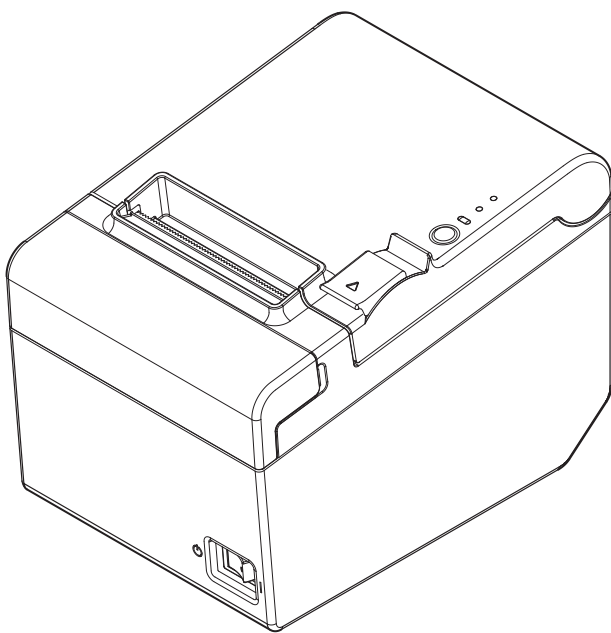


TM-T82II

Technical Reference Guide



Product Overview

Describes features and general specifications for the product.

Setup

Describes setup and installation of the product and peripherals.

Application Development Information

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

Handling

Describes how to handle the product.

Appendix

Describes interfaces, connectors, and character code tables.

Cautions

- No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Seiko Epson Corporation.
- The contents of this document are subject to change without notice. Please contact us for the latest information.
- While every precaution has been taken in the preparation of this document, Seiko Epson Corporation assumes no responsibility for errors or omissions.
- Neither is any liability assumed for damages resulting from the use of the information contained herein.
- Neither Seiko Epson Corporation nor its affiliates shall be liable to the purchaser of this product or third parties for damages, losses, costs, or expenses incurred by the purchaser or third parties as a result of: accident, misuse, or abuse of this product or unauthorized modifications, repairs, or alterations to this product, or (excluding the U.S.) failure to strictly comply with Seiko Epson Corporation's operating and maintenance instructions.
- Seiko Epson Corporation shall not be liable against any damages or problems arising from the use of any options or any consumable products other than those designated as Original EPSON Products or EPSON Approved Products by Seiko Epson Corporation.

Trademarks

EPSON and ESC/POS are registered trademarks of Seiko Epson Corporation in Japan and other countries/regions.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

ESC/POS® Command System

EPSON ESC/POS is a proprietary POS printer command system that includes patented or patent-pending commands. ESC/POS is compatible with most EPSON POS printers and displays.

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

Copyright © 2012 Seiko Epson Corporation. All rights reserved.

For Safety

Key to Symbols

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

 WARNING	You must follow warnings carefully to avoid serious bodily injury.
 CAUTION	Provides information that must be observed to prevent damage to the equipment or loss of data. • Possibility of sustaining physical injuries. • Possibility of causing physical damage. • Possibility of causing information loss.
 CAUTION	Provides information that must be observed to avoid damage to your equipment or a malfunction.
 NOTE	Provides important information and useful tips.

Warnings



WARNING

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

Cautions



- **Do not connect cables in ways other than those mentioned in this manual.**
Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
The product may break or cause injury if it falls.
- **Do not use this product in locations subject to high humidity or dust levels.**
Excessive humidity and dust may cause equipment damage or fire.
- **Do not place heavy objects on top of this product. Never stand or lean on this product.**
Equipment may fall or collapse, causing breakage and possible injury.
- **Take care not to injure your fingers on the manual cutter**
 - * When you remove printed paper
 - * When you perform other operations such as loading/replacing roll paper
- **Do not open the roll paper cover without taking the necessary precautions, as this can result in injury from the autocutter fixed blade.**
- **To ensure safety, unplug this product before leaving it unused for an extended period.**

Restriction of Use

When this product is used for applications requiring high reliability/safety, such as transportation devices related to aviation, rail, marine, automotive, etc.; disaster prevention devices; various safety devices, etc.; or functional/precision devices, etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgment on this product's suitability after a full evaluation.

