228]	“ [244]
5	ଏ [133]	ଖ [149]	େ [165]	ା [181]	ି [197]	୬ [213]	ଖ [229]	“ [245]
6	ଝ [134]	ଚ [150]	ଝ [166]	୬ [182]	୬ [198]	୯ [214]	ଚ [230]	ି [246]
7	ଢ [135]	ୟ [151]	ଢ [167]	ୟ [183]	୦ [199]	୦ [215]	ୟ [231]	ି [247]
8	ମ [136]	ଷ [152]	ମ [168]	ୟ [184]	ି [200]	ୟ [216]	ଷ [232]	ି [248]
9	ଯ [137]	ଷ [153]	ଯ [169]	ି [185]	ର [201]	ି [217]	ଷ [233]	ି [249]
A	କ [138]	ବ [154]	କ [170]	ି [186]	ି [202]	ଗ [218]	ବ [234]	ି [250]
B	ଲ [139]	ଯ [155]	ଲ [171]	ି [187]	ି [203]	ି [219]	ଯ [235]	ି [251]
C	ମ [140]	ବ [156]	ମ [172]	ି [188]	ି [204]	ି [220]	ବ [236]	ି [252]
D	ନ [141]	ଝ [157]	ନ [173]	ି [189]	= [205]	ି [221]	ଝ [237]	ି [253]
E	ଓ [142]	଱ [158]	ଓ [174]	୬ [190]	ି [206]	ି [222]	଱ [238]	ି [254]
F	ଠ [143]	ଯ [159]	ଠ [175]	ି [191]	ୟ [207]	ି [223]	ଯ [239]	SP [255]

Page 44 (PC1125: Ukrainian)

HEX	8	9	A	B	C	D	E	F
0	А [128]	Р [144]	а [160]	ї [176]	л [192]	і [208]	р [224]	ї [240]
1	Б [129]	С [145]	б [161]	ї [177]	т [193]	і [209]	с [225]	є [241]
2	В [130]	Т [146]	в [162]	ї [178]	т [194]	і [210]	т [226]	г [242]
3	Г [131]	У [147]	г [163]	і [179]	т [195]	і [211]	у [227]	ѓ [243]
4	Д [132]	Ф [148]	д [164]	і [180]	- [196]	і [212]	ф [228]	е [244]
5	Е [133]	Х [149]	е [165]	і [181]	і [197]	і [213]	х [229]	е [245]
6	Ж [134]	Ц [150]	ж [166]	і [182]	і [198]	і [214]	ц [230]	і [246]
7	З [135]	Ч [151]	з [167]	ї [183]	ї [199]	ї [215]	ч [231]	і [247]
8	И [136]	Ш [152]	и [168]	ї [184]	ї [200]	ї [216]	ш [232]	ї [248]
9	Й [137]	Щ [153]	й [169]	ї [185]	ї [201]	ї [217]	щ [233]	ї [249]
A	К [138]	ь [154]	к [170]	і [186]	і [202]	і [218]	ь [234]	÷ [250]
B	Л [139]	ы [155]	л [171]	ї [187]	ї [203]	ї [219]	ы [235]	± [251]
C	М [140]	ь [156]	м [172]	ї [188]	ї [204]	ї [220]	ь [236]	№ [252]
D	Н [141]	Э [157]	н [173]	ї [189]	= [205]	ї [221]	э [237]	¤ [253]
E	О [142]	Ю [158]	о [174]	ї [190]	ї [206]	ї [222]	ю [238]	■ [254]
F	П [143]	Я [159]	п [175]	ї [191]	ї [207]	ї [223]	я [239]	SP [255]

