

TM-P80

Technical Reference Guide

Product Overview

Describes features of the product.

Setup

Describes setup and installation of the product.

Application Development Information

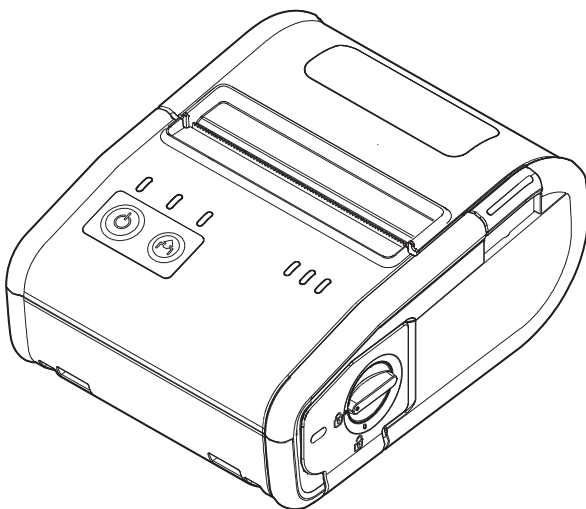
Describes how to control the printer and necessary information when you develop applications.

Handling

Describes how to handle the product.

Appendix

Describes general specifications, initial software settings, and character code tables.



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For Safety

Key to Symbols

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

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

Warnings



- 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 electric 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 electric 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 turn the power off, disconnect the battery pack, and then 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. Immediately turn the power off, disconnect the battery pack, and then contact your dealer or a Seiko Epson service center for advice.
- **Do not use aerosol sprayers containing flammable gas inside or around this product.**
Doing so may cause fire.
- **If any liquid from the battery gets into your eyes, promptly wash it out with clean water for more than 10 minutes and consult your doctor immediately.**
Otherwise, the liquid may cause loss of eye sight.
- **Never disassemble or modify the battery pack.**
This may cause fire, explosion, leakage, overheating or damage.
- **When storing and moving the battery, attach the battery cover.**
Shorting of battery terminals could lead to fire, bursting, leakage or overheating.
- **Do not expose the battery to fire or heat it.**
This may cause fire, explosion, leakage, overheating or damage.
- **Should any battery liquid get on skin or clothing, promptly wash it off with clean water.**
Otherwise, the liquid may damage your skin.
- **Do not expose the battery to water. Do not allow water to contact the terminals.**
This may cause fire, overheating, or electric shock.

Cautions



- **Do not connect cables in ways other than those mentioned in this manual.**
Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
The product may break or cause injury if it falls.
- **Do not use this product in locations subject to high humidity or dust levels.**
Excessive humidity and dust may cause equipment damage or fire.
- **Do not place heavy objects on top of this product. Never stand or lean on this product.**
Equipment may fall or collapse, causing breakage and possible injury.
- **Take care not to injure your fingers on the manual cutter:**
 - * When you remove printed paper.
 - * When you perform other operations, such as loading/replacing roll paper.
- **To ensure safety, remove the battery 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; disaster prevention devices; various safety devices; or functional/precision devices, etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgement on this product's suitability after a full evaluation.

Note about interference

- The Radio Frequency module that can be installed in this product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
- If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult your dealer or an experienced radio/TV technician for help.
- Never disassemble or modify this product or the installed Radio Frequency module.
- Seiko Epson Corporation shall not be liable for interference to radio/TV resulting from changes or modifications to this product or the installed Radio Frequency module not expressly approved by Seiko Epson Corporation.

About this Manual

Aim of the Manual

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

Manual Content

The manual is made up of the following sections:

Chapter 1	Product Overview
Chapter 2	Setup
Chapter 3	Application Development Information
Chapter 4	Handling
Appendix	Specifications of Interfaces and Connectors Character Code Tables

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Product Overview

This chapter describes features and specifications of the TM-P80, a portable receipt printer.

Features

Printing

Maximum printing speed of 100 mm/s is possible.

Printer handling

- Easy drop-in paper loading.
- Long battery life.
- Compact body of approximately 500 g. (For the Bluetooth model)
- Printing without margins at the top of the sheet by controlling the starting position of the printing with using the Receipt paper (with black mark).
- The body has been made robust (Drop impact resistance: 120 cm (4 feet)) and dust/splash proof (IP54 equivalent^{*}).

* The values used here are measured by the printer unit based on the JISC0920 (IEC60529:2001) evaluation. They do not guarantee the printing result, and failure and damage of the printer.

Software

- Command protocol is based on the ESC/POS Proprietary Command System.
- OPOS ADK, JavaPOS ADK, and Windows printer drivers are available.
- ePOS-Print SDK is available for the native applications that operate on iOS or Android devices.
- For the Wi-Fi models, the ePOS-Print service is available for the Web-based applications.
- Printing various kinds of barcodes and two-dimensional symbols are available.
- Has a maintenance counter function.
- 42 column emulation mode supported.

Interfaces

- Has Wi-Fi (IEEE802.11 a/b/g/n) or Bluetooth (Ver. 2.1 + EDR) interface.
- The Wi-Fi model supports 2.4 GHz and 5 GHz. WPA2-Enterprise is also available as a security option.
- USB interface is standard equipment.

Environment

Has a paper-saving function.

Product Configurations

Interfaces

- Wi-Fi model (IEEE802.11 + USB)
- Bluetooth model (Bluetooth + USB)

Accessories

Included

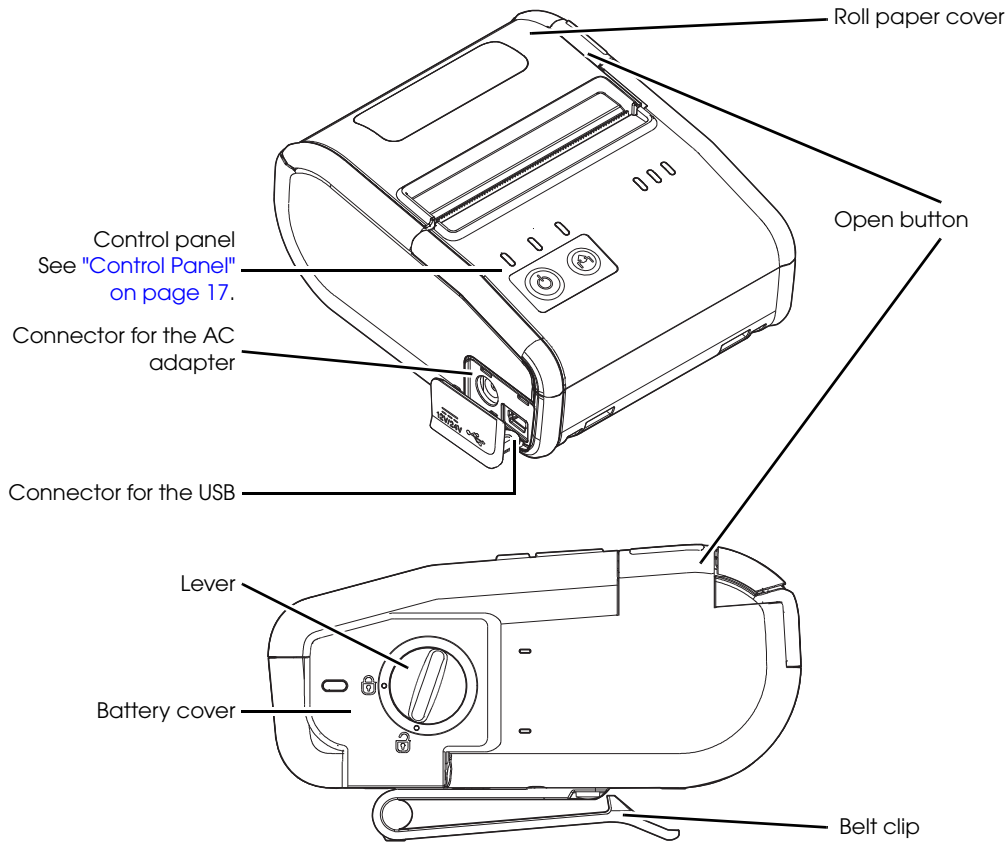
- Thermal roll paper (for operation check)
- Battery pack (OT-BY60II)
- Belt clip (attached to the printer)
- USB cable
- Setup Guide (Wireless LAN / Bluetooth)
- User's manual
- Warranty certificate*

* May not be included, depending on the model.

Options

- Battery pack (OT-BY60II)
- AC adapter (PS-11)
- Battery charger (OT-CH60II)

Part Names and Functions



Roll Paper Cover

Open this cover to install or remove the roll paper.

Open Button

Push this button to open the roll paper cover.

Connector for the AC adapter

Connect the optional AC adapter to charge the battery.

Connector for the USB

Connect the USB interface cable.

Lever

Turn this lever to open the battery cover.

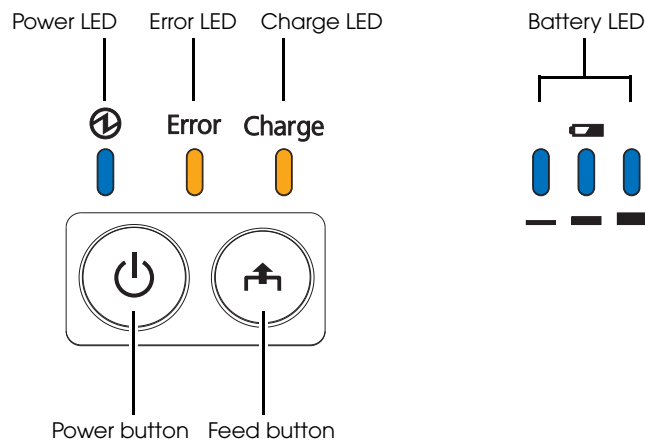
Battery Cover

Open this cover to install or remove the battery.

Belt clip

Use this clip to hang the printer on your belt.

Control Panel



Buttons

Power Button

Press this button to turn the printer on. Press this button for 2 seconds or more to turn the printer off.

CAUTION

- After the power button is pressed, it takes the following time before the printer is initialized. Establishing a wireless communication takes longer than the following.
 - * IEEE802.11a/b/g/n: Approx. 10 sec. after the Power LED comes on.
 - * Bluetooth: Approx. 2 sec. after the Power LED comes on.
- The printer does not operate and the LEDs go out when the battery is not installed in the printer even if the printer is connected to the optional AC adapter.
- To turn the printer on immediately after turning the printer off, press the Power button after the LEDs go off.

Feed button

- When Paper Type Setting is set to Receipt paper (without black mark), pressing this button once feeds paper by one line. Holding this button down feeds paper continuously.
- When Paper Type Setting is set to Receipt paper (with black mark), pressing this button feeds paper to the print starting position on the next black mark.

NOTE

Enabling/disabling of the Feed button can be selected by a command. If the command is set to disable the button, it does not function.

LEDs

Ⓛ Power LED (Blue)

CAUTION

The printer does not operate and the LEDs go out when the battery is not installed in the printer even if the printer is connected to the optional AC adapter.

- Lights when the power is on.
- Goes out when the power is turned off.
- Flashes when the printer is powering-off or while the Feed button is being pressed in the software setting mode. With the Wi-Fi models, it flashes also when the printer is being initialized after the power is turned on.

Error LED (Orange)

- Lights when the printer is offline. (For details about offline, see ["Offline" on page 19.](#))
- Flashes when an error occurs. (For details about the flash codes, see ["Error Status" on page 25.](#))
- Goes out during normal operation (online).

Charge LED (Orange)

- Lights when the battery is being charged.
- Off when the battery is not being charged.
- Flashes when there is abnormality in battery charging.

Battery LED (Blue)

The remaining battery charge is indicated by three LEDs only when the battery is installed in the printer. For details, see ["Operation Mode When Battery is Low" on page 21.](#)

Offline

The printer automatically goes offline and stops printing under the following conditions. Once all of the following conditions are cleared, the printer becomes online and ready to print.

- During power on until the printer is ready
- While roll paper is being fed using the Feed button
- When the roll paper cover is open
- When paper is out
- When an error has occurred
- While waiting for the switch for executing the macro to be on
- While the printer is shutting down
- When the remaining battery charge is at level E
- When the battery malfunction is detected

NOTE

- The Error LED lights during offline. However, it flashes when an error has occurred.
- For details about the battery charge levels and operation modes, see "[Operation Mode When Battery is Low](#)" on page 21.
- You can select whether or not to stop command processing off-line with the customized value. To set the customized value, see "[Software Settings](#)" on page 46.
- The buzzer beeps five times when there is no more paper or an error has occurred. You can disable the buzzer with the memory switches. For details on the memory switch settings, see "[Software Settings](#)" on page 46.

Power Functions

You can customize the printer using the power functions, the auto-power off function and battery charge mode function to save the battery power or minimize the battery deterioration.

Auto-Power Off

The printer automatically turns off once the specified time has elapsed in the idle state. However, when the printer is in the following status, it is not considered as idle state, and the auto-power off function is not applied.

- Printer is off-line
- Remaining battery amount is at S level

NOTE

The auto-power off time is selectable with the customized value. To set the customized value, see ["Software Settings" on page 46](#).

Battery Charge Modes

The printer acts differently when connected to the optional AC adapter depending on the battery charge mode.

The printer has two modes and is initially set to the mode 1.

NOTE

The battery charge mode is selectable with the customized value. To set the customized value, see ["Software Settings" on page 46](#).

Mode 1

Suitable for battery-powered operation.

In Mode 1, battery charging is controlled so that the battery is always fully charged. This maximizes the battery life when using the printer as a portable printer.

Mode 2

Suitable for the printer that is always connected to the AC adapter.

In Mode 2, battery charging is controlled so that the battery is about 80% charged. This reduces the deterioration of the battery.

Operation Mode When Battery is Low

There are two operation modes for the printer when the battery is low. Change the mode depending on the usage status.

Mode 1 (initial setting):

Continues printing until the remaining battery becomes approximately 0%. This is appropriate if you want to maximize the battery operation time. However, the printer may stop during the printing or print quality may decrease when the remaining battery becomes near 0%.

Mode 2:

Stops printing when the remaining battery becomes approximately 10%. This is appropriate if you want to avoid that the printer stops during the printing.

NOTE

- It is recommended to replace or charge the battery when the remaining battery charge goes down to the level S.
- The operation mode when battery is low is selectable with the customized value. To set the customized value, see "[Software Settings](#)" on page 46.
- The buzzer beeps five times when the remaining battery charge goes down to the levels L or S. You can disable the buzzer with the memory switches. To set the memory switches, see "[Software Settings](#)" on page 46.

Mode 1



: On



: Flash



: Off

	Battery LED	Error LED	Remaining battery charge	Printing	Communication
Level H			Approx. 60 ~ 100%	Possible	Possible
Level M			Approx. 20 ~ 60%	Possible	Possible
Level L			Approx. 10 ~ 20%	Possible	Possible
Level S			Approx. below 10%	Possible*	Possible
Level E			Approx. 0%	Impossible	Impossible

* Printing may be interrupted.

Mode 2



	Battery LED	Error LED	Remaining battery charge	Printing	Communication
Level H			Approx. 60 ~ 100%	Possible	Possible
Level M			Approx. 40 ~ 60%	Possible	Possible
Level L			Approx. 20 ~ 40%	Possible	Possible
Level S			Approx. 10 ~ 20%	Possible	Possible
Level E			Approx. below 10%	Impossible	Impossible

Column emulation mode

The printer is equipped with the function to emulate 42 column mode.

If you have replaced a printer that can print at the dot density of 180 dpi on the paper that is 80 mm wide with TM-P80 (Dot density: 203 dpi), when you set the Column emulation mode to 42 column mode, the print results will be similar.

For setting the Column emulation mode, see ["Software Settings" on page 46](#).

For the 42 column of the Printing Specifications, Character Specifications and Printable Area, see ["Product Specifications" on page 91](#).

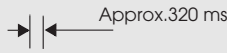


Error Status

When an error occurs, the printer stops printing, goes offline, and the Error LED flashes.

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

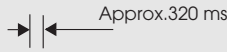

Automatically Recoverable Errors

Printing is temporarily suspended when automatically recoverable errors occur. They can recover automatically, as described below.

Error	Error description	Error LED flash code 	Recovery measure
Paper error	The black mark cannot be detected.		Recovers automatically when the cover is opened.
Temperature error	The temperature of the print head, motor driver IC, or battery is high.		Recovers automatically when the temperature goes down.

Recoverable Error

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

Error	Error description	Error LED flash code 	Recovery measure
Paper layout error	The paper layout differs from the actual paper. Paper jam occurs.		Recovers by sending an error recovery command ("DLE ENQ").

CAUTION

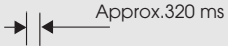
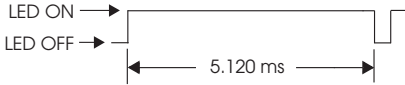





The error recovery command is valid only if a recoverable error (excluding automatically recoverable errors) occurs.

Unrecoverable Errors

Printing is no longer possible when unrecoverable errors occur. If the same error occurs again even after turning the power back on, contact your dealer or a Epson service center.



Immediately turn off the power and remove the battery when unrecoverable errors occur.

Error	Error description	Error LED flash code 
Internal circuit error	Internal circuits are not connected correctly.	
R/W error in memory	After R/W checking, the printer does not work correctly.	
High voltage error	The power supply voltage is high.	
Overload error	The temperature of the print head or battery is extremely high or low.	
CPU execution error	The CPU is executing an incorrect address.	
Wireless communication unit error	Wireless communication does not work correctly or the wireless communication unit is disconnected.	

NV Memory (Non-Volatile Memory)

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

- NV graphics memory
- User NV memory
- Customized values and memory switches
- User-defined page
- Maintenance counter

CAUTION

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

NV Graphics Memory

Graphics, such as shop logos to be printed on receipts, can be stored. Even if communication speed is low, high speed graphic printing is possible.

Use the TM-P80 Utility to register graphics. You can also print and confirm the registered graphics in the TM-P80 Utility or NV graphics print mode.

NOTE

- For detailed information about the TM-P80 Utility, see the TM-P80 Utility User's Manual.
- To use the NV graphics print mode, see ["NV Graphics Print Mode" on page 73](#).

User NV Memory

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

Use ESC/POS commands ("GS (C") to store and read the text data.

NOTE

For detailed information about ESC/POS commands, see the ESC/POS Command Reference (see ["ESC/POS Commands" on page 56](#)).

Customized Values and Memory Switches

With the customized values and memory switches, which are software switches for the printer, you can configure various settings of the printer.

To set the customized values and memory switches, see ["Software Settings" on page 46](#).

User-defined Page

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

Maintenance Counter

With this function, printer information, such as the number of lines fed, and printer operation time after the printer starts working, is automatically stored in NV memory. You can read or reset the information with TM-P80 Utility, the Status API of the APD, or OPOS ADK to use it for periodical checks or part replacement.