About this Manual

Aim of the Manual

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

Manual Content

The manual is made up of the following sections:

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

Contents

■ For Safety	3
Key to Symbols	3
Warnings	4
Cautions.....	5
■ Restriction of Use	5
■ About this Manual	6
Aim of the Manual.....	6
Manual Content	6
Product Overview	11
■ Features	11
■ Product Configurations	12
Interface	12
Colors	12
Accessories.....	12
■ Part Names and Functions	13
Power Switch	13
Power Switch Cover.....	14
Control Panel	14
Offline	15
Connectors.....	16
■ Error Status	17
Automatically Recoverable Errors	17
Recoverable Errors.....	17
Unrecoverable Errors	18
■ NV Memory (Non-Volatile Memory)	19
NV Graphics Memory.....	19
User NV Memory	19
Memory Switches.....	19
R/E (Receipt Enhancement)	20
User-defined Page	20
Maintenance Counter	20
■ Product Specifications	21
Printing Specifications	22
Character Specifications	23
Paper Specifications.....	27
Printable Area	28
Printing and Cutting Positions	29
Electrical Characteristics	30
Environmental Conditions.....	31
External Dimensions and Mass	32

Setup33

■ Flow of Setup.....	33
■ Installing the Printer.....	34
Installing the Printer Vertically	35
Hanging the Printer on a Wall	36
■ Changing the Paper Width.....	38
■ Adjusting the Paper Near-End Sensor	39
■ Connecting the Printer to the Host Computer	41
For Serial Interface.....	41
For Parallel Interface	43
For USB Interface.....	45
For Ethernet Interface	47
■ Connecting to the Power Source.....	49
Connecting the AC cable	49
■ Setting the Memory Switches/Receipt Enhancement.....	51
Functions	52
■ Connecting the Optional External Buzzer.....	62
Connecting the Buzzer Unit.....	62
■ Connecting the Cash Drawer	64
Connecting the Drawer Kick-out Cable.....	64
Drawer Connection Diagram	65

Application Development Information67

■ How to Control the Printer.....	67
Selecting a Driver	67
ESC/POS Commands.....	68
■ Software and Manuals	74
Printer Drivers	74
Utilities	76
How to Get Drivers, Manuals, and the Utility.....	77
■ Setting/Checking Modes	78
Self-test Mode	78
Hexadecimal Dumping Mode.....	80
NV Graphics Information Print Mode	81
Receipt Enhancement Information Print Mode	83
Memory Switch Setting Mode	84

Handling87

■ Installing and Replacing Roll Paper.....	87
■ Removing Jammed Paper.....	89
When the Roll Paper Cover Cannot be Opened.....	89
■ Cleaning the Printer.....	91
Cleaning the Printer Case	91
Cleaning the Thermal Head/Platen Roller.....	91
■ Preparing for Transport	92

Appendix.....93

■ Specifications of Interface and Connector	93
USB (Universal Serial Bus) Interface	93
RS-232 Serial Interface	94
IEEE 1284 Parallel Interface	97
■ Character Code Tables.....	100
Common to All Pages	100
Page 0 (PC437: USA, Standard Europe)	101
Page 1 (Katakana).....	102
Page 2 (PC850: Multilingual)	103
Page 3 (PC860: Portuguese).....	104
Page 4 (PC863: Canadian-French)	105
Page 5 (PC865: Nordic)	106
Page 11 (PC851: Greek)	107
Page 12 (PC853: Turkish)	108
Page 13 (PC857: Turkish)	109
Page 14 (PC737: Greek)	110
Page 15 (ISO8859-7: Greek)	111
Page 16 (WPC1252).....	112
Page 17 (PC866: Cyrillic #2).....	113
Page 18 (PC852: Latin2).....	114
Page 19 (PC858: Euro).....	115
Page 20 (KU42: Thai).....	116
Page 21 (TIS11: Thai).....	117
Page 26 (TIS18: Thai).....	118
Page 30 (TCVN-3: Vietnamese)	119
Page 31 (TCVN-3: Vietnamese)	120
Page 32 (PC720: Arabic)	121
Page 33 (WPC775: Baltic Rim).....	122
Page 34 (PC855: Cyrillic).....	123
Page 35 (PC861: Icelandic).....	124
Page 36 (PC862: Hebrew)	125
Page 37 (PC864: Arabic)	126
Page 38 (PC869: Greek)	127
Page 39 (ISO8859-2: Latin2).....	128