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	º [176]	Ŕ [192]	Đ [208]	ŕ [224]	đ [240]
1	SP [129]	‘ [145]	ˇ [161]	± [177]	Á [193]	Ń [209]	á [225]	ń [241]
2	,	’ [130]	„ [146]	ˇ [162]	‘ [178]	Â [194]	ň [210]	â [226]
3	SP [131]	“ [147]	Ł [163]	ł [179]	Ã [195]	Ó [211]	ă [227]	ó [243]
4	,	” [132]	¤ [148]	¤ [164]	‘ [180]	Ä [196]	Ô [212]	ä [228]
5	,	… [133]	• [149]	À [165]	µ [181]	Ľ [197]	Õ [213]	í [229]
6	† [134]	- [150]	‐ [166]	¶ [182]	Ć [198]	Ö [214]	ć [230]	ö [246]
7	‡ [135]	- [151]	§ [167]	· [183]	Ç [199]	× [215]	ç [231]	÷ [247]
8	SP [136]	SP [152]	– [168]	‐ [184]	Č [200]	Ř [216]	č [232]	ř [248]
9	‰ [137]	™ [153]	© [169]	ą [185]	É [201]	Ü [217]	é [233]	ü [249]
A	Š [138]	ſ [154]	ſ [170]	ſ [186]	Ę [202]	Ú [218]	ę [234]	ú [250]
B	⟨ [139]	⟩ [155]	« [171]	» [187]	Ě [203]	Ü [219]	ë [235]	ü [251]
C	Ś [140]	ś [156]	‐ [172]	ł [188]	Ě [204]	Ü [220]	ě [236]	ü [252]
D	Ž [141]	ž [157]	- [173]	‐ [189]	Í [205]	Ý [221]	í [237]	ý [253]
E	Ž [142]	ž [158]	® [174]	њ [190]	Î [206]	Ј [222]	î [238]	њ [254]
F	Ž [143]	ž [159]	ž [175]	ž [191]	Đ [207]	Ծ [223]	đ [239]	‐ [255]

Page 46 (WPC1251: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	Ђ [128]	Ѡ [144]	Ѐ [160]	Ѡ [176]	Ӑ [192]	Ӗ [208]	Ӑ [224]	Ӗ [240]
1	Ӯ [129]	‘ [145]	ӻ [161]	Ӱ [177]	Ӯ [193]	Ҫ [209]	Ӯ [225]	Ҫ [241]
2	,	’ [130]	ӻ [146]	ӻ [162]	Ӣ [178]	Ӯ [194]	Ӯ [226]	Ӯ [242]
3	Ӯ [131]	“ [147]	ڶ [163]	ڶ [179]	Ӯ [195]	Ӯ [211]	Ӯ [227]	Ӯ [243]
4	” [132]	” [148]	Ӯ [164]	Ӯ [180]	Ӯ [196]	Ӯ [212]	Ӯ [228]	Ӯ [244]
5	” [133]	• [149]	Ӯ [165]	Ӯ [181]	Ӯ [197]	Ӯ [213]	Ӯ [229]	Ӯ [245]
6	Ӯ [134]	- [150]	Ӯ [166]	Ӯ [182]	Ӯ [198]	Ӯ [214]	Ӯ [230]	Ӯ [246]
7	Ӯ [135]	- [151]	Ӯ [167]	Ӯ [183]	Ӯ [199]	Ӯ [215]	Ӯ [231]	Ӯ [247]
8	Ӯ [136]	SP [152]	Ӯ [168]	Ӯ [184]	Ӯ [200]	Ӯ [216]	Ӯ [232]	Ӯ [248]
9	Ӯ [137]	TM [153]	Ӯ [169]	Ӯ [185]	Ӯ [201]	Ӯ [217]	Ӯ [233]	Ӯ [249]
A	Ӯ [138]	Ӯ [154]	Ӯ [170]	Ӯ [186]	Ӯ [202]	Ӯ [218]	Ӯ [234]	Ӯ [250]
B	Ӯ [139]	Ӯ [155]	Ӯ [171]	Ӯ [187]	Ӯ [203]	Ӯ [219]	Ӯ [235]	Ӯ [251]
C	Ӯ [140]	Ӯ [156]	Ӯ [172]	Ӯ [188]	Ӯ [204]	Ӯ [220]	Ӯ [236]	Ӯ [252]
D	Ӯ [141]	Ӯ [157]	Ӯ [173]	Ӯ [189]	Ӯ [205]	Ӯ [221]	Ӯ [237]	Ӯ [253]
E	Ӯ [142]	Ӯ [158]	Ӯ [174]	Ӯ [190]	Ӯ [206]	Ӯ [222]	Ӯ [238]	Ӯ [254]
F	Ӯ [143]	Ӯ [159]	Ӯ [175]	Ӯ [191]	Ӯ [207]	Ӯ [223]	Ӯ [239]	Ӯ [255]