NOTE

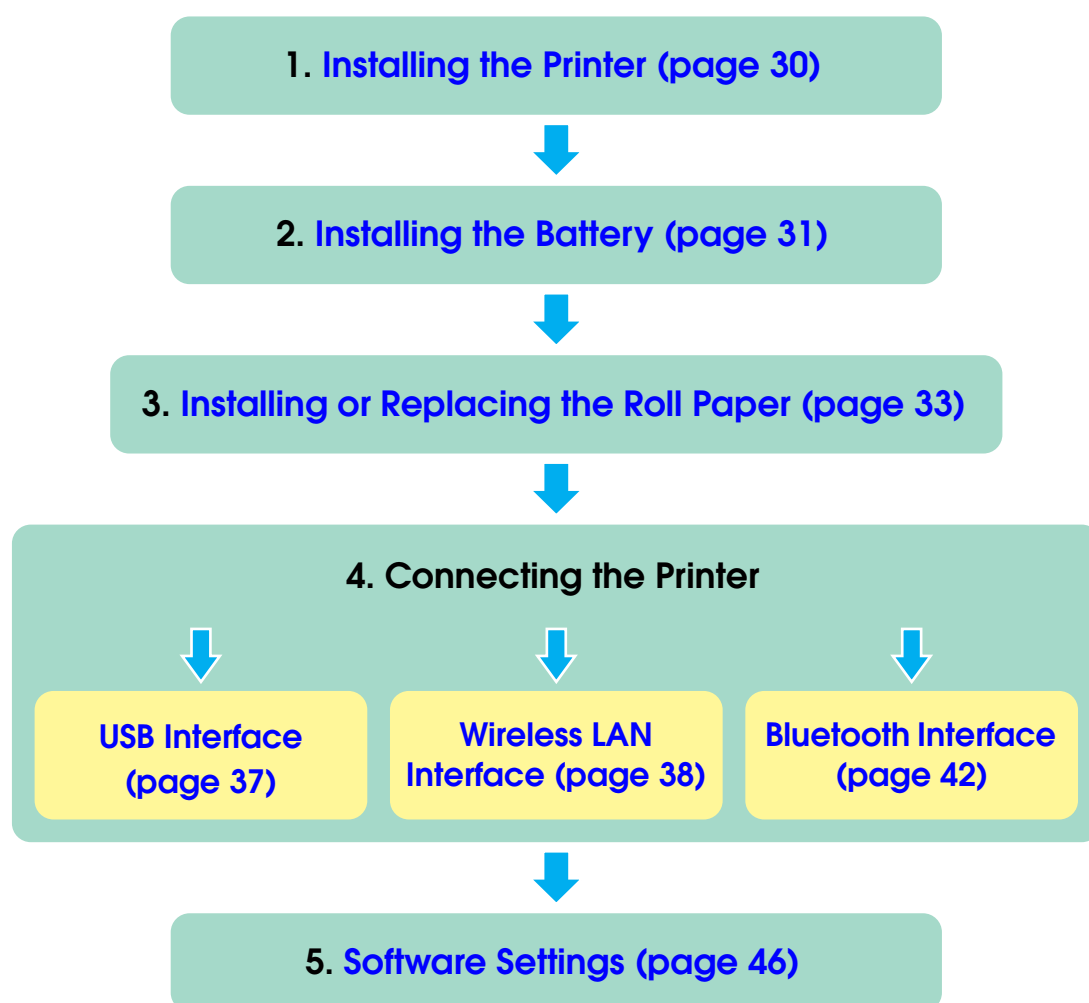
Maintenance counter values are usually saved every two minutes except in the power saving status. However, if the printer power is turned off by removing the battery or using up the battery charge, the latest maintenance counter will not be saved. For detailed information about ESC/POS commands ("GS g 0", "GS g 2"), see the ESC/POS Command Reference (see "[ESC/POS Commands](#)" on page 56).

Setup

This chapter describes setup and installation of the product.

Flow of Setup

This chapter consists of the following sections, along with the setup flow of the product. The TM-P80 has dual interfaces: a built-in USB interface and another interface selected by the customer, wireless LAN or Bluetooth interface. See the corresponding section for the interface you selected.

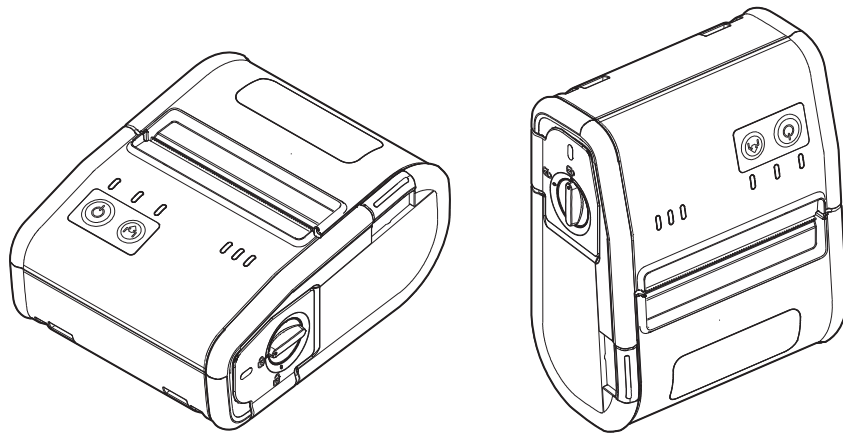


Installing the Printer

You can install the printer horizontally or vertically. You can also carry it using the belt clip on the back of the printer to hang the printer on your belt.

CAUTION

- When you install the printer vertically, only the orientation shown below is available. Do not install the printer upside down.
- When you install the printer horizontally, it is recommended to remove the belt clip. Remove the two screws fixing the clip to remove it.



Notes on Using the Wi-Fi Models

- Keep the printer away from the devices, such as kitchen microwaves, that may cause radio wave interference.
- Use channels that are away from the frequency bands that may cause radio wave interference.
- Place shields between the printer and the devices that may cause radio wave interference.
- Select either 2.4 GHz or 5 GHz, whichever is free from radio wave interference.
- In auto channel setting for the access point, do not select a channel in which the printer may cause radio wave interference.

Installing the Battery

The printer does not operate without a charged battery installed.

Follow the steps below to install the battery.



Be sure to use the battery OT-BY60II.

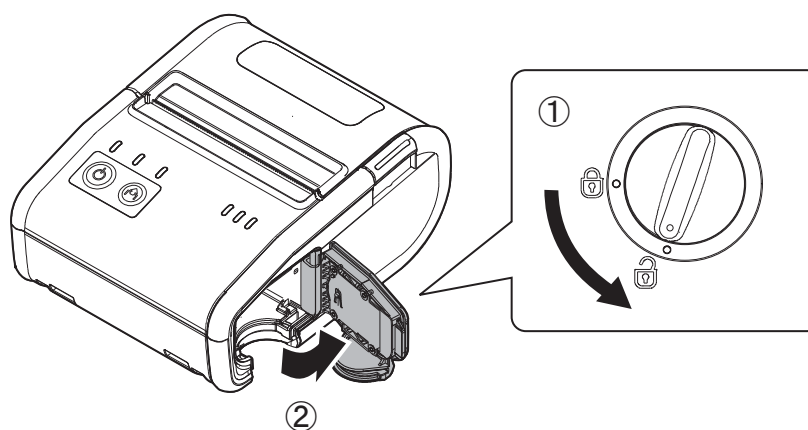
Using a battery other than the one specified may cause fire, explosion, leakage, overheating or other damage.

CAUTION

- When removing or installing the battery, be sure to turn off the power before doing so.
- Dispose of used batteries according to the instructions.

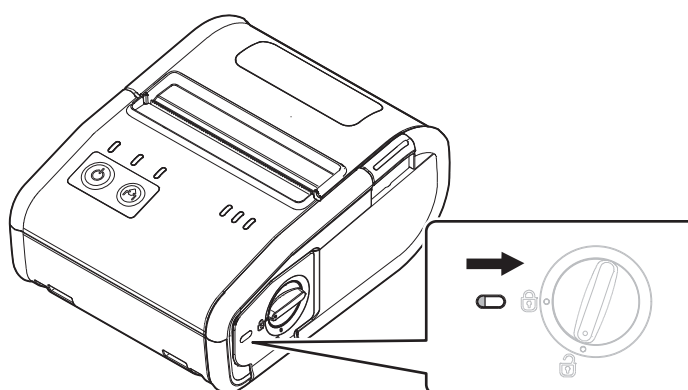
1 Make sure that the printer is turned off.

2 Open the battery cover.

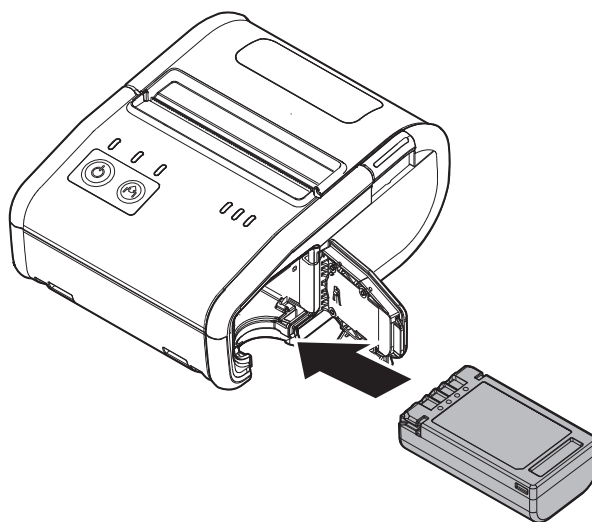


NOTE

When the Battery cover will not open, move the notch in the direction of the arrow by using a tool such as a ballpoint pen.



- 3** Install the battery, and close the battery cover.



NOTE

To charge the battery, see "[Charging Battery](#)" on page 83.

Installing or Replacing the Roll Paper

Follow the steps below to install or replace the roll paper.

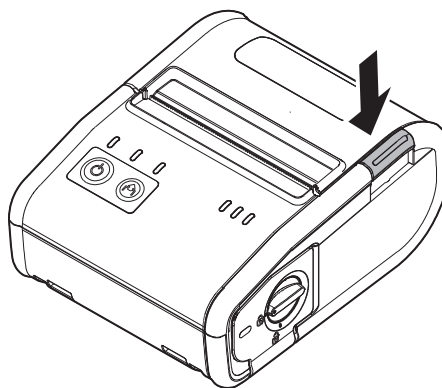
If you hang the printer vertically on a belt using a belt clip on the back of the printer, see "[When Installing the Printer Vertically](#)" on page 34.

CAUTION

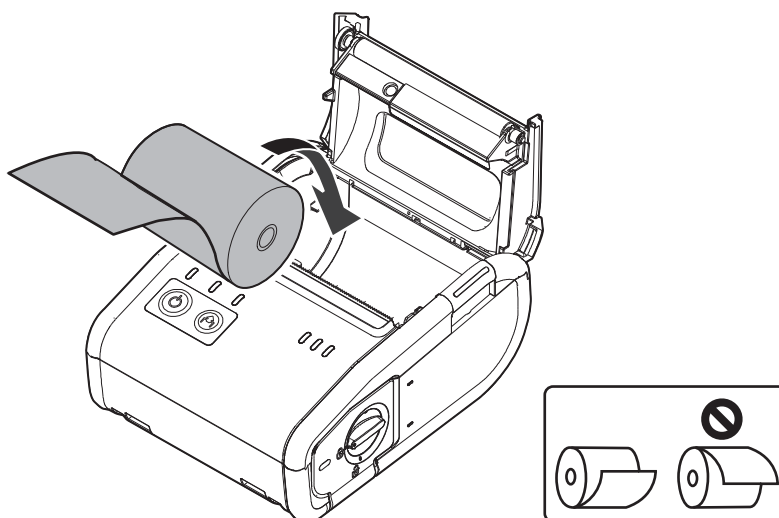
Use paper that meets the printer specifications. For details about paper specifications, see "[Paper Specifications](#)" on page 94.

When Installing the Printer Horizontally

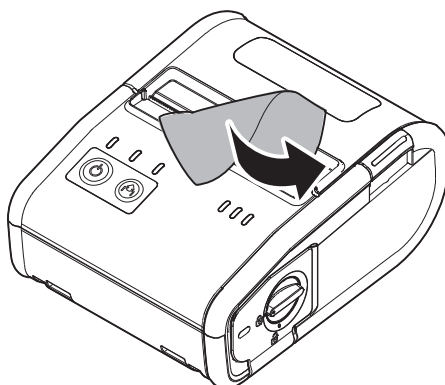
- 1 Press the open button to open the roll paper cover.



- 2 Remove the used roll paper core, if there is one.
- 3 Insert the new roll paper in the correct direction.

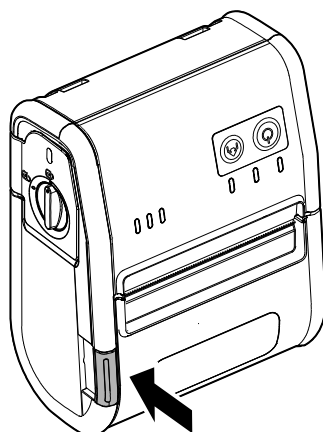


-
- 4** Pull out some paper, close the cover, and tear off the paper.

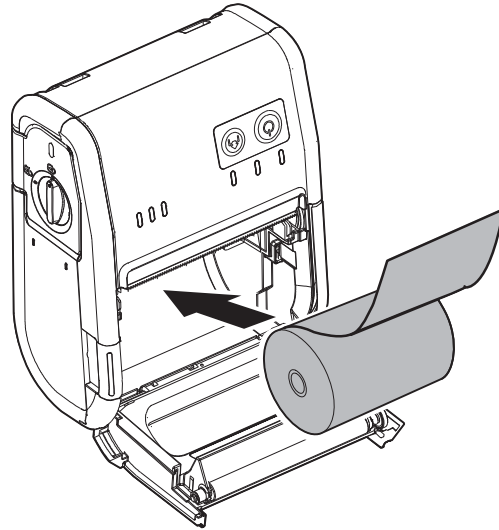


When Installing the Printer Vertically

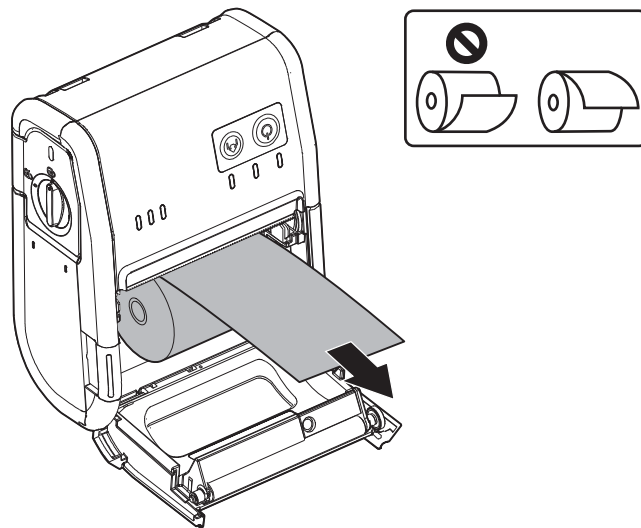
- 1** Press the open button to open the roll paper cover.



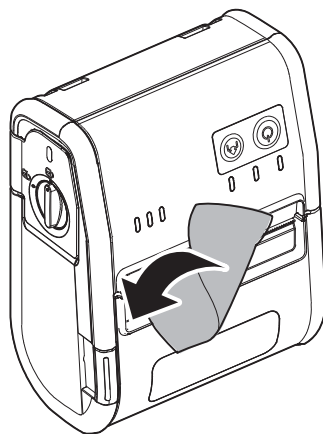
- 2** Remove the used roll paper core, if there is one.
- 3** Set the new roll paper in the correct direction.



- 4** Pull the leading edge of the roll paper.



-
- 5** Pull out some paper, close the cover, and tear off the paper.



Connecting the Printer

CAUTION

- Before connecting the printer, confirm the current interface mode. The printer is initially set to the Automatic selection mode. To change the interface mode, see "[Software Settings](#)" on page 46.
- **Automatic selection:**
When the USB cable is connected with a host PC, the USB interface is preferentially selected. Otherwise, the wireless LAN/Bluetooth interface is selected. Once the interface is selected, the selection is enabled until the power is turned off or the USB cable is disconnected.

USB Interface

When communicating with a host PC via the USB cable, connect the USB cable to the printer, turn on the PC, and then turn on the printer. For Windows, you can change the printer settings with the TM-P80 Utility. For details on the TM-P80 Utility, see "[Software Settings](#)" on page 46.

CAUTION

Do not place any weight or stress on the cable when using. Doing so could damage the cable and connectors.

- 1** Connect the USB cable from the host computer to the USB upstream connector.
- 2** Connect the other end of the interface cable to the host computer.
- 3** Turn on the host computer.
- 4** Turn on the printer.

Wireless LAN Interface

When using the wireless LAN interface, it is recommended to connect the printer to a host PC via the USB cable first and use EpsonNet Config to set wireless LAN settings.

CAUTION

- When you set up the access point at the same time, set the access point in advance and check that it operates correctly.
- Examine the radio wave situation in the surrounding area before use.
- Avoid using the same channel that is used in the neighboring shops where wireless LAN is used.
- When using the printer in environments where kitchen microwaves and other devices that may interfere radio waves are installed, observe the following points.
 - * Keep the printer away from the devices, such as kitchen microwaves, that may cause radio wave interference.
 - * Use channels that are away from the frequency bands that may cause radio wave interference.
 - * Place shields between the printer and the devices that may cause radio wave interference.
 - * Select either 2.4 GHz or 5 GHz, whichever is free from radio wave interference.
 - * In auto channel setting for the access point, do not select a channel in which the devices may cause radio wave interference.
- In the infrastructure mode, W53 and W56 channels are not available to connect to a stealth SSID access point.

NOTE

- For detailed information about EpsonNet Config, see the EpsonNet Config manual (operation guide) or the EpsonNet Config online help.
- When changing the wireless LAN settings in an environment the printer is already connected via the wireless LAN interface, you can set the printer with EpsonNet Config (web version). For detailed information about EpsonNet Config (web version), see ["EpsonNet Config \(Web Version\)" on page 65](#).
- You can check the current wireless LAN settings by printing the dynamic status sheet. To print the dynamic status sheet, see ["Dynamic Status Sheet Print Mode \(Only for Wi-Fi Models\)" on page 81](#).
- The network parameters are initially set as follows:
 - * Communication standard: 802.11b/g/n
 - * Network mode: Infrastructure
 - * SSID: EpsonNet
 - * Security level: WPA-PSK (AES)
 - * Passphrase: EpsonNet
 - * IP Address: 192.168.192.168
 - * Subnet mask: 255.255.255.0
- To initialize the wireless LAN setting, see ["Wireless Communication Setting Initializing Mode" on page 79](#).
- This product equips the power-saving mode that saves the power consumption while connecting via wireless LAN.

If your access point supports the power-saving function and the function is turned on, you can save the power consumption with turning on the power-saving mode of this product.

To make the power saving-mode settings of this product, use the EpsonNet Config (Web version). For more details, see ["EpsonNet Config \(Web Version\)" on page 65](#).

Note that the wireless LAN connection with the access point may be unstable depending on the environment. In that case, turning off this function may improve the connection.

Needs

- TM printer: TM-P80
- Computer for setting: Windows 8/Windows 7/Windows Vista/Windows XP/Windows 2000
- Utility for setting: EpsonNet Config
- USB cable

Installing the EpsonNet Config to the computer used for setting

Download the EpsonNet Config and install it in the computer, following the on-screen instructions. (See the EpsonNet Config manual (operation guide) or the EpsonNet Config online help for information on how to use the EpsonNet Config after you have installed it.)

Acquisition of the setting information

Acquire the following information from the network administrator.