Page 40 (ISO8859-15: Latin9).....	129
Page 41 (PC1098: Farsi)	130
Page 42 (PC1118: Lithuanian).....	131
Page 43 (PC1119: Lithuanian).....	132
Page 44 (PC1125: Ukrainian).....	133
Page 45 (WPC1250: Latin 2)	134
Page 46 (WPC1251: Cyrillic)	135
Page 47 (WPC1253: Greek).....	136
Page 48 (WPC1254: Turkish)	137
Page 49 (WPC1255: Hebrew).....	138
Page 50 (WPC1256: Arabic).....	139
Page 51 (WPC1257: Baltic Rim)	140
Page 52 (WPC1258: Vietnamese)	141
Page 53 (KZ1048: Kazakhstan).....	142
Page 255 (User-Defined Page).....	143
International Character Sets.....	144

Product Overview

This chapter describes features and specifications of the product.

Features

Printing

- High speed receipt printing is possible (200 mm/s maximum).
- Shifting from 80 mm width paper printing to 58 mm width paper printing is available.
- Paper-saving function is supported.

Handling

- Easy drop-in paper loading

Software

- Command protocol is based on the ESC/POS[®] Proprietary Command System.
- Windows printer drivers, OPOS ADK, OPOS for .NET ADK, JavaPOS ADK and other drivers (Linux CUPS, Mac driver) are available.
- Printing of various types of bar codes, GS1-DataBar, and two-dimensional symbols (PDF417, QR code, MaxiCode, Composite Symbology) is supported.
- A maintenance counter function is supported.
- 42-column mode is supported.

Interface

- Serial, parallel, and Ethernet interface models are available.
- For serial or parallel interface models, USB interface is additionally available.

Others

- Various installation layouts (horizontal, vertical, and wall-hanging installation) are selectable.
- Optional external buzzer is available.

Product Configurations

Interface

- Serial + USB interface model
- Parallel + USB interface model
- Ethernet interface model

Colors

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

Accessories

Included

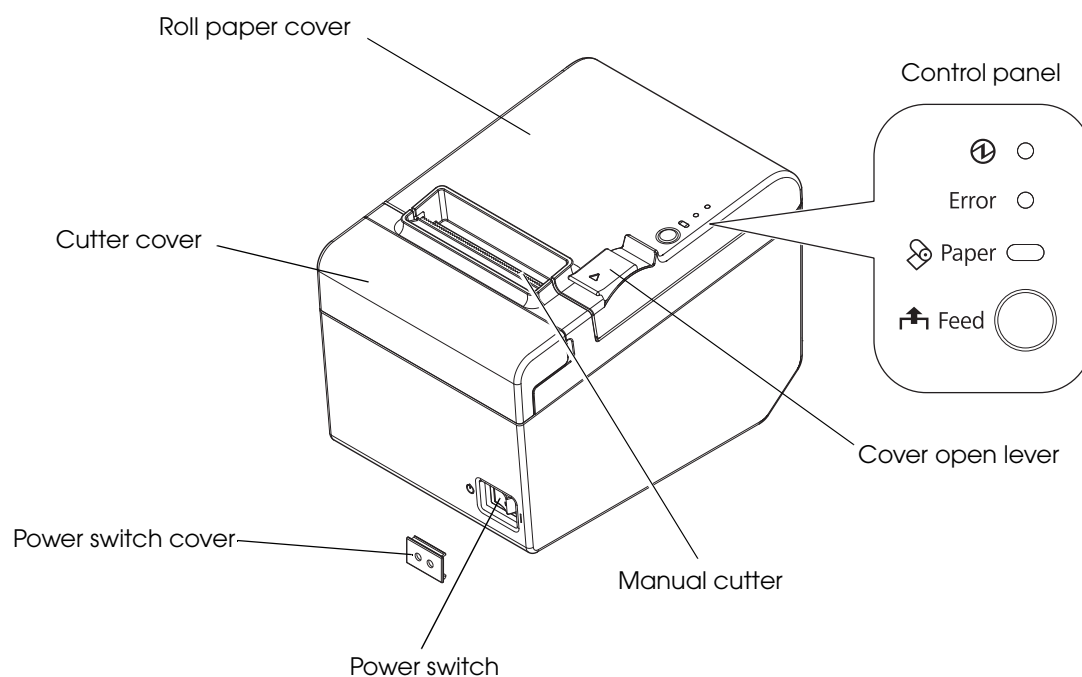
- Roll paper (for operation check)
- Power switch cover
- Power switch waterproof cover
- Wall hanging bracket
- Screws for wall hanging bracket
- Rubber feet for vertical installation
- Control panel label for vertical installation
- 58-mm width roll paper guide
- AC adapter*
- AC cable*
- User's Manual
- Warranty certificate*

* May not be included depending on the model.