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	° [176]	Ł [192]	Π [208]	Ü [224]	Π [240]
1	SP [129]	‘ [145]	„ [161]	± [177]	À [193]	Ρ [209]	ᾳ [225]	ϙ [241]
2	,	’ [130]	À [146]	₂ [162]	₂ [178]	Β [194]	SP [210]	ϐ [226]
3	ƒ [131]	“ [147]	£ [163]	₃ [179]	Γ [195]	Σ [211]	ᵧ [227]	Ϭ [243]
4	” [132]	” [148]	¤ [164]	‐ [180]	Δ [196]	Τ [212]	δ [228]	τ [244]
5	… [133]	• [149]	¥ [165]	μ [181]	Ε [197]	΢ [213]	϶ [229]	϶ [245]
6	† [134]	‐ [150]	׀ [166]	׀ [182]	Ζ [198]	Φ [214]	ζ [230]	ϙ [246]
7	‡ [135]	‐ [151]	§ [167]	· [183]	Η [199]	Χ [215]	η [231]	χ [247]
8	SP [136]	SP [152]	„ [168]	Ѐ [184]	Θ [200]	Ѱ [216]	θ [232]	ѱ [248]
9	‰ [137]	™ [153]	© [169]	՚ [185]	Ι [201]	Ѡ [217]	լ [233]	ԝ [249]
A	SP [138]	SP [154]	ѧ [170]	՚ [186]	Կ [202]	՚ [218]	կ [234]	՚ [250]
B	〈 [139]	〉 [155]	« [171]	» [187]	Ա [203]	՚ [219]	լ [235]	՚ [251]
C	SP [140]	SP [156]	‐ [172]	՞ [188]	Մ [204]	՚ [220]	մ [236]	՚ [252]
D	SP [141]	SP [157]	‐ [173]	½ [189]	Ն [205]	՚ [221]	՞ [237]	՚ [253]
E	SP [142]	SP [158]	® [174]	՚ [190]	՚ [206]	՚ [222]	՚ [238]	՚ [254]
F	SP [143]	SP [159]	‐ [175]	՞ [191]	Օ [207]	՚ [223]	օ [239]	SP [255]

Page 48 (WPC1254: Turkish)

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	º [176]	À [192]	Ğ [208]	à [224]	ğ [240]
1	SP [129]	‘ [145]	ı [161]	‡ [177]	Á [193]	Ñ [209]	á [225]	ñ [241]
2	,	’ [146]	¢ [162]	² [178]	Â [194]	Ò [210]	â [226]	ò [242]
3	ƒ [131]	“ [147]	£ [163]	³ [179]	Ã [195]	Ó [211]	ã [227]	ó [243]
4	” [132]	” [148]	¤ [164]	‐ [180]	Ä [196]	Ô [212]	ä [228]	ô [244]
5	… [133]	• [149]	¥ [165]	µ [181]	Å [197]	Õ [213]	å [229]	õ [245]
6	† [134]	‐ [150]	‐ [166]	¶ [182]	Æ [198]	Ö [214]	æ [230]	ö [246]
7	‡ [135]	‐ [151]	§ [167]	‐ [183]	Ç [199]	× [215]	ç [231]	÷ [247]
8	^ [136]	‐ [152]	‐ [168]	‐ [184]	È [200]	Ø [216]	è [232]	ø [248]
9	‰ [137]	™ [153]	@ [169]	¹ [185]	É [201]	Ù [217]	é [233]	ù [249]
A	Š [138]	Š [154]	à [170]	º [186]	Ê [202]	Ú [218]	ê [234]	ú [250]
B	⟨ [139]	⟩ [155]	« [171]	» [187]	Ë [203]	Ü [219]	ë [235]	û [251]
C	Œ [140]	œ [156]	‐ [172]	¼ [188]	Ì [204]	Ü [220]	ì [236]	ü [252]
D	SP [141]	SP [157]	‐ [173]	½ [189]	Í [205]	Ì [221]	í [237]	í [253]
E	SP [142]	SP [158]	® [174]	¾ [190]	Î [206]	Ş [222]	î [238]	ş [254]
F	SP [143]	Ÿ [159]	‐ [175]	¸ [191]	Ï [207]	ß [223]	ï [239]	ÿ [255]

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	◦ [176]	· [192]	[208]	₪ [224]] [240]
1	SP [129]	‘ [145]	ı [161]	± [177]	·· [193]	· [209]	ל [225]	ו [241]
2	‘ [130]	’ [146]	¢ [162]	² [178]	·· [194]	· [210]	ל [226]	ו [242]
3	ƒ [131]	“ [147]	£ [163]	³ [179]	·· [195]	· [211]	ת [227]	¶ [243]
4	” [132]	” [148]	₪ [164]	· [180]	· [196]	ֲ [212]	ַ [228]	ׂ [244]
5	·· [133]	· [149]	¥ [165]	µ [181]	·· [197]	ְ [213]	ִ [229]	ׁ [245]
6	† [134]	- [150]	׀ [166]	׀ [182]	ׂ [198]	ֲ [214]	ׁ [230]	ׂ [246]
7	‡ [135]	- [151]	ׂ [167]	· [183]	- [199]	ׂ [215]	ׂ [231]	ׂ [247]
8	ׂ [136]	ׂ [152]	ׂ [168]	ׂ [184]	ׂ [200]	ׂ [216]	ׂ [232]	ׂ [248]
9	ׂ [137]	™ [153]	ׂ [169]	ׂ [185]	ׂ [201]	SP [217]	ׂ [233]	ׂ [249]
A	SP [138]	SP [154]	×	÷ [170]	SP [186]	SP [202]	ׂ [234]	ׂ [250]
B	ׂ [139]	ׂ [155]	ׂ [171]	ׂ [187]	ׂ [203]	SP [219]	ׂ [235]	SP [251]
C	SP [140]	SP [156]	ׂ [172]	ׂ [188]	ׂ [204]	SP [220]	ׂ [236]	SP [252]
D	SP [141]	SP [157]	ׂ [173]	ׂ [189]	ׂ [205]	SP [221]	ׂ [237]	SP [253]
E	SP [142]	SP [158]	ׂ [174]	ׂ [190]	ׂ [206]	SP [222]	ׂ [238]	SP [254]
F	SP [143]	SP [159]	ׂ [175]	ׂ [191]	ׂ [207]	SP [223]	ׂ [239]	SP [255]

Page 50 (WPC1256: Arabic)

HEX	8	9	A	B	C	D	E	F
0	€ [128]	ػ [144]	SP [160]	ؔ [176]	؈ [192]	؜ [208]	ؘ [224]	ؚ [240]
1	ػ [129]	‘ [145]	‘ [161]	؉ [177]	؊ [193]	؋ [209]	، [225]	؍ [241]
2	؇ [130]	ؑ [146]	؂ [162]	ؒ [178]	ؖ [194]	ؕ [210]	ؘ [226]	ؚ [242]
3	؆ [131]	ؑؑ [147]	؂ؑ [163]	ؓ [179]	؊ؑ [195]	ؓؑ [211]	ؗؑ [227]	ؙؑ [243]
4	ؑؑ [132]	ؑؑؑ [148]	؂ؑؑ [164]	ؓؑؑ [180]	ؖؑؑ [196]	ؖؑؑؑ [212]	ؖؑؑؑؑ [228]	ؖؑؑؑؑؑ [244]
5	ؑؑؑ [133]	ؑؑؑؑ [149]	ؑؑؑؑؑ [165]	ؑؑؑؑؑؑ [181]	ؑؑؑؑؑؑؑ [197]	ؑؑؑؑؑؑؑؑ [213]	ؑؑؑؑؑؑؑؑؑ [229]	ؑؑؑؑؑؑؑؑؑؑ [245]
6	ؑؑؑؑؑ [134]	ؑؑؑؑؑؑ [150]	ؑؑؑؑؑؑؑ [166]	ؑؑؑؑؑؑؑؑ [182]	ؑؑؑؑؑؑؑؑؑ [198]	ؑؑؑؑؑؑؑؑؑؑ [214]	ؑؑؑؑؑؑؑؑؑؑؑ [230]	ؑؑؑؑؑؑؑؑؑؑؑؑ [246]
7	ؑؑؑؑؑؑؑ [135]	ؑؑؑؑؑؑؑؑ [151]	ؑؑؑؑؑؑؑؑؑ [167]	ؑؑؑؑؑؑؑؑؑؑ [183]	ؑؑؑؑؑؑؑؑؑؑؑ [199]	ؑؑؑؑؑؑؑؑؑؑؑؑ [215]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [231]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [247]
8	؈ [136]	ػ [152]	ؑؑؑؑؑؑؑؑؑؑ [168]	ؑؑؑؑؑؑؑؑؑؑؑ [184]	ؑؑؑؑؑؑؑؑؑؑؑؑ [200]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [216]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [232]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [248]
9	ؑؑؑؑؑؑؑؑ [137]	TM [153]	ؑؑؑؑؑؑؑؑؑؑؑ [169]	ؑؑؑؑؑؑؑؑؑؑؑؑ [185]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [201]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [217]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [233]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [249]
A	ؑؑؑؑؑؑؑؑؑ [138]	ؑؑؑؑؑؑؑؑؑؑ [154]	ؑؑؑؑؑؑؑؑؑؑؑ [170]	ؑؑؑؑؑؑؑؑؑؑؑؑ [186]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [202]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [218]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [234]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [250]
B	ؑؑؑؑؑؑؑؑؑؑ [139]	ؑؑؑؑؑؑؑؑؑؑؑ [155]	ؑؑؑؑؑؑؑؑؑؑؑؑ [171]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [187]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [203]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [219]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [235]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [251]
C	ؑؑؑؑؑؑؑؑؑؑؑ [140]	ؑؑؑؑؑؑؑؑؑؑؑؑ [156]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [172]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [188]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [204]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [220]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [236]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [252]
D	ؑؑؑؑؑؑؑؑؑؑؑؑ [141]	SP [157]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [173]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [189]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [205]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [221]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [237]	SP [253]
E	ؑؑؑؑؑؑؑؑؑؑؑؑ [142]	SP [158]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [174]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [190]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [206]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [222]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [238]	SP [254]
F	ؑؑؑؑؑؑؑؑؑؑؑؑ [143]	ؑؑؑؑؑؑؑؑؑؑؑؑؑ [159]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [175]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [191]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [207]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [223]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [239]	ؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑؑ [255]

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	° [176]	À [192]	Š [208]	ä [224]	š [240]
1	SP [129]	‘ [145]	SP [161]	± [177]	Í [193]	Ñ [209]	í [225]	ñ [241]
2	,	[130]	’ [146]	¢ [162]	² [178]	Ā [194]	᷑ [210]	ā [226]
3	SP [131]	“ [147]	£ [163]	³ [179]	Ć [195]	Ó [211]	ć [227]	ó [243]
4	” [132]	” [148]	¤ [164]	‘ [180]	Ā [196]	ō [212]	ä [228]	ō [244]
5	… [133]	• [149]	SP [165]	μ [181]	À [197]	õ [213]	å [229]	õ [245]
6	† [134]	- [150]	‘ [166]	¶ [182]	È [198]	ö [214]	ë [230]	ö [246]
7	‡ [135]	- [151]	§ [167]	· [183]	Ē [199]	× [215]	ē [231]	÷ [247]
8	SP [136]	SP [152]	Ø [168]	ø [184]	Č [200]	ۇ [216]	č [232]	ۇ [248]
9	‰ [137]	™ [153]	© [169]	¹ [185]	É [201]	ł [217]	é [233]	ł [249]
A	SP [138]	SP [154]	Ŗ [170]	ŗ [186]	ż [202]	ś [218]	ż [234]	ś [250]
B	⟨ [139]	⟩ [155]	« [171]	» [187]	Ē [203]	ū [219]	é [235]	ū [251]
C	SP [140]	SP [156]	¬ [172]	¼ [188]	Ğ [204]	ü [220]	ǵ [236]	ü [252]
D	-- [141]	- [157]	- [173]	½ [189]	Ķ [205]	ž [221]	ķ [237]	ž [253]
E	ˇ [142]	‘ [158]	® [174]	¾ [190]	Ĭ [206]	ž [222]	ī [238]	ž [254]
F	‐ [143]	SP [159]	Ŗ [175]	ȝ [191]	Ľ [207]	ڦ [223]	ڶ [239]	ڦ [255]

Page 52 (WPC1258: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	€ [128]	SP [144]	SP [160]	º [176]	À [192]	Đ [208]	à [224]	đ [240]
1	SP [129]	‘ [145]	í [161]	± [177]	Á [193]	Ñ [209]	á [225]	ñ [241]
2	,	’ [146]	¢ [162]	² [178]	Â [194]	” [210]	â [226]	- [242]
3	ƒ [131]	“ [147]	£ [163]	³ [179]	Ã [195]	Ó [211]	ă [227]	ó [243]
4	” [132]	” [148]	¤ [164]	‐ [180]	Ä [196]	Ô [212]	ä [228]	ô [244]
5	… [133]	• [149]	¥ [165]	µ [181]	Å [197]	Ø [213]	å [229]	ø [245]
6	† [134]	- [150]	[166]	¶ [182]	Æ [198]	Ö [214]	æ [230]	ö [246]
7	‡ [135]	- [151]	§ [167]	· [183]	Ç [199]	× [215]	ç [231]	÷ [247]
8	^ [136]	~ [152]	– [168]	‐ [184]	È [200]	Ø [216]	è [232]	ø [248]
9	% [137]	™ [153]	@ [169]	¹ [185]	É [201]	Ù [217]	é [233]	ù [249]
A	SP [138]	SP [154]	à [170]	º [186]	Ê [202]	Ú [218]	ê [234]	ú [250]
B	< [139]	> [155]	« [171]	» [187]	Ë [203]	Ü [219]	ë [235]	û [251]
C	Œ [140]	œ [156]	¬ [172]	¼ [188]	˜ [204]	Ü [220]	˜ [236]	ü [252]
D	SP [141]	SP [157]	- [173]	½ [189]	Í [205]	Ü [221]	í [237]	ú [253]
E	SP [142]	SP [158]	® [174]	¾ [190]	Î [206]	˜ [222]	î [238]	đ [254]
F	SP [143]	ÿ [159]	- [175]	¸ [191]	Ï [207]	ß [223]	ï [239]	ÿ [255]

HEX	8	9	A	B	C	D	E	F
0	ң	ң	SP	ө	А	Р	ә	р
1	ғ	‘	Ұ	ұ	Б	С	б	с
2	,	’	Ұ	і	В	Т	в	т
3	ғ	“	Ә	і	Г	Ү	ғ	ү
4	”	”	Ә	ө	Д	Ф	д	ф
5	…	•	Ө	ү	Е	Х	е	х
6	†	-	І	Ҙ	Ж	Ц	ж	ц
7	‡	-	Ӯ	·	З	Ч	з	ч
8	€	SP	Ӭ	ё	И	Ш	и	ш
9	‰	™	©	№	Й	Ҙ	й	Ҙ
A	љ	љ	F	F	К	ѣ	к	ѣ
B	<	>	«	»	Л	ы	л	ы
C	һ	һ	‐	ә	М	б	м	ь
D	Ҝ	Ҝ	-	Ҥ	Ҥ	Э	н	э
E	ҝ	ҝ	®	Ҥ	Ң	Ю	օ	ю
F	Ҕ	Ҕ	Ұ	Ұ	Ҕ	Я	Ҕ	я

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HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

International Character Sets

Country	ASCII code (Hex)														
	23	24	25	2A	40	5B	5C	5D	5E	60	7B	7C	7D	7E	
USA	#	\$	%	*	@	[\]	^	`	{		}	~	
France	#	\$	%	*	à	°	ç	§	^	`	é	ù	è	“	
Germany	#	\$	%	*	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
U.K.	£	\$	%	*	@	[\]	^	`	{		}	~	
Denmark I	#	\$	%	*	@	Æ	Ø	Å	^	`	æ	ø	å	~	
Sweden	#	¤	%	*	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
Italy	#	\$	%	*	@	°	\	é	^	ù	à	ò	è	ì	
Spain I	Pt	\$	%	*	@	i	Ñ	¿	^	`	..	ñ	}	~	
Japan	#	\$	%	*	@	[¥]	^	`	{		}	~	
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