- Network mode
- SSID: This is set for each network of the SSID wireless LAN. Set the same setting as the access point.
- WEP, WPA, WPA-Personal/Enterprise: This is a security setting and a cipher key. Set the same setting as the access point.
- Channel
- IP address
- Subnet mask
- Gateway address

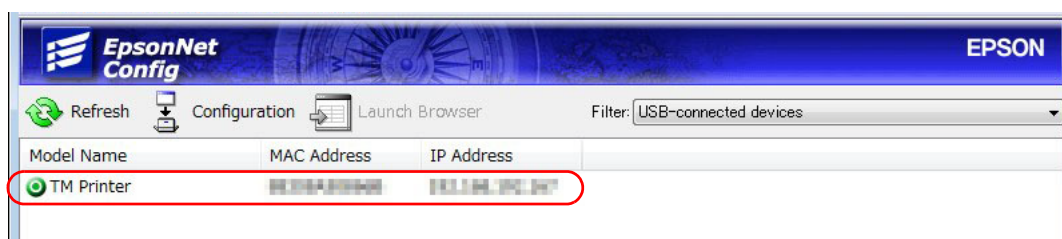
Follow the steps below to connect the printer.

- 1** Connect the printer to a PC via the USB cable.
See "[USB Interface](#)" on page 37.
- 2** Turn on the host computer.
- 3** Turn on the printer.
- 4** Start up the EpsonNet Config.

CAUTION

When the EpsonNet Config is started up, the battery LED (the remaining battery charge is indicated) goes off and the Feed button is disabled.

- 5** Double-click on the printer.



- 6 Configure the (Network) settings and the (TCP/IP) settings.
- 7 Disconnect the USB cable, turn off the printer, and then turn it back on.

CAUTION

To start wireless LAN communication, be sure to disconnect the USB cable, turn off the printer, and then turn it back on.

NOTE

If you need to configure other settings, use EpsonNet Config (web version). For information about EpsonNet Config (web version), see "[Starting EpsonNet Config \(Web Version\)](#)" on page 65.

Confirming the operation

Confirm that the printer is connecting to the network. There are the following methods:

- Confirm using a web browser
- Confirm using EpsonNet Config
- Confirm using the PING command from the command prompt

This section describes how to confirm using a web browser.

- 1 Confirm that the network is running; then start up the computer of the network.
- 2 Start up the web browser and input the printer's IP address in the address bar.
`http://(printer's IP address)/`
- 3 The "EpsonNet Config" window is displayed.
If the "EpsonNet Config" window is not displayed, connect the computer for setting to the printer with the USB cable, then confirm the setting again.

Bluetooth Interface

Use a tool, such as a built-in Bluetooth connection tool of your device to establish the connection with the printer. If your device is a Windows computer, use EPSON™ Bluetooth Connector, which is a utility to easily pair a terminal and the printer.

CAUTION

- If the host computer and the printer are not connected on a continuous basis but rather connected every time the printer starts printing, some time may be needed for the printer to actually start printing after the host computer commands printing. This pause is the time required for processing the connection between the host computer and the printer, and it depends on the conditions of the environment where used.
- If data transfer from an application of the host computer has already been completed, data might remain in the Bluetooth module internal buffer. As such data remaining in the buffer might be lost when the connection is cut off, use the status or similar functions to check that transmitted data has been completely printed before cutting off the wireless connection.

NOTE

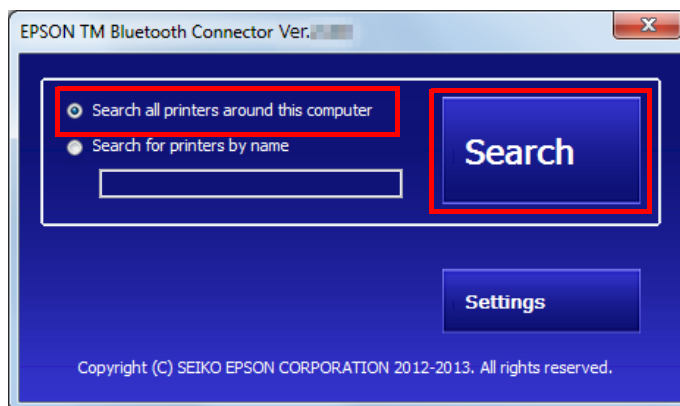
- The device name and passkey are initially set as follows:
 - * Device name: TM-P80_XXXXXX*
 - * XXXXXX refers to the last 6 digits of the serial number labeled on the back of your printer.
 - * Passkey: 0000
- For detailed information about EPSON™ Bluetooth Connector, see the TM Bluetooth Connector User's Manual.
- The device name and passkey are editable with the TM-P80 Utility.

Connecting method

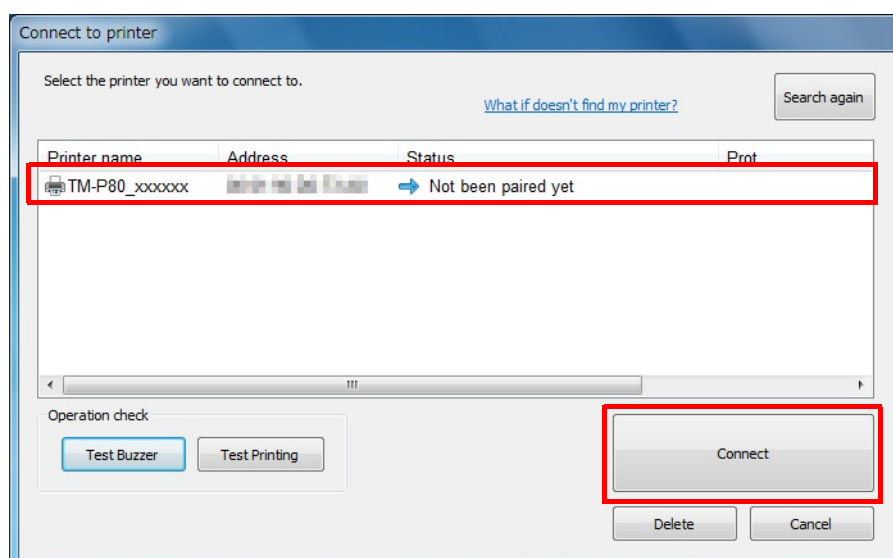
Follow the procedure below and make the settings.

- 1** Have a Bluetooth-compatible computer ready.
Make sure you have installed TM Bluetooth Connector.
- 2** Turn on the printer.
- 3** Start TM Bluetooth Connector.

- 4 Select (Search all printers around this computer), and then click (Search).

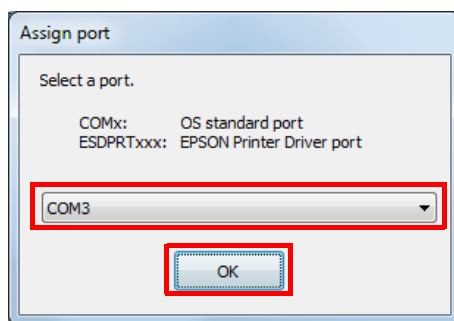


- 5 Select the printer to be paired (→ Not been paired yet), and then click (Connect).



6 If the window to enter a passkey appears, enter a passkey and click (OK).

7 Select the port to be used from the pull-down list, and then click (OK).



Printing method	Port name
APD print queue	ESDPRTxxx (TM-P80: <i>Queue name</i>)
UPOS	ESDPRTxxx (UPOS for TM-P80)
ESC/POS command	Displayed virtual COM port (e.g. COM4)

8 The "Connection complete" window appears. Click (Test Buzzer) or (Test Printing) to check operation.

9 Click (Back to Main screen) to return to the main window.

10 Click the "x" button of TM Bluetooth Connector to exit.

NOTE

- If “Error” is displayed when you click the [Search] on the TM Bluetooth Connector, check whether:
 - The Bluetooth adapter is installed to the computer.
 - Bluetooth is ON in the Windows settings.
- If the device is not displayed on the TM Bluetooth Connector or the TM Bluetooth Connector Status shows “✖” after pairing.
Check whether:
 - The printer is not turned on.
Turn on the printer. Confirm that the battery is properly loaded in the printer.
 - The printer is 10 m or further away from the computer.
 - Confirm that there is no other wireless device, such as a microwave oven and cordless telephone, that can interfere with the Bluetooth printer.
 - If the printer and the computer are placed in different rooms separated by a wall, move the printer and/or the computer in the same room.
 - The printer may not be detected when the search time is short. Try search again with longer search time.
 - While a computer and printer are communicating, the printer cannot be detected by other computers. Confirm that the printer to be detected is not communicating with any computer.

Software Settings

With the customized values and memory switches, which are software settings for this printer, you can set the various functions. For an outline of those functions, see the following section. Use TM-P80 Utility, Software setting mode, or ESC/POS commands (“GS (E”), to set the customized values and memory switches.

		TM-P80 Utility	Software setting mode	ESC/POS commands
Customized values	User NV memory capacity		✓	✓
	NV graphics memory capacity		✓	✓
	Print density	✓	✓	✓
	Print speed	✓	✓	✓
	Interface mode		✓	✓
	Column emulation mode	✓	✓	✓
	Command execution during offline	✓	✓	✓
	Automatic paper reduction	✓	✓	✓
	Automatic power off time	✓	✓	✓
	Battery charge mode	✓		✓
	Operation mode when battery is low	✓		✓
Memory switches	Transmission of status notice	✓	✓	✓
	Buzzer Settings	✓	✓	✓
	Error signal output	✓		✓
	Paper position immediately after specific state function selection	✓	✓	✓
	Paper position immediately after specific state position selection	✓	✓	✓
USB Class		✓	✓	✓
Bluetooth interface		✓		✓

NOTE

- For detailed information about TM-P80 Utility, see the TM-P80 Utility User's Manual.
- For information about how to use the Software setting mode, see ["Software Setting Mode" on page 74](#).
- For detailed information about ESC/POS commands, see the ESC/POS Command Reference (see ["ESC/POS Commands" on page 56](#)).

User NV memory capacity

- 1 KB (initial setting)
- 64 KB
- 128 KB
- 192 KB

NV graphics memory capacity

- None
- 64 KB
- 128 KB
- 192 KB
- 256 KB
- 320 KB
- 384 KB (initial setting)

Print density

Selectable from levels 1 to 13 (70% ~ 130%) (initial setting: level 7)

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

Original Paper Type	Density Level
KT55F20, AF50KS-E	7 (100%)
P35024	8 (105%)
F5041(48), F5041(55)	9 (110%)
KT48F20	10 (115%)
P30023, P31023	12 (125%)

CAUTION

- 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 about how to clean the thermal head, see "[Cleaning the Thermal Head](#)" on page 90.

Print speed

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

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.

Interface mode

Selectable from: automatic selection, fixed to wireless LAN/Bluetooth interface, or fixed to built-in USB.

NOTE

- The TM-P80 has dual interfaces: a built-in USB interface and another interface selected by the customer, wireless LAN or Bluetooth. The tables below describe the modes you can set for the printer to control the dual interfaces.
- **Automatic selection:**
When the USB cable is connected with a host PC, the USB interface is preferentially selected. Otherwise, the wireless LAN/Bluetooth interface is selected. Once the interface is selected, the selection is enabled until the power is turned off or the USB cable is disconnected.

For Wi-Fi models

Interface mode	Wireless LAN	Built-in USB
Automatic selection (initial setting)	Available	Available
Fixed to Wireless LAN	Available	Not available
Fixed to built-in USB	Not available	Available

For Bluetooth models

Interface mode	Bluetooth	Built-in USB
Automatic selection (initial setting)	Available	Available
Fixed to Bluetooth	Available	Not available
Fixed to built-in USB	Not available	Available

Column emulation mode

- 48 column mode (initial setting)
- 42 column mode

NOTE

For detailed information, see ["Printing Specifications" on page 91](#) and ["Character Specifications" on page 93](#).

Command execution during offline

When this function is enabled, you can execute commands that are not related to mechanical operation while the printer is off-line.

- Enabled (initial setting)
- Disabled

Automatic paper reduction

- Extra upper space reduction
 - Disabled (initial setting)
 - Enabled
- Extra lower space reduction
 - Disabled (initial setting)
 - Enabled
- Line space reduction rate
 - Not reduced (initial setting)
 - 25%
 - 50%
 - 75%
- Line feed reduction rate
 - Not reduced (initial setting)
 - 25%
 - 50%
 - 75%
- Barcode height reduction rate
 - Not reduced (initial setting)
 - 25%
 - 50%
 - 75%

CAUTION

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

Automatic power off time

Selectable from 0, 1 to 60 minutes. (initial setting: disabled)

CAUTION

When using the USB interface, the automatic power off function is disabled even if the time is set.

NOTE

- Power off time becomes 0 minutes when it is set to Disable or 20 minutes when it is set to Enable in Software Setting Mode.
- For detailed information, see "[Auto-Power Off](#)" on page 20.

Battery charge mode

- Mode 1 (initial setting)
- Mode 2

NOTE

For detailed information about the battery charge mode, see "[Battery Charge Modes](#)" on page 20.

Operation mode when battery is low

- Mode 1 (initial setting)
- Mode 2

NOTE

For detailed information about the operation mode when battery is low, see "[Operation Mode When Battery is Low](#)" on page 21.

Transmission of Status notice

- Transmits (initial setting)
- Does not transmit

Buzzer settings

- Buzzer sounds for low battery warning
 - Disabled
 - Enabled (initial setting)
- Buzzer sounds for roll paper end warning
 - Disabled
 - Enabled (initial setting)
- Buzzer sounds for error occurrence warnings
 - Disabled
 - Enabled (initial setting)

Error signal output

- Enabled (initial setting)
- Disabled

Paper position immediately after the specific state

Specific state: after the roll paper cover is closed, the printer is reset, or the power is turned on.

- Function Select
 - Enabled
 - Disabled (initial setting)
- Position Select
 - Cut Position
 - Top Position (initial setting)

USB class

- Printer Class
- Vendor Class (initial setting)

Bluetooth interface

- Passkey (initial setting: 0000)
- Device name (initial setting: TM-P80_XXXXXX)



The device name is initially set to TM-P80_XXXXXX.
(XXXXXX refers to the last 6 digits of the serial number labeled on the back of your printer.)

Acceptable Characters

Item	Number of characters	Acceptable Characters
Passkey	4 to 16	30H to 39H, 41H to 46H (Indicates the number from "0" to "9" and "A" to "F" in hexadecimal)
Device Name	1 to 31	20H, 21H, 23H to 7EH (Character code between 20H and 7EH and except for the double quotation mark (""))

Paper Layout Setting

You can make settings for paper type and size in Paper layout setting. Paper type is set to Receipt paper (without black mark) as default.

In case of using the Receipt paper (with black mark), you must select the Receipt paper (with black mark) for paper type.

When the paper layout setting and the actual paper you are using do not match, the following situations may occur.

- When Paper Type Setting is set to Receipt paper (without black mark) and receipt paper (with black mark) is used, the printer detects paper out.
- When Paper Type Setting is set to Receipt paper (with black mark) and receipt paper (without black mark) is used, a paper error occurs.

To make the Paper Layout Setting, there are following options available.

- Setting with the APD
Set the size of the paper that you are using correctly.
- Setting with the OPOS
See the "PTR_DI_SET_PAPERLAYOUT method" of your driver's Application Development Guide for details to make the settings.
- Setting with the ESC/POS command
See the "FS (L <fn=33>" (Paper layout setting) of ESC/POS Command Reference for details to make the settings.
- Setting with the ePOS-Print SDK
See "addLayout" method in ePOS-Print SDK User's Manual.
- Setting with the ePOS-Print API (available only with the Wi-Fi model)
See "addLayout" method in ePOS-Print API User's Manual.

NOTE

- For detailed information about the driver, see ["Printer Drivers" on page 62](#).
- For detailed information about ESC/POS command, see ["ESC/POS Commands" on page 56](#).
- For detailed information about downloading the software and manuals, see ["How to Get Software and Manuals" on page 62](#).



Application Development Information

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

Controlling the Printer

Use a driver, ESC/POS commands, or ePOS-Print to control the printer. ePOS-Print is available only with the Wi-Fi models.

Selecting a Driver

Choose one of the drivers listed in "[Printer Drivers](#)" on page 62, depending on the application operating environment.

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

When you develop a new application

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

NOTE

You can use all functions, including ones not supported by OPOS ADK or APD, by using ESC/POS commands through your driver. Use the DIRECT I/O function of OPOS ADK, the control A command of APD, or Status API to send ESC/POS commands from each driver. (See "[ESC/POS command functions](#)" on page 56.)

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.

The ESC/POS command functions are listed below. For detailed information about ESC/POS commands, see the ESC/POS Command Reference. You can view this guide by accessing the URL described in the How to Get Software and Manuals section with a user ID that has been registered as an account (see ["How to Get Software and Manuals" on page 62](#)).

CAUTION

With the Bluetooth models, after opening the COM port, leave an interval of 300 msec or more before sending data to the COM port.

Example: For Windows, after obtaining a valid handle of CreateFile, leave an interval of 300 msec or more before executing WriteFile.

ESC/POS command functions

Print Position Commands
Horizontal tab
Set absolute print position
Set horizontal tab positions
Select print direction in page mode
Set print area in page mode
Set relative print position
Select justification
Set absolute vertical print position in page mode
Set left margin
Set print area width
Set relative vertical print position in page mode
Mechanism Control Commands
Select cut mode and cut paper

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

Printing Paper Commands
Select label and black mark control function(s)
Paper layout setting
Paper layout information transmission
Transmit the positioning information
Feed paper to the cutting position
Feed paper to the print starting position
Paper layout error special margin setting
Status Commands
Transmit real-time status
Enable/disable Automatic Status Back (ASB)
Transmit status
Enable/disable Automatic Status Back (ASB) related to extended function
Line Spacing Commands
Select default line spacing
Set line spacing
Panel Button Commands
Enable/disable panel buttons
Customize Commands
Delete the specified record
Store the data in the specified record
Transmit the data in the specified record
Transmit capacity of the NV user memory currently being used
Transmit the remaining capacity of the NV user memory
Transmit the key code list of stored record
Delete all data in the NV user memory
Change into the use setting mode
End the user setting mode session
Set the memory switch values
Transmit memory switch values

Set the customized setting values
Transmit the customized setting values
Set the configuration item for the Bluetooth interface
Transmit the configuration item for the Bluetooth interface
Set the configuration item for the USB interface
Transmit the configuration item for the USB interface
Bit-image Commands
Select bit-image mode
Define downloaded bit image
Print downloaded bit image
Transmit the NV graphics memory capacity
Print the graphics data in the print buffer
Transmit the remaining capacity of the NV graphics memory
Transmit the remaining capacity of the download graphics memory
Transmit the key code list for defined NV graphics
Delete all NV graphics data
Delete the specified NV graphics data
Define the NV graphics data (raster format)
Print the specified NV graphics data
Transmit the key code list for defined download graphics
Delete all download graphics data
Delete the specified download graphics data
Define the downloaded graphics data (raster format)
Print the specified download graphics data
Store the graphics data in the print buffer (raster format)
Save the setting values from the work area into the storage area
Load the setting values stored in the storage area to the work area
Select the setting values of the work area after the initialization process
Specify Windows BMP graphics data

Two Dimensions Code Commands
Set up and print the symbol
Barcode Commands
Select print position of HRI characters
Select font for HRI characters
Set barcode height
Set barcode width
Print barcode
Macro Function Commands
Start/end macro definition
Execute macro
Miscellaneous Commands
Send real-time request to printer
Execute power-off sequence
Transmit specified status in real-time
Clear buffer(s)
Buzzer sounds
Select peripheral device
Initialize printer
Select page mode
Select standard mode
Execute test print
Enable/disable real-time command
Specify the process ID response
Select print control mode
Select the print speed
Printable area setting when page mode is selected
Draw line
Draw rectangle
Transmit printer ID

Set horizontal and vertical motion units
Initialize maintenance counter
Transmit maintenance counter
Kanji Commands (only for Traditional Chinese model)
Select print mode(s) for Kanji characters
Select Kanji character mode
Turn underline mode on / off for Kanji characters
Cancel Kanji character mode
Define user-defined Kanji characters
Set Kanji character spacing
Turn quadruple-size mode on / off for Kanji characters

ePOS-Print

ePOS-Print is functionality to control POS printers in a multi-platform environment. Using ePOS-Print, data can be directly printed from personal computers, smart phones, or tablet computers to ePOS-Print supported TM printers. In addition, print images rendered in HTML5 Canvas on Web browsers can be printed.

CAUTION

To use ePOS-Print XML or SDK for JavaScript, set ePOS-Print to Enable in EpsonNet Config (Web Version) beforehand.
For details about EpsonNet Config (Web Version), see "[EpsonNet Config \(Web Version\)](#)" on page 65.

NOTE

For detailed information about ePOS-Print, see the ePOS-Print API User's Manual or ePOS-Print XML User's Manual.

Software and Manuals

The following software and manuals are provided for application development.

How to Get Software and Manuals

You can obtain software and manuals from one of the following URLs.

For customers in North America, go to the following web site and follow the on-screen instructions:

<http://www.epsonexpert.com/>

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

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

Printer Drivers

Software	Manual
EPSON Advanced Printer Driver (APD): In addition to ordinary Windows driver functions, this driver has controls specific to POS, such as controls for paper cut, a cash drawer, or customer display. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	<ul style="list-style-type: none">• APD Install Manual• APD TM/BA/EU Printer Manual• APD Printer Specification• Devmode API/PRINTERINFO Manual• Status API Manual• Sample Program Guide
OPOS ADK: This OCX driver can control POS peripherals using OLE technology* ¹ . Because controlling POS peripherals with original commands is not required on the application side, efficient system development is possible.	<ul style="list-style-type: none">• OPOS Installation Manual• User's Manual• Application Development Guide• UnifiedPOS Retail Peripheral Architecture*²• Sample Program Guide
OPOS ADK for .NET: OPOS ADK for .NET allows you to develop applications that are compatible with Microsoft POS for .NET. When developing applications, use a separate development environment such as Microsoft Visual Studio .NET.	<ul style="list-style-type: none">• OPOS ADK for .NET Installation Guide• UnifiedPOS Retail Peripheral Architecture*²• User's Reference (SetupPOS)• Application Development Guide

Software	Manual
<p>JavaPOS ADK:</p> <p>JavaPOS is the standard specification which defines an architecture and device interface (API) to access various POS devices from a Java based system. Using JavaPOS standard API allows control with Java-based applications of functions inherent to each device. A flexible design with Java language and JavaPOS enables many different types of computer systems, such as stand alone or network configuration, to use a same application. You can use JavaPOS to build applications and drivers independently of platforms. This allows flexible configurations using thin clients to meet the system requirements.</p>	<p>JavaPOS ADK Installation Guide</p>
<p>EPSON™ Virtual Port Driver:</p> <p>This driver is a Serial-USB and Parallel-USB conversion driver to make an EPSON™/BA/EU printer connected via USB accessible from a POS application through virtual COM ports and a virtual LPT port. Without making changes in the POS application that controls devices connected through serial or parallel interfaces, devices connected via USB can be directly controlled with ESC/POS commands.</p>	<p>TM Virtual Port Driver User's Manual</p>

- *1 OLE technology developed by Microsoft divides software into part blocks. The OPOS driver is presupposed to be used with a development environment, such as Visual Basic, unlike ordinary Windows drivers. It is not a driver to be used for printing from commercial applications.
- *2 This guide describes general information on how to control printers using the OPOS ADK (in the chapter "POS Printer" and "Appendix A"). It does not describe Epson's specific functions.

Utilities

CAUTION

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

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

Software	Manual
<p>TM-P80 Utility: Use for checking and setting the following functions:</p> <ul style="list-style-type: none"> • Current settings • Storing logos • Paper reduction • Printing control • Interface • Backup/restore • Operation check 	TM-P80 Utility User's Manual
<p>EpsonNet Config: Use for wireless LAN setting. For Windows and Mac.</p>	EpsonNet Config manual (operation guide) or EpsonNet Config online help
<p>Monitoring Tool: Use to check a list of status for the Epson printers connected to the network. You can also update certificates for multiple printers used for WPA-Enterprise in a batch. Use with Monitoring Tool and TM-P80 Utility to check the status and make settings from the administrator's computer for the printer that is directly connected to the network, or the printer that is connected to the client computer over a network by USB.</p>	Monitoring Tool User's Manual
<p>TM Bluetooth Connector: Use to easily pair a terminal and a printer using Bluetooth.</p>	TM Bluetooth Connector User's Manual
<p>Deployment Tool Use to configure network/Wi-Fi settings and printer/driver settings in a batch via the USB interface. It enables deploying more than one printer/driver efficiently and quickly for initial installation.</p>	Deployment Tool User's Manual

EpsonNet Config (Web Version)

EpsonNet Config (Web version) is a utility to configure the network and other settings on a web browser.

Starting EpsonNet Config (Web Version)

Follow the steps below to start up EpsonNet Config (web version).

- 1** Start up a PC connected to the network.
- 2** Start up the web browser and input the printer's IP address (http:// printer's IP address) in the address bar as shown below.

`http://xxx.xxx.xxx.xxx`

NOTE

- You can check the printer's IP address from the dynamic status sheet or in self-test mode. For details on printing the dynamic status sheet, see "[Dynamic Status Sheet Print Mode \(Only for Wi-Fi Models\)](#)" on page 81. For details on the self-test mode, see "[Self-test Mode](#)" on page 71.
- In the initial setting, the user name and password will be required on the authentication screen when you access EpsonNet Config (web version) from a browser. Enter "epson" for both user name and password. You can change the password in [Password] in the Optional configuration menu.

EpsonNet Config starts.

The screenshot displays the EpsonNet Config web interface. The top navigation bar includes 'Home', 'Help', and 'About' links, along with the 'EPSON' logo. The left sidebar contains a menu with sections: 'Information' (Basic Information, TCP/IP, SNMP, Bonjour, Time Server, Timeout, ePOS-Print), 'Configuration' (Network, Wireless, Security, SSL/TLS, Authentication, Certificate List, Certificate Import, TCP/IP, SNMP, Bonjour, Time Server, Timeout, ePOS-Print), and 'Optional' (Administrator Information, Reset, Password). The main content area is titled 'Information - Network' and shows 'Basic Information' for the network. The data is presented in a table format:

Administrator Name	
Location	
Interface Card Model Name	IF_WiFi0
MAC Address	88:00:01:53:00:4B
Hardware Version	04.00
Software Version	01.00
Model Name	TM-P80
Communication Standard	802.11b/g/n
Network Mode	Infrastructure
SSID	EPSON_CASUAL
Channel	8
Transmission Rate	72.0Mbps
Access Point MAC Address	88:00:01:53:00:4B
Signal Condition	Excellent
Printer Status	Online

A 'Refresh' button is located at the bottom of the table.

Settings

Select from the menu list on the left to check or configure the settings.

CAUTION

Enable the time server when using a certificate. Otherwise, the printer's Stored Date/Time may not be set correctly and the wireless LAN may be unavailable. If this happens, enable the time server, or initialize the Stored Date/Time from one of the following:

- EpsonNet Config
- EpsonNet Config (Web Version)
- Wireless Communication Setting Initializing Mode

You can check the printer's Stored Date/Time from the dynamic status sheet.

Information menu

You can check the settings as shown in the table below.

Menu		Settings
Basic Information		Administrator Name, Location, interface Card Model Name, MAC Address, Hardware Version, Software Version, Model Name, Communication Standard, Network Mode, SSID, Channel, Transmission Rate, Access Point MAC Address, Signal Condition, Printer Status
TCP/IP	IPv4 Address	IP Address Settings (Acquiring the IP Address, IP Address, Subnet Mask, Default Gateway) Set Using Automatic Private IP Addressing (APIPA)
	DNS/DDNS	DNS Server Addresses (IPv4) Settings (Acquire DNS Server Address Automatically, DNS Server Addresses) Domain Name Setting (Acquire Domain Name Automatically, Fully Qualified Domain Name, Register the Network Interface's Address to DNS Server)
SNMP		Community (Read Only) IP Trap (Trap1/2, Address, Community)
Bonjour		Bonjour (Disable/Enable) Bonjour Name, Bonjour Printer Name, Location
Time Setting		Use Time Server Time Server Address, Update Interval, Time Server Status
Timeout		Print (LPR, RAW (Port9100))
ePOS-Print		Version, ePOS-Print (Disable/Enable), Device ID

Configuration menu

You can configure the settings as shown in the table below.

Menu		Settings
Wireless		Wireless Settings (Communication Standard, Network Mode, SSID, Channel, Encryption Type) WPA Pre-Shared Key, Default WEP Key, WEP Key 1/2/3/4, Authentication Algorithm Power Save Note: Characters you can use for the User ID/Password when using WPA-Enterprise are as follows: - Character code: ASCII character (20H to 7EH) - Maximum number of characters: 128
Security	SSL/TLS	Server Certificate, Encryption Strength, Automatic Redirect HTTP to HTTPS
Authentication	Certificate List	Self-Signed Certificate (Status, Subject) CA-Signed Certificate 1~3 (Status, Subject) CA Certificate 1~10 (Status, Subject)
	Certificate Import	Certificate Import (File Type, File Name, Password) Note: Characters you can use for the Password section are as follows: - Character code: ASCII character (20H to 7EH) - Maximum number of characters: 64
TCP/IP	IPv4 Address	IP Address Settings (Acquiring the IP Address, IP Address, Subnet Mask, Default Gateway) Set Using Automatic Private IP Addressing (APIPA)
	DNS/DDNS	DNS Server Addresses (IPv4) Settings (Acquire DNS Server Address Automatically, DNS Server Addresses) Host Name and Domain Name Setting (Acquire Host Name and Domain Name Automatically, Host Name, Domain Name, Register the Network Interface's Address to DNS Server)
SNMP		Community (Read Only) IP Trap (Trap1/2, Address, Community)
Bonjour		Bonjour (Disable/Enable) Bonjour Name, Bonjour Printer Name, Location
Time Setting		Use Time Server Time Server Address, Update Interval
Timeout		Print (LPR, RAW (Port9100))
ePOS-Print		Version, ePOS-Print (Disable/Enable), Device ID

NOTE

You can also select the following functions from the optional configuration menu.

- **Administrator Information:** Use to register administrator name and the printer location.
- **Reset:** Use to reset the interface card or restore the default settings.
- **Password:** Use to change the password.

Certificate Import

CAUTION

Enable the time server when using a certificate.

Make the following settings in the Authentication - Certificate Import menu.

- 1** Set the file type of certificate.
- 2** Specify the certificate file to import.
- 3** If the file type of certificate is PKCS#12, enter the password.
- 4** Click (Import).

Setting/Checking Modes

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

- Self-test mode: [page 71](#)
- Hexadecimal dumping mode: [page 72](#)
- NV graphics print mode: [page 73](#)
- Software setting mode: [page 74](#)
- Wireless communication setting initializing mode: [page 79](#)
- Radio field intensity check mode (only for Wi-Fi models): [page 80](#)
- Dynamic status sheet print mode (only for Wi-Fi models): [page 81](#)

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.


- ROM version
- Interface type
- Interface setting
- Built-in character sets
- Maintenance information (Print head running length)

Starting the status print and test print

Follow the steps below to start a status print and test print on the roll paper.

- 1** Install the roll paper.
- 2** Close the roll paper cover.
- 3** While pressing the Feed 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 roll paper.

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

```
"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection      : 1 second or more"
```

- 4** To start the test print, press the Feed button less than 1 second.
The printer prints a rolling pattern on the roll paper, using only the built-in character set.

NOTE

If you select the mode selection, see ["NV Graphics Print Mode" on page 73](#), ["Software Setting Mode" on page 74](#), ["Wireless Communication Setting Initializing Mode" on page 79](#), or ["Radio Field Intensity Check Mode \(Only For Wi-Fi Models\)" on page 80](#).

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

```
"*** completed***"
```

Hexadecimal Dumping Mode

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

Starting the hexadecimal dumping mode

Follow the steps below to run this mode.

CAUTION

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

- 1** Install the roll paper.
- 2** With the roll paper cover open, while pressing the Feed button, turn on the printer.
- 3** Close the roll paper cover.
The printer starts printing data received from then on in hexadecimal numbers and their corresponding characters.

Printing example:

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

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

*** Completed ***
```

Turn off the printer or press the Feed button 3 times to return to the normal mode.

NV Graphics Print Mode

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

- Capacity of the NV graphics
- Unused capacity of the NV graphics
- Key code, number of dots in X direction, number of dots in Y direction
- Used amount of the NV graphics
- Number of NV graphics that are registered
- NV graphics data


NOTE

For detailed information about NV graphics, see ["NV Graphics Memory" on page 27](#).

Starting the NV graphics print mode

Follow the steps below to run this mode.

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

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

```
"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection      : 1 second or more"
```

- 4** Press the Feed button. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions.
- 5** After the printing has been completed, press the Feed button.
- 6** Press the Feed button again. (Keep pressing the button until the printer starts printing.)
The printer starts printing the NV graphics information.

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

Software Setting Mode

In the software setting mode, you can set the following customized values and memory switches which are software switches of this printer.

- Print density
- Interface mode
- Print speed
- Command execution during offline
- Buzzer Settings
- Paper position immediately after the specific state
- Automatic paper reduction
- USB class
- NV graphics memory capacity
- Transmission of status notice
- Automatic power off time
- Column emulation settings


NOTE

For detailed information about customized values and memory switches, see "[Software Settings](#)" on page 46.

Starting the memory switch setting mode

Follow the steps below to run this mode.

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

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

"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection : 1 second or more"

- 4** Press the Feed button. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions.
- 5** After the printing has been completed, press the Feed button 2 times.
- 6** Press the Feed button again. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions. Follow them.

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

Setting the memory switch

Follow the steps below to run this mode.

Enter the memory switch setting mode.

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

Select the setting item

Select the setting item by the number of times the Feed button is pressed as follows.
When the Feed button is not pressed (0 times) or it is pressed more than 13 times, this mode finishes.

- | | |
|---|--|
| <input type="checkbox"/> 1: Print Current Settings | <input type="checkbox"/> 8: Command Execution (Offline) |
| <input type="checkbox"/> 2: Print Density | <input type="checkbox"/> 9: Transmission of status information |
| <input type="checkbox"/> 3: Automatic Paper Reduction | <input type="checkbox"/> 10: Buzzer sounds |
| <input type="checkbox"/> 4: Interface Selection | <input type="checkbox"/> 11: Auto power off |
| <input type="checkbox"/> 5: USB Interface Settings | <input type="checkbox"/> 12: Paper Position at Power On |
| <input type="checkbox"/> 6: Printing Speed | <input type="checkbox"/> 13: Column Emulation |
| <input type="checkbox"/> 7: NV Capacity | |

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

Set the conditions

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

- | | |
|--|---|
| <input type="checkbox"/> Print Current Settings | <input type="checkbox"/> Command Execution (page 77) |
| <input type="checkbox"/> Print Density (page 76) | <input type="checkbox"/> Transmission of status information (page 77) |
| <input type="checkbox"/> Automatic Paper Reduction (page 76) | <input type="checkbox"/> Buzzer sounds (page 78) |
| <input type="checkbox"/> Interface Selection (page 76) | <input type="checkbox"/> Auto power off (page 78) |
| <input type="checkbox"/> USB Interface Settings (page 76) | <input type="checkbox"/> Paper Position at Power On (page 78) |
| <input type="checkbox"/> Printing Speed (page 77) | <input type="checkbox"/> Column Emulation (page 78) |
| <input type="checkbox"/> NV Capacity (page 77) | |

Finish the memory switch setting mode

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

Setting conditions

- Print Density

Number of times to press the Feed button	Settings
0	No change
1	Monochrome

- Automatic Paper Reduction

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

- Interface Selection

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

- USB Interface Settings

Number of times to press the Feed button	Settings
0	No change
1	Class
2	IEEE1284 Device ID

- **Printing Speed**

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

- **NV Capacity**

Number of times to press the Feed button	Settings
0	No change
1	User NV Memory
2	NV Graphics Memory

- **Command Execution (Offline)**

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

- **Transmission of status information**

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

- Buzzer sounds

Number of times to press the Feed button	Settings
0	No change
1	Low battery warning
2	Roll paper end warning
3	Error occurrence warning

- Auto power off

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

- Paper Position at Power On

The content of the settings is the same as the following:

["Paper position immediately after the specific state" on page 51](#)

Number of times to press the Feed button	Settings
0	No change
1	Function Select
2	Position Select

- Column Emulation

Number of times to press the Feed button	Settings
0	No change
1	48 Column mode
2	42 Column Mode

Wireless Communication Setting Initializing Mode

You can initialize the wireless communication settings by running this mode.

When you run this mode with a Wi-Fi model connecting with the wireless LAN interface, the wireless LAN setting will be initialized.


When you run this mode with a Bluetooth model connecting with the Bluetooth interface, the Bluetooth setting will be initialized.

When you run this mode with a Wi-Fi/Bluetooth model connecting with the USB interface, nothing will be initialized.

Starting the wireless communication setting initializing mode

Follow the steps below to run this mode.

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

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

“Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection : 1 second or more”

- 4** Press the Feed button. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions.
- 5** After the printing has been completed, press the Feed button 4 times.
- 6** Press the Feed button again. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions. Follow them.

Radio Field Intensity Check Mode (Only For Wi-Fi Models)


In the radio field intensity check mode, the printer prints information about the wireless LAN intensity.

Starting the field intensity check mode

Follow the steps below to run this mode.

- 1** Install the roll paper.
- 2** Close the roll paper cover.
- 3** While pressing the Feed button, turn the power on. (Keep pressing the button until the printer starts printing.)

The printer starts printing the current status of the printer.

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

"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection : 1 second or more"

- 4** Press the Feed button. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions.
- 5** After the printing has been completed, press the Feed button 3 times.
- 6** Press the Feed button again. (Keep pressing the button until the printer starts printing.)
The printer starts printing instructions.
- 7** Keep pressing the Feed button until the buzzer beeps once (approximately one second).

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

Dynamic Status Sheet Print Mode (Only for Wi-Fi Models)

In the dynamic status sheet print mode, the printer prints the dynamic status sheet indicating the wireless LAN settings.

Starting the dynamic status sheet print mode

Follow the steps below to run this mode.

CAUTION

Do not run this mode while communicating with the wireless LAN interface. Otherwise, printing might not be performed normally.

- 1 Install the roll paper.
- 2 Open the roll paper cover.
- 3 With the roll paper cover open, keep pressing the Feed button until the buzzer sounds.
- 4 Close the roll paper cover.
The printer starts printing the dynamic status sheet.
- 5 Confirm that "Link Status" value is "Connect" and that "TCP/IP Status" is properly set.

```

*** Dynamic Status Sheet ***
MAC Address      :**-**-**-**-**-**
:
:
Wireless Status
SSID :EpsonSSID
Network Mode    :Infrastructure
Link Status     :Connect
Channel        :5
Transmission Rate:48Mbps
Access Point    :**-**-**-**-**-**
Signal Level    :-48dBm

TCP/IP Status
IP Address:     :192.168.10.10
Subnet Mask    :255.255.255.0
Default Gateway :192.169.10.2
  
```

After printing, the printer returns to the normal mode.



Handling

This chapter describes basic handling of the printer.

Charging Battery

Follow the steps below to charge the battery. You can charge the battery using the printer itself with the optional AC adapter (PS-11) or using the optional multi-charger (OT-CH60II).



Be sure to use the battery OT-BY60II.

Using a battery other than the one specified may cause fire, explosion, leakage, overheating or other damage.



- The battery can be charged only when the temperature is 0 ~ 40°C {32 ~ 104°F}.
- Dispose of used batteries according to the instructions.
- Do not remove the battery during charging.



- Fully charging a battery that is fully discharged while the printer is turned off will take approximately 2.5 hours.
- Charging the battery at 35°C {95°F} or higher may require a longer charging time than the specified one.
- You can use the printer during the battery charging.
- For information on the optional AC adapter (PS-11), see its User's Manual.
- For information on the optional multi-charger (OT-CH60II), see its User's Manual.

Using the optional AC adapter (PS-11)

- 1** Install the battery.
See "[Installing the Battery](#)" on page 31.
- 2** Connect the optional AC adapter to the connector for the AC adapter.
Charging starts. The Charge LED turns on while charging the battery.

Battery's charging status

Make sure you charge the battery in an environment with a temperature of 0 to 40°C.

Battery charging stops if it is charged in an environment outside the temperature range allowed for charging.

The charging status of the battery is notified by the combination of three LED lights on the Control Panel.



Environment temperature	When the power is ON			When the power is OFF		
	Power LED	Error LED	Charge LED	Power LED	Error LED	Charge LED
55°C and higher						
41 to 54°C				Outside the temperature range allowed for charging		
0 to 40°C						
Below 0°C						











NOTE

When the battery is charged in an environment with a temperature of over 35°C, the printer detects an increase in temperature, and automatically stops/resumes the printer; this may extend the charging time.

Battery malfunction

If the battery has been charged for about five hours but cannot be fully charged, it is considered as a malfunction, and Charge LED flashes. If this happens, you cannot use the same battery pack again. Replace with another battery pack.

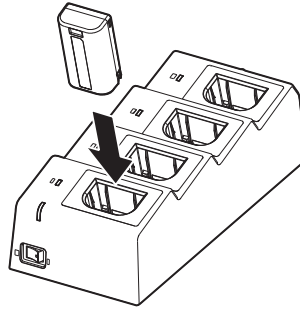


Condition	When the power is ON			When the power is OFF		
	Power LED	Error LED	Charge LED	Power LED	Error LED	Charge LED
Battery malfunction						 *
Outside the temperature range allowed for charging						

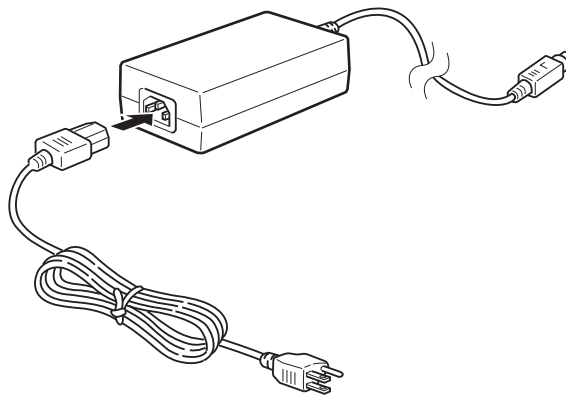
- * When Charge LED is flashing while the power is off, it indicates one of the two possible conditions: battery malfunction or outside the temperature range allowed for charging. To distinguish battery malfunction, turn the power on, set the roll paper, and check the Error LED and Charge LED while the roll paper cover is closed.

When using the optional battery charger (OT-CH60II)

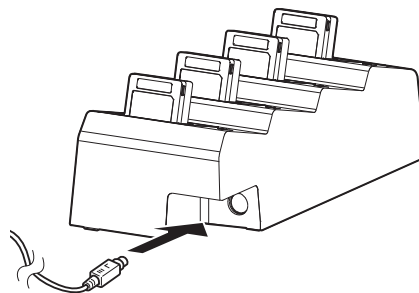
- 1 Firmly insert the battery pack into the battery holder.




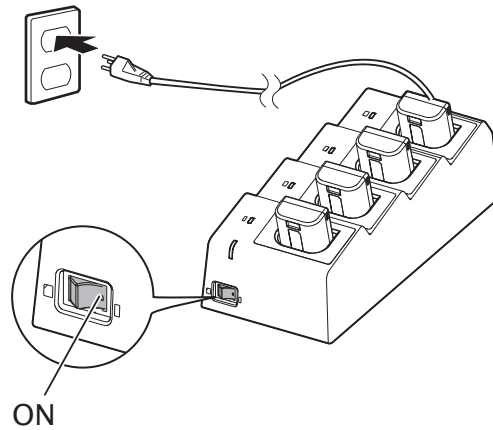
- 2 Securely insert the AC cable in to AC adapter's inlet. Make sure you use the AC adapter and cable that came with OT-CH60II.



- 3 Securely insert the DC cable into the power connector of the charger.




- 4** Insert the power plug into the outlet and turn the power ON. The  (Power) LED (green) is lit. In a few seconds, Charge LED (orange) is lit, and charging starts.



- 5** Once charging is complete, Charge LED (orange) turns off.

NOTE

- When turning on/off the power switch, make sure that the AC adapter's power plug is connected to the outlet.
- When you turn the power off and then on, make sure that the  (Power) LED is turned off.
- When you are not using the charger for a long period of time, remove the battery pack from the battery holder.

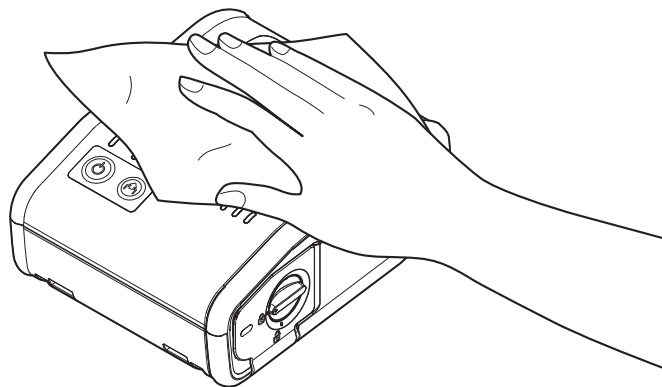
Cleaning the Printer

Cleaning the Printer Case

Be sure to unplug the AC cable from the wall socket, remove the battery, 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.



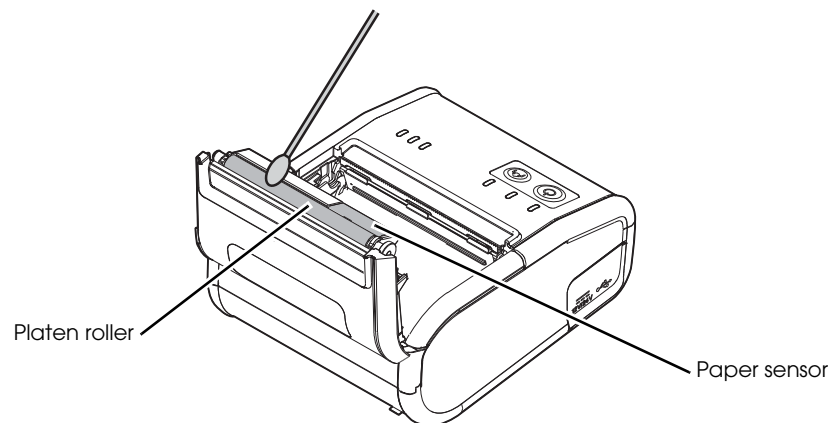
Cleaning the Platen Roller/Paper Sensor

When paper dust accumulates on the platen rollers or the paper sensor, follow the steps below to clean them. To maintain good functional capabilities, clean them regularly (every 6 months).



Do not use an alcohol-based solvent. Use of an alcohol-based solvent might cause the adhesive agent to partially dissolve making its removal even more difficult.

- 1** Turn off the printer, open the roll paper cover.
- 2** Clean the platen roller and the paper sensor with a cotton swab lightly moistened with water.



- 3** Close the roll paper cover after the water has dried.

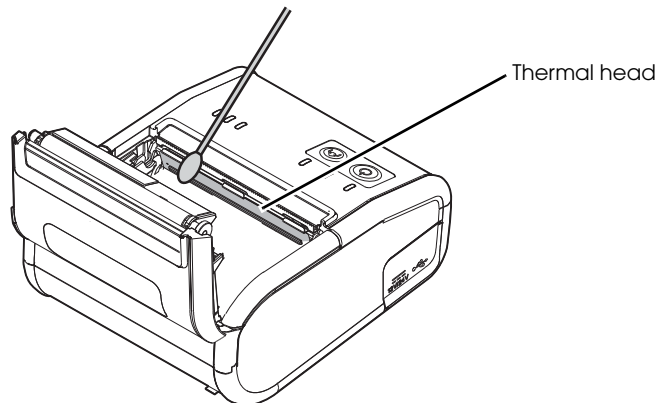
Cleaning the Thermal Head

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



After printing, the thermal head can be very hot. Be careful not to touch it and to let it cool before you clean it. Do not damage the thermal head by touching it with your fingers or any hard object. Do not use water. Use an alcohol-based solvent only.

- 1** Turn off the printer, open the roll paper cover.
- 2** Clean the thermal elements of the thermal head with a cotton swab moistened with an alcohol solvent (ethanol or IPA).



- 3** Close the roll paper cover.

Appendix

Product Specifications

Printing Specifications

Printing method		Thermal line printing	
Dot density		203 × 203 dpi	
Printing direction		Unidirectional with friction feed	
Maximum print speed* ¹		100 mm/s {3.94"/s}	
Printing width	48 column mode (initial setting)	72 mm {2.83"}, 576 dots	
	42 column mode	68.3 mm {2.69"}, 546 dots	
Characters per line	48 column mode (initial setting)	Font A	48
		Font B	64
		Kanji font* ²	24
	42 column mode	Font A	42
		Font B	60
		Kanji font* ²	21
Character spacing	48 column mode (initial setting)	Font A	0.25 mm {0.01"} (2 dots)
		Font B	0.25 mm {0.01"} (2 dots)
		Kanji font* ²	0.25 mm {0.01"} (2 dots)
	42 column mode	Font A	0.38 mm {0.01"} (3 dots)
		Font B	0.25 mm {0.01"} (2 dots)
		Kanji font* ²	0.50 mm {0.02"} (4 dots)
Paper feed speed		100 mm/s {3.94"/s} (when feeding with the Feed button)	
Line spacing* ³		3.75 mm {0.15"} (4 dots)	

dpi: dots per inch

*1 The printing speed listed above are the values when using a new battery fully charged, the print density is 100%, and at normal temperature. The printing speed changes automatically depending on the remaining battery, the head temperature, and the number of print dots.

*2 Only for Traditional Chinese Model.

*3 Initial setting. Programmable by commands (“ESC 3”).

CAUTION

- The maximum printing speed listed above may not be achieved depending on the type of interface, the data transmission speed, and the combination of control commands. Especially, the printing speed may change automatically depending on the communication environment if using a wireless interface.
- If the data transmission speed is slower than the maximum printing speed, or depending on the battery depletion and deterioration conditions and environment temperature, the printing speed may fluctuate, and the print result may become shaded and/or dot displacement in paper feeding may occur.
- If the data transmission speed is slow, intermittent printing may occur and white lines may be formed when printing graphics. To avoid this, keep the print speed constant by setting it lower. The print speed can be set with the customized value. To set the customized value, see ["Software Settings" on page 46](#).

Character Specifications

Number of characters				Alphanumeric characters: 95 Extended graphics: 128 × 43 pages (including user-defined page) International characters: 18 sets Traditional Chinese ^{*1} : Big5 13,535
Character structure	48 column mode (initial setting)	Font A		12 × 24
		Font B		9 × 17
		Kanji font ^{*1}		24 × 24
	42 column mode	Font A ^{*2}		13 × 24
		Font B		9 × 17
		Kanji font ^{*1}		26 × 24
Character size ^{*3} (Standard/ Double-height/ Double-width)	48 column mode (initial setting)	W × H	Font A	1.25 × 3.0 mm/1.25 × 6.0 mm/2.5 × 3.0 mm
			Font B	0.88 × 2.13 mm/0.88 × 4.25 mm/1.75 × 2.13 mm
			Kanji font ^{*1}	3.0 × 3.0 mm/3.0 × 6.0 mm/6.0 × 3.0 mm
		cpl	Font A	48/48/24
			Font B	64/64/32
			Kanji font ^{*1}	24/24/12
	42 column mode	W × H	Font A	1.25 × 3.0 mm/1.25 × 6.0 mm/2.5 × 3.0 mm
			Font B	0.88 × 2.13 mm/0.88 × 4.25 mm/1.75 × 2.13 mm
			Kanji font ^{*1}	3.0 × 3.0 mm/ 3.0 × 6.0 mm/ 6.0 × 3.0 mm
		cpl	Font A	42/42/21
			Font B	60/60/30
			Kanji font ^{*1}	21/21/10

*1 Only for Traditional Chinese Model.

*2 13 × 24 font is a font with a 1-dot horizontal space added to Font A of the normal mode. Therefore, the character size is the same as Font A of the normal mode and the space between characters increases by 1 dot. When printing graphics characters, there is 1-dot space between characters.

*3 Space between characters is not included.

cpl: Characters per line

Paper Specifications

Type	Thermal paper: Receipt paper (without black mark) Receipt paper (with black mark)	
Form	Roll paper	
Size	Width	79.5 ± 0.5 mm {3.13 ± 0.02"}
	Outside diameter	51.0 mm {2.01"} maximum
	Roll width when taken up	80.0 + 0.5/- 1.0 mm {3.15 + 0.02/- 0.04"}
	Roll paper core	Outside diameter: 18.0 mm {0.71"} or more Width: Same as the paper width or less than the paper width by 1 mm {0.04"}

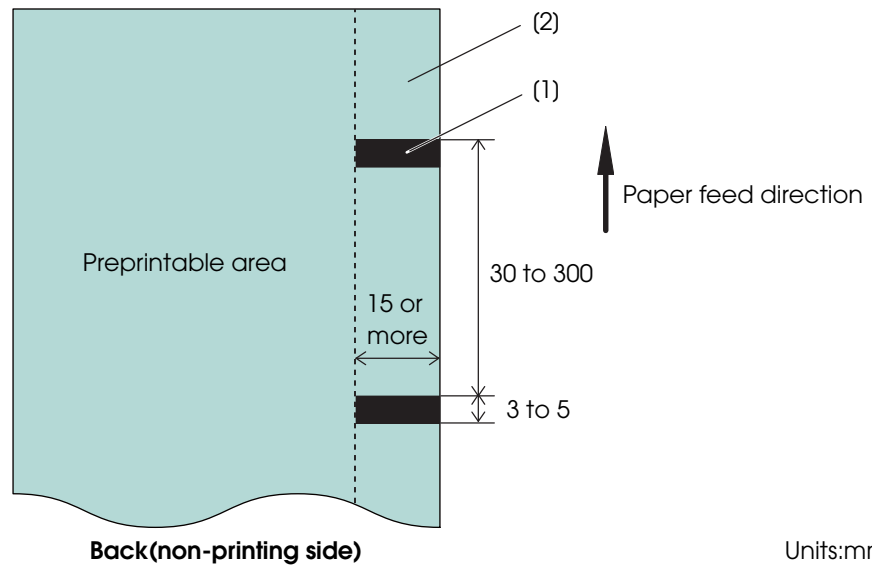
Specified original paper type

Paper type no.	Manufacturer
P30023, P31023, P35024	Kanzaki Specialty Papers
KT55F20, KT48F20	Koehler
AF50KS-E	Jujo Thermaloy
F5041(48), F5041(55)	Mitsubishi HiTec

CAUTION

- For the winding direction of a thermal roll, the chromogenic side must face outside.
- Paper must not be pasted to the roll paper core.
- For the best print quality for each paper type, it is recommended to set the print density. The print density can be set with the customized value. To set customized value, See ["Software Settings" on page 46](#).

Requirement for black mark printing



The allowable relation between the reflecting rate in the black mark portion (1) and the non black mark portion (2) must be as shown in the below:

Black mark portion (1): 16% or less

Non black mark portion (2): 85% or more

NOTE

The reflecting rate means the value which is measured with a Macbeth density meter (PCMI) D filter.

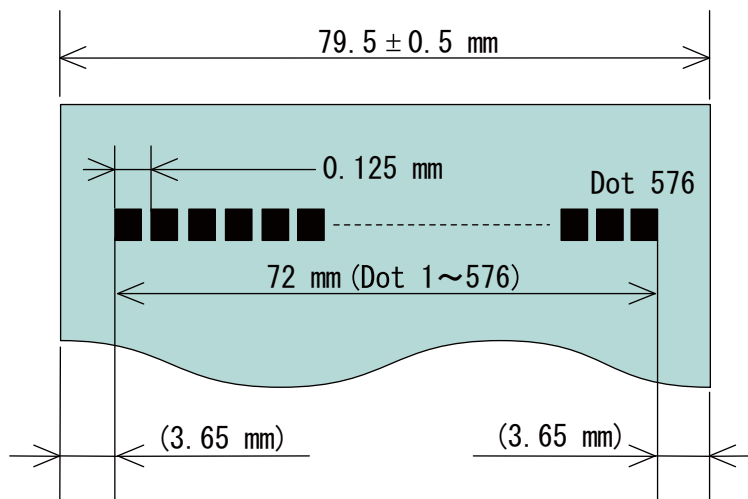
Printable Area

CAUTION

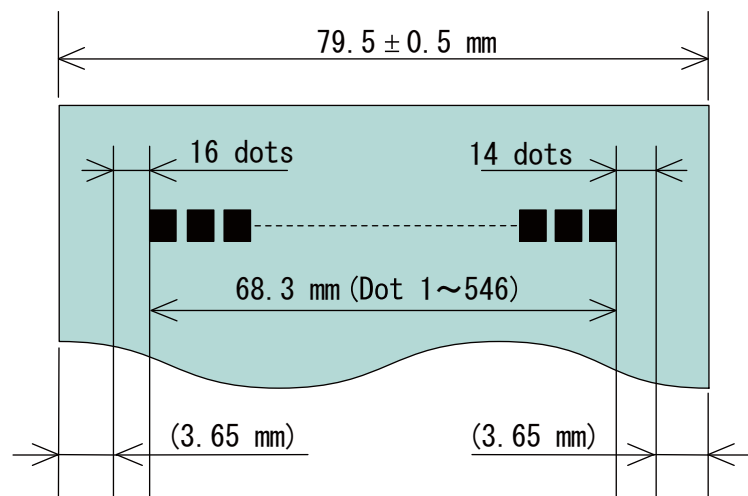
Printing is automatically performed in one to four-part energization depending on the printing conditions. During printing with two to four-part energization, a maximum misalignment (horizontal ruled line shift) of 1/4 to 1/2 dot might occur in the paper feeding direction due to segmented printing.



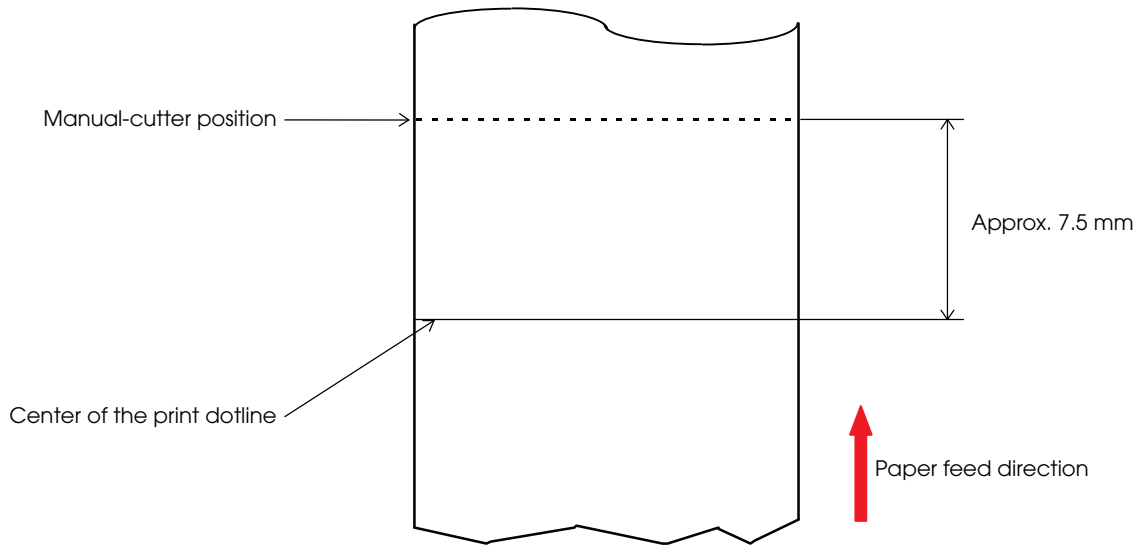
48 column mode (initial setting)



42 column mode



Printing and Cutting Positions



Electrical Characteristics

CAUTION

- Be sure to install the battery in the printer. The printer does not operate with the optional AC adapter only.
- Be sure to use the optional PS-11 as the power supply unit.

Dedicated battery (OT-BY60II)	Model: D141A	Rated voltage: DC 7.4 V Capacity: 2000 mAh
	Model: D161A	Rated voltage: DC 7.2 V Capacity: Typ. 1950 mAh, Min. 1850 mAh
Power supply		Input: DC24 V/Max. 1.5 A or DC12 V/Max. 1.0 A ^{*1}
Dedicated AC adapter (PS-11)		Output: DC 24 V/Max. 1.5 A Input: AC 100 V to 240 V
Continuous operating time	Wi-Fi models ^{*2}	Power save mode enabled: Approx. 25 hours Power save mode disabled: Approx. 14 hours
	Bluetooth models ^{*3}	Approx. 46 hours

*1 This is the input voltage required to charge the battery with the printer.

*2 Test conditions for Wi-Fi models:

- * Using a fully charged new battery
- * Printing ANK 48 columns × 20 lines + 6 line feeding
- * With interval of printing once per 2.5 minutes
- * At 25°C {77°F}
- * Printing density: 100%
- * Access point: CISCO AIR-LAP1142N-P-K9
- * Wireless communication conditions: Beacon interval of 200 ms, DTIM interval of 1, and no broadcast.
- * From when the battery is fully charged until when the battery remaining charge is reduced to approx. 0%.

*3 Test conditions for Bluetooth models:

- * Using a fully charged new battery
- * Printing ANK 48 columns × 20 lines + 6 line feeding
- * With interval of printing once per 2.5 minutes
- * At 25°C {77°F}
- * Printing density: 100%
- * From when the battery is fully charged until when the battery remaining charge is reduced to approx. 0%.

NOTE

Above continuous operating times will vary depending on changes in the use environment.

Reliability

Life* ¹	Printer mechanism	10 million lines printing (3.75 mm {0.15"} for one line)
	Thermal head	100 million pulses (for each element), 50 km
MTBF (Mean Time Between Failure)* ²		120,000 hours
MCBF (Mean Cycle Between Failure)* ³		16 million lines

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

*2 Failure is defined as a random failure occurring at the time of the random failure period.

*3 This is an average failure interval based on failures related to wear out and random failures up to the life of 10 million lines.)

Environmental Conditions

Temperature and humidity

For operation	When using only battery for power supply	Temperature: 0 to 45°C {32 to 113°F} Humidity: 10 to 90% RH (except for paper)
	When using battery and AC adapter for power supply	Temperature: 0 to 40°C {32 to 104°F} Humidity: 10 to 90% RH (except for paper)
For print quality	When using only battery for power supply	Temperature: 5 to 45°C {41 to 113°F} Humidity: 10 to 90% RH
	When using battery and AC adapter for power supply	Temperature: 5 to 40°C {41 to 104°F} Humidity: 10 to 90% RH
For battery charging		Temperature: 0 to 40°C {32 to 104°F} Humidity: 10 to 90% RH
For storage		Temperature: -25 to 70°C {-13 to 158°F} Storage time: 120 hours

Acoustic noise

During operation	Approximately 53 dB (bystander position) Note: Acoustic noise differs depending on the paper used, printing contents, and the setting values, such as print speed or print density.
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Drop impact resistance

Height	120 cm (4 feet)
--------	-----------------

* This is an experimental value based on our company's drop test standard; this is not a guaranteed value.

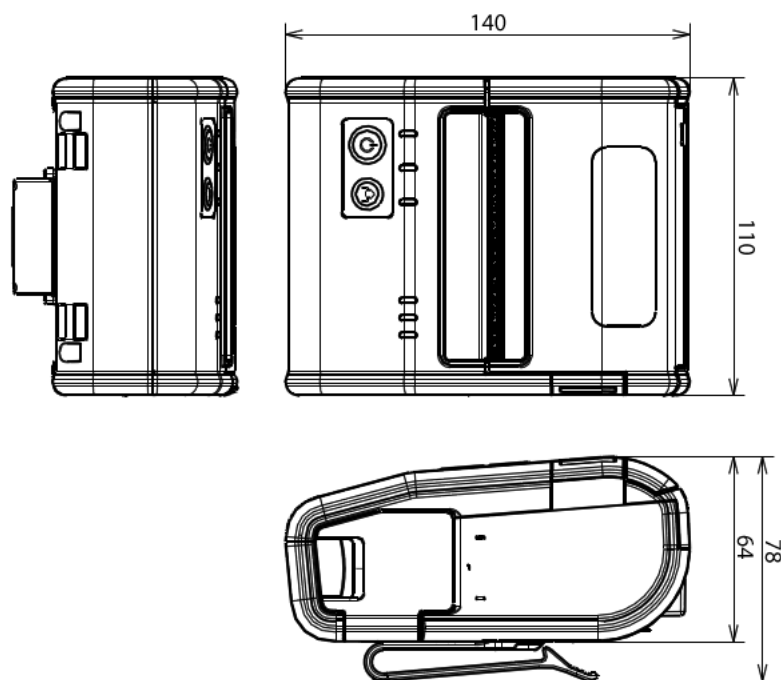
Dust/splash proof function

Vertical placement	IP54 equivalent Note: Roll paper is excluded. When roll paper recess is installed on the bottom side. The Connector cover is closed.
Horizontal placement	IP54 equivalent Note: Roll paper is excluded. When the belt clip is installed on the bottom side. The Connector cover is closed.

* The values used here are measured by the printer unit based on the JISC0920(IEC60529:2001) evaluation. Therefore, safety standard application, and failure and breakage of the printer are not guaranteed.

External Dimensions and Mass

- Width: Approximately 110 mm {4.33"}
- Depth: Approximately 140 mm {5.51"}
- Height: Approximately 64 mm {2.52"} (the belt clip excluded)
- Mass:
 - Wi-Fi model: Approximately 506 g {1.11 lb}
 - Bluetooth model: Approximately 500 g {1.10 lb}
 - (Battery included; belt clip and roll paper excluded)



Colors

EBCK (Epson Black)

Specifications of Interfaces and Connectors

USB (Universal Serial Bus) Interface

USB interface connector

Has a USB upstream port connector (mini USB type-B connector)

USB transmission specifications

USB function

Overall specifications	According to USB 2.0 specifications
Transmission speed	USB Full-Speed (12 Mbps)
Transmission method	USB bulk transmission method
Power supply specifications	USB self power supply function
Current consumed by USB bus	2 mA
USB packet size (with full-speed connection)	
USB bulk OUT (TM)	64 bytes
USB bulk IN (TM)	64 bytes
USB device class	Both USB vendor-defined class and USB printer class are supported.

NOTE

To set the USB device class, see ["Software Settings" on page 46](#).

USB descriptor

		USB vendor-defined class	USB printer class
Vendor ID		04b8h	04b8h
Product ID		0202h	0E18h
String Descriptor	Manufacturer	EPSON	EPSON
	Product	TM-P80 Wi-Fi TM-P80 Bluetooth	TM-P80 Wi-Fi TM-P80 Bluetooth
	Serial number	Character string based on the product serial number	Character string based on the product serial number

IEEE802.11a/b/g/n Wireless LAN Interface

Countries where this product can be used

021 model

Austria, Belgium, Bulgaria, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, Australia*, New Zealand*, Hong Kong

* Products with an RCM mark only.

CAUTION

- Using W53 (CH52 - CH64), and W56 (CH100 - CH140) in ad-hoc mode is either prohibited or unavailable.
- Using W52 (CH36 - CH48) outdoors is prohibited.
- Using W53 (CH52 - CH64) outdoors in Australia or Hong Kong is prohibited.
- Using W58 (CH149 - CH165) is either prohibited or unavailable.
- Using the TM-P80 outdoors in France is prohibited.
- In Italy, if used outside of own premises, general authorization is required.

011 model

Canada, USA

CAUTION

- Using W53 (CH52 - CH64), and W56 (CH100 - CH140) in ad-hoc mode is prohibited.
- Using W52 (CH36 - CH48) outdoors is prohibited.
- With W56, CH120, 124, and 128 are unavailable.

Specification

- IEEE802.11a/b/g/n (2.4 GHz band or 5 GHz band) compliant wireless LAN communication compatible
- Infrastructure mode and 802.11 Ad-hoc mode are supported
- Support the IP address automatic acquisition function (DHCP, APIPA).

Communication speed

- IEEE802.11a (5 GHz): Automatic change
- IEEE802.11b (2.4 GHz): Automatic change
- IEEE802.11g (2.4 GHz): Automatic change
- IEEE802.11n (2.4 GHz): Automatic change (65 Mbps at maximum)
- IEEE802.11n (5 GHz): Automatic change (65 Mbps at maximum)

Security

Security can be selected from among the following:

- none
- WEP-64bit (40bit)
- WEP-128bit (104bit)
- WPA-PSK(TKIP)
- WPA-PSK(AES)*
- WPA-Enterprise (TKIP)
- WPA-Enterprise (AES)*

* WPA and WPA2 are both supported.

Initial settings

Parameter	Setting value
Communication standard	802.11b/g/n
Network mode	Infrastructure mode
SSID	EpsonNet
Encryption type	WPA-PSK(AES)
Passphrase	EpsonNet
IP Address	192.168.192.168
Subnet mask	255.255.255.0

* You can connect to a WPA2-PSK (AES) access point using the settings above.

Printing communication protocol

- LP, LPR: Transfers printing data
- TCP Socket Port: Transfers printing data and printer status via bidirectional direct socket communication.

LP, LPR

- Max. simultaneous connections: 2
- Number of connections for which printing is available: 1 (Other users need to wait until printing is completed.)
- Time out: 1 min. (changeable)
- Job cancel: Not available
- Banner printing: Not available

Socket communication

- Port type: TCP communication port for direct printing
- Port number: 9100
- Port communication direction: bidirectional
- Max. simultaneous connections: 2
- Number of connections for which printing is available: 1 (Other users need to wait until printing is completed.)
- Time out: 1 min. (changeable)

Notes on Wireless LAN connection

Because not all the combinations of the printer and wireless LAN devices have been checked for operation, the operation of the printer in combination with all the wireless LAN devices is not guaranteed. Especially in the ad-hoc mode, the printer may not operate normally, depending on the combination of the device to connect with. Be sure to carry out evaluation of the operation before use.

Notes on use

- When you initialize or change the printer settings, the printer is reset to reflect the settings. It may take about 1 minute depending on the network settings or environment. Also, your application may indicate power off during the time waiting for reset. In that case, wait for about 1 minute, and then reconnect to the printer.
- Where wireless LAN communication is in heavy traffic, your application may falsely recognize that the communication is disconnected and indicate power off due to response delay. In that case, disable Power Save to improve the trouble.

Bluetooth Wireless Interface

Countries where this product can be used

521, 552 models

Austria, Belgium, Bulgaria, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, Australia*, New Zealand*, Hong Kong

* Products with an RCM mark only.

CAUTION

In Italy, if used outside of own premises, general authorization is required.

511, 551 models

Canada, USA

Specification

- Conforms to Bluetooth Specification Version 2.1 + EDR
- Bluetooth Power Class 2
- Built-in antenna
- Pass key setting is possible
- Device name setting is possible

Notes on use

Time required until printing starts

If the host computer and the printer are not connected on a continuous basis but rather connected every time the printer starts printing, some time may be needed for the printer to actually start printing after the host computer commands printing. This pause is the time required for processing the connection between the host computer and the printer, and it depends on the conditions of the environment where used.

Timing to shut the connection off

If a connection between the host computer and the printer is shut off while the printer is offline, it may not be re-established. In this case, first clear the printer offline causes, and then try to re-establish the connection.

Notes when communicating with Android devices

- The printer cannot connect to Android 2.3 and 2.3.2.
- When communicating with Android 2.3.3 or later versions, communicate through an insecure connection. Communication with the printer is not available for secure connection. To establish insecure connection, you need to use Android OS's API for communication that supports insecure connection. Note that Epson's ePOS-Print SDK supports insecure connection.

The Initial Software Settings

To set the customized values and memory switches, see ["Software Settings"](#) on page 46.

	Settings		Initial Setting	
Customized values	User NV memory capacity		1 KB	
	NV graphics memory capacity		384 KB	
	Print density		Level 7	
	Print speed		Level 10	
	Interface mode		Automatic selection	
	Column emulation mode		48 column mode	
	Command execution during offline		Enabled	
	Automatic paper reduction	Extra upper space reduction		Disabled
		Extra lower space reduction		Disabled
		Line space reduction rate		Not reduced
		Line feed reduction rate		Not reduced
		Barcode height reduction rate		Not reduced
	Automatic power off time		Disabled	
Battery charge mode		Mode 1		
Operation mode when battery is low		Mode 1		
Memory switches	Transmission of status notice		Transmits	
	Buzzer Settings	Buzzer sounds for low battery warning	Enabled	
		Buzzer sounds for roll paper end warning	Enabled	
		Buzzer sounds for error occurrence warning	Enabled	
	Error signal output		Enabled	
	Paper position immediately after the specific state	Function Select	Disabled	
Position Select		Top Position		

	Settings	Initial Setting
USB class		Vendor Class
Bluetooth interface	Passkey	0000
	Device name	TM-P80_xxxxxx*

* The device name is initially set to TM-P80_xxxxxx. (xxxxxx refers to the last 6 digits of the serial number labeled on the back of your printer.)

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 154.) is USA:

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

Page 0 (PC437: USA, Standard Europe)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	⌘ 176	Ł 192	⌘ 208	α 224	≡ 240
1	Ü 129	æ 145	í 161	⌘ 177	Ł 193	⌘ 209	β 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	τ 194	π 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	ı 179	ƒ 195	⌘ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	† 180	- 196	Ł 212	Σ 228	ƒ 244
5	à 133	ò 149	Ñ 165	† 181	† 197	F 213	σ 229	J 245
6	å 134	û 150	ä 166	|| 182	ƒ 198	π 214	μ 230	÷ 246
7	ç 135	ù 151	ö 167	π 183	|| 199	|| 215	τ 231	≈ 247
8	ê 136	ÿ 152	ı 168	ƒ 184	Ł 200	≠ 216	φ 232	° 248
9	ë 137	ö 153	ƒ 169	|| 185	ƒ 201	J 217	θ 233	• 249
A	è 138	ü 154	ƒ 170	|| 186	⌘ 202	ƒ 218	Ω 234	• 250
B	ï 139	¢ 155	½ 171	π 187	π 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	π 188	|| 204	■ 220	ω 236	n 252
D	ì 141	¥ 157	ı 173	⌘ 189	= 205	ı 221	φ 237	² 253
E	Ä 142	℥ 158	« 174	J 190	|| 206	ı 222	ε 238	■ 254
F	Å 143	f 159	» 175	ı 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	= 224	× 240
1	— 129	〒 145	。 161	ア 177	チ 193	ム 209	ト 225	円 241
2	■ 130	† 146	「 162	イ 178	ツ 194	メ 210	キ 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	ア 167	キ 183	ヌ 199	ラ 215	▼ 231	秒 247
8	| 136	「 152	イ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	| 137	〒 153	ウ 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	オ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	■ 140	「 156	ヤ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	■ 141	、 157	ユ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	■ 142	、 158	ヨ 174	セ 190	ホ 206	” 222	/ 238	☼ 254
F	† 143	ノ 159	ツ 175	ソ 191	マ 207	° 223	＼ 239	SP 255

Page 2 (PC850: Multilingual)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	⌘ 176	Ł 192	ǫ 208	Ó 224	- 240
1	Ü 129	æ 145	í 161	⌘ 177	Ł 193	Ð 209	β 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	Т 194	Ê 210	Ô 226	= 242
3	â 131	ô 147	ú 163	ı 179	† 195	Ë 211	Ò 227	¼ 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	ä 166	Â 182	ã 198	Í 214	μ 230	÷ 246
7	ç 135	ù 151	ö 167	À 183	Ã 199	Î 215	þ 231	· 247
8	ê 136	ÿ 152	¿ 168	© 184	Ł 200	Ï 216	ƒ 232	° 248
9	ë 137	ö 153	® 169	¶ 185	ƒ 201	Ј 217	Ú 233	¨ 249
A	è 138	ü 154	¬ 170	¶ 186	Ł 202	Г 218	Û 234	• 250
B	ï 139	ø 155	½ 171	¶ 187	π 203	■ 219	Ü 235	¹ 251
C	î 140	£ 156	¼ 172	¶ 188	¶ 204	■ 220	Ý 236	³ 252
D	ì 141	Ø 157	ı 173	¢ 189	= 205	ı 221	Ÿ 237	² 253
E	Ä 142	× 158	« 174	¥ 190	¶ 206	Ï 222	ˉ 238	■ 254
F	Å 143	f 159	» 175	₱ 191	Ꝥ 207	■ 223	˘ 239	SP 255

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

Page 4 (PC863: Canadian-French)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	Ì 160	⋮ 176	Ł 192	⋈ 208	ɑ 224	≡ 240
1	Ü 129	È 145	Í 161	⋷ 177	Ł̇ 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	ǀ 179	ƒ 195	⋈̈̈̈ 211	Π 227	≤ 243
4	Â 132	Ë 148	Û 164	ǁ 180	– 196	ƒ̇ 212	Σ 228	ƒ̇ 244
5	à 133	Ï 149	Ü 165	ǂ 181	† 197	ƒ̈ 213	σ 229	Ɔ 245
6	ŕ 134	Û 150	Ɔ 166	ǃ 182	‡ 198	π 214	μ 230	÷ 246
7	ç 135	ù 151	– 167	π̇ 183	‡̇ 199	‡̈ 215	τ 231	≈ 247
8	ê 136	ɶ 152	Î 168	Ǆ 184	Ł̈ 200	‡̈̈ 216	φ 232	° 248
9	ë 137	Ô 153	Ɠ 169	ǅ 185	ƒ̈̈̈ 201	Ɔ̇ 217	θ 233	• 249
A	è 138	Û 154	Ɣ̇ 170	ǆ 186	Ł̈̈ 202	Ɠ̇ 218	Ω 234	• 250
B	ï 139	ϕ 155	½ 171	Ǉ 187	⋈̈̈̈̈ 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	ǈ 188	‡̈̈̈̈ 204	■ 220	ω 236	∞ 252
D	– 141	Û 157	¾ 173	ǉ 189	≡ 205	▮ 221	φ̇ 237	² 253
E	À 142	Ô 158	« 174	Ǌ 190	‡̈̈̈̈̈ 206	▮̇ 222	ε 238	■ 254
F	§ 143	ƒ 159	» 175	ǋ 191	⋈̈̈̈̈̈̈ 207	▮̈ 223	∩ 239	SP 255

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

Page 11 (PC851: Greek)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	Ɔ 144	ÿ 160	⋯ 176	Ł 192	Ƨ 208	ζ 224	- 240
1	ü 129	SP 145	ÿ 161	⋯ 177	Ł 193	Υ 209	η 225	± 241
2	é 130	Ɔ 146	ó 162	⋯ 178	Ƨ 194	Φ 210	θ 226	U 242
3	â 131	ô 147	ú 163	l 179	Ƨ 195	Χ 211	l 227	φ 243
4	ä 132	ö 148	À 164	† 180	- 196	Ψ 212	κ 228	χ 244
5	à 133	Υ 149	Β 165	Κ 181	† 197	Ω 213	λ 229	§ 245
6	À 134	û 150	Γ 166	Λ 182	Π 198	α 214	μ 230	ψ 246
7	ç 135	ù 151	Δ 167	Μ 183	Ρ 199	β 215	ν 231	· 247
8	ê 136	Ω 152	Ε 168	Ν 184	Λ 200	γ 216	ξ 232	° 248
9	ë 137	ö 153	Ζ 169	¶ 185	Ƨ 201	Ƨ 217	ο 233	¨ 249
A	è 138	ü 154	Η 170	|| 186	≡ 202	Γ 218	π 234	ω 250
B	ï 139	á 155	½ 171	π 187	π 203	■ 219	ρ 235	Ü 251
C	î 140	£ 156	θ 172	¶ 188	¶ 204	■ 220	σ 236	Û 252
D	Ë 141	é 157	Ι 173	≡ 189	= 205	δ 221	ς 237	ώ 253
E	Ä 142	ή 158	« 174	Ο 190	¶ 206	ε 222	τ 238	■ 254
F	Ĥ 143	í 159	» 175	Γ 191	Σ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	☼ 176	Ł 192	SP 208	Ó 224	- 240
1	Ü 129	Ĉ 145	í 161	☼ 177	Ł 193	SP 209	β 225	SP 241
2	é 130	Ċ 146	ó 162	☼ 178	Ƨ 194	Ê 210	Ô 226	ℓ 242
3	â 131	ô 147	ú 163	ı 179	Ƨ 195	Ë 211	ò 227	ħ 243
4	ä 132	ö 148	ñ 164	† 180	- 196	È 212	Ĝ 228	˘ 244
5	à 133	ò 149	Ñ 165	Á 181	† 197	ı 213	ğ 229	§ 245
6	ĉ 134	û 150	Ĝ 166	Â 182	Ŝ 198	Í 214	μ 230	÷ 246
7	ç 135	ù 151	ğ 167	À 183	Ŝ 199	Î 215	¶ 231	· 247
8	ê 136	ï 152	Ĥ 168	Ş 184	Ł 200	İ 216	ħ 232	° 248
9	ë 137	ö 153	ĥ 169	¶ 185	Ɔ 201	Ĵ 217	Ú 233	¨ 249
A	è 138	ü 154	SP 170	¶ 186	Ł 202	Ɔ 218	Û 234	· 250
B	ĩ 139	ĝ 155	½ 171	¶ 187	Ɔ 203	■ 219	Ù 235	SP 251
C	î 140	£ 156	Ĵ 172	¶ 188	Ɔ 204	■ 220	Ŭ 236	³ 252
D	ì 141	Ĝ 157	Ş 173	Ž 189	= 205	SP 221	Ű 237	² 253
E	Ă 142	× 158	« 174	Ž 190	¶ 206	Ï 222	· 238	■ 254
F	Ĉ 143	Ĵ 159	» 175	Ƨ 191	Ɔ 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	Ł 192	o 208	Ó 224	- 240
1	ü 129	æ 145	í 161	⌘ 177	Ł 193	a 209	β 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	Т 194	Ê 210	Ô 226	SP 242
3	â 131	ô 147	ú 163	ı 179	† 195	Ë 211	ò 227	¼ 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	Ǻ 199	Î 215	SP 231	· 247
8	ê 136	ï 152	ı 168	© 184	Ł 200	Ï 216	× 232	° 248
9	ë 137	ö 153	® 169	¶ 185	ƒ 201	Ј 217	Ú 233	¨ 249
A	è 138	ü 154	¬ 170	¶ 186	Ł 202	Г 218	Û 234	• 250
B	ï 139	ø 155	½ 171	¶ 187	π 203	■ 219	Ü 235	¹ 251
C	î 140	£ 156	¼ 172	¶ 188	¶ 204	■ 220	ı 236	³ 252
D	ı 141	∅ 157	ı 173	¢ 189	= 205	ı 221	ÿ 237	² 253
E	Ä 142	§ 158	« 174	¥ 190	¶ 206	Ï 222	— 238	■ 254
F	Å 143	§ 159	» 175	₺ 191	Ꞥ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Α 128	Ρ 144	Λ 160	⋯ 176	Λ 192	⋈ 208	ω 224	Ω 240
1	Β 129	Σ 145	Κ 161	⋯ 177	⊥ 193	⊟ 209	ά 225	± 241
2	Γ 130	Τ 146	λ 162	⋯ 178	Τ 194	Π 210	έ 226	≥ 242
3	Δ 131	Υ 147	μ 163	Ι 179	† 195	⋈ 211	ή 227	≤ 243
4	Ε 132	Φ 148	ν 164	‡ 180	- 196	⋈ 212	ϊ 228	ϊ 244
5	Ζ 133	Χ 149	ξ 165	‡ 181	† 197	ƒ 213	ί 229	ÿ 245
6	Η 134	Ψ 150	ο 166	‖ 182	‡ 198	π 214	ό 230	÷ 246
7	Θ 135	Ω 151	π 167	π 183	‖ 199	‡ 215	ύ 231	≈ 247
8	Ι 136	α 152	ρ 168	‡ 184	⋈ 200	‡ 216	ü 232	° 248
9	Κ 137	β 153	σ 169	‖ 185	ƒ 201	ƒ 217	ώ 233	• 249
A	Λ 138	γ 154	ς 170	‖ 186	⋈ 202	ƒ 218	Ά 234	• 250
B	Μ 139	δ 155	τ 171	π 187	⋈ 203	■ 219	Έ 235	√ 251
C	Ν 140	ε 156	υ 172	ϋ 188	‖ 204	■ 220	Ή 236	η 252
D	Ξ 141	ζ 157	φ 173	⋈ 189	= 205	■ 221	Ί 237	² 253
E	Ο 142	η 158	χ 174	ƒ 190	‖ 206	■ 222	Ό 238	■ 254
F	Π 143	θ 159	ψ 175	γ 191	⊥ 207	■ 223	Υ 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	ÿ 192	Π 208	Û 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	ˆ 181	Ε 197	Υ 213	ε 229	υ 245
6	SP 134	SP 150	¡ 166	À 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	É 184	Θ 200	Ψ 216	θ 232	ψ 248
9	SP 137	SP 153	© 169	Η 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	¸ 170	Ϊ 186	Κ 202	Ï 218	κ 234	ϊ 250
B	SP 139	SP 155	« 171	» 187	Λ 203	ÿ 219	λ 235	ÿ 251
C	SP 140	SP 156	¬ 172	ϐ 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	Υ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	- 175	Ϟ 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	Ð 208	à 224	ð 240
1	SP 129	‘ 145	ì 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	f 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	ï 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	- 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	^ 136	~ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	Š 138	š 154	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

Page 17 (PC866: Cyrillic #2)

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

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	⋯ 176	Ł 192	đ 208	Ó 224	- 240
1	ü 129	Ĺ 145	í 161	⋮ 177	Ł 193	Đ 209	β 225	˘ 241
2	é 130	Í 146	ó 162	⋯ 178	Т 194	Đ 210	ô 226	˙ 242
3	â 131	ô 147	ú 163	l 179	ł 195	Ě 211	Ń 227	˘ 243
4	ä 132	ö 148	ą 164	ł 180	- 196	đ 212	ń 228	˘ 244
5	û 133	Ľ 149	ą 165	Á 181	ł 197	ň 213	ň 229	§ 245
6	ć 134	ŷ 150	ž 166	Â 182	Ǻ 198	í 214	š 230	÷ 246
7	ç 135	Ś 151	ž 167	Ě 183	ǻ 199	î 215	š 231	˙ 247
8	ł 136	ś 152	Ę 168	Ś 184	Ł 200	ě 216	Ŕ 232	° 248
9	ë 137	ö 153	ę 169	ł 185	ł 201	Ĵ 217	Ú 233	˘ 249
A	õ 138	ü 154	€ 170	ll 186	ll 202	ŕ 218	ř 234	˙ 250
B	õ 139	ŷ 155	ž 171	ł 187	ł 203	■ 219	Ů 235	ů 251
C	î 140	ł 156	č 172	ł 188	ł 204	■ 220	ý 236	ř 252
D	ž 141	ł 157	š 173	ž 189	= 205	Ĵ 221	ý 237	ř 253
E	Ǻ 142	× 158	« 174	ž 190	ł 206	Ů 222	ł 238	■ 254
F	ć 143	č 159	» 175	ł 191	ř 207	■ 223	˘ 239	SP 255

Page 19 (PC858: Euro)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	⌘ 176	Ł 192	Š 208	Ó 224	- 240
1	Ü 129	æ 145	í 161	⌘ 177	Ł 193	Đ 209	β 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	Т 194	Ê 210	Ô 226	= 242
3	â 131	ô 147	ú 163	ı 179	† 195	Ë 211	Ò 227	¼ 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	ä 166	Â 182	ã 198	Í 214	μ 230	÷ 246
7	ç 135	ù 151	ó 167	À 183	Ǻ 199	Î 215	þ 231	· 247
8	ê 136	ÿ 152	¿ 168	© 184	Ł 200	Ï 216	ƒ 232	° 248
9	ë 137	ö 153	® 169	¶ 185	ƒ 201	Ј 217	Ú 233	¨ 249
A	è 138	ü 154	¬ 170	¶ 186	Ł 202	Г 218	Û 234	• 250
B	ï 139	ø 155	½ 171	¶ 187	π 203	■ 219	Ü 235	¹ 251
C	î 140	£ 156	¼ 172	¶ 188	¶ 204	■ 220	Ý 236	³ 252
D	ì 141	Ø 157	ì 173	¢ 189	= 205	ı 221	Ÿ 237	² 253
E	Ä 142	× 158	« 174	¥ 190	¶ 206	Ï 222	ˉ 238	■ 254
F	Å 143	f 159	» 175	₯ 191	Ꝥ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	┌ 128	๐ 144	SP 160	ฌ 176	ย 192	ไ 208	· 224	๓ 240
1	└ 129	๑ 145	ก 161	ฉ 177	ร 193	แ 209	๕ 225	๔+ 241
2	┌ 130	๒ 146	ข 162	ค 178	ถ 194	โ 210	๖ 226	๕๐ 242
3	└ 131	๓ 147	ค 163	ด 179	ฌ 195	ใ 211	+ 227	๕- 243
4	┌ 132	๔ 148	ฆ 164	ด 180	ว 196	ไ 212	๘ 228	๕๕ 244
5	└ 133	๕ 149	ง 165	ท 181	ศ 197	ำ 213	· 229	๕๖ 245
6	┌ 134	๖ 150	จ 166	ธ 182	ษ 198	ำ 214	๐- 230	๕+ 246
7	└ 135	๗ 151	ฉ 167	น 183	ส 199	๐ 215	๑๕ 231	๕- 247
8	┌ 136	๘ 152	ช 168	บ 184	ห 200	๑ 216	๑๖ 232	๕๕ 248
9	└ 137	๙ 153	ซ 169	ป 185	ฬ 201	๒ 217	๑+ 233	๕๖ 249
A	┌ 138	๐ 154	ฌ 170	ผ 186	อ 202	๓ 218	๑- 234	๕+ 250
B	└ 139	๑ 155	ฌ 171	ฝ 187	ฮ 203	๔ 219	๑๕ 235	๕- 251
C	← 140	๒ 156	ฉ 172	ฝ 188	๕ 204	๕ 220	๑๖ 236	๕๕ 252
D	↑ 141	๓ 157	ฉ 173	ฝ 189	ภ 205	๖ 221	๑+ 237	๕๖ 253
E	→ 142	๔ 158	ฌ 174	ภ 190	า 206	๐ 222	๑- 238	๕+ 254
F	↓ 143	๕ 159	ท 175	ม 191	ำ 207	๑ 223	๑๕ 239	SP 255

Page 21 (Thai Code 11)

HEX	8	9	A	B	C	D	E	F
0	๕- 128	๕+ 144	เ 160	๕๕ 176	ภ 192	๕๕ 208	เ 224	๐ 240
1	๕๕ 129	๕- 145	ก 161	ท 177	ม 193	๕ 209	แ 225	๑ 241
2	๕๖ 130	๕๕ 146	ป 162	ฝ 178	ย 194	า 210	โ 226	๒ 242
3	๕+ 131	๕๖ 147	บ 163	ผ 179	ร 195	ำ 211	ใ 227	๓ 243
4	๕- 132	๕+ 148	ค 164	ด 180	ถ 196	๕ 212	ไ 228	๔ 244
5	๕๕ 133	๐- 149	ค 165	ด 181	ล 197	๕ 213	า 229	๕ 245
6	๕๖ 134	๐๕ 150	ฆ 166	ถ 182	ภ 198	๕ 214	ำ 230	๖ 246
7	๕+ 135	๐๖ 151	ง 167	ท 183	ว 199	๕ 215	๕ 231	๗ 247
8	๕๕ 136	๐+ 152	จ 168	ธ 184	ศ 200	๐ 216	๐ 232	๘ 248
9	๕- 137	๐ 153	ฉ 169	น 185	ช 201	๕ 217	๕ 233	๙ 249
A	๕๕ 138	๐ 154	ช 170	บ 186	ส 202	๐ 218	๕ 234	๐ 250
B	๕๖ 139	๐ 155	ซ 171	ป 187	ห 203	- 219	+ 235	๑ 251
C	๕+ 140	๐ 156	ฉ 172	ฝ 188	ฬ 204	๐ 220	๕ 236	๒ 252
D	๕- 141	๐ 157	ฉ 173	ฝ 189	อ 205	T 221	๐ 237	๓ 253
E	๕๕ 142	๐ 158	ฉ 174	ฬ 190	ฮ 206	๐ 222	๕ 238	๔ 254
F	๕๖ 143	๐ 159	ฉ 175	ฬ 191	๐ 207	๐ 223	๐ 239	SP 255

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

Page 30 (TCVN-3: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	é 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	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	ẽ 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	ừ 245
6	SP 134	SP 150	SP 166	ả 182	ă 198	ệ 214	ở 230	ử 246
7	SP 135	SP 151	SP 167	ã 183	ã 199	ì 215	õ 231	ữ 247
8	SP 136	SP 152	ă 168	á 184	ã 200	ỉ 216	ố 232	ứ 248
9	SP 137	SP 153	â 169	ạ 185	ã 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	ã 187	ậ 203	SP 219	ở 235	ỷ 251
C	SP 140	SP 156	ơ 172	ã 188	ề 204	ĩ 220	ỡ 236	ỹ 252
D	SP 141	SP 157	ư 173	ã 189	SP 205	í 221	ờ 237	ý 253
E	SP 142	SP 158	đ 174	ã 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	Ě 209	Ó 225	Ů 241
2	SP 130	SP 146	Â 162	SP 178	SP 194	Ê 210	Õ 226	Ű 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	Ě 211	Ó 227	Ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	Ě 212	Ọ 228	Ụ 244
5	SP 133	SP 149	SP 165	À 181	SP 197	Ě 213	Ô 229	Û 245
6	SP 134	SP 150	SP 166	Ả 182	Ặ 198	Ê 214	Ỗ 230	Ủ 246
7	SP 135	SP 151	Đ 167	Ã 183	Ẫ 199	Ì 215	Ỗ 231	Û 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	Ự 249
A	SP 138	SP 154	Ê 170	SP 186	Ẫ 202	SP 218	Ờ 234	Ỡ 250
B	SP 139	SP 155	Ô 171	Ẫ 187	Ặ 203	SP 219	Ỡ 235	Ỡ 251
C	SP 140	SP 156	Ớ 172	Ẫ 188	È 204	Ĩ 220	Ỗ 236	Ỡ 252
D	SP 141	SP 157	Ứ 173	Ẫ 189	SP 205	Ỉ 221	Ớ 237	Ỡ 253
E	SP 142	SP 158	SP 174	Ẫ 190	Ê 206	Ỉ 222	Ớ 238	Ỡ 254
F	SP 143	SP 159	SP 175	SP 191	Ễ 207	Ỗ 223	Ừ 239	SP 255

Page 32 (PC720: Arabic)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	ب 160	⋮ 176	ل 192	ﻻ 208	ض 224	≡ 240
1	SP 129	ّ 145	ة 161	⋮ 177	ل 193	ﻻ 209	ط 225	´ 241
2	é 130	° 146	ت 162	⋮ 178	ت 194	ﻻ 210	ظ 226	ˆ 242
3	â 131	ô 147	ث 163	| 179	ت 195	ﻻ 211	ع 227	ˆ 243
4	SP 132	α 148	ج 164	ت 180	- 196	ﻻ 212	غ 228	´ 244
5	à 133	- 149	ح 165	ت 181	† 197	ﻻ 213	ف 229	ˆ 245
6	SP 134	û 150	خ 166	ﻻ 182	ف 198	ﻻ 214	ﻻ 230	ˆ 246
7	ç 135	ù 151	د 167	ﻻ 183	ﻻ 199	ﻻ 215	ق 231	≈ 247
8	ê 136	ء 152	ذ 168	ﻻ 184	ﻻ 200	ﻻ 216	ك 232	° 248
9	ë 137	آ 153	ر 169	ﻻ 185	ﻻ 201	ل 217	ل 233	• 249
A	è 138	أ 154	ز 170	ﻻ 186	ﻻ 202	ر 218	م 234	• 250
B	ï 139	ؤ 155	س 171	ﻻ 187	ﻻ 203	■ 219	ن 235	√ 251
C	î 140	£ 156	ش 172	ك 188	ﻻ 204	■ 220	ه 236	n 252
D	SP 141	ل 157	ص 173	ﻻ 189	= 205	■ 221	و 237	2 253
E	SP 142	ئ 158	« 174	ل 190	ﻻ 206	■ 222	ي 238	■ 254
F	SP 143	ا 159	» 175	ل 191	ﻻ 207	■ 223	ي 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Ć 128	É 144	Ā 160	⋮ 176	Ł 192	ą 208	Ó 224	- 240
1	Ü 129	æ 145	Ī 161	⋮ 177	Ł 193	č 209	β 225	± 241
2	é 130	Æ 146	Ó 162	⋮ 178	Т 194	ę 210	ō 226	“ 242
3	ā 131	ō 147	Ž 163	l 179	ł 195	è 211	Ń 227	¾ 243
4	ä 132	ö 148	ž 164	ł 180	- 196	ì 212	õ 228	¶ 244
5	ğ 133	Ğ 149	ž 165	Ą 181	ł 197	š 213	õ 229	§ 245
6	ǎ 134	ϕ 150	” 166	Č 182	ų 198	ų 214	μ 230	÷ 246
7	ć 135	ś 151	ı 167	Ę 183	Ū 199	ū 215	ń 231	” 247
8	ł 136	ś 152	© 168	È 184	Ł 200	ž 216	Ɔ 232	° 248
9	ē 137	ö 153	® 169	¶ 185	ŕ 201	ĵ 217	Ɔ 233	• 249
A	Ŕ 138	ü 154	¬ 170	¶ 186	Ł 202	ŕ 218	Ł 234	• 250
B	ŕ 139	ø 155	½ 171	¶ 187	π 203	■ 219	Ĵ 235	1 251
C	ī 140	£ 156	¼ 172	¶ 188	¶ 204	■ 220	Đ 236	3 252
D	ž 141	ø 157	ł 173	Ĵ 189	= 205	■ 221	Ē 237	2 253
E	Ä 142	× 158	« 174	Š 190	¶ 206	■ 222	Ń 238	■ 254
F	Ā 143	ᄀ 159	» 175	ᄁ 191	ž 207	■ 223	,	SP 255

Page 34 (PC855: Cyrillic)

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

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

Page 36 (PC862: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	א 128	ב 144	אָ 160	⋯ 176	ל 192	מ 208	א 224	≡ 240
1	ב 129	בּ 145	אִ 161	⋯ 177	ל 193	מ 209	ב 225	± 241
2	ג 130	גּ 146	אֵ 162	⋯ 178	ט 194	פ 210	ג 226	≥ 242
3	ד 131	דּ 147	אֶ 163	⋯ 179	ת 195	צ 211	ד 227	≤ 243
4	ה 132	הּ 148	אֹ 164	⋯ 180	– 196	ק 212	ה 228	ר 244
5	ו 133	וּ 149	אָ 165	⋯ 181	† 197	פ 213	ו 229	י 245
6	ז 134	זּ 150	אָ 166	⋯ 182	פ 198	צ 214	ז 230	÷ 246
7	ח 135	חּ 151	אָ 167	⋯ 183	פ 199	ק 215	ח 231	≈ 247
8	ט 136	טּ 152	אָ 168	⋯ 184	ל 200	פ 216	ט 232	° 248
9	י 137	יּ 153	אָ 169	⋯ 185	פ 201	י 217	י 233	• 249
A	י 138	יּ 154	אָ 170	⋯ 186	מ 202	י 218	י 234	• 250
B	כ 139	כּ 155	אָ 171	⋯ 187	מ 203	■ 219	כ 235	√ 251
C	כ 140	כּ 156	אָ 172	⋯ 188	מ 204	■ 220	כ 236	n 252
D	ל 141	לּ 157	אָ 173	⋯ 189	= 205	■ 221	ל 237	2 253
E	מ 142	מּ 158	אָ 174	⋯ 190	מ 206	■ 222	מ 238	■ 254
F	נ 143	נּ 159	אָ 175	⋯ 191	מ 207	■ 223	נ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	° 128	β 144	SP 160	• 176	ϕ 192	ذ 208	ا 224	آ 240
1	• 129	⊞ 145	- 161	١ 177	ء 193	ر 209	فا 225	آ 241
2	• 130	ϕ 146	˜ 162	٢ 178	آ 194	ز 210	قا 226	ن 242
3	√ 131	± 147	£ 163	٣ 179	أ 195	ع 211	كا 227	ه 243
4	⊞ 132	½ 148	¤ 164	٤ 180	ؤ 196	ثقا 212	لا 228	ه 244
5	- 133	¼ 149	ل 165	ه 181	غ 197	ط 213	ما 229	و 245
6	| 134	≈ 150	SP 166	٦ 182	ئا 198	قا 214	نا 230	ي 246
7	† 135	« 151	€ 167	٧ 183	ا 199	ط 215	ها 231	خ 247
8	† 136	» 152	ل 168	٨ 184	با 200	ظ 216	وا 232	ق 248
9	‡ 137	لا 153	ب 169	٩ 185	ة 201	ع 217	ي 233	لا 249
A	† 138	لا 154	ت 170	ف 186	تا 202	غا 218	يا 234	لا 250
B	⊞ 139	SP 155	ث 171	؛ 187	ثا 203	ا 219	ظرا 235	ل 251
C	٦ 140	SP 156	، 172	عر 188	جا 204	را 220	ع 236	ك 252
D	‡ 141	لا 157	ج 173	شرا 189	حا 205	÷ 221	غا 237	ي 253
E	⊞ 142	لا 158	ح 174	ص 190	خ 206	× 222	غا 238	■ 254
F	‡ 143	، 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	Ι 144	ϊ 160	⋯ 176	Λ 192	Τ 208	Ζ 224	- 240
1	SP 129	ϊ 145	ϋ 161	⋯ 177	⊥ 193	Υ 209	η 225	± 241
2	SP 130	ο 146	ό 162	⋯ 178	τ 194	φ 210	θ 226	υ 242
3	SP 131	SP 147	ύ 163	ι 179	† 195	Χ 211	λ 227	φ 243
4	SP 132	SP 148	Α 164	† 180	- 196	Ψ 212	κ 228	χ 244
5	SP 133	Υ 149	Β 165	Κ 181	† 197	Ω 213	λ 229	§ 245
6	À 134	ÿ 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	Ω 152	Ε 168	Ν 184	ℒ 200	γ 216	ξ 232	° 248
9	¬ 137	² 153	Ζ 169	‡ 185	℞ 201	ι 217	ο 233	¨ 249
A	¡ 138	³ 154	Η 170	‖ 186	⋈ 202	Γ 218	π 234	ω 250
B	‘ 139	ά 155	½ 171	π 187	π̄ 203	■ 219	ρ 235	ü 251
C	’ 140	£ 156	θ 172	‡ 188	‡ 204	■ 220	σ 236	ÿ 252
D	Έ 141	έ 157	Ι 173	≡ 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	Γ 191	Σ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	☐ 128	L 144	SP 160	° 176	Ř 192	Ð 208	ř 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	Ǻ 195	Ó 211	ǻ 227	ó 243
4	† 132	- 148	ǫ 164	˘ 180	Ǽ 196	Ô 212	ǽ 228	ô 244
5	J 133	† 149	ł 165	ł 181	Ł 197	Õ 213	í 229	õ 245
6	ŕ 134	■ 150	Ś 166	ś 182	Ć 198	Ö 214	ć 230	ö 246
7	■ 135	■ 151	§ 167	˘ 183	Ç 199	× 215	ç 231	÷ 247
8	© 136	Ł 152	¨ 168	· 184	Č 200	Ř 216	č 232	ř 248
9	ł 137	ŕ 153	š 169	š 185	É 201	Û 217	é 233	û 249
A	ł 138	Ł 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	ł 139	ŕ 155	Ÿ 171	Ÿ 187	Ě 203	Ů 219	ě 235	ů 251
C	ł 140	ł 156	Ž 172	ž 188	Ě 204	Ü 220	ě 236	ü 252
D	¢ 141	= 157	- 173	˘ 189	Í 205	Ý 221	í 237	ý 253
E	¥ 142	ł 158	Ž 174	ž 190	Î 206	Ť 222	î 238	ť 254
F	ł 143	® 159	Ž 175	ž 191	Ď 207	ß 223	ď 239	· 255

Page 40 (ISO8859-15: Latin 9)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	° 176	À 192	Ð 208	à 224	ð 240
1	SP 129	SP 145	ì 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	SP 130	SP 146	ϕ 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	ŋ 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	ÿ 191	Ï 207	ß 223	ï 239	ÿ 255

HEX	8	9	A	B	C	D	E	F
0	SP 128	ؤ 144	ح 160	۰ 176	ل 192	ع 208	ک 224	- 240
1	SP 129	ئا 145	خ 161	۱ 177	ل 193	ء 209	ک 225	۵ 241
2	، 130	ب 146	د 162	۲ 178	ت 194	ع 210	گ 226	ب 242
3	؛ 131	با 147	ر 163	ا 179	ت 195	غ 211	گ 227	- 243
4	؟ 132	پ 148	ز 164	ا 180	- 196	غ 212	ل 228	۰ 244
5	ء 133	پ 149	ر 165	ض 181	ت 197	غ 213	ل 229	۱ 245
6	آ 134	ت 150	ز 166	ف 182	ظ 198	غ 214	م 230	۲ 246
7	آ 135	تا 151	ث 167	ط 183	ع 199	ف 215	م 231	۳ 247
8	آ 136	ث 152	عی 168	ط 184	لا 200	ف 216	ن 232	۴ 248
9	ا 137	ثا 153	ع 169	ا 185	را 201	ل 217	نا 233	۵ 249
A	ل 138	ج 154	ثی 170	ا 186	لا 202	را 218	و 234	۶ 250
B	د 139	د 155	ث 171	ا 187	را 203	■ 219	ه 235	۷ 251
C	ء 140	ج 156	ص 172	ک 188	را 204	■ 220	ه 236	۸ 252
D	أ 141	چ 157	ط 173	وال 189	= 205	ق 221	ه 237	۹ 253
E	أ 142	x 158	« 174	ظ 190	را 206	قا 222	ه 238	■ 254
F	أ 143	ح 159	» 175	٦ 191	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	Ł 192	ą 208	ɑ 224	≡ 240
1	ü 129	æ 145	í 161	⋯ 177	Ł̇ 193	č 209	β 225	± 241
2	é 130	Æ 146	ó 162	⋯ 178	Ṭ 194	ę 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	l̇ 179	ṭ 195	è 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	ł̇ 180	- 196	į 212	Σ 228	” 244
5	à 133	ò 149	Ñ 165	Ą̇ 181	† 197	š 213	σ 229	“ 245
6	ǎ 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	ı̇ 168	È 184	Ł̈ 200	ž 216	φ 232	° 248
9	ë 137	ö̇ 153	ƒ 169	ł̈ 185	Ŧ 201	Ƶ 217	θ 233	• 249
A	è 138	ü̇ 154	ƒ̇ 170	ll̈ 186	ll̈ 202	ƶ 218	Ω 234	· 250
B	ï 139	ϕ 155	½ 171	π̈ 187	π̈ 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	ϣ̈ 188	ll̈ 204	■ 220	ω 236	n 252
D	ì 141	¥ 157	ı̇ 173	ł̈ 189	= 205	l̈ 221	φ 237	² 253
E	Ā 142	℥ 158	« 174	Š 190	ll̈ 206	l̈ 222	ε 238	■ 254
F	Ă 143	f 159	» 175	ṭ 191	ž 207	■ 223	∩ 239	SP 255

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

Page 44 (PC1125: Ukrainian)

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

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ř 192	Ð 208	ř 224	đ 240
1	SP 129	‘ 145	ˇ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	, 130	, 146	ˇ 162	• 178	Â 194	Ñ 210	â 226	ň 242
3	SP 131	“ 147	ł 163	ŧ 179	Ă 195	Ó 211	ă 227	ó 243
4	” 132	” 148	ꝛ 164	˘ 180	Ă 196	Ô 212	ä 228	ô 244
5	… 133	• 149	À 165	μ 181	Ĺ 197	Õ 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	Û 217	é 233	û 249
A	Š 138	š 154	Ş 170	ş 186	È 202	Ú 218	è 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ě 203	Û 219	ě 235	ů 251
C	Š 140	š 156	¬ 172	Ĺ 188	Ě 204	Ü 220	ě 236	ü 252
D	ŧ 141	ŧ 157	- 173	˘ 189	Í 205	Ý 221	í 237	ý 253
E	Ž 142	ž 158	® 174	ř 190	Î 206	Ï 222	î 238	ț 254
F	Ž 143	ž 159	Ž 175	ž 191	Ď 207	ß 223	ď 239	· 255

Page 46 (WPC1251: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	ћ 128	ђ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	ѓ 129	‘ 145	ђ 161	± 177	Б 193	С 209	б 225	с 241
2	, 130	’ 146	ђ 162	І 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	ѧ 164	г 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Г 165	μ 181	Е 197	Х 213	е 229	х 245
6	† 134	- 150	і 166	π 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	Ѡ 143	ѡ 159	İ 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	ï 192	Π 208	Û 224	π 240
1	SP 129	‘ 145	” 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	, 130	, 146	Ä 162	² 178	Β 194	SP 210	β 226	ς 242
3	f 131	“ 147	£ 163	³ 179	Γ 195	Σ 211	γ 227	σ 243
4	” 132	” 148	α 164	ˆ 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	ı 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	α 170	Ί 186	Κ 202	Ï 218	κ 234	ϊ 250
B	‹ 139	› 155	« 171	» 187	Λ 203	ÿ 219	λ 235	ÿ 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	Υ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	- 175	Ω 191	Ο 207	ί 223	ο 239	SP 255

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	ı 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	f 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	ı 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	- 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	^ 136	~ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	Š 138	š 154	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	ı 161	± 177	∴ 193	· 209	ב 225	ן 241
2	, 130	, 146	¢ 162	2 178	∴ 194	· 210	ג 226	ו 242
3	f 131	“ 147	£ 163	3 179	∴ 195	· 211	ד 227	ז 243
4	” 132	” 148	¥ 164	ˆ 180	· 196	|| 212	ה 228	ח 244
5	… 133	• 149	¥ 165	μ 181	∴ 197	|| 213	ו 229	ט 245
6	† 134	- 150	ı 166	¶ 182	∴ 198	|| 214	ז 230	י 246
7	‡ 135	- 151	§ 167	· 183	- 199	’ 215	ח 231	כ 247
8	^ 136	~ 152	∴ 168	· 184	∴ 200	” 216	ט 232	ל 248
9	‰ 137	™ 153	© 169	1 185	· 201	SP 217	י 233	מ 249
A	SP 138	SP 154	× 170	÷ 186	SP 202	SP 218	י 234	נ 250
B	‹ 139	› 155	« 171	» 187	∴ 203	SP 219	ס 235	SP 251
C	SP 140	SP 156	¬ 172	¼ 188	· 204	SP 220	ז 236	SP 252
D	SP 141	SP 157	- 173	½ 189	· 205	SP 221	ח 237	SP 253
E	SP 142	SP 158	® 174	¾ 190	- 206	SP 222	ט 238	SP 254
F	SP 143	SP 159	- 175	¿ 191	- 207	SP 223	י 239	SP 255

Page 50 (WPC1256: Arabic)

HEX	8	9	A	B	C	D	E	F
0	€ 128	ك 144	SP 160	° 176	^ 192	ذ 208	â 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	f 131	“ 147	£ 163	3 179	أ 195	س 211	م 227	’ 243
4	” 132	” 148	¤ 164	ˆ 180	ؤ 196	ش 212	ن 228	ô 244
5	… 133	• 149	¥ 165	μ 181	ل 197	ص 213	ه 229	’ 245
6	† 134	- 150	¡ 166	¶ 182	ئ 198	ض 214	و 230	ˆ 246
7	‡ 135	- 151	§ 167	• 183	ا 199	× 215	ç 231	÷ 247
8	^ 136	ك 152	¨ 168	˙ 184	ب 200	ط 216	è 232	” 248
9	‰ 137	™ 153	© 169	1 185	ة 201	ظ 217	é 233	ù 249
A	ث 138	ث 154	ه 170	؛ 186	ت 202	ع 218	ê 234	° 250
B	< 139	> 155	« 171	» 187	ث 203	غ 219	ë 235	û 251
C	€ 140	€ 156	¬ 172	¼ 188	ج 204	- 220	ي 236	ü 252
D	ج 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	س 159	- 175	؟ 191	د 207	ك 223	ï 239	ع 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Š 208	ą 224	š 240
1	SP 129	‘ 145	SP 161	± 177	Ī 193	Ņ 209	į 225	ň 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	ˆ 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	ı 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	Ů 216	č 232	ů 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ł 217	é 233	ł 249
A	SP 138	SP 154	Ŕ 170	Ŗ 186	Ž 202	Ś 218	ż 234	ś 250
B	‹ 139	› 155	« 171	» 187	È 203	Ū 219	è 235	ū 251
C	SP 140	SP 156	¬ 172	¼ 188	Ĝ 204	Ü 220	ğ 236	ü 252
D	¨ 141	- 157	- 173	½ 189	Ķ 205	Ž 221	ķ 237	ž 253
E	˘ 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	Ð 208	à 224	đ 240
1	SP 129	‘ 145	ì 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	, 130	, 146	¢ 162	² 178	Â 194	” 210	â 226	· 242
3	f 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	ơ 245
6	† 134	- 150	ì 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	- 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	^ 136	~ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	SP 138	SP 154	à 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	< 139	> 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	Œ 140	œ 156	¬ 172	¼ 188	ˆ 204	Ü 220	ˆ 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	Һ 128	Ғ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	Ғ 129	‘ 145	Ұ 161	± 177	Б 193	С 209	б 225	с 241
2	, 130	’ 146	Ұ 162	І 178	В 194	Т 210	в 226	т 242
3	Ғ 131	“ 147	Ә 163	і 179	Г 195	У 211	г 227	у 243
4	” 132	” 148	Ә 164	ө 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ө 165	ү 181	Е 197	Х 213	е 229	х 245
6	† 134	- 150	і 166	җ 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	Ғ 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	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

International Character Sets

Country	ASCII code (Hex)													
	23	24	25	2A	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA	#	\$	%	*	@	[	\	\]	^	`	{	|	}	~
France	#	\$	%	*	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	\$	%	*	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.	£	\$	%	*	@	[	\	\]	^	`	{	|	}	~
Denmark I	#	\$	%	*	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	%	*	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	\$	%	*	@	°	\	é	^	ù	à	ò	è	ì
Spain I	¤	\$	%	*	@	í	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	í	ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	\$	%	*	á	í	ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	\$	%	*	@	[	#	]	^	`	{	|	}	~
Slovenia/ Croatia	#	\$	%	*	ž	š	đ	ć	č	ž	š	đ	ć	č
China	#	¥	%	*	@	[	\	\]	^	`	{	|	}	~
Vietnam	đ	\$	%	*	@	[	\	\]	^	`	{	|	}	~
Arabia	#	\$	%	*	@	[	\	\]	^	`	{	|	}	~