Options

- Affixing tape for fixing the printer (Model: DF-10)
- External buzzer unit (Model: OT-BZ20)

Part Names and Functions



Power Switch

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

CAUTION

To turn the printer on immediately after turning the printer off, press the Power button after the LED lights go off.

NOTE

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

Power Switch Cover

Install the power switch cover that comes with the TM-T82II onto the printer to prevent inadvertent operation of the power switch and to prevent tampering. To reset the printer when the power switch cover is installed, insert a long, thin object (such as the end of a paper clip) into the hole in the power switch cover and press the power switch.

A waterproof cover for the power switch is also included.



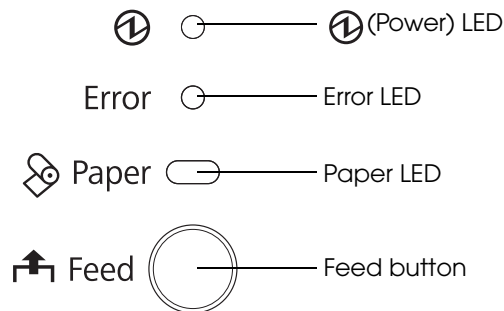
If an accident occurs with the power switch cover attached, unplug the AC cable immediately.

Continued use of the printer may cause fire or shock.

CAUTION

Use the power switch waterproof cover if the printer is installed in a humid location or exposed to water. If current leakage occurs, it could result in electric shock.

Control Panel



NOTE

When installing the printer vertically or hanging the printer on a wall, be sure to attach the included control panel label for vertical installation on the roll paper cover. The control panel label for vertical installation is upside down.

① Power LED (green)

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

Error LED (orange)

Lights or flashes when the printer is offline.

- Lights after the power is turned on or after a reset (offline). Automatically goes out after a while to indicate that the printer is ready.
- Lights when printing has stopped (offline) due to paper end or paper near end. If this happens, replace the roll paper.

- Flashes when an error occurs. (For information about the flashing patterns, see ["Error Status" on page 17.](#))
- Goes out during regular operation (online).

Paper LED (orange)

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

Feed button

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

NOTE

- Whether to let printing stop when the roll paper is nearly out can be selected by a command. For information about the paper near-end sensor, see ["Adjusting the Paper Near-End Sensor" on page 39.](#)
- Whether to let the Paper LED light when the roll paper is nearly out can be selected with the memory switch. For information about the paper near-end sensor, see ["Adjusting the Paper Near-End Sensor" on page 39.](#)
- Enabling/disabling of Feed button can be selected by a command. If the command is set to disable this button, it does not function. For information about ESC/POS commands, see the ESC/POS Application Programming Guide.

Offline

The printer automatically goes offline under the following conditions:

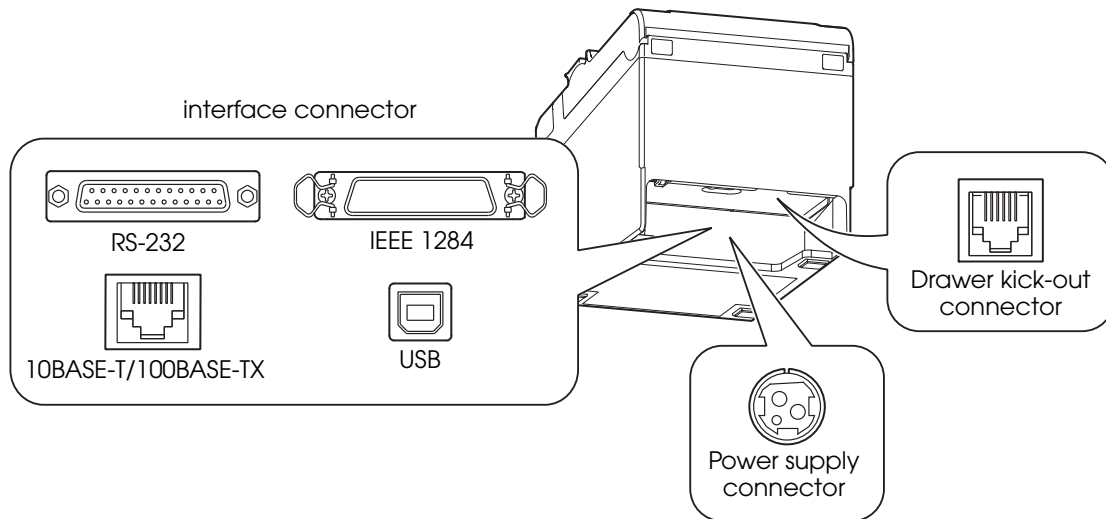
- During power on until the printer is ready
- During the self-test
- While roll paper is fed using the Feed button
- When the printer stops printing due to a paper near end or paper end
- During a macro execution standby state
- When an error has occurred (See ["Error Status" on page 17.](#))

NOTE

Whether to let printing stop when the roll paper is nearly out can be selected by a command. For information about the paper near-end sensor, see ["Adjusting the Paper Near-End Sensor" on page 39.](#)

Connectors

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



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

CAUTION

For a USB interface, do not turn on the printer before installing the printer driver.

NOTE

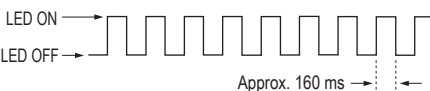
For information about how to connect the interface connector, cash drawer, and optional external buzzer, see ["Connecting to the Power Source" on page 49](#), ["Connecting the Cash Drawer" on page 64](#), and ["Connecting the Optional External Buzzer" on page 62](#).

Error Status

When an error occurs, the printer stops operating, goes offline, and the Error LED flashes. There are three possible error types: automatically recoverable errors, recoverable errors, and unrecoverable errors.

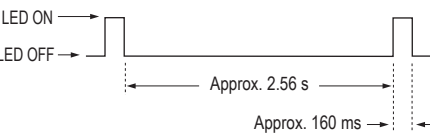
Automatically Recoverable Errors

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

Error	Error description	Error LED flashing pattern	Recovery measure
Roll paper cover open error	The roll paper cover was opened during printing.	 LED ON → LED OFF → Approx. 160 ms →	Recovers automatically when the roll paper cover is closed.
Print head temperature error	A high temperature outside the head drive operating range was detected.	 LED ON → LED OFF → Approx. 160 ms →	Recovers automatically when the print head cools.

Recoverable Errors

Printing is no longer possible when recoverable errors occur. They can be recovered easily by turning the power on again or sending an error recovery command from the driver after eliminating the cause of the error.

Error	Error description	Error LED flashing pattern	Recovery measure
Autocutter error	Autocutter does not work correctly.	 LED ON → LED OFF → Approx. 2.56 s Approx. 160 ms →	Remove the jammed paper or foreign matter in the printer, close the roll paper cover, send the error recovery command, or turn the power on to recover.

CAUTION

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

Unrecoverable Errors

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



Turn off the power immediately when an unrecoverable error occurs.

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

NV Memory (Non-Volatile Memory)

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

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

CAUTION

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

NV Graphics Memory

Graphics, such as shop logos to be printed on receipts, can be registered. Even with a serial interface model whose communication speed is low, high speed graphic printing is possible. Use the TM-T82II Utility to register graphics. You can also use the TM-T82II Utility or the NV graphics information print mode to print and confirm the registered graphics.

NOTE

- For information about the TM-T82II Utility, see the TM-T82II Utility User's Manual.
- For information about how to use the NV graphics information print mode, see ["NV Graphics Information Print Mode" on page 81](#).

User NV Memory

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

Use ESC/POS commands to store and read the text data.

NOTE

For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Application Programming Guide.

Memory Switches

With the memory switches, which are software switches for the printer, you can configure various settings of the printer. For information about the memory switch, see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#).

R/E (Receipt Enhancement)

Graphics, such as shop logos can be printed on top or bottom of receipts by setting R/E (Receipt Enhancement). For information about R/E, see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#).

User-defined Page

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

NOTE

- For the character code table, see ["Character Code Tables" on page 100](#).
- User-defined page is not supported by South Asia font models.

Maintenance Counter

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

NOTE

You can also check the head running length and number of times of autocutting with the self-test (see ["Self-test Mode" on page 78](#).) and the TM-T82II Utility.

Product Specifications

Printing method		Thermal line printing
Printing direction		Unidirectional with friction feed
Paper feed speed		200 mm/s {7.87"/s} (continuous paper feeding with the Feed button)
Cutting method		Partial cut (cutting with one point in left edge left uncut)
Interface	Serial interface models	Serial (RS-232), USB (USB 2.0, Full-speed (12 Mbps))
	Parallel interface models	Parallel (IEEE1284), USB (USB 2.0, Full-speed (12 Mbps))
	Ethernet interface models	Ethernet (10BASE-T/100BASE-TX)
Buffers	Receive buffer	4 KB/45 bytes (selectable using the memory switch)
	Downloaded buffer (user-defined characters and user-defined images)	12 KB
	Macro buffer	2 KB
	NV graphics memory	256 KB
	Download graphics memory	208 KB
	User NV memory	1KB
Barcode/ two-dimensional symbol printing		UPC-A, UPC-E, JAN 8 (EAN 8), JAN 13 (EAN 13), CODE 39, ITF, CODABAR (NW-7), CODE 93, CODE 128, GS1-128, GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, PDF417, QR CODE, MaxiCode, Composite Symbology
Operating voltage		DC 24V $\pm$ 7%
Life	Printer mechanism	15,000,000 lines (printing + paper feeding)
	Thermal head	100 million pulses, 160 km
	Autocutter	1,500,000 cuts
	MTBF	360,000 hours
	MCBF	60,000,000 lines
Overall dimensions (H $\times$ W $\times$ D)		146 $\times$ 140 $\times$ 199 mm {5.75 $\times$ 5.51 $\times$ 7.83"}
Weight (mass)		Approx. 1.7 kg {3.74 lb}

Printing Specifications

			80 mm width paper printing	58 mm width paper printing
Printing method			Thermal line printing	
Dot density			203 × 203 dpi	
Paper width	Normal mode (initial setting)		72.0 mm (2.83"), 576 dots	52.5 mm (2.07"), 420 dots
	42 column mode		68.3 mm (2.69"), 546 dots	47.3 mm (1.86"), 378 dots
Character spacing	Normal mode (initial setting)	Font A	0.25 mm {0.0098"} (2 dots)	
		Font B	0.25 mm {0.0098"} (2 dots)	
		Kanji font	0.00 mm (0 dot)	
		Special font A	0.25 mm {0.0098"} (2 dots)	
		Special font B	0.25 mm {0.0098"} (2 dots)	
	42 column mode	Font A	0.38 mm {0.015"} (3 dots)	0.25 mm {0.0098"} (2 dots)
		Font B	0.25 mm {0.0098"} (2 dots)	0.25 mm {0.0098"} (2 dots)
		Kanji font	0.25 mm {0.0098"} (2 dots)	0.00 mm (0 dot)
		Special font A	0.38 mm {0.015"} (3 dots)	0.25 mm {0.0098"} (2 dots)
		Special font B	0.25 mm {0.0098"} (2 dots)	0.25 mm {0.0098"} (2 dots)
Line spacing			3.75 mm {1/5"} (initial setting, programmable by command)	
Maximum print speed*			200 mm/s {7.87"/s}	

dpi: dots per inch

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

CAUTION

- To change the paper width, you need to install the 58-mm width paper guide plate and to make the paper width setting with the memory switch. For information about how to change the paper width, see ["Changing the Paper Width" on page 38](#).
- The printing speed changes automatically depending on the applied voltage and head temperature.
- The maximum printing speed may not be achieved depending on the type of interface, the setting of data transmission speed, and the combination of control commands.
- If the data transmission speed is slower than the maximum printing speed, the printing speed may fluctuate and the print result may become shaded and/or dot displacement in paper feeding may occur. Furthermore, if the data transmission speed is much slower than the maximum printing speed, intermittent printing will occur.

NOTE

Especially when using a serial interface, low transmission speed may cause intermittent printing. It is recommended to transmit data to the printer as quickly as possible.

Character Specifications

Number of characters

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

Character structure

		80 mm width paper printing	58 mm width paper printing
Normal mode (initial setting)	Font A	12 × 24 (including 2-dot horizontal spacing)	
	Font B	9 × 17 (including 2-dot horizontal spacing)	
	Kanji font	24 × 24	
	Special font A	12 × 24 (including 2-dot horizontal spacing)	
	Special font B	9 × 24 (including 2-dot horizontal spacing)	
42 column mode	Font A* ¹	13 × 24 (including 3-dot horizontal spacing)	9 × 17 (including 2-dot horizontal spacing)
	Font B	9 × 17 (including 2-dot horizontal spacing)	12 × 24 (including 2-dot horizontal spacing)
	Kanji font* ²	26 × 24 (including 2-dot horizontal spacing)	24 × 24
	Special font A* ¹	13 × 24 (including 3-dot horizontal spacing)	9 × 24 (including 2-dot horizontal spacing)
	Special font B	9 × 24 (including 2-dot horizontal spacing)	12 × 24 (including 2-dot horizontal spacing)

*1: 13 × 24 font is a font with a 1-dot horizontal space added to Font A or Special font A (12 × 24) of the normal mode. Therefore, the character size is the same as Font A or Special 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.

*2: 26 × 24 font is a font with a 2-dot horizontal space added to Kanji font A (24 × 24) of the normal mode. Therefore, the character size is the same as Kanji font of the normal mode and the space between characters increases by 2 dots.

Character size

		Standard/Double-height/Double-width/Double-width, double-height W × H (mm)	
		80 mm width paper printing	58 mm width paper printing
Normal mode	Font A	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/2.50 × 6.00	
	Font B	0.88 × 2.13/0.88 × 4.26/1.76 × 2.13/1.76 × 4.26	
	Kanji font	3.00 × 3.00/3.00 × 6.00/6.00 × 3.00/6.00 × 6.00	
	Special font A	1.25 × 3.00/1.25 × 6.00/2.50 × 3.00/2.50 × 6.00	
	Special font B	0.88 × 3.00/0.88 × 6.00/1.76 × 3.00/1.76 × 6.00	
42 column mode	Font A	1.25 × 3.00/1.25 × 6.00/ 2.50 × 3.00/2.50 × 6.00	0.88 × 2.13/0.88 × 4.26/ 1.76 × 2.13/1.76 × 4.26
	Font B	0.88 × 2.13/0.88 × 4.26/ 1.76 × 2.13/1.76 × 4.26	1.25 × 3.00/1.25 × 6.00/ 2.50 × 3.00/2.50 × 6.00
	Kanji font	3.00 × 3.00/3.00 × 6.00/6.00 × 3.00/6.00 × 6.00	
	Special font A	1.25 × 3.00/1.25 × 6.00/ 2.50 × 3.00/2.50 × 6.00	0.88 × 3.00/0.88 × 6.00/ 1.76 × 3.00/1.76 × 6.00
	Special font B	0.88 × 3.00/0.88 × 6.00/ 1.76 × 3.00/1.76 × 6.00	1.25 × 3.00/1.25 × 6.00/ 2.50 × 3.00/2.50 × 6.00

Note:

Space between characters is not included.

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

Characters per line

		Standard/Double-height/Double-width/Double-width, double-height	
		80 mm width paper printing	58 mm width paper printing
Normal mode	Font A	48/48/24/24	35/35/17/17
	Font B	64/64/32/32	46/46/23/23
	Kanji font	24/24/12/12	17/17/8/8
	Special font A	48/48/24/24	35/35/17/17
	Special font B	64/64/32/32	46/46/23/23
42 column mode	Font A	42/42/21/21	42/42/21/21
	Font B	60/60/30/30	31/31/15/15
	Kanji font	21/21/10/10	15/15/7/7
	Special font A	42/42/21/21	42/42/21/21
	Special font B	60/60/30/30	31/31/15/15

Paper Specifications

		80 mm width paper printing	58 mm width paper printing
Paper types		Specified thermal paper	
Form		Roll paper	
Size	Roll paper diameter	83 mm {3.27"} maximum	
	Roll paper spool	Inside: 12 mm {0.47"}, Outside: 18 mm {0.71"}	
	Roll width when taken up	80 + 0.5/-1.0 mm	58 + 0.5/-1.0 mm
	Paper width	79.5 ± 0.5 mm	57.5 ± 0.5 mm
Specified roll paper type		NTP080-80	NTP058-80
Specified original paper type		TF50KS-E, TF60KS-E (NIPPON Paper Industries Co., Ltd.) PD150R, PD160R, PD190R (OJI Paper Mfg. Co., Ltