TM-L500A

Technical Reference Guide

Product Overview

Describes features and general specifications for the product.

Setup

Describes setup and installation of the product and peripherals.
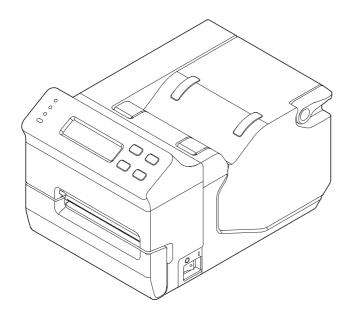
Application Development Information

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

Handling

Describes how to handle the product.

Appendix

Describes interfaces, connectors, and character code tables.

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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.

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. • Possibility of sustaining physical injuries. • Possibility of causing physical damage. • Possibility of causing information loss.
CAUTION	Provides information that must be observed to avoid damage to your equipment or a malfunction.
NOTE	Provides important information and useful tips.

Warnings

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

⚠️ **CAUTION**

- **Do not connect cables in ways other than those mentioned in this manual.**
  Different connections may cause equipment damage 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.
- **Take care not to injure your fingers on the manual cutter:**
  ∗ When you remove printed paper.
  ∗ When you perform other operations, such as loading/replacing roll paper.
- **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; or functional/precision devices, 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 judgement 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 systems and development and design of printer applications for developers.

Manual Content

The manual is made up of the following sections:

Contents

Setup 43

Application Development Information 65

Product Overview

This chapter describes features and specifications of the product.

Features

The TM-L500A is a high-speed compact printer suited for issuing boarding passes and baggage tags.

The features are as follows:

Printing

- High speed printing: Max. 250 mm/s {9.84"/s}
- Selection of 3 paper widths — 54.0 mm {2.13"}, 79.5 mm {3.13"}, and 82.5 mm {3.24"}. 50.8 mm {2.00"} is also available for the ESC/POS mode.
- Auto printing position adjustment

Handling

- Compact body for flexible installation locations
- High-speed autocutter
- Optional paper supply devices
- BP (Boarding Pass) tray is supplied as a factory option.

Software

- Command protocol based on the AEA2009 and ESC/POS Proprietary Command System
- Windows printer driver
- Bar code and two-dimensional symbol printing is possible.
- Maintenance counter

Environment

ENERGY STAR qualified.

Product Configurations

LCD (Liquid Crystal Display)

- Model with LCD
- Model without LCD

> **NOTE** The ESC/POS mode is available for the models without LCD only.

BP (Boarding Pass)-Tray

- Model with BP-Tray
- Model without BP-Tray

> **NOTE** Up to 20 autocut boarding passes can be stored in the BP tray.

Corner R (Round) Detection

- Model with the corner R detection
- Model without the corner R detection

> **NOTE** • The corner R detection is available only in the AEA mode.
> • The corner R detection sensor can detect corner R of only 82.5 mm wide paper.

Interfaces

- Serial (9 Pin D-Sub) UB + USB interface model
- Serial (25 Pin D-Sub) interface model
- Ethernet interface model

Colors

EDG (Epson Dark Gray)

Accessories

Included

- AC adapter (Model: PS-180)

- Cable hook

- User's manual
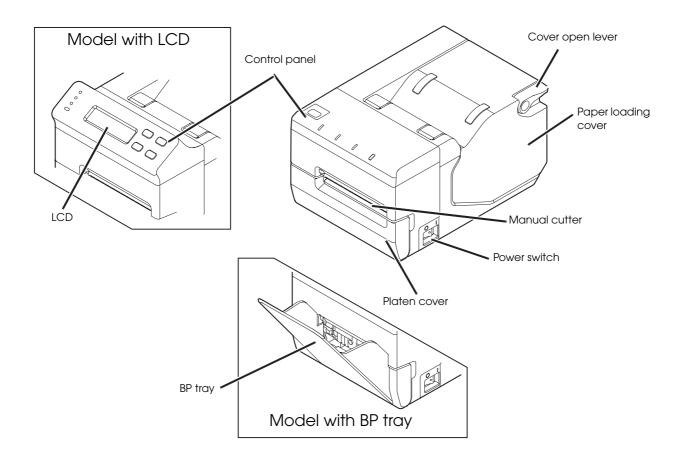
Options

- Paper supply device (Model: SU-RPL500/RPL500B)

- USB/RS-232C D-sub9 interface board (Model: UB-U500)

- RS-232C D-sub25 interface board (Model: UB-S500)

- Ethernet interface board (Model: UB-E500)

CAUTION	These optional interface boards are only for the TM-L500A. Never use them with other Epson printers. Also, never use other interface boards with the TM-L500A.

Part Names and Functions

Model with LCD

Control panel

Cover open lever

Paper loading cover

LCD

Manual cutter

Power switch

Platen cover

BP tray

Model with BP tray

Power Switch
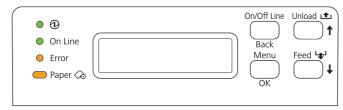
Turns the printer on or off. The marks on the switch: (⏻ : OFF/ | : ON)

CAUTION	• Before turning on the printer soon after turning it off, make sure the LEDs on the control panel are off.
	• 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 Application Programming Guide.

Control Panel

For a model with LCD

For a model without LCD

⏻ Power LED (Green)

- Lights when the power supply is on.
- Goes out when the power supply is turned off, or the printer is in the power-saving mode (sleep 3).

On Line LED (Green)

- Lights when the printer is online.
- Goes out when the printer is offline (For details about offline, see "Offline" on page 17.) or in the power-saving mode (sleep 3).

Error LED (Orange)

- Lights when the paper loading cover or the platen frame is open.
- Flashes when an error occurs. (For details about the flash codes, see "Error Status" on page 19.)
- Goes out during regular operation or the power-saving mode (sleep 3).

Paper LED (Orange)

- Lights when paper is out.
- Goes out when paper is loaded, or the printer is in the power-saving mode (sleep 3).
- Flashes in self-test printing standby state or autoloading standby state.

Unload (↑) button

Holding down this button for 1 second or more feeds paper backward until the paper can be removed from the back of the printer.

In the menu mode with a model with LCD, this button switches the menu items and options.

Feed (↓) button (only for the model with LCD)

If you use the label paper or paper with black marks,

- This button feeds paper to the print start position except during a printer error or the power-saving mode.
- This button ejects the paper when the status of the paper out sensor is paper not present and a paper out error has not occurred.

If you use the continuous paper, this button feeds paper continuously except during a printer error or the power-saving mode.

In the menu mode, this button switches the menu items and options.

On/Off Line (Back) button (only for the model with LCD)

This button switches between online and offline.

In the menu mode, this button returns to an upper menu item, or exits the menu mode.

Menu (OK) button (only for the model with LCD)

This button enters the menu mode when the printer is offline.

In the menu mode, this button sets the displayed setting option.

NOTE	• For the setting items in the menu mode and setting procedures, see "Setting Menu on the LCD" on page 64. • For information about the power-saving mode, see "Power-Saving Mode" on page 22.

Items displayed on the LCD (only for the model with LCD)
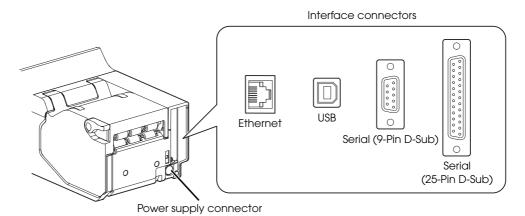
Printer status	Printer sub status	Line 1 of LCD	Line 2 of LCD
Normal condition	Online	(Device mode)	(User ID): On Line
	Offline	(Device mode)	(User ID): Off Line
	Online	Prt Ready	(User ID): On Line
During printer error	Online	(Device mode)	(User ID): On Line
		Error	(Displays causes of printer errors.)
During unrecoverable error	Offline	Unrecoverable error	(Displays causes of unrecoverable errors.)
In menu mode	First layer	(Setting menu)	(Menu name)
	Second layer	((Menu name))	(Options)

NOTE	During a printer error, the causes of the error are displayed in turn every other 2 seconds.

Connectors

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

Interface connectors

Ethernet

USB

Serial (9-Pin D-Sub)

Serial
(25-Pin D-Sub)

Power supply connector

- Interface connector: Connects the printer with the host computer interface.
  The interface type differs depending on the model. (See "Interfaces" on page 12.)

- Power supply connector: Connects the power supply unit.

NOTE	For details on how to connect the interface connector and the power supply connector, see "Connecting the Printer to the Host Computer" on page 52 and "Connecting the Power Supply Unit (PS-180)" on page 55.

Offline

The printer automatically goes offline under the following conditions:

ESC/POS mode

- Between the power is turned on (including the printer reset through the interface) and when the printer is ready to receive data.

- During a self-test

- When the paper loading cover is open.

- When the platen frame is open.

- When the printer stops printing due to a paper-end.

- When the printer stops printing due to a paper jam.

- When an error has occurred.

AEA mode

- Between the power is turned on (including the printer reset through the interface) and when the printer is ready to receive data.

- During a self-test.

- During offline with the On/Off Line button.

- When in menu mode.

- When an unrecoverable error has occurred.

Error Status

When an error occurs, the printer stops operating, the Error LED or Paper LED lights or flashes, and the buzzer beeps (only when the buzzer function is enabled). If the error is a fatal one, the printer goes offline.

Printer Errors

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

LCD indication	Error description	Error LED flash code →| |← Approx. 320 ms	Recovery measure
High temperature	The temperature of the print head is extremely high.		Recovers automatically when the print head cools.
Autocutter	Autocutting failed.		Open the platen frame, remove the foreign object, and then load the appropriate paper. Or send an error recovery command.
Check paper	No black mark/hole was found.	Approx. 5120 ms Approx. 3200 ms	Remove the paper in the paper path, and then load the appropriate paper.
Check paper	Paper out sensor is in the status of paper not present.	The Error LED goes out. The Paper LED lights.	Remove the paper in the paper path, and then load the appropriate paper.
Cover opened	Platen frame is open. (including while printing)	The Error LED lights.	Remove the paper in the paper path, close the platen frame, and then load the appropriate paper.
Cover opened	Paper loading cover is open.		Close the paper loading cover.

LCD indication	Error description	Error LED flash code Approx. 320 ms	Recovery measure
Paper JAM	Paper jam sensor has detected a paper jam.		Remove the paper wrapped around the platen, and then load the appropriate paper.

CAUTION

- When an Autocutter error occurs, do not turn the printer power off. If the printer power is turned off, in case of autocutter error, the print starting position of the first sheet immediately after the printer power is turned on is placed on the wrong position.
- The models with the corner R detection do not detect a paper jam.

Unrecoverable Errors

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

CAUTION

Turn off the power immediately when a fatal error occurs.

LCD indication	Error description	Error LED flash code Approx. 4800 ms Approx. 320 ms
R/W error in memory	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 executes an incorrect address.	
Internal circuit connection error	The connection of internal circuit is not correct.	

Data Receive Error (Only with the Serial Interface Models)

If any of the following errors occurs during serial interface communication, the printer prints "?" or ignores the data.

- Parity error

- Framing error

- Overrun error

Power-Saving Mode

The TM-L500A has the power-saving mode function to reduce the power consumption.

There are 3 statuses, sleeps 1, 2, and 3 in the power-saving mode.

> **NOTE**
> For the power consumption during standby in each sleep mode, see "Electrical Characteristics" on page 35.

Sleep 1 & Sleep 2

You can set the statuses, Sleeps 1 & 2 to any of the 3 patterns in the table below with the memory switch.

- Sleep 1:   The printer enters this mode 10 seconds after entering standby status.
- Sleep 2:   The printer enters this mode 5 minutes after entering standby status.

In the default setting (Pattern 1) of the model with LCD, if the printer does not operate for 10 seconds, the LEDs and the backlight of the LCD become dim, and for 5 minutes, the backlight of the LCD is turned off. They come back on when the printer operates.

Patterns for sleep 1 and sleep2	Status	LEDs brightness	LCD backlight brightness (only for the model with LCD)
No power saving	—	Bright	Bright (initial setting*1)
Pattern 1 (initial setting)	Normal	Bright	Bright (initial setting*1)
	Sleep 1	Dim	Dim*2
	Sleep 2	Dim	Off
Pattern 2	Normal	Bright	Bright (initial setting*1)
	Sleep 1	Dim	Dim*2
Pattern 3	Normal	Bright	Bright (initial setting*1)
	Sleep 1	Bright	Dim*2
	Sleep 2	Bright	Dim*2

*1: Selectable from Bright, Dim, and Off with the control panel or the memory switch.

*2: If the LCD brightness during the normal status is set to Off, the LCD does not become dim.

> **NOTE**
> - Standby status is a status when no processing is being performed for printing or communication, and the cover is closed.
> - When printing data is received, it is printed immediately.
> - For details on how to set the memory switch, see "Setting the Memory Switches" on page 57.

Sleep 3

When Sleep 3 is enabled with the memory switch, the printer enters this mode 4 hours after entering standby status.

During Sleep 3, the LEDs and the backlight of the LCD are off, and no operation is available.

The printer recovers to the normal status when you perform any of the following;

- Push one of the panel buttons.
- Open the paper loading cover.
- Turn the printer power off, and turn it back on. (Turn the printer power on after 3 seconds or more have passed.)

1

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:

- Memory switches
- Maintenance counter

CAUTION	As a guide when you program applications, NV memory should be rewritten 10 or fewer times a day.

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" on page 57.

Maintenance Counter

With this function, printer information, such as the number of lines printed, the number of MICR readings, the number of autocuts, and printer operation time after the printer starts working, is automatically stored in NV memory. You can read or reset the information with the TM-L500A Utility, the Status API of the APD, or OPOS ADK to use it for periodical checks or part replacement.

Product Specifications

Printing method		Thermal line printing
Dot density		203 dpi × 203 dpi
Printing direction		Unidirectional with friction feed
Paper width		50.8 mm {2.00"} (only for ESC/POS mode), 54.0 mm {2.13"}(default), 79.5 mm {3.13"}, 82.5 mm {3.24"}
Number of characters	ESC/POS mode	Alphanumeric characters: 95 Extended graphics: 128 × 43 pages International characters: 18 character sets
	AEA mode	Alphanumeric characters: 95 Extended graphics: 128 × 30 pages International characters: 16 character sets
Character structure	ESC/POS mode	Font A: 12 × 24 (including horizontal 2-dot spacing) Font B: 9 × 17 (including horizontal 2-dot spacing)
	AEA mode	PECTAB: 5 cpi, 10 cpi, 17 cpi TEMPLATE: Arbitrary width (cpi)
Cutting type		Full cut
Interfaces		Serial (RS-232), USB (2.0 Full-speed), Ethernet (10BASE-T/100BASE-TX)
Receive buffer		4 KB
Bar code/ two-dimensional symbol printing	ESC/POS mode	• Two-dimensional symbols (PDF417, QR code, MaxiCode, GS1-DataBar) • Bar codes (UPC-A, UPC-E, EAN 13, EAN 8, Code 39, Inter-leaved 2 of 5, CODABAR, Code 128, GS1-128, GS1-DataBar) • CompositSymbology
	AEA mode	• Two-dimensional symbols (PDF417, QR code, Aztec, Data-matrix) • Bar codes (Interleaved 2 of 5, Industrial 2 of 5, Code 39, Code 128, EAN 13)
Power supply		Epson PS-180 (Model: M159B)
Overall dimensions (H × W × D)	Model without LCD	Model w/o BP-Tray: 122 × 156 × 230 mm {4.80 × 6.14 × 9.06"}
		Model with BP-Tray: 147 × 156 × 328 mm {5.79 × 6.14 × 12.91"}
	Model with LCD	Model w/o BP-Tray: 148 × 156 × 236 mm {5.83 × 6.14 × 9.29"}
		Model with BP-Tray: 148 × 156 × 328 mm {5.83 × 6.14 × 12.91"}
Weight (mass)		Approx. 2.8 kg {6.17 lb}

dpi: dots per inch   cpi: characters per inch

Printing Specifications

Printing method		Thermal line printing
Dot density		203 dpi × 203 dpi
Printing direction		Unidirectional with friction feed
Paper width	ESC/POS mode	50.8 mm {2.00"}, 54.0 mm {2.13"}(default), 79.5 mm {3.13"}, 82.5 mm {3.24"}
	AEA mode	54.0 mm {2.13"}(default), 79.5 mm {3.13"}, 82.5 mm {3.24"}
Printing width	50.8 mm printing (only for ESC/POS mode)	48.0 mm {1.89"}, 384 dots
	54.0 mm printing	ESC/POS mode: 51.0 mm (2.01"), 408 dots AEA mode: 50.8 mm (2.00"), 407 dots
	79.5 mm printing	77.0 mm (3.03"), 616 dots
	82.5 mm printing	80.0 mm (3.15"), 640 dots

Maximum printing speed

Text printing (boarding pass)	Media type 1, 2, 3 (Roll or fanfold paper)	153 mm/s {6.02"/s}
	Media type 4 (Roll paper diameter: 184.0 mm or less)	200 mm/s {7.87"/s}
	Media type 4 (Roll paper diameter: 152.4 mm or less)	250 mm/s {9.84"/s}
Text printing (baggage tag)	Roll paper	200 mm/s {7.87"/s}
Bar code/2-dimensional symbol printing		126 mm/s {4.96"/s}

Note: The printing speeds listed above are the values when the printer prints with the standard print density level at 24V and 25°C {77°F}.

CAUTION	• When changing the paper width, you need to remove or move the paper guides. To change the paper width, see "Changing the Paper Width" on page 44. • Because some parts of the print head contact the platen and they may become worn out in narrower paper width printing, once you use the printer in narrower paper width printing, you cannot change it back to wider one.

NOTE	• Printing speed can be changed with the memory switch. (See "Setting the Memory Switches" on page 57.) • Printing speed may be slower, depending on such items as the data transmission speed.

Paper Specifications

CAUTION	• Paper must not be pasted to the roll paper spool. • If preprinted thermal paper is used, sticking (a problem of the thermal head sticking to the surface of the thermal paper during printing) may occur, causing faulty printing and other problems. Preprinting may also cause drop in the print density.

Boarding pass

Complies with IATA RESOLUTION722c, 722e

Type	Thermal paper
Form	Fanfold paper, Roll paper (The chromogenic side must face outside.)
Width	79.5 mm ± 0.5 mm {3.13" ± 0.02"}, 82.5 mm ± 0.5 mm {3.25" ± 0.02"}
Length	203.2 mm {8.00"}, 187.3 mm {7.37"}
Length detection	Optical-sensing hole detection, Black mark detection (Roll paper without holes or black marks is also supported.) Corner round detection*
Thickness	75 to 200 μm
Roll paper diameter	184.2 mm {7.25"} maximum
Roll paper inside core	76.2 mm {3.00"}, 25.4 mm {1.00"}

*: Only for the models with the corner R detection.

CAUTION	• Reflection rate of black marks must be 10% or less, and that of the areas without black marks must be 75% or more. • Carefully design the print layout so that the print area is away from the perforated line. • The corner R detection sensor can detect corner R of only 82.5 mm wide paper.

Baggage tag

Complies with IATA RESOLUTION740

Type	Thermal paper
Form	Roll paper (The chromogenic side must face outside.)
Width	54.0 mm ± 0.5 mm {2.13" ± 0.02"}
Length	400 to 600 mm {15.75" to 23.62"}
Length detection	Optical-sensing (hole detection/backing paper (liner) detection)
Thickness	220 μm or less (including backing paper)
Roll paper diameter	184.2 mm {7.25"} maximum
Roll paper inside core	76.2 mm {3.00"}

CAUTION	• Take careful consideration in the print layout so that no printing is done on the backing paper or outer edge. • Do not preprint (black marks or the equivalent print) in the joint between two backing papers. • The transmission rate must be 57% or more for the backing paper, and 18% or less for the backing paper + label paper. • The joint within a baggage tag must be 1 mm {0.039"} or less. • The hole size must be 1.6 to 6 mm {0.06 to 0.24"}. • The gap between labels must be 3.2 to 6 mm {0.13 to 0.24"}.

2" paper (only for ESC/POS mode)

Type	Thermal paper
Form	Fanfold paper, Roll paper (The chromogenic side must face outside.)
Width	50.8 mm ± 0.5 mm {2.00" ± 0.02"}
Length	Fanfold paper: Minimum 40 mm {1.57"} Roll paper: Minimum 30 mm {1.18"}
Length detection	Optical-sensing hole detection, Black mark detection
Thickness	75 to 220 μm
Roll paper diameter	184.2 mm {7.25"} maximum
Roll paper inside core	76.2 mm {3.00"}, 25.4 mm {1.00"}

CAUTION	• Carefully design the print layout so that the print area is within paper and away from the outer edges and perforated lines. • The hole size must be 1.6 to 6 mm {0.063 to 0.24"}

Specified Original Paper Types

For good print quality, set the media type, print density, and print speed, depending on the original paper number, as shown in the tables below. They can be changed with the memory switch. For information about the memory switches see .

Boarding pass and 2" paper
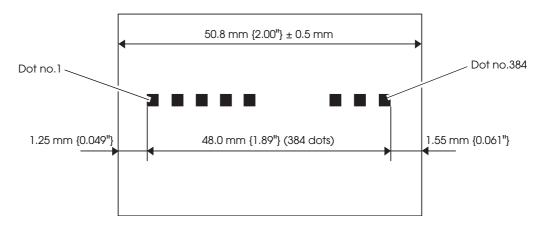
Specified original paper types	Manufacturer	Media type	Recommended			
			Print density	Print speed (mm/s)		
				Fanfold	Roll paper	
					Diameter: 152.4 mm or less	Diameter: 184.0 mm or less
Resiste 400-7.0	Appleton	Type 2	04	150	150	150
Resiste 400-5.3	Appleton	Type 2	01	150	150	150
Resiste 800-5.3	Appleton	Type 2	01	150	150	150
Resiste 800-4.5	Appleton	Type 1	03	150	150	150
Resiste 500-7.6	Appleton	Type 1	05	150	150	150
P354	Kanzaki Specialty Papers	Type 1	01	150	150	150
ST-5	Kanzaki Specialty Papers	Type 2	04	150	150	150
KT-300	Kanzaki Specialty Papers	Type 2	01	150	150	150
TF1767	Mitsubisi HiTec	Type 2	03	150	150	150
T1733	Mitsubisi HiTec	Type 2	03	150	150	150
KL615 s B+	Kanzan	Type 1	01	150	150	150
TF11KS-ET	NIPPON PAPER INDUSTRIES	Type 4	07	250	250	200
PD160R	OJI PAPER MFG	Type 4	07	250	250	200

Baggage tag and 2" paper
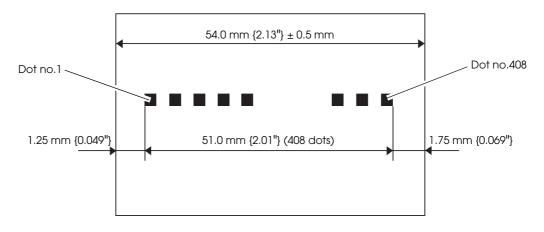
Specified original paper types	Manufacturer	Media type	Recommended		
			Print density	Print speed	
				AEA	ESC/POS (mm/s)
PolyTherm 300-3.0	Appleton	Type 3	02	High	200
PolyTherm 300-4.1	Appleton	Type 3	01	High	200
PolyTherm 500-4.1	Appleton	Type 2	02	High	200
Resiste 190-3.2	Appleton	Type 3	05	High	200
KPT 3370	Kanzaki Specialty Papers	Type 2	04	High	200
KPT 33100	Kanzaki Specialty Papers	Type 3	04	High	200
KLS46	Kanzan	Type 3	01	High	200
AL60KT-S	Jujo Thermal Oy	Type 1	06	High	200
140LES	RICOH	Type 2	05	High	200
150LCS-B	RICOH	Type 2	05	High	200

Printable Area
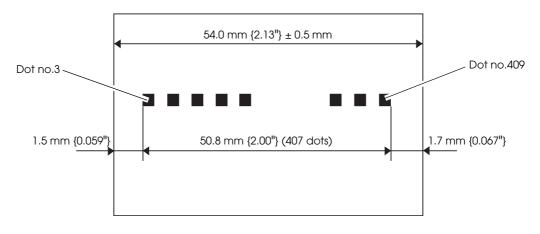
50.8 mm paper width printing (ESC/POS mode)

50.8 mm {2.00"} ± 0.5 mm

Dot no.1

Dot no.384

1.25 mm {0.049"}

48.0 mm {1.89"} (384 dots)

1.55 mm {0.061"}

54.0 mm paper width printing (ESC/POS mode)

54.0 mm {2.13"} ± 0.5 mm

Dot no.1

Dot no.408

1.25 mm {0.049"}

51.0 mm {2.01"} (408 dots)

1.75 mm {0.069"}
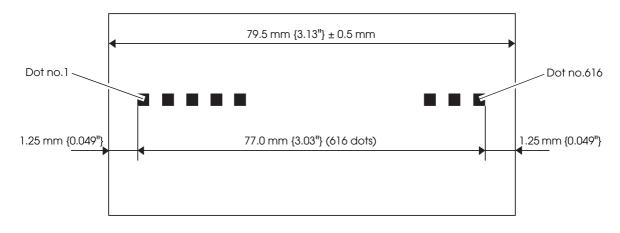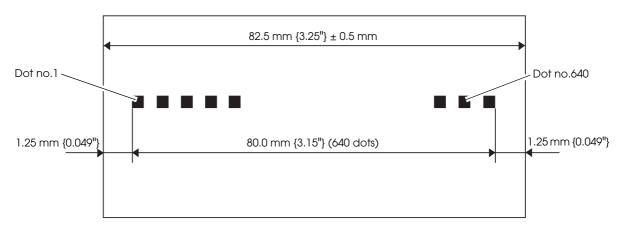
54.0 mm paper width printing (AEA mode)

54.0 mm {2.13"} ± 0.5 mm

Dot no.3

Dot no.409

1.5 mm {0.059"}

50.8 mm {2.00"} (407 dots)

1.7 mm {0.067"}

31

79.5 mm paper width printing

79.5 mm {3.13"} ± 0.5 mm

Dot no.1

Dot no.616

1.25 mm {0.049"}

77.0 mm {3.03"} (616 dots)

1.25 mm {0.049"}

82.5 mm paper width printing

82.5 mm {3.25"} ± 0.5 mm

Dot no.1

Dot no.640

1.25 mm {0.049"}

80.0 mm {3.15"} (640 dots)

1.25 mm {0.049"}
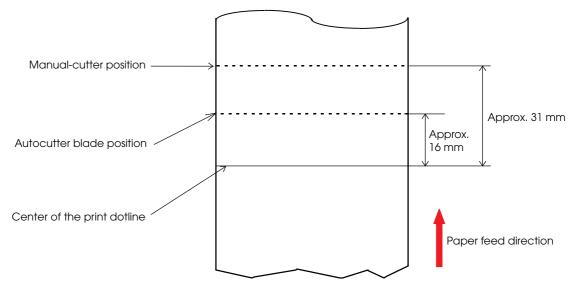
Printing and Cutting Positions

Manual-cutter position

Autocutter blade position

Center of the print dotline

Approx. 31 mm

Approx. 16 mm

Paper feed direction
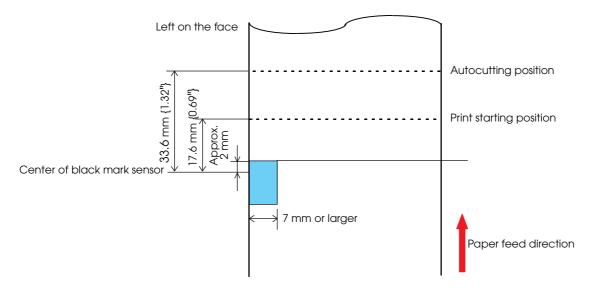
The numeric values are typical values.

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

1

Black Marks

Black marks are detected on the far left of the back of the paper (non-thermal face).
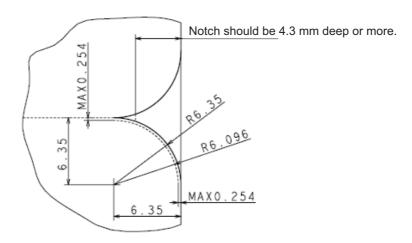
Left on the face

Autocutting position

Print starting position

33.6 mm {1.32"}

17.6 mm {0.69"}

Approx. 2 mm

Center of black mark sensor

7 mm or larger

Paper feed direction

CAUTION	Reflection rate of black marks must be 10% or less, and that of the areas without black marks must be 75% or more. (Measured with Macbeth density meter PCMII (filter D).)

Corner R Detection (Only for Models with Corner R Detection)
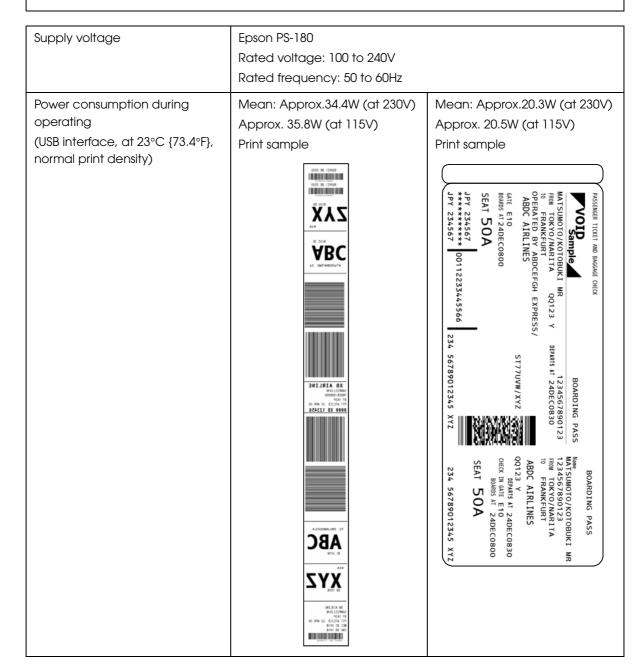
Shape and quality of corner R should be compliant with IATA RESOLUTION 722e.

Notch should be 4.3 mm deep or more.

MAX0.254

R6.35

R6.096

6.35

MAX0.254

6.35

Electrical Characteristics

⚠ **WARNING**	**Be sure to use the power supply that came with your printer.**

Supply voltage	Epson PS-180 Rated voltage: 100 to 240V Rated frequency: 50 to 60Hz	
Power consumption during operating (USB interface, at 23°C {73.4°F}, normal print density)	Mean: Approx.34.4W (at 230V) Approx. 35.8W (at 115V) Print sample	Mean: Approx.20.3W (at 230V) Approx. 20.5W (at 115V) Print sample
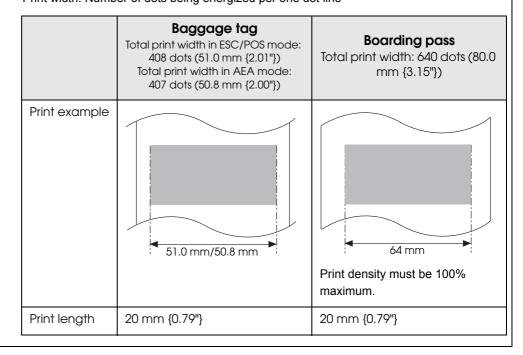
Power consumption during standby (at 23°C {73.4°F}, normal print density)	115V/60Hz	Serial I/F	No power-saving (normal)	1.26W
			Sleep 1	1.00W
			Sleep 2	0.61W
			Sleep 3	0.33W
			Power off	0.32W
		USB I/F	No power-saving (normal)	1.21W
			Sleep 1	0.94W
			Sleep 2	0.56W
			Sleep 3	0.34W
			Power off	0.32W
		Ethernet I/F	No power-saving (normal)	3.20W
			Sleep 1	2.94W
			Sleep 2	2.59W
			Sleep 3	0.35W
			Power off	0.32W
	230V/50Hz	Serial I/F	No power-saving (normal)	1.38W
			Sleep 1	1.12W
			Sleep 2	0.73W
			Sleep 3	0.44W
			Power off	0.43W
		USB I/F	No power-saving (normal)	1.33W
			Sleep 1	1.06W
			Sleep 2	0.67W
			Sleep 3	0.45W
			Power off	0.43W
		Ethernet I/F	No power-saving (normal)	3.36W
			Sleep 1	3.09W
			Sleep 2	2.73W
			Sleep 3	0.46W
			Power off	0.43W

CAUTION	If printing is continuously performed with a high ratio, the overcurrent protection may be activated and result in uneven print density or a low voltage error. Therefore, the printing length must not exceed the following values when printing with high print ratio. Print width: Number of dots being energized per one dot line

	Baggage tag Total print width in ESC/POS mode: 408 dots (51.0 mm {2.01"}) Total print width in AEA mode: 407 dots (50.8 mm {2.00"})	**Boarding pass** Total print width: 640 dots (80.0 mm {3.15"})
Print example	51.0 mm/50.8 mm	64 mm Print density must be 100% maximum.
Print length	20 mm {0.79"}	20 mm {0.79"}

Reliability

Life	Printer	Paper feeding of 100 km or 5 years, which comes first
	Print head	300,000 boarding passes, 100,000 baggage tags
	Autocutter	100,000 cuts (autocutting of perforated area of thick paper)
MTBF		360,000 hours
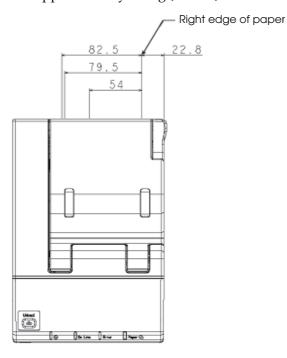
Environmental Conditions
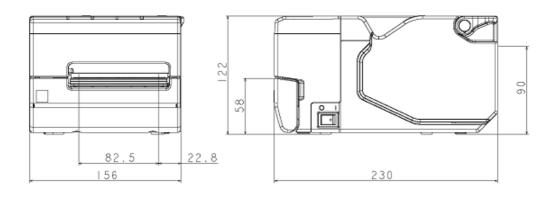
Temperature/ Humidity	Operating	5 to 45°C {41 to 113°F}, 10 to 80% RH
	Storage	-20 to 50°C {-4 to 122°F}, 10 to 90% RH (except for paper)
		34°C {93.2°F}, 80% / 40°C {104°F}, 58% / 45°C {113°F}, 46%
Acoustic noise (operating)		Approximately 57 dB (bystander position) (including autocutting operation) Note: The values above are measured in the Epson evaluation condition. Acoustic noise differs depending on the paper used, printing contents, and the setting values, such as print speed or print density.

External Dimensions and Mass

Model without LCD and BP-Tray
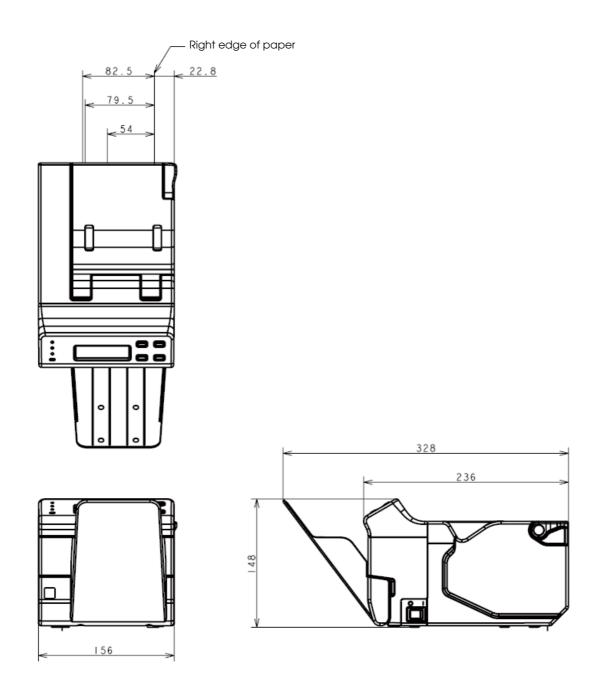
- Height: Approximately 122 mm {4.80"}

- Width: Approximately 156 mm {6.14"}

- Depth: Approximately 230 mm {9.06"}

- Mass: Approximately 2.8 kg {6.17 lb}

Right edge of paper
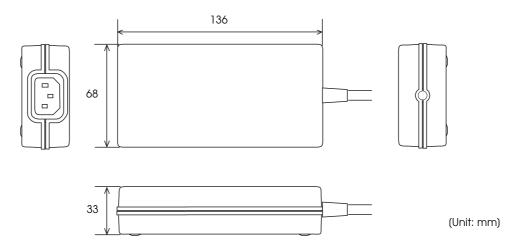
Model with LCD and BP-Tray

- Height: Approximately 148 mm {5.83"}
- Width: Approximately 156 mm {6.14"}
- Depth: Approximately 328 mm {12.91"}
- Mass: Approximately 2.8 kg {6.17 lb}

Power Supply Unit (PS-180)

136

68

33

(Unit: mm)

1

Electric characteristics	Input conditions	Input voltage: AC100V to AC240V
		Frequency: 50-60 Hz
		Input current (rating): 1.3A
	Output conditions	Output voltage (rating): DC24V ± 5%
		Output current (rating): 2.1A
Case specifications	Dimensions (H × W × D)	68 × 136 × 33 mm {2.68 × 5.35 × 1.30"} (excluding projections)
	Weight	Approx. 0.4 kg {14.11 oz} (excluding the AC cable)
	Color	Black (matte)

CAUTION   For Energy Star printers, always use the power supply that came with your printer.

NOTE   For detailed information about the PS-180, see the instruction manual for the PS-180.
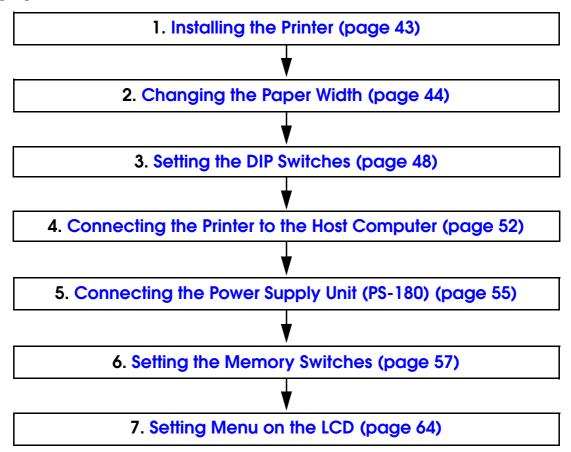
Setup

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.

1. **Installing the Printer (page 43)**

2. **Changing the Paper Width (page 44)**

3. **Setting the DIP Switches (page 48)**

4. **Connecting the Printer to the Host Computer (page 52)**

5. **Connecting the Power Supply Unit (PS-180) (page 55)**

6. **Setting the Memory Switches (page 57)**

7. **Setting Menu on the LCD (page 64)**

Installing the Printer

Important Notes

• The printer must be installed horizontally on a flat surface (not tilted).

• Do not place the printer in dusty locations.

• Do not knock or strike the printer. This may cause printing errors.

• Do not place any liquids or drinks on the printer case.

Changing the Paper Width

The printer is initially set to print on 54.0 mm width paper, but you can change the printer to print on 82.5 mm, 79.5 mm, or 50.8 mm width paper by removing or moving the paper guides installed in the printer.
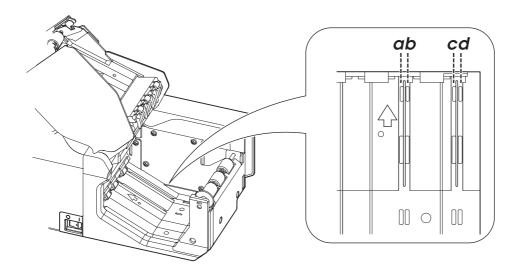
CAUTION	• Because some parts of the print head contact the platen and they may become worn out in narrower paper width printing, once you use the printer in narrower paper width printing, you cannot change it back to wider one. • When changing the paper width, be sure to change the setting for the paper width with the customized value. To set the customized value, see "Setting the Memory Switches" on page 57. • 50.8 mm width paper printing is supported by only the ESC/POS mode.

To change the paper width to 82.5 mm, remove the paper guide installed in groove **b**. (See page 45.)

To change the paper width to 79.5 mm, remove the paper guides installed in grooves **b** and **d**, and install one of them in groove **c**. (See page 46.)
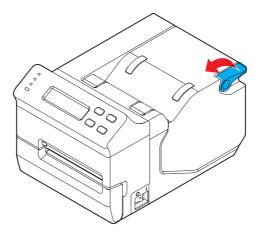
To change the paper width to 50.8 mm, remove the paper guide installed in groove **b**, and install it in groove **a**. (See page 47.)
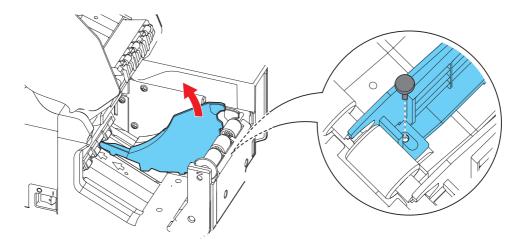
Setting the Paper Width to 82.5 mm

Follow the steps below to set the paper width to 82.5 mm.

1   Make sure the printer is turned off.

2   Open the paper loading cover by pulling up the cover open lever.
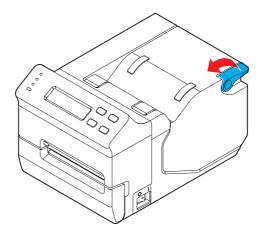
3   Remove the screw fixing the paper guide installed in groove **b** to remove the paper guide.
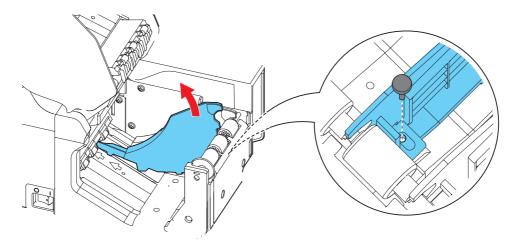
Setting the Paper Width to 79.5 mm

Follow the steps below to set the paper width to 79.5 mm.

1 Make sure the printer is turned off.

2 Open the paper loading cover by pulling up the cover open lever.

3 Remove the screws fixing the paper guides installed in grooves **b** and **d** to remove the paper guides.
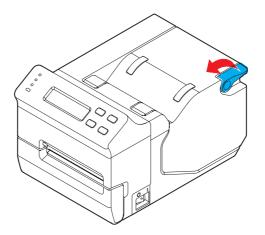
4 Install one of the removed paper guides in the groove **c** so that the projections of the paper guide are aligned with the holes along the groove.

5 Fix the paper guide with the screw.
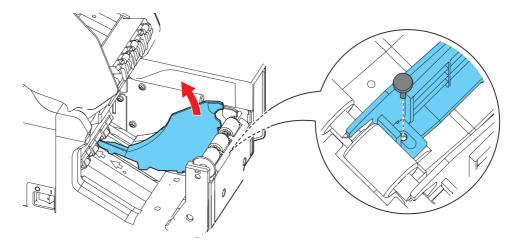
Setting the Paper Width to 50.8 mm (Only for ESC/POS mode)

Follow the steps below to set the paper width to 50.8 mm. This paper width is available only in the ESC/POS mode.

1 Make sure the printer is turned off.

2 Open the paper loading cover by pulling up the cover open lever.

3 Remove the screw fixing the paper guide installed in grooves **b** to remove the paper guide.

4 Install the removed paper guide in the groove **a** so that the projection of the paper guide is aligned with the hole along the groove.

5 Fix the paper guide with the screw.

Setting the DIP Switches

On this printer, you can make various settings with DIP switches.

Functions of the DIP switches differ depending on the interface.

Setting Procedure

Follow the steps below to change the DIP switch settings.
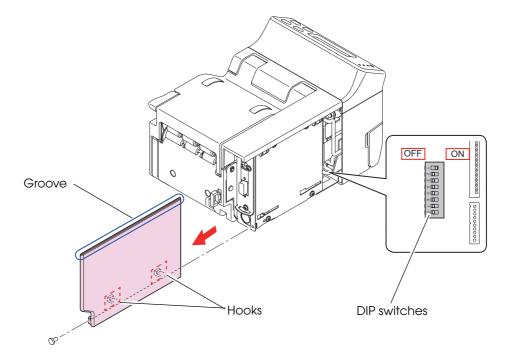
⚠ **CAUTION**	**Before you remove the DIP switch cover, turn the printer off.** Otherwise, a short-circuit may cause the printer to malfunction.

CAUTION	DIP switch settings are enabled only when the power is turned on or the printer is reset via the interface. If the settings are changed after that, the functions will not change.
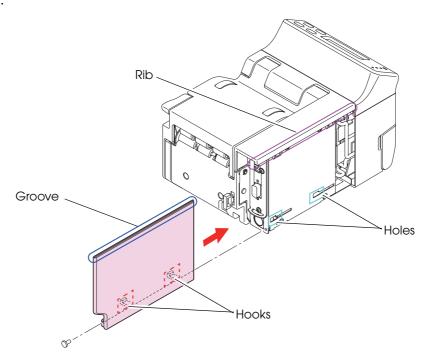
1 Make sure the power supply for the printer is turned off.

2 Remove the screw that secures the left case.

3 Slide the left case to the rear to release the groove and two hooks of the left case, and remove the left case.

Groove

Hooks

OFF   ON

DIP switches

4   Set the DIP switches, using the tip of a tool, such as a small screwdriver.

5   Install the left case and secure it with the screw.

Align the groove on top of the left case with the rib of the upper case.
Align the two hooks of the left case with the two holes of the board plate and slide it to the front.

Rib

Groove

Holes

Hooks

2

For Serial Interface

SW	Function	ON	OFF	Initial setting
1	Reserved (Do not change)	Fixed to ON		ON
2	Printer mode	ESC/POS commands	AEA commands	OFF
3	Transmission speed selections	See the " Transmission Speed (DIP Switches 3/ 4)" table below.		ON
4				ON
5	DSR (hardware) reset	Enabled	Disabled	OFF
6	Reserved (Do not change)	Fixed to OFF		OFF
7	Reserved (Do not change)	Fixed to OFF		OFF
8	Reserved (Do not change)	Fixed to OFF		OFF

Transmission Speed (DIP Switches 3/4)

Transmission speed (bps)	SW 3	SW 4
Setting with the memory switch*: 2400, 4800, 9600, 19200 (initial setting), 38400, 57600, 115200	ON	ON
9600	OFF	ON
19200	ON	OFF
38400	OFF	OFF

bps: bits per second

* When DIP switches 3 and 4 are set to ON, the value (initially 19200) can be set to any of the values listed in the lower portion of the row using a command, memory switch setting mode, or the TM-L500A Utility. (See "Setting the Memory Switches" on page 57.)

NOTE	Depending on print conditions, such as print duty, print head temperature, and data transmission speed, print speed is automatically adjusted, which can cause white lines due to intermittent print (the motor sometimes stops). To avoid this, set the transmission speed higher or keep the print speed constant by setting it lower. (See "Setting the Memory Switches" on page 57.)

For USB Interface

SW	Function	ON	OFF	Initial setting
1	Reserved (Do not change)	Fixed to ON		ON
2	Printer mode	ESC/POS commands	AEA commands	OFF
3	Reserved (Do not change)	Fixed to ON		ON
4	Reserved (Do not change)	Fixed to ON		ON
5	Reserved (Do not change)	Fixed to OFF		OFF
6	Reserved (Do not change)	Fixed to OFF		OFF
7	USB interface class	Printer class	Vendor class	OFF
8	Reserved (Do not change)	Fixed to OFF		OFF

For Ethernet Interface

SW	Function	ON	OFF	Initial setting
1	Reserved (Do not change)	Fixed to ON		ON
2	Printer mode	ESC/POS commands	AEA commands	OFF
3	Reserved (Do not change)	Fixed to ON		ON
4	Reserved (Do not change)	Fixed to ON		ON
5	Reserved (Do not change)	Fixed to OFF		OFF
6	Reserved (Do not change)	Fixed to OFF		OFF
7	Reserved (Do not change)	Fixed to OFF		OFF
8	Reserved (Do not change)	Fixed to OFF		OFF

2

Connecting the Printer to the Host Computer

For Serial Interface

Connect the printer to a host computer by a serial interface (RS-232) cable.
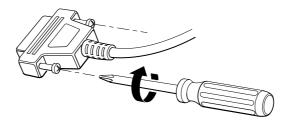
⚠️ **WARNING**	**Be sure to turn off the power supply for both the printer and host computer before connecting the cables.**
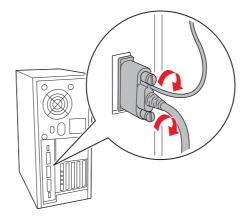
NOTE	Use a null modem serial cable to connect the printer.

1 Insert the interface cable connector firmly into the interface connector on the connector panel.

2 When using connectors equipped with screws, tighten the screws to secure the connectors firmly.
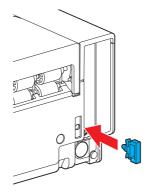
3 When using interface cables equipped with a grounding line, attach the ground line to the screw hole marked "FG" on the printer.

4 Connect the other end of the interface cable to the host computer.

For USB Interface

Connect the printer to a host computer by a USB interface cable.

1   Install the cable hook.
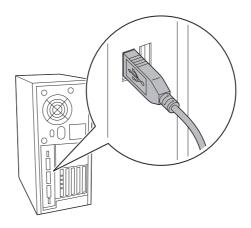
2   Put the USB cable through the cable hook.

CAUTION	Putting the USB cable through the cable hook prevents the cable from coming unplugged.

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

4   Connect the other end of the interface cable to the host computer.

For Ethernet Interface

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

⚠ 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 a standard telephone line cable to the 10/100BASE-T LAN connector.**

NOTE	For Ethernet interface communication settings, use TM-L500A Utility or EPSON TMNet WinConfig utility. For detailed information about the setting methods, see the TM-L500A Utility User's Manual or EPSON TM Net WinConfig User's Guide.

Connect a 10/100BASE-T cable to the 10/100BASE-T LAN connector by pressing firmly until the connector clicks into place.
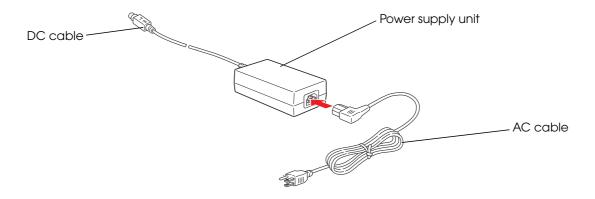
Connecting the Power Supply Unit (PS-180)

Use the PS-180 as the power supply unit.

Before using the power supply unit, read carefully the user's manual enclosed with it.
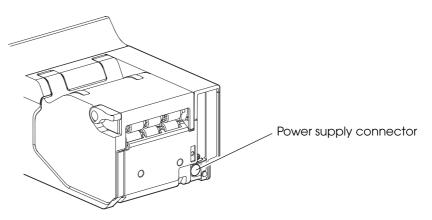
⚠ WARNING	• **Always use the EPSON PS-180 as the power supply unit.** Using a nonstandard power supply can result in electric shock and fire. • **Should a fault ever occur in the EPSON PS-180, immediately turn off the power to the printer and unplug the power supply cable from the wall socket.**

DC cable — Power supply unit — AC cable
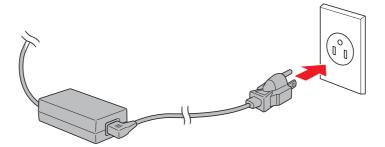
Connecting the Power Supply Unit

1 Make sure the printer's power supply is turned off and the AC cable has been unplugged from the wall socket.

2 Insert the connector of the DC cable onto the power supply connector.

Power supply connector

3 Connect the plug of the AC cable to the wall socket.

⚠ WARNING	• **Be sure to unplug the AC cable from the wall socket whenever connecting or disconnecting the power supply unit to the printer.** Failure to do so may result in damage to the power supply unit or the printer. • **Make sure the wall socket power supply satisfies the rated voltage requirements of the power supply unit. Never insert the power supply cable plug into a socket that does not meet the rated voltage requirements of the power supply unit.** Doing so may result in damage to both the power supply and the printer.

Setting the Memory Switches

With the memory switch function, which is software setting for this printer, you can set the various functions.

For an outline of the functions, see the following section. Use TM-L500A Utility, ESC/POS commands, or AEA commands to set the memory switches.

NOTE	• For detailed information about the TM-L500A Utility, see the TM-L500A Utility User's Manual. • For detailed information about ESC/POS commands, see the ESC/POS Application Programming Guide. • For detailed information about AEA commands, see the AEA2009.

<table>
<tr><td rowspan="3" colspan="3">Settings\Setting Methods</td><td colspan="2">TM-L500A Utility</td><td rowspan="2">ESC/POS Commands</td><td rowspan="2">AEA Commands</td></tr>
<tr><td>ESC/POS mode</td><td>AEA mode</td></tr>
<tr></tr>
<tr><td rowspan="20">Memory Switches</td><td colspan="2">BUSY condition</td><td>✔</td><td>✔</td><td>✔</td><td></td></tr>
<tr><td colspan="2">Data receive error</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">Automatic line spacing</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">Paper jam detection</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">USB power saving</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td colspan="2">AEA device mode</td><td></td><td>✔</td><td></td><td>✔</td></tr>
<tr><td colspan="2">Serial DSR software reset</td><td></td><td>✔</td><td></td><td>✔</td></tr>
<tr><td rowspan="13">Customized Values</td><td>Default character code table</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Default international character font</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Transition pattern for power saving</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Sleep 3</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Adjustment of TOF-cut position</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Paper width</td><td></td><td></td><td>✔</td><td></td></tr>
<tr><td>Print density</td><td></td><td></td><td>✔</td><td>✔</td></tr>
<tr><td>Print speed</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr>
<tr><td>Maximum amount of paper fed from when paper is inserted until a mark is detected</td><td>✔</td><td></td><td>✔</td><td></td></tr>
<tr><td>Mark type</td><td>✔</td><td>✔</td><td>✔</td><td></td></tr>
<tr><td>Media type</td><td></td><td></td><td>✔</td><td>✔</td></tr>
</table>

Memory Switches	Model's Unique Functions	User/Context mode	✔	✔	✔	✔
		Buzzer volume	✔	✔	✔	✔
		LCD backlight brightness*	–	✔	–	✔
		LCD contrast*	–	✔	–	✔
		AEA error judgement for wrong coupon type	–	✔	–	✔
		Font compatible mode	–	✔	–	✔
		Truncate function	–	✔	–	✔
	Transmission conditions for serial interface		✔	✔	✔	✔

*: Only for the model with LCD

Functions

BUSY condition

CAUTION	When you use AEA commands, be sure not to change the initial setting.

- Receive buffer full (initial setting)
- Receive buffer full or printer offline

Data receive error

- Ignored
- Receive error (initial setting)

Automatic line spacing

- Always enabled
- Always disabled (initial setting)

Paper jam detection

- Disabled
- Enabled (initial setting)

> **CAUTION** Setting of paper jam detection is invalid for the model with corner R detection.

USB power saving

- Disabled
- Enabled (initial setting)

AEA device mode

- Baggage Tag mode (initial setting)
- Boarding Pass mode

Serial DSR software reset

- Resets (initial setting)
- Does not reset

Default character code table

ESC/POS commands: Selectable from 43 pages (initial setting: PC437 USA, Standard Europe)

AEA commands: Selectable from 30 pages (initial setting: PC437 USA, Standard Europe)

> **NOTE** The pages for ESC/POS commands consist of Bitmap fonts while the pages for AEA commands consist of scalable fonts.

Default international character font

ESC/POS mode: Selectable from 18 types (initial setting: USA)

AEA mode: Selectable from 16 types (initial setting: USA)

> **NOTE** The types for ESC/POS commands consist of Bitmap fonts while the types for AEA commands consist of scalable fonts.

Transition pattern for power saving

- No power saving
- Pattern 1 (initial setting)
- Pattern 2
- Pattern 3

Sleep 3
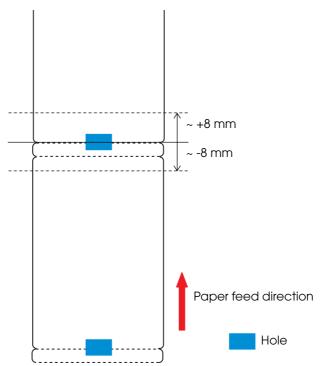
NOTE	For good print quality, set the media type, depending on the original paper number (See "Paper Specifications" on page 27.).

- Enabled
- Disabled (initial setting)

Adjustment of TOF-cut position

Selectable from -8 mm to 8 mm (The initial setting differs depending on the model.)

Paper width

- 50.8 mm (only for ESC/POS mode)
- 54.0 mm (initial setting)
- 79.5 mm
- 82.5 mm

CAUTION	When changing the paper width, you need to remove or move the paper guide. To change the paper width, see "Changing the Paper Width" on page 44.

Print density

Selectable from levels 1 to 9 (70% ~ 110%) (initial setting: level 7)

NOTE	• If the print density is set to a darker level, printing speed may be reduced. • If the print density is set to a darker level, paper dust accumulates on the print head and print may be faint. For information on how to clean the thermal head, see "Cleaning the Thermal Head" on page 75. • For good print quality, set the print density, depending on the original paper number (See "Paper Specifications" on page 27.).

Print speed

Selectable from levels 1 to 10 (Slow ~ Fast) (initial setting: level 6)

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. (See "Transmission Speed (DIP Switches 3/4)" on page 50.) • For good print quality, set the print speed, depending on the original paper number (See "Paper Specifications" on page 27.).

Maximum amount of paper fed from when paper is inserted until a mark is detected

- 8" (initial setting)
- 600 mm

Mark type

- Auto detection (initial setting)
- Hole
- Black mark
- No mark

Media type

Selectable from 4 types (initial setting: Type 2)

NOTE	For good print quality, set the media type, depending on the original paper number (See "Paper Specifications" on page 27.).

User/Context mode

- Single user/Single context (initial setting)
- Single user/Multi context
- Multi user/Multi context

Buzzer volume

Selectable from Off and levels 1 to 5 (initial setting: level 5)

LCD backlight brightness

Selectable from Off, Bright and Dim (initial setting: Bright)

LCD contrast

Selectable from levels 1 to 3 (initial setting: level 3)

AEA error judgement for wrong coupon type

- AEA error
- No AEA error (initial setting)

Font compatible mode

- PECTAB-compliant font
- IER506-compatible font (initial setting)

Truncate function

- Does not truncate
- Truncates (no error) (initial setting)
- Truncates (error)

Transmission conditions for serial interface

Transmission speed

When DIP switches 3 and 4 are set to ON, the value (initially 19200 bps) can be set to 2400, 4800, 9600, 19200, 38400, 57600, or 115200 bps. (See "Transmission Speed (DIP Switches 3/4)" on page 50.)

> **NOTE**
> The transmission speed can be set with DIP switches 3 and 4 (See "Transmission Speed (DIP Switches 3/4)" on page 50.) or the memory switch. When DIP switches 3 and 4 are set to ON, the setting with the memory switch is enabled.

Parity bit

- None (initial setting)
- Odd
- Even

Flow control (Only for AEA mode)

- RTS/CTS control (initial setting)
- DTR/DSR control

> **NOTE**
> In the ESC/POS mode, Flow control is fixed to DTR/DSR + RTS/CTS control.

Setting Menu on the LCD

If your printer is equipped with an LCD, you can set the buzzer volume, LCD contrast, and LCD brightness with the buttons on the control panel.

- Buzzer volume: The buzzer sounds when the printer is in an error status.
  You can adjust the volume of the buzzer from OFF to level 5.

- LCD contrast: You can adjust the contrast of the LCD from level 1 to 3.

- LCD brightness: You can select the brightness of the LCD from Bright/Dim/Off.

> **NOTE**
> The buzzer volume, LCD contrast, and LCD brightness can be set also with the customized value. To set the customized value, see .

Follow the steps below to set menu on the LCD.

1 Turn on the printer.

2 When "On Line" is displayed on the LCD, press the ON/Off Line (Back) button to put the printer offline.

3 Press the Menu (OK) button to display "(Setting menu)" on the LCD.

4 Use the Unload (↑) button and Feed (↓) button to display the setting item for which you want to make a setting, and press the Menu (OK) button to select it.

5 Use the Unload (↑) button and Feed (↓) button to display the setting options, and press the Menu (OK) button to set it.

6 To make another setting, press the On/Off Line (Back) button once to return to the menu selecting screen.

To finish setting, press the On/Off Line (Back) button twice to exit the menu mode.

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, AEA commands, or ESC/POS commands to control the printer.

CAUTION	A model with LCD can be controlled by AEA commands.

EPSON Advanced Printer Driver (APD)

EPSON Advanced Printer Driver is a Windows printer driver for EPSON TM printers. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.

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

CAUTION	When you use APD, be sure to set the DIP switch for printer mode to enable ESC/POS commands. (See "Setting the DIP Switches" on page 48.)

NOTE	You can use all functions, including ones not supported by APD, by using ESC/POS commands through your driver. Use the control A command of APD, or Status API to send ESC/POS commands from the driver.

AEA Commands

AEA specifications for Automated Ticket and Boarding Pass equipment (ATB), Parametric Tables (PECTAB), Self Service and Baggage Tag Printers (BTP) related firmware are an industry standard.

 See the AEA2009 for more details.

CAUTION	When you use AEA commands, be sure to set the DIP switch to enable AEA commands. (See "Setting the DIP Switches" on page 48.)

ESC/POS Commands

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

To use ESC/POS commands, you need to agree to a nondisclosure contract first and obtain the ESC/POS Application Programming Guide. Ask your dealer for details.

CAUTION	When you use ESC/POS commands, be sure to set the DIP switch to enable ESC/POS commands.(See "Setting the DIP Switches" on page 48.)

Software and Manuals

The following software and manuals are provided for application development.

How to Get Drivers, Manuals, and the Utility

You can obtain drivers, manuals, and the TM-L500A Utility 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:

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

Printer Driver

Software	Manual
EPSON Advanced Printer Driver (APD): EPSON Advanced Printer Driver is a Windows printer driver for EPSON TM printers. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	• APD Install Manual • APD TM/BA/EU Printer Manual • APD Printer Specification • Devmode API/PRINTERINFO Manual • Status API Manual • Sample Program Guide

Utilities

Software	Manual
TM-L500A Utility: Use for various settings.	• TM-L500A Utility User's Manual
EPSON TM Net WinConfig: Use for IP address or wireless LAN setting.	• EPSON TM Net WinConfig User's Guide

3

Self-Test Mode

In the self-test mode, the printer prints the current status of the printer and resident characters as a test print.

You can confirm the following information with the status print.

- Model name
- Control software version
- Printer settings
- User counter
- Maintenance counter

Starting the Self-Test

Follow the steps below to start the self-test.

1   Install the roll paper.

2   Close all covers.

3   While pressing the Unload (↑) button, turn on the printer. (Keep pressing the button until the printer starts printing.)

The printer starts printing the current status of the printer on the paper.

NOTE	With the Ethernet interface, before printing starts, it takes 15 seconds if the IP address is fixed and 20 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 current printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test printing standby status.):

"If you want to continue SELF-TEST printing, please press Unload button."

4   To start the test print, press the Unload (↑) button (less than 1 second).

The printer prints a rolling pattern on the paper, using only the built-in character set.

NOTE	If you press the Unload (↑) button for more than 1 second, the printer prints the other settings and counter value.

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

"*** completed***"

Handling

This chapter describes basic handling of the printer.

Usage Precautions

- Install the printer horizontally.
- When installing, leave enough space around the printer for loading paper, turning on/off the power switch, removing jammed paper, and so on.
- Make sure cords and foreign objects are not caught in the printer.
- Do not open the covers during printing or autocutting.
- Make sure that the printer is not subjected to any impact or vibration.
- Do not put any food or drink on the printer case.
- Do not move the printer with the paper loading cover open. The cover may close unexpectedly.
- To prevent a paper jam, do not prevent paper from being ejected from the paper exit and do not pull the paper being ejected.

4

Installing and Replacing Paper

⚠️ **WARNING**	• **Do not open the covers during printing/autocutting.** The printer may be damaged. • **Do not touch the manual cutter with your hands.** Otherwise, you may be injured because the manual cutter blade is sharp.
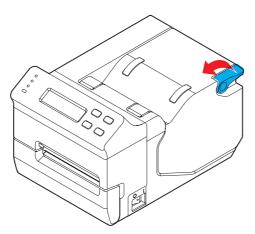
CAUTION	• Use paper that meets the printer specifications. For details about paper specifications, see "Paper Specifications" on page 27. • When changing the paper width, you need to remove or move the paper guide and to change the setting for the paper width with the customized value. To change the paper width, see "Changing the Paper Width" on page 44. • To adjust the cutting position, define a character string in the CUTPOS field in the printer environment data for baggage tags and boarding passes. (The adjustable range: -30 to 30)
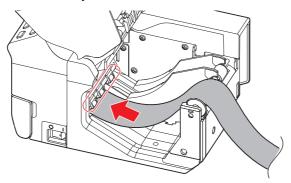
Installing Paper

When the Paper LED is on, follow the steps below to load paper.

1 Turn on the printer.

2 Open the paper loading cover by pulling up the cover open lever.

3   Insert the end of the paper under the rollers.

The paper is fed automatically.

4   Close the paper loading cover.

The paper is fed to the position of a punch hole or a black mark, and cut automatically.

CAUTION	Close the paper loading cover immediately. If it is left open for 1 minute or longer, paper feeding may not be correct.
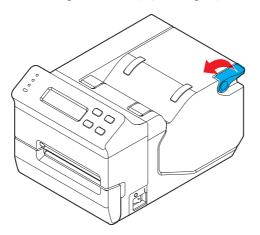
NOTE	For the models with the BP-tray, up to 20 autocut boarding passes can be stored in the BP tray. When you use roll paper, use roll paper with 3" inner core. Curled paper may fall out.

Replacing Paper
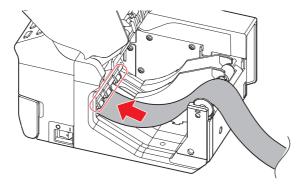
Follow the steps below to replace paper.

1   Turn on the printer.

2   Hold down the Unload (↑) button until the paper starts feeding backward.

3   After paper feeding stops, remove the paper by pulling it backward.

4 Open the paper loading cover by pulling up the cover open lever.

5 Insert the end of the paper under the rollers.

The paper is fed automatically.

6 Close the paper loading cover.

The paper is fed to the position of a punch hole or a black mark, and cut automatically.

CAUTION	Close the paper loading cover immediately. If it is left open for 1 minute or longer, paper feeding may not be correct.

NOTE	For the models with the BP-tray, up to 20 autocut boarding passes can be stored in the BP tray. When you use roll paper, use roll paper with 3" inner core. Curled paper may fall out.

Removing Jammed Paper
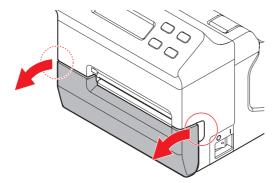
When a paper jam occurs, never pull out the paper forcibly.

Follow the steps below to remove the jammed paper.
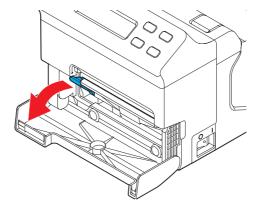
⚠ **CAUTION**	**Do not touch the thermal head** (See"Cleaning the Printer" on page 75.) **because it can be very hot after printing.**

1   Turn off the printer.

2   Open the platen cover (or BP-tray for the models with the BP-tray).
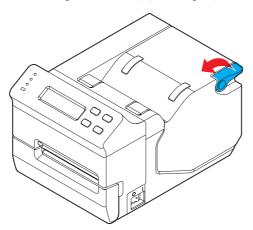
3   Push down the platen lever to open the platen frame.

4   Pull out the jammed paper forward, and cut any distorted, crumpled, or torn parts of the paper.

5 Open the paper loading cover by pulling up the cover open lever.

6 Pull out the paper backward, and cut any distorted, crumpled, or torn parts of the paper if there are any.

7 Close the platen frame and the platen cover (or BP-tray for the models with the BP-tray).
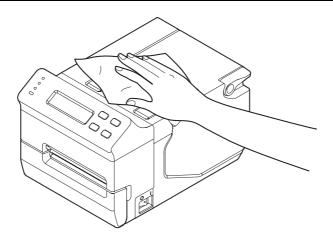
Cleaning the Printer

Cleaning the Printer Case

Be sure to unplug the AC cable from the wall socket and turn off the printer before cleaning.
Wipe the dirt off the printer case with a dry cloth or a damp cloth.

CAUTION	Never clean the product with alcohol, benzine, thinner, or other such solvents. Doing so may damage or break the parts made of plastic and rubber.
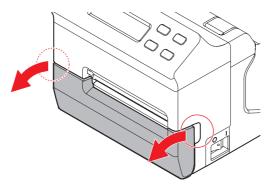
Cleaning the Thermal Head

Epson recommends cleaning the thermal head periodically (generally every 3 months) to maintain receipt print quality.
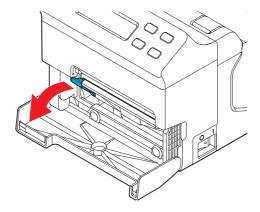
⚠ **CAUTION**	• After printing, the thermal head can be very hot. Do not touch it and let it cool before you clean it. • Do not damage the thermal head by touching it with your fingers or any hard object.

1 Hold down the Unload (↑) button until the paper starts feeding back-ward.

2 After paper feeding stops, remove the paper by pulling it backward.

3 Turn off the printer.
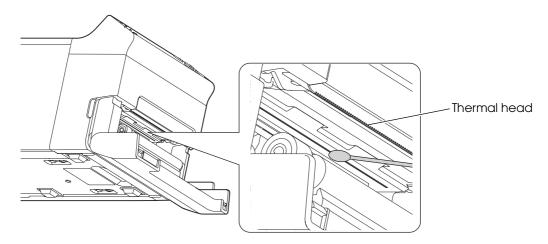
4 Open the platen cover (or BP-tray for the models with the BP-tray).

5 Push down the platen lever to open the platen frame.

6 Clean the thermal elements of the thermal head with a cotton swab moistened with an alcohol solvent (ethanol or IPA).

Thermal head

7 Close the platen frame and the platen cover (or BP-tray for the models with the BP-tray).

Preparing for Transport

Follow the steps below to transport the printer.

1   Turn off the printer.

2   Remove the power supply connector.

3   Remove the roll paper.

4   Pack the printer upright.

Appendix

Specifications of Interfaces and Connectors

RS-232 Serial Interface

Interface board specifications (RS-232-compliant)

Item		Specifications
Data transfer method		Serial
Synchronization		Asynchronous
Handshake	ESC/POS mode	DTR/DSR + RTS/CTS control
	AEA mode	Select one of the following with a memory switch: • DTR/DSR • RTS/CTS
Signal level	MARK	-3V to -15V logic "1"/OFF
	SPACE	+3V to +15V logic "0"/ON
Transmission speed (bps: bits per second)		• Select one of the following with DIP switches 3 and 4: 9600/19200/38400 bps • Select one of the following with a memory switch: 2400/4800/9600/19200/38400/57600/115200 bps
Bit lengths		8 bits
Parity selection		Select one of the following with a memory switch: • None • Even • Odd
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 9-pin (male) connector, DSUB 25-pin (female) connector

Functions of each connector pin

NOTE	**Receive buffer full:** • When the remaining space in the receive buffer drops to 128 bytes, the printer status becomes "buffer full" and it remains "buffer full" until the space in the receive buffer increases to 256 bytes. • The printer ignores the data received when the remaining space in the receive buffer is 0 byte.

ESC/POS mode

DSUB9 Pin no.	DSUB25 Pin no.	Signal name	Signal direction	Function
1	—	NC	—	Not connected
2	3	RXD	Input	Receive data
3	2	TXD	Output	Transmit data
4	20	DTR	Output	Indicates whether or not the printer is BUSY. SPACE indicates that the printer is ready to receive data, and MARK indicates that the printer is BUSY. Memory switch 1-3 changes the BUSY condition for the printer.
5	7	GND	—	Signal ground
6	6	DSR	Input	Indicates whether or not the host computer is ready to receive data. SPACE indicates that the host computer is ready to receive data, and MARK indicates that the host computer is not ready to receive data. The printer checks this signal before transmitting data. (Except when transmitting data with some commands.) Changing the setting of DIP switch allows this signal to be used as a reset signal for the printer. The printer is reset when the signal remains MARK for 1 ms or more.
7	4	RTS	Output	Same as DTR signal.
8	5	CTS	Input	Indicates whether or not the host computer is ready to receive data. SPACE indicates that the host computer is ready to receive data, and MARK indicates that the host computer is not ready to receive data. The printer checks this signal before transmitting data. (Except when transmitting data with some commands.)
9	—	NC	—	Not connected

NOTE	**The printer goes BUSY (MARK) under the following conditions:**		

Printer status		Memory switch 1-3	
		ON	**OFF**
Offline	1. During the period from when the power is turned on (including resetting through the interface) to when the printer becomes ready to receive data.	BUSY	BUSY
	2. During a self-test	BUSY	BUSY
	3. When the paper loading cover is open.	—	BUSY
	4. When the platen frame is open.	—	BUSY
	5. When the printer stops printing due to a paper-end.	—	BUSY
	6. When the printer stops printing due to a paper jam.	—	BUSY
	7. When an error has occurred.	—	BUSY
8. When the receive buffer becomes full.		BUSY	BUSY

AEA mode

DSUB9 Pin no.	DSUB25 Pin no.	Signal name	Signal direction	Function
1	—	NC	—	Not connected
2	3	RXD	Input	Receive data
3	2	TXD	Output	Transmit data
4	20	DTR	Output	<When RTS/CTS flow control is selected> Indicates whether or not the printer power is ON. SPACE indicates that the printer power is ON, and MARK indicates that the printer power is OFF. <When DTR/DSR flow control is selected> Indicates whether or not the printer is BUSY. SPACE indicates that the printer is ready to receive data, and MARK indicates that the printer is BUSY. The printer goes BUSY when the printer is made offline by pressing down the On/Off Line button or when the receive buffer is full.
5	7	GND	—	Signal ground

DSUB9 Pin no.	DSUB25 Pin no.	Signal name	Signal direction	Function
6	6	DSR	Input	<When RTS/CTS flow control is selected> Indicates whether or not the host computer power is ON. SPACE indicates that the host computer is ON, and MARK indicates that the host computer is OFF. Changing the setting of DIP switch or memory switch allows this signal to be used as a reset signal for the printer. This reset signal is used for detecting the MARK status of the host computer and for resetting the printer. <When DTR/DSR flow control is selected> Indicates whether or not the host computer is ready to receive data. SPACE indicates that the host computer is ready to receive data, and MARK indicates that the host computer is not to ready to receive data. When DTR/DSR control is selected, check the status of this signal before transmitting data.
7	4	RTS	Output	<When RTS/CTS flow control is selected> Indicates whether or not the printer is BUSY. SPACE indicates that the printer is ready to receive data, and MARK indicates that the printer is BUSY. The printer goes BUSY when the printer is made offline by pressing down the On/Off Line button or when the receive buffer is full. <When DTR/DSR flow control is selected> Indicates whether or not the printer power is ON. SPACE indicates that the printer power is ON, and MARK indicates that the printer power is OFF.
8	5	CTS	Input	<When RTS/CTS flow control is selected> Indicates whether or not the host computer is ready to receive data. SPACE indicates that the host computer is ready to receive data, and MARK indicates that the host computer is not ready to receive data. When RTS/CTS control is selected, check the status of this signal before transmitting data. <When DTR/DSR flow control is selected> This signal is not used.
9	—	SG	—	Signal ground

10BASE-T/100BASE-TX Ethernet Interface

Software specifications

Basic communication protocols

- IP, ARP, ICMP, UDP, TCP: Basic communications protocols for various functions (used by higher-level protocols below)

Printing communications protocols

- LP, LPR: Transfers printing data.
- TCP socket port: Transfers printing data and printer status with direct socket communications (bi-directional).

Protocol for obtaining status and setting

- HTTP: Displays module status and makes setting with the Web browser.

- SNMP: Obtains status and/or sets module or printer with the dedicated/commercial MIB tool.

- ENPC: Obtains status and/or sets the interface unit and printer.

- TFTP: Updates the interface unit firmware.

Automatic IP Address Assignment Protocols

Automatic IP addressing is executed in order shown in the table below. If DHCP is disabled or IP addressing for DHCP fails, then IP addressing for the next protocols is executed. If APIPA is disabled or IP address cannot be obtained, the internal setting parameters are used.

Protocol	Order	Application
DHCP	1	Obtains IP address.
APIPA	2	Assigns IP address.
Manual setting	3	Uses the internal parameters.

Internal parameter settings

Internal parameter settings can be changed with the following:

- ENPC protocol: Epson provides a dedicated utility that makes miscellaneous setting with the ENPC protocol.

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

- arp commands and ping commands (Only IP address is settable.):

    This function is available only when it has been enabled. The setting can be made only from a host PC that supports both arp and ping commands and is in the same segment as the module.

Article	Parameters	Default values	Utility		Browser		Status sheet print
			View	Setting	View	Setting	
IP address		192.168.192.168	Yes	Yes	Yes	Yes	Yes
Subnet mask		255.255.255.0	Yes	Yes	Yes	Yes	Yes
Gateway address		0.0.0.0	Yes	Yes	Yes	Yes	Yes
DHCP	Enable/Disable	Disable	Yes	Yes	Yes	Yes	Yes
APIPA	Enable/Disable	Disable	Yes	Yes	Yes	Yes	Yes
Arp/ping IP setting	Enable/Disable	Enable	Yes	Yes	Yes	Yes	No
Community name 1 (read-only)	Max. 16 characters	"public"	Yes	No	Yes	No	Yes
Community name 2 (read-write)	Max. 16 characters	None	Yes	Yes	Yes	Yes	Yes
IP Trap 1 Enable	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No
IP Trap 2 Enable	Enable/Disable	Disable	Yes	Yes	Yes	Yes	No
Community name (IP Trap #1)	Max. 16 characters	None	Yes	Yes	Yes	Yes	No
Community name (IP Trap #2)	Max. 16 characters	None	Yes	Yes	Yes	Yes	No
IP trap #1 address		None	Yes	Yes	Yes	Yes	No
IP trap #2 address		None	Yes	Yes	Yes	Yes	No
Password		None	No	Yes	No	Yes	No
Physical layer setting	Auto negotiation /10Base-T Half /10Base-T Full /100Base-TX Half /100Base-TX Full	Auto negotiation	Yes	Yes	Yes	Yes	Yes
Hardware version	—	—	Yes	No	Yes	No	Yes
Firmware version	—	—	Yes	No	Yes	No	Yes
MAC address	—	—	Yes	No	Yes	No	Yes

USB (Universal Serial Bus) Interface

Outline

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

USB transmission specifications

USB function

Overall specifications		USB 2.0	
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		0 mA	
USB packet size (with full-speed connection)			
	USB bulk OUT (TM)	64 bytes	
	USB bulk IN (TM)	64 bytes	
USB device class		Both vendor-defined class and USB printer class are supported. Switching of the class can be set by DIP switch on startup.	
USB descriptor		USB vendor-defined class	USB printer class
	Vendor ID	04b8h	04b8h
	Product ID	0202h	0E08h
	String Descriptor Manufacturer Product Serial number	EPSON TM-L500A Character string based on the product serial number	

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, status 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 canceled.

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 the international character set (See "International Character Sets" on page 130.) 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	(1)	XON (17)	! (33)	1 (49)	A (65)	Q (81)	a (97)	q (113)
2	(2)	(18)	" (34)	2 (50)	B (66)	R (82)	b (98)	r (114)
3	(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)	(22)	& (38)	6 (54)	F (70)	V (86)	f (102)	v (118)
7	(7)	(23)	' (39)	7 (55)	G (71)	W (87)	g (103)	w (119)
8	(8)	CAN (24)	((40)	8 (56)	H (72)	X (88)	h (104)	x (120)
9	HT (9)	(25)	) (41)	9 (57)	I (73)	Y (89)	i (105)	y (121)
A	LF (10)	(26)	* (42)	: (58)	J (74)	Z (90)	j (106)	z (122)
B	(11)	ESC (27)	+ (43)	; (59)	K (75)	[(91)	k (107)	{ (123)
C	FF (12)	FS (28)	, (44)	< (60)	L (76)	\ (92)	l (108)		(124)
D	CR (13)	GS (29)	- (45)	= (61)	M (77)	] (93)	m (109)	} (125)
E	(14)	RS (30)	. (46)	> (62)	N (78)	^ (94)	n (110)	~ (126)
F	(15)	(31)	/ (47)	? (63)	O (79)	— (95)	o (111)	SP (127)

Page 0 (PC437: USA, Standard Europe)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

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

Page 2 (PC850: Multilingual)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	░ 176	└ 192	ð 208	Ó 224	‑ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	ì 141	Ø 157	¡ 173	¢ 189	= 205	¦ 221	Ý 237	² 253
E	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	È 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	Ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	Ê 137	õ 153	Ò 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Í 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	Ù 157	¡ 173	╜ 189	= 205	▌ 221	φ 237	² 253
E	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Â 143	Ó 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

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Page 4 (PC863: Canadian-French)

HEX	8		9		A		B		C		D		E		F	
0	Ç	128	É	144	¦	160	▓	176	└	192	╨	208	α	224	≡	240
1	ü	129	È	145	´	161	▒	177	┴	193	╤	209	β	225	±	241
2	é	130	Ê	146	ó	162	▓	178	┬	194	╥	210	Γ	226	≥	242
3	â	131	ô	147	ú	163	│	179	├	195	╙	211	π	227	≤	243
4	Â	132	Ë	148	¨	164	┤	180	─	196	╘	212	Σ	228	⌠	244
5	à	133	Ï	149	¸	165	╡	181	┼	197	╒	213	σ	229	⌡	245
6	¶	134	û	150	³	166	╢	182	╞	198	╓	214	µ	230	÷	246
7	Ç	135	ù	151	─	167	╖	183	╟	199	╫	215	τ	231	≈	247
8	ê	136	¤	152	Î	168	╕	184	╚	200	╪	216	Φ	232	°	248
9	ë	137	Ô	153	⌐	169	╣	185	╔	201	┘	217	θ	233	•	249
A	è	138	Ü	154	¬	170	║	186	╩	202	┌	218	Ω	234	·	250
B	ï	139	¢	155	½	171	╗	187	╦	203	█	219	δ	235	√	251
C	î	140	£	156	¼	172	╝	188	╠	204	▄	220	∞	236	ⁿ	252
D	=	141	Ù	157	¾	173	╜	189	=	205	▌	221	φ	237	²	253
E	À	142	Û	158	«	174	╛	190	╬	206	▐	222	ε	238	■	254
F	§	143	ƒ	159	»	175	┐	191	╧	207	▀	223	∩	239	SP	255

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	β 225	± 241
2	é 130	Æ 146	ó 162	░ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	Ø 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	Ø 157	¡ 173	╜ 189	= 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 11 (PC851: Greek)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	Ί 144	ϊ 160	▓ 176	└ 192	┬ 208	ζ 224	– 240
1	ü 129	SP 145	ΐ 161	▒ 177	┴ 193	Υ 209	η 225	± 241
2	é 130	Ό 146	ό 162	▒ 178	┬ 194	Φ 210	θ 226	υ 242
3	â 131	ô 147	ύ 163	│ 179	├ 195	Χ 211	ι 227	φ 243
4	ä 132	ö 148	Α 164	┤ 180	─ 196	Ψ 212	κ 228	χ 244
5	à 133	Ύ 149	Β 165	Κ 181	┼ 197	Ω 213	λ 229	§ 245
6	Ά 134	û 150	Γ 166	Λ 182	Π 198	α 214	μ 230	ψ 246
7	ç 135	ù 151	Δ 167	Μ 183	Ρ 199	β 215	ν 231	΄ 247
8	ê 136	Ώ 152	Ε 168	Ν 184	╚ 200	γ 216	ξ 232	° 248
9	ë 137	Ö 153	Ζ 169	╣ 185	╔ 201	┘ 217	ο 233	¨ 249
A	è 138	Ü 154	Η 170	║ 186	╩ 202	┌ 218	π 234	ω 250
B	ï 139	ά 155	½ 171	╗ 187	╦ 203	█ 219	ρ 235	ϋ 251
C	î 140	£ 156	Θ 172	╝ 188	╠ 204	▄ 220	σ 236	ΰ 252
D	Έ 141	έ 157	Ι 173	Ξ 189	= 205	δ 221	ς 237	ώ 253
E	Ά 142	ή 158	« 174	Ο 190	╬ 206	ε 222	τ 238	■ 254
F	Ή 143	ί 159	» 175	┐ 191	Σ 207	▀ 223	΄ 239	SP 255

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HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	SP 208	Ó 224	─ 240
1	ü 129	Ċ 145	í 161	▓ 177	┴ 193	SP 209	ß 225	SP 241
2	é 130	Ċ 146	Ó 162	▓ 178	┬ 194	Ê 210	Ô 226	ℓ 242
3	â 131	Ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	ħ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	Ġ 228	˘ 244
5	à 133	Ò 149	Ñ 165	Á 181	┼ 197	ı 213	ġ 229	§ 245
6	ĉ 134	û 150	Ğ 166	Â 182	Ŝ 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	ğ 167	À 183	Ŝ 199	Î 215	Ħ 231	، 247
8	ê 136	İ 152	Ĥ 168	Ş 184	Ŀ 200	Ï 216	ħ 232	° 248
9	ë 137	Ö 153	ĥ 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	SP 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ĝ 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	SP 251
C	î 140	£ 156	Ĵ 172	╝ 188	╠ 204	▄ 220	Ŭ 236	³ 252
D	ì 141	Ĝ 157	Ş 173	Ż 189	= 205	SP 221	ŭ 237	² 253
E	Ä 142	× 158	« 174	Ż 190	╬ 206	Ì 222	· 238	▮ 254
F	Ĉ 143	Ĵ 159	» 175	┐ 191	¤ 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	▓	176	└	192	º	208	Ó	224	–	240
1	ü	129	æ	145	í	161	▓	177	┴	193	ª	209	ß	225	±	241
2	é	130	Æ	146	ó	162	▓	178	┬	194	Ê	210	Ô	226	SP	242
3	â	131	ô	147	ú	163	│	179	├	195	Ë	211	Ò	227	¾	243
4	ä	132	ö	148	ñ	164	┤	180	─	196	È	212	õ	228	¶	244
5	à	133	ò	149	Ñ	165	Á	181	┼	197	€	213	Õ	229	§	245
6	å	134	û	150	Ğ	166	Â	182	ã	198	Í	214	µ	230	÷	246
7	ç	135	ù	151	ğ	167	À	183	Ã	199	Î	215	SP	231	¸	247
8	ê	136	İ	152	¿	168	©	184	Ŀ	200	Ï	216	×	232	°	248
9	ë	137	Ö	153	®	169	╣	185	╔	201	┘	217	Ú	233	¨	249
A	è	138	Ü	154	¬	170	║	186	╩	202	┌	218	Û	234	·	250
B	ï	139	Ø	155	½	171	╗	187	╦	203	█	219	Ù	235	¹	251
C	î	140	£	156	¼	172	╝	188	╠	204	▄	220	ì	236	³	252
D	ı	141	Ø	157	¡	173	¢	189	=	205	¦	221	ÿ	237	²	253
E	Ä	142	Ş	158	«	174	¥	190	╬	206	Ì	222	‾	238	■	254
F	Å	143	ş	159	»	175	┐	191	¤	207	▀	223	´	239	SP	255

HEX	8	9	A	B	C	D	E	F
0	A 128	Ρ 144	ι 160	░ 176	└ 192	╨ 208	ω 224	Ώ 240
1	B 129	Σ 145	κ 161	▒ 177	┴ 193	╤ 209	ά 225	± 241
2	Γ 130	Τ 146	λ 162	▓ 178	┬ 194	╥ 210	έ 226	≥ 242
3	Δ 131	Υ 147	μ 163	│ 179	├ 195	╙ 211	ή 227	≤ 243
4	E 132	Φ 148	ν 164	┤ 180	─ 196	╘ 212	ϊ 228	Ϊ 244
5	Z 133	Χ 149	ξ 165	╡ 181	┼ 197	╒ 213	ί 229	Ϋ 245
6	H 134	Ψ 150	ο 166	╢ 182	╞ 198	╓ 214	ό 230	÷ 246
7	Θ 135	Ω 151	π 167	╖ 183	╟ 199	╫ 215	ύ 231	≈ 247
8	I 136	α 152	ρ 168	╕ 184	╚ 200	╪ 216	ϋ 232	° 248
9	K 137	β 153	σ 169	╣ 185	╔ 201	┘ 217	ώ 233	∙ 249
A	Λ 138	γ 154	ς 170	║ 186	╩ 202	┌ 218	Ά 234	· 250
B	M 139	δ 155	τ 171	╗ 187	╦ 203	█ 219	Έ 235	√ 251
C	N 140	ε 156	υ 172	╝ 188	╠ 204	▄ 220	Ή 236	^{n} 252
D	Ξ 141	ζ 157	φ 173	╜ 189	═ 205	▌ 221	Ί 237	^{2} 253
E	O 142	η 158	χ 174	╛ 190	╬ 206	▐ 222	Ό 238	■ 254
F	Π 143	θ 159	ψ 175	┐ 191	╧ 207	▀ 223	Ύ 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	ΐ 192	Π 208	ΰ 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	Ά 182	Ζ 198	Φ 214	ζ 230	φ 246
7	SP 135	SP 151	§ 167	· 183	Η 199	Χ 215	η 231	χ 247
8	SP 136	SP 152	¨ 168	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	SP 137	SP 153	© 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	ͺ 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	SP 139	SP 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ϋ 251
C	SP 140	SP 156	¬ 172	Ό 188	Μ 204	ά 220	μ 236	ό 252
D	SP 141	SP 157	173	½ 189	Ν 205	έ 221	ν 237	ύ 253
E	SP 142	SP 158	SP 174	Ύ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	― 175	Ώ 191	Ο 207	ί 223	ο 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	ð 240
1	SP 129	' 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	' 130	' 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	ˆ 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	ª 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

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Page 17 (PC866: Cyrillic #2)

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	░ 176	└ 192	╨ 208	р 224	Ё 240
1	Б 129	С 145	б 161	▒ 177	┴ 193	╤ 209	с 225	ё 241
2	В 130	Т 146	в 162	▓ 178	┬ 194	╥ 210	т 226	Є 242
3	Г 131	У 147	г 163	│ 179	├ 195	╙ 211	у 227	є 243
4	Д 132	Ф 148	д 164	┤ 180	─ 196	╘ 212	ф 228	Ї 244
5	Е 133	Х 149	е 165	╡ 181	┼ 197	╒ 213	х 229	ї 245
6	Ж 134	Ц 150	ж 166	╢ 182	╞ 198	╓ 214	ц 230	ў 246
7	З 135	Ч 151	з 167	╖ 183	╟ 199	╫ 215	ч 231	ў 247
8	И 136	Ш 152	и 168	╕ 184	╚ 200	╪ 216	ш 232	° 248
9	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	• 249
A	К 138	Ъ 154	к 170	║ 186	╩ 202	┌ 218	ъ 234	· 250
B	Л 139	Ы 155	л 171	╗ 187	╦ 203	█ 219	ы 235	√ 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	▄ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	╜ 189	= 205	▌ 221	э 237	¤ 253
E	О 142	Ю 158	о 174	╛ 190	╬ 206	▐ 222	ю 238	■ 254
F	П 143	Я 159	п 175	┐ 191	╧ 207	▀ 223	я 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	đ 208	Ó 224	- 240
1	ü 129	Ĺ 145	í 161	▓ 177	┴ 193	Đ 209	ß 225	˜ 241
2	é 130	ĺ 146	ó 162	▓ 178	┬ 194	Ď 210	Ô 226	˛ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ń 227	ˇ 243
4	ä 132	ö 148	Ą 164	┤ 180	─ 196	ď 212	ń 228	˘ 244
5	ů 133	Ľ 149	ą 165	Á 181	┼ 197	Ň 213	ň 229	§ 245
6	ć 134	ľ 150	Ž 166	Â 182	Ă 198	Í 214	Š 230	÷ 246
7	ç 135	Ś 151	ž 167	Ě 183	ă 199	Î 215	š 231	¸ 247
8	ł 136	ś 152	Ę 168	Ş 184	╚ 200	ě 216	Ŕ 232	° 248
9	ë 137	Ö 153	ę 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	ő 138	Ü 154	€ 170	║ 186	╩ 202	┌ 218	ŕ 234	˙ 250
B	ő 139	Ť 155	Ź 171	╗ 187	╦ 203	█ 219	Ű 235	ű 251
C	î 140	ť 156	Č 172	╝ 188	╠ 204	▄ 220	ý 236	Ř 252
D	Ź 141	Ł 157	ş 173	Ż 189	= 205	Ţ 221	Ý 237	ř 253
E	Ä 142	× 158	« 174	Ż 190	╬ 206	Ů 222	ţ 238	■ 254
F	Ć 143	č 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

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Page 19 (PC858: Euro)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	ð 208	Ó 224	- 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	Ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	Ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	ý 236	³ 252
D	ì 141	Ø 157	¡ 173	¢ 189	= 205	¦ 221	Ý 237	² 253
E	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	‾ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	¤ 207	■ 223	´ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Γ 128	O 144	SP 160	ฌ 176	ย 192	เ 208	ฺ 224	๚ 240
1	ๅ 129	๑ 145	ก 161	ญ 177	ร 193	แ 209	่ 225	๛ 241
2	∟ 130	๒ 146	ข 162	ฎ 178	ฤ 194	โ 210	๊ 226	๜ 242
3	⌐ 131	๓ 147	ค 163	ฏ 179	ล 195	ใ 211	๋ 227	๝ 243
4	│ 132	๔ 148	ฆ 164	ฐ 180	ว 196	ไ 212	๎ 228	๞ 244
5	─ 133	๕ 149	ง 165	ฑ 181	ศ 197	ๅ 213	๏ 229	๟ 245
6	├ 134	๖ 150	จ 166	ฒ 182	ษ 198	ๆ 214	์ 230	๠ 246
7	┤ 135	๗ 151	ฉ 167	ณ 183	ส 199	็ 215	๎ 231	๡ 247
8	┴ 136	๘ 152	ช 168	ต 184	ห 200	่ 216	๊ 232	๢ 248
9	┬ 137	๙ 153	ซ 169	ถ 185	ฬ 201	ᴖ 217	๋ 233	๣ 249
A	┼ 138	ฎ 154	ฌ 170	ผ 186	อ 202	ᴗ 218	์ 234	๤ 250
B	■ 139	ฏ 155	ญ 171	ฝ 187	ฮ 203	ᴘ 219	๎ 235	๥ 251
C	← 140	᷉ 156	ฎ 172	พ 188	๎ 204	ᴙ 220	๎ 236	๦ 252
D	↑ 141	᷊ 157	ฏ 173	ฟ 189	ภ 205	ᴚ 221	๎ 237	๧ 253
E	→ 142	᷋ 158	ฐ 174	ภ 190	ๅ 206	° 222	๎ 238	๨ 254
F	↓ 143	เ 159	ฑ 175	ม 191	ๆ 207	๘ 223	๎ 239	SP 255

Page 21 (TIS11: Thai)

HEX	8	9	A	B	C	D	E	F
0	128	144	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	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	SP 255

HEX	8	9	A	B	C	D	E	F
0	┌ 128	ั 144	SP 160	ฐ 176	ภ 192	ั 208	เ 224	๐ 240
1	┐ 129	ๅ 145	ก 161	ฑ 177	ม 193	ั 209	แ 225	๑ 241
2	└ 130	ั 146	ข 162	ฒ 178	ย 194	ำ 210	โ 226	๒ 242
3	┘ 131	ั 147	ฃ 163	ณ 179	ร 195	ำ 211	ใ 227	๓ 243
4	│ 132	ั 148	ค 164	ด 180	ฤ 196	ั 212	ไ 228	๔ 244
5	─ 133	ั 149	ฅ 165	ต 181	ล 197	ั 213	ำ 229	๕ 245
6	├ 134	ั 150	ฆ 166	ถ 182	ฦ 198	ั 214	ๅ 230	๖ 246
7	┤ 135	ั 151	ง 167	ท 183	ว 199	ั 215	๘ 231	๗ 247
8	┴ 136	ั 152	จ 168	ธ 184	ศ 200	ิ 216	' 232	๘ 248
9	┬ 137	ั 153	ฉ 169	น 185	ษ 201	ี 217	๏ 233	๙ 249
A	┼ 138	ั 154	ช 170	บ 186	ส 202	ั 218	๏ 234	๚ 250
B	█ 139	ั 155	ซ 171	ป 187	ห 203	ุ 219	+ 235	๛ 251
C	← 140	ั 156	ฌ 172	ผ 188	ฬ 204	ู 220	๏ 236	ั 252
D	↑ 141	ั 157	ญ 173	ฝ 189	อ 205	ฺ 221	๐ 237	ั 253
E	→ 142	ั 158	ฎ 174	พ 190	ฮ 206	ั 222	๏ 238	ั 254
F	↓ 143	เ 159	ฏ 175	ฟ 191	ๆ 207	฿ 223	๏ 239	SP 255

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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	ẹ 209	ỏ 225	ủ 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	ê 210	õ 226	ũ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	ể 211	ó 227	ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	ễ 212	ọ 228	ụ 244
5	SP 133	SP 149	SP 165	à 181	SP 197	ế 213	ồ 229	ù 245
6	SP 134	SP 150	SP 166	ả 182	ặ 198	ệ 214	ỗ 230	ử 246
7	SP 135	SP 151	SP 167	ã 183	ẩ 199	ì 215	ỡ 231	ữ 247
8	SP 136	SP 152	ă 168	á 184	ẫ 200	ỉ 216	ố 232	ứ 248
9	SP 137	SP 153	â 169	ạ 185	ẩ 201	SP 217	ộ 233	ự 249
A	SP 138	SP 154	ê 170	SP 186	ấ 202	SP 218	ờ 234	ỳ 250
B	SP 139	SP 155	ô 171	ằ 187	ậ 203	SP 219	ở 235	ỷ 251
C	SP 140	SP 156	ơ 172	ẳ 188	è 204	ĩ 220	ỡ 236	ỹ 252
D	SP 141	SP 157	ư 173	ẵ 189	SP 205	í 221	ớ 237	ý 253
E	SP 142	SP 158	đ 174	ắ 190	ẻ 206	ị 222	ợ 238	ỵ 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	Ă 161	SP 177	SP 193	Ệ 209	Ồ 225	Ủ 241
2	SP 130	SP 146	Â 162	SP 178	SP 194	Ê 210	Õ 226	Ũ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	Ể 211	Ó 227	Ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	Ẽ 212	Ọ 228	Ụ 244
5	SP 133	SP 149	SP 165	À 181	SP 197	Ế 213	Ồ 229	Ữ 245
6	SP 134	SP 150	SP 166	Ả 182	Ặ 198	Ệ 214	Ỏ 230	Ứ 246
7	SP 135	SP 151	Đ 167	Ã 183	Â 199	Ì 215	Ỗ 231	Ữ 247
8	SP 136	SP 152	SP 168	Á 184	Ẫ 200	Ỉ 216	Ố 232	Ứ 248
9	SP 137	SP 153	SP 169	Ạ 185	Ẫ 201	SP 217	Ộ 233	Ụ 249
A	SP 138	SP 154	Ê 170	SP 186	Ấ 202	SP 218	Ờ 234	Ỳ 250
B	SP 139	SP 155	Ô 171	Ằ 187	Ậ 203	SP 219	Ở 235	Ỷ 251
C	SP 140	SP 156	Ơ 172	Ẳ 188	È 204	Ĩ 220	Õ 236	Ỹ 252
D	SP 141	SP 157	Ư 173	Ẵ 189	SP 205	Í 221	Ớ 237	Ý 253
E	SP 142	SP 158	SP 174	Ắ 190	Ẻ 206	Ị 222	Ợ 238	Ỵ 254
F	SP 143	SP 159	SP 175	SP 191	Ẽ 207	Ò 223	Ù 239	SP 255

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Page 32 (PC720: Arabic)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	ب 160	▓ 176	└ 192	⊥ 208	ض 224	☰ 240
1	SP 129	ʷ 145	ة 161	▒ 177	⊥ 193	╤ 209	ط 225	ٴ 241
2	é 130	° 146	ت 162	░ 178	⊤ 194	╥ 210	ظ 226	ٴٴ 242
3	â 131	ô 147	ث 163	│ 179	├ 195	╙ 211	ع 227	ٴ 243
4	SP 132	¤ 148	ج 164	┤ 180	─ 196	╘ 212	غ 228	ٰ 244
5	à 133	― 149	ح 165	╡ 181	┼ 197	╒ 213	ف 229	ٴ 245
6	SP 134	û 150	خ 166	╢ 182	╞ 198	╓ 214	μ 230	ٌ 246
7	ç 135	ù 151	د 167	╖ 183	╟ 199	╫ 215	ق 231	≈ 247
8	ê 136	ء 152	ذ 168	╕ 184	╚ 200	╪ 216	ك 232	° 248
9	ë 137	آ 153	ر 169	╣ 185	╔ 201	┘ 217	ل 233	● 249
A	è 138	أ 154	ز 170	║ 186	╩ 202	┌ 218	م 234	· 250
B	ï 139	ؤ 155	س 171	╗ 187	╦ 203	█ 219	ن 235	√ 251
C	î 140	£ 156	ش 172	╝ 188	╠ 204	▄ 220	ه 236	n 252
D	SP 141	إ 157	ص 173	╜ 189	= 205	▌ 221	و 237	² 253
E	SP 142	ئ 158	« 174	╛ 190	╬ 206	▐ 222	ى 238	■ 254
F	SP 143	ا 159	» 175	┐ 191	⊥ 207	▀ 223	ي 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ć 128	É 144	Ā 160	▒ 176	└ 192	ą 208	Ó 224	– 240
1	ü 129	æ 145	Ī 161	▓ 177	┴ 193	č 209	ß 225	± 241
2	é 130	Ǽ 146	Ó 162	▓ 178	┬ 194	ę 210	Ō 226	" 242
3	ā 131	ō 147	Ż 163	│ 179	├ 195	ė 211	Ń 227	¾ 243
4	ä 132	ö 148	ż 164	┤ 180	─ 196	į 212	õ 228	¶ 244
5	ģ 133	Ģ 149	Ź 165	Ą 181	┼ 197	š 213	Õ 229	§ 245
6	å 134	¢ 150	" 166	Č 182	Ų 198	ų 214	µ 230	÷ 246
7	ć 135	Ś 151	¦ 167	Ę 183	Ū 199	ū 215	ń 231	" 247
8	ł 136	ś 152	© 168	Ė 184	╚ 200	ž 216	Ķ 232	° 248
9	ē 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	ķ 233	• 249
A	Ŗ 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ļ 234	• 250
B	ŗ 139	Ø 155	½ 171	╗ 187	╦ 203	█ 219	ļ 235	¹ 251
C	ī 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ņ 236	³ 252
D	Ź 141	Ø 157	ł 173	Į 189	= 205	▌ 221	Ē 237	² 253
E	Ä 142	× 158	« 174	Š 190	╬ 206	▐ 222	Ņ 238	■ 254
F	Å 143	¤ 159	» 175	┐ 191	Ž 207	▀ 223	' 239	SP 255

Page 34 (PC855: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	ђ 128	љ 144	а 160	░ 176	└ 192	Л 208	Я 224	‒ 240
1	Ђ 129	Љ 145	А 161	▒ 177	┴ 193	Л 209	р 225	Ы 241
2	ѓ 130	њ 146	б 162	▓ 178	Т 194	М 210	Р 226	Ы 242
3	Ѓ 131	Њ 147	Б 163	│ 179	Ҍ 195	М 211	с 227	З 243
4	ё 132	ћ 148	ц 164	┤ 180	─ 196	Н 212	С 228	З 244
5	Ё 133	Ћ 149	Ц 165	Х 181	┼ 197	Н 213	т 229	Ш 245
6	є 134	Ќ 150	д 166	Х 182	к 198	о 214	Т 230	Ш 246
7	Є 135	Ќ 151	Д 167	и 183	К 199	О 215	у 231	э 247
8	ѕ 136	ў 152	е 168	И 184	╚ 200	П 216	У 232	Э 248
9	Ѕ 137	Ў 153	Е 169	╣ 185	╔ 201	┘ 217	ж 233	щ 249
A	і 138	џ 154	ф 170	║ 186	╩ 202	┌ 218	Ж 234	Щ 250
B	І 139	Џ 155	Ф 171	╗ 187	╦ 203	█ 219	в 235	ч 251
C	ї 140	ю 156	г 172	╝ 188	╠ 204	▄ 220	В 236	Ч 252
D	Ї 141	Ю 157	Г 173	й 189	= 205	П 221	ь 237	§ 253
E	ј 142	ъ 158	« 174	Й 190	╬ 206	Я 222	Ь 238	■ 254
F	Ј 143	Ъ 159	» 175	┐ 191	¤ 207	▀ 223	№ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▓ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	Á 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	þ 149	Í 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	Ó 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	Ý 151	Ú 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ý 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Ð 139	Ø 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	ð 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	þ 141	Ø 157	¡ 173	╜ 189	= 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	┴ 207	▀ 223	∩ 239	SP 255

Page 36 (PC862: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	א 128	] 144	á 160	░ 176	└ 192	╨ 208	α 224	≡ 240
1	ב 129	ס 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	ג 130	ע 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	ד 131	ף 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ה 132	פ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	ו 133	ץ 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	ז 134	צ 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ח 135	ק 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ט 136	ר 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	י 137	ש 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	∙ 249
A	ך 138	ת 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	כ 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	ל 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ם 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	מ 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	ן 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	° 128	β 144	SP 160	♦ 176	¢ 192	ذ 208	— 224	ّ 240
1	• 129	ɯ 145	─ 161	١ 177	ء 193	ر 209	ف 225	ّ 241
2	• 130	φ 146	ٱ 162	٢ 178	آ 194	ز 210	ق 226	ن 242
3	√ 131	± 147	£ 163	٣ 179	أ 195	س 211	ك 227	ه 243
4	▓ 132	½ 148	¤ 164	٤ 180	ؤ 196	ش 212	┘ 228	ﻬ 244
5	─ 133	¼ 149	ﻷ 165	٥ 181	ع 197	ص 213	ﻣ 229	ى 245
6	│ 134	≈ 150	SP 166	٦ 182	ئ 198	ض 214	ن 230	ي 246
7	┼ 135	« 151	€ 167	٧ 183	ا 199	ط 215	ه 231	غ 247
8	┤ 136	» 152	ﻝ 168	٨ 184	ب 200	ظ 216	و 232	ق 248
9	┬ 137	ﻻ 153	ب 169	٩ 185	ة 201	ع 217	ى 233	ﻵ 249
A	├ 138	ﻷ 154	ت 170	ف 186	ت 202	غ 218	ب 234	ﻹ 250
B	┴ 139	SP 155	ث 171	ء 187	ث 203	ا 219	ض 235	ل 251
C	┐ 140	SP 156	، 172	س 188	ج 204	¬ 220	ع 236	ك 252
D	┌ 141	ﻻ 157	ج 173	ش 189	ح 205	÷ 221	غ 237	ي 253
E	└ 142	ﻻ 158	ح 174	ص 190	خ 206	× 222	غ 238	■ 254
F	┘ 143	ع 159	خ 175	؟ 191	د 207	ع 223	م 239	SP 255

Page 38 (PC869: Greek)

HEX	8	9	A	B	C	D	E	F
0	SP 128	Ί 144	ϊ 160	▓ 176	└ 192	┬ 208	ζ 224	─ 240
1	SP 129	Ϊ 145	ΐ 161	▓ 177	┴ 193	Υ 209	η 225	± 241
2	SP 130	Ό 146	ό 162	▓ 178	┬ 194	Φ 210	θ 226	υ 242
3	SP 131	SP 147	ύ 163	│ 179	├ 195	Χ 211	ι 227	φ 243
4	SP 132	SP 148	Α 164	┤ 180	─ 196	Ψ 212	κ 228	χ 244
5	SP 133	Ύ 149	Β 165	Κ 181	┼ 197	Ω 213	λ 229	§ 245
6	Ά 134	Ϋ 150	Γ 166	Λ 182	Π 198	α 214	μ 230	ψ 246
7	€ 135	© 151	Δ 167	Μ 183	Ρ 199	β 215	ν 231	¨ 247
8	· 136	Ώ 152	Ε 168	Ν 184	╚ 200	γ 216	ξ 232	° 248
9	¬ 137	² 153	Ζ 169	╣ 185	╔ 201	┘ 217	ο 233	¨ 249
A	¦ 138	³ 154	Η 170	║ 186	╩ 202	┌ 218	π 234	ω 250
B	' 139	ά 155	½ 171	╗ 187	╦ 203	■ 219	ρ 235	ϋ 251
C	' 140	£ 156	Θ 172	╝ 188	╠ 204	■ 220	σ 236	ΰ 252
D	Έ 141	έ 157	Ι 173	Ξ 189	= 205	δ 221	ς 237	ώ 253
E	― 142	ή 158	« 174	Ο 190	╬ 206	ε 222	τ 238	■ 254
F	Ή 143	ί 159	» 175	┐ 191	Σ 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	⊥ 145	Ą 161	ą 177	Á 193	Ń 209	á 225	ń 241
2	▓ 130	⊤ 146	˘ 162	˛ 178	Â 194	Ň 210	â 226	ň 242
3	│ 131	├ 147	Ł 163	ł 179	Ă 195	Ó 211	ă 227	ó 243
4	┤ 132	─ 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	┘ 133	┼ 149	Ľ 165	ľ 181	Ĺ 197	Ő 213	ĺ 229	ő 245
6	┌ 134	■ 150	Ś 166	ś 182	Ć 198	Ö 214	ć 230	ö 246
7	█ 135	■ 151	§ 167	ˇ 183	Ç 199	× 215	ç 231	÷ 247
8	© 136	Ŀ 152	¨ 168	¸ 184	Č 200	Ř 216	č 232	ř 248
9	╣ 137	╔ 153	Š 169	š 185	É 201	Ů 217	é 233	ů 249
A	║ 138	╩ 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	╗ 139	╦ 155	Ť 171	ť 187	Ë 203	Ű 219	ë 235	ű 251
C	╝ 140	╠ 156	Ź 172	ź 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	Ţ 222	î 238	ţ 254
F	┐ 143	® 159	Ż 175	ż 191	Ď 207	ß 223	ď 239	˙ 255

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Page 40 (ISO8859-15: Latin9)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	ð 240
1	SP 129	SP 145	¡ 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	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	SP 139	SP 155	« 171	» 187	Ë 203	Û 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	ؤ 144	ﺪ 160	░ 176	└ 192	غ 208	ک 224	‒ 240
1	SP 129	ئ 145	خ 161	▒ 177	┴ 193	ء 209	ک 225	ى 241
2	، 130	ب 146	ﺦ 162	▓ 178	┬ 194	ﻤ 210	گ 226	ﺒ 242
3	؛ 131	ﺒ 147	د 163	│ 179	├ 195	غ 211	ﮒ 227	— 243
4	؟ 132	پ 148	ذ 164	┤ 180	─ 196	غ 212	ل 228	ه 244
5	ˮ 133	ﭙ 149	ر 165	ض 181	┼ 197	غ 213	ﻠ 229	۱ 245
6	آ 134	ﺕ 150	ز 166	ﺿ 182	ظ 198	ﻐ 214	م 230	۲ 246
7	آ 135	ﺖ 151	ژ 167	ط 183	ع 199	ف 215	ﻤ 231	۳ 247
8	آ 136	ﺚ 152	ﺱ 168	ﻂ 184	╠ 200	ﻓ 216	ن 232	۴ 248
9	ا 137	ﺙ 153	ﺳ 169	╣ 185	╔ 201	┘ 217	ﻨ 233	۵ 249
A	ﻟ 138	ﺝ 154	ﺵ 170	║ 186	╩ 202	┌ 218	و 234	۶ 250
B	ﻻ 139	ﺟ 155	ﺷ 171	╗ 187	╦ 203	█ 219	ه 235	۷ 251
C	ء 140	ﺝ 156	ﺹ 172	╝ 188	╟ 204	▄ 220	ﻬ 236	۸ 252
D	أ 141	ﺧ 157	ﺻ 173	﷼ 189	= 205	ق 221	ﻫ 237	۹ 253
E	ﺃ 142	× 158	« 174	ظ 190	╫ 206	ﻗ 222	ﺉ 238	■ 254
F	ﴼ 143	ح 159	» 175	┐ 191	SP 207	▀ 223	ی 239	SP 255

Page 42 (PC1118: Lithuanian)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	░ 176	└ 192	ą 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	č 209	β 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	ę 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	ė 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	į 212	Σ 228	" 244
5	à 133	ò 149	Ñ 165	Ą 181	┼ 197	š 213	σ 229	" 245
6	å 134	û 150	ª 166	Č 182	Ų 198	ų 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	Ę 183	Ū 199	ū 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	Ė 184	╚ 200	ž 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	ⁿ 252
D	ì 141	¥ 157	¡ 173	Į 189	═ 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	Š 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	Ž 207	▀ 223	∩ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	░ 176	└ 192	ą 208	р 224	Ё 240
1	Б 129	С 145	б 161	▒ 177	┴ 193	č 209	с 225	ё 241
2	В 130	Т 146	в 162	▓ 178	┬ 194	ę 210	т 226	≥ 242
3	Г 131	У 147	г 163	│ 179	├ 195	ė 211	у 227	≤ 243
4	Д 132	Ф 148	д 164	┤ 180	─ 196	į 212	ф 228	" 244
5	Е 133	Х 149	е 165	Ą 181	┼ 197	š 213	х 229	" 245
6	Ж 134	Ц 150	ж 166	Č 182	Ų 198	ų 214	ц 230	÷ 246
7	З 135	Ч 151	з 167	Ę 183	Ū 199	ū 215	ч 231	≈ 247
8	И 136	Ш 152	и 168	Ė 184	⌐ 200	ž 216	ш 232	° 248
9	Й 137	Щ 153	й 169	╣ 185	╟ 201	┘ 217	щ 233	• 249
A	К 138	Ъ 154	к 170	║ 186	╨ 202	┌ 218	ъ 234	· 250
B	Л 139	Ы 155	л 171	╗ 187	╤ 203	█ 219	ы 235	√ 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	▄ 220	ь 236	ⁿ 252
D	Н 141	Э 157	н 173	Į 189	= 205	▌ 221	э 237	² 253
E	О 142	Ю 158	о 174	Š 190	╬ 206	▐ 222	ю 238	■ 254
F	П 143	Я 159	п 175	┐ 191	Ž 207	▀ 223	я 239	SP 255

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Page 44 (PC1125: Ukrainian)

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	▒ 176	└ 192	╨ 208	р 224	Ё 240
1	Б 129	С 145	б 161	▒ 177	┴ 193	╤ 209	с 225	ё 241
2	В 130	Т 146	в 162	▓ 178	┬ 194	╥ 210	т 226	Ґ 242
3	Г 131	У 147	г 163	│ 179	├ 195	╙ 211	у 227	ґ 243
4	Д 132	Ф 148	д 164	┤ 180	─ 196	╘ 212	ф 228	Є 244
5	Е 133	Х 149	е 165	╡ 181	┼ 197	╒ 213	х 229	є 245
6	Ж 134	Ц 150	ж 166	╢ 182	╞ 198	╓ 214	ц 230	І 246
7	З 135	Ч 151	з 167	╖ 183	╟ 199	╫ 215	ч 231	і 247
8	И 136	Ш 152	и 168	╕ 184	╚ 200	╪ 216	ш 232	Ї 248
9	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	ї 249
A	К 138	Ъ 154	к 170	║ 186	╩ 202	┌ 218	ъ 234	÷ 250
B	Л 139	Ы 155	л 171	╗ 187	╦ 203	█ 219	ы 235	± 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	▄ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	╜ 189	═ 205	▌ 221	э 237	¤ 253
E	О 142	Ю 158	о 174	╛ 190	╬ 206	▐ 222	ю 238	■ 254
F	П 143	Я 159	п 175	┐ 191	╧ 207	▀ 223	я 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 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	˘ 162	˛ 178	Â 194	Ň 210	â 226	ň 242
3	SP 131	" 147	Ł 163	ł 179	Ă 195	Ó 211	ã 227	ó 243
4	„ 132	" 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	… 133	• 149	Ą 165	µ 181	Ĺ 197	Ő 213	í 229	õ 245
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	Ů 217	é 233	ů 249
A	Š 138	š 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ë 203	Ű 219	ë 235	ű 251
C	Ś 140	ś 156	¬ 172	Ľ 188	Ě 204	Ü 220	ě 236	ü 252
D	Ť 141	ť 157	- 173	˝ 189	Í 205	Ý 221	í 237	ý 253
E	Ž 142	ž 158	® 174	ľ 190	Î 206	Ţ 222	î 238	ţ 254
F	Ź 143	ź 159	Ż 175	ż 191	Ď 207	ß 223	ď 239	˙ 255

Page 46 (WPC1251: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	Ђ 128	ђ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	Ѓ 129	' 145	Ў 161	± 177	Б 193	С 209	б 225	с 241
2	‚ 130	' 146	ў 162	I 178	В 194	Т 210	в 226	т 242
3	ѓ 131	" 147	Ј 163	і 179	Г 195	У 211	г 227	у 243
4	„ 132	" 148	¤ 164	ґ 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ґ 165	µ 181	Е 197	Х 213	е 229	х 245
6	† 134	– 150	¦ 166	¶ 182	Ж 198	Ц 214	ж 230	ц 246
7	‡ 135	— 151	§ 167	· 183	З 199	Ч 215	з 231	ч 247
8	€ 136	SP 152	Ё 168	ё 184	И 200	Ш 216	и 232	ш 248
9	‰ 137	™ 153	© 169	№ 185	Й 201	Щ 217	й 233	щ 249
A	Љ 138	љ 154	Є 170	є 186	К 202	Ъ 218	к 234	ъ 250
B	‹ 139	› 155	« 171	» 187	Л 203	Ы 219	л 235	ы 251
C	Њ 140	њ 156	¬ 172	ј 188	М 204	Ь 220	м 236	ь 252
D	Ќ 141	ќ 157	- 173	Ѕ 189	Н 205	Э 221	н 237	э 253
E	Ћ 142	ћ 158	® 174	ѕ 190	О 206	Ю 222	о 238	ю 254
F	Џ 143	џ 159	Ї 175	ї 191	П 207	Я 223	п 239	я 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ϊ́ 192	Π 208	Ϋ́ 224	π 240
1	SP 129	' 145	¨΄ 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	' 130	' 146	Ά 162	² 178	Β 194	SP 210	β 226	ς 242
3	ƒ 131	" 147	£ 163	³ 179	Γ 195	Σ 211	γ 227	σ 243
4	" 132	" 148	¤ 164	΄ 180	Δ 196	Τ 212	δ 228	τ 244
5	… 133	• 149	¥ 165	µ 181	Ε 197	Υ 213	ε 229	υ 245
6	† 134	– 150	¦ 166	¶ 182	Ζ 198	Φ 214	ζ 230	φ 246
7	‡ 135	— 151	§ 167	· 183	Η 199	Χ 215	η 231	χ 247
8	SP 136	SP 152	¨ 168	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	‰ 137	™ 153	© 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	ª 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	‹ 139	› 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ϋ 251
C	SP 140	SP 156	¬ 172	Ό 188	Μ 204	ά 220	μ 236	ό 252
D	SP 141	SP 157	- 173	½ 189	Ν 205	έ 221	ν 237	ύ 253
E	SP 142	SP 158	® 174	Ύ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	— 175	Ώ 191	Ο 207	ί 223	ο 239	SP 255

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Page 48 (WPC1254: Turkish)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Ğ 208	à 224	ğ 240
1	SP 129	' 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	‚ 130	' 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	ˆ 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	ª 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	İ 221	í 237	ı 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	א 224	] 240
1	SP 129	' 145	¡ 161	± 177	⋯ 193	209	⸬ 225	0 241
2	' 130	' 146	¢ 162	2 178	⋯ 194	210	⸬ 226	ʊ 242
3	ƒ 131	" 147	£ 163	3 179	⋯ 195	⸬ 211	⸬ 227	�9 243
4	" 132	" 148	₪ 164	´ 180	· 196	⸬ 212	⸬ 228	Ð 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	¹ 185	· 201	SP 217	⸬ 233	⸬ 249
A	SP 138	SP 154	× 170	÷ 186	SP 202	SP 218	⸬ 234	⸬ 250
B	‹ 139	› 155	« 171	» 187	⸬ 203	SP 219	⸬ 235	SP 251
C	SP 140	SP 156	¬ 172	¼ 188	· 204	SP 220	⸬ 236	SP 252
D	SP 141	SP 157	173	½ 189	· 205	SP 221	⸬ 237	SP 253
E	SP 142	SP 158	® 174	¾ 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	ڭ 144	SP 160	° 176	ˆ 192	ذ 208	à 224	ؚ 240
1	پ 129	' 145	، 161	± 177	ء 193	ر 209	ل 225	ۘ 241
2	‚ 130	' 146	¢ 162	² 178	آ 194	ز 210	â 226	ؚ 242
3	ƒ 131	" 147	£ 163	³ 179	أ 195	س 211	م 227	ٔ 243
4	„ 132	" 148	¤ 164	´ 180	ؤ 196	ش 212	ن 228	Ô 244
5	… 133	• 149	¥ 165	µ 181	إ 197	ص 213	ه 229	ؚ 245
6	† 134	– 150	¦ 166	¶ 182	ئ 198	ض 214	و 230	ٕ 246
7	‡ 135	— 151	§ 167	· 183	ا 199	× 215	ç 231	÷ 247
8	ˆ 136	ک 152	¨ 168	ٻ 184	ب 200	ط 216	è 232	ۙ 248
9	‰ 137	™ 153	© 169	¹ 185	ة 201	ظ 217	é 233	ù 249
A	ٹ 138	ڑ 154	ھ 170	؛ 186	ت 202	ع 218	ê 234	° 250
B	‹ 139	› 155	« 171	» 187	ث 203	غ 219	ë 235	Û 251
C	Œ 140	œ 156	¬ 172	¼ 188	ج 204	ـ 220	ى 236	ü 252
D	چ 141	SP 157	173	½ 189	ح 205	ف 221	ي 237	SP 253
E	ژ 142	SP 158	® 174	¾ 190	خ 206	ق 222	î 238	SP 254
F	ڈ 143	ں 159	¯ 175	؟ 191	د 207	ك 223	ï 239	ے 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ą 192	Š 208	ą 224	š 240
1	SP 129	' 145	SP 161	± 177	Į 193	Ń 209	į 225	ń 241
2	' 130	' 146	¢ 162	² 178	Ā 194	Ņ 210	ā 226	ŋ 242
3	SP 131	" 147	£ 163	³ 179	Ć 195	Ó 211	ć 227	ó 243
4	" 132	" 148	¤ 164	´ 180	Ä 196	Ō 212	ä 228	ō 244
5	… 133	• 149	SP 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	† 134	– 150	¦ 166	¶ 182	Ę 198	Ö 214	ę 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	Ų 216	č 232	ų 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ł 217	é 233	ł 249
A	SP 138	SP 154	Ŗ 170	ŗ 186	Ź 202	Ś 218	ź 234	ś 250
B	‹ 139	› 155	« 171	» 187	Ė 203	Ū 219	ė 235	ū 251
C	SP 140	SP 156	¬ 172	¼ 188	Ģ 204	Ü 220	ģ 236	ü 252
D	¨ 141	157	173	½ 189	Ķ 205	Ż 221	ķ 237	ż 253
E	ˇ 142	' 158	® 174	¾ 190	Ī 206	Ž 222	ī 238	ž 254
F	˛ 143	SP 159	Æ 175	æ 191	Ļ 207	ß 223	ļ 239	˙ 255

Page 52 (WPC1258: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	đ 240
1	SP 129	' 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	, 130	' 146	¢ 162	² 178	Â 194	ʔ 210	â 226	· 242
3	ƒ 131	" 147	£ 163	³ 179	Ă 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	Ơ 213	å 229	ơ 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	ˆ 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	ª 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	` 204	Ü 220	´ 236	ü 252
D	SP 141	SP 157	173	½ 189	Í 205	Ư 221	í 237	ư 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	Ђ 128	ђ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	Ѓ 129	' 145	Ұ 161	± 177	Б 193	С 209	б 225	с 241
2	' 130	' 146	Ү 162	I 178	В 194	Т 210	в 226	т 242
3	ѓ 131	" 147	Ә 163	і 179	Г 195	У 211	г 227	у 243
4	" 132	" 148	¤ 164	ө 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ө 165	µ 181	Е 197	Х 213	е 229	х 245
6	† 134	– 150	Ӏ 166	¶ 182	Ж 198	Ц 214	ж 230	ц 246
7	‡ 135	— 151	§ 167	· 183	З 199	Ч 215	з 231	ч 247
8	€ 136	SP 152	Ё 168	ё 184	И 200	Ш 216	и 232	ш 248
9	‰ 137	™ 153	© 169	№ 185	Й 201	Щ 217	й 233	щ 249
A	Љ 138	љ 154	Ғ 170	ғ 186	К 202	Ъ 218	к 234	ъ 250
B	‹ 139	› 155	« 171	» 187	Л 203	Ы 219	л 235	ы 251
C	Њ 140	њ 156	¬ 172	ә 188	М 204	Ь 220	м 236	ь 252
D	Қ 141	қ 157	- 173	Ң 189	Н 205	Э 221	н 237	э 253
E	һ 142	һ 158	® 174	ң 190	О 206	Ю 222	о 238	ю 254
F	Ұ 143	ұ 159	Ү 175	ү 191	П 207	Я 223	п 239	я 255

Page 255 (User-Defined Page)

HEX	8		9		A		B		C		D		E		F	
0	Ç	128	É	144	á	160	·	176	·	192	H	208	SP	224	SP	240
1	ü	129	æ	145	í	161	·	177	·	193	I	209	SP	225	SP	241
2	é	130	Æ	146	ó	162	·	178	·	194	SP	210	SP	226	SP	242
3	â	131	ô	147	ú	163	·	179	·	195	SP	211	SP	227	SP	243
4	ä	132	ö	148	ñ	164	·	180	·	196	SP	212	SP	228	SP	244
5	à	133	ò	149	Ñ	165	Á	181	·	197	SP	213	SP	229	SP	245
6	å	134	û	150	Ğ	166	Â	182	â	198	·	214	SP	230	SP	246
7	ç	135	ù	151	ğ	167	À	183	Ä	199	·	215	SP	231	SP	247
8	ê	136	ÿ	152	¿	168	İ	184	╚	200	SP	216	SP	232	SP	248
9	ë	137	Ö	153	·	169	╣	185	╔	201	SP	217	SP	233	SP	249
A	è	138	Ü	154	·	170	║	186	╩	202	SP	218	SP	234	SP	250
B	ï	139	ø	155	·	171	╗	187	╦	203	SP	219	SP	235	SP	251
C	î	140	£	156	·	172	╝	188	╠	204	SP	220	SP	236	SP	252
D	ì	141	Ø	157	¡	173	¢	189	=	205	SP	221	SP	237	SP	253
E	Ä	142	Ş	158	·	174	·	190	╬	206	SP	222	SP	238	SP	254
F	Å	143	ş	159	¤	175	·	191	·	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	β
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	$	%	*	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	%	*	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	%	*	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	%	*	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	%	*	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	%	*	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	%	*	@	[	₩	]	^	`	{	|	}	~
Slovenia/Croatia	#	$	%	*	Ž	Š	Đ	Ć	Č	ž	š	đ	ć	č
China	#	¥	%	*	@	[	\	]	^	`	{	|	}	~
Vietnam	đ	$	%	*	@	[	\	]	^	`	{	|	}	~
Arabia	#	$	%	*	@	[	\	]	^	`	{	|	}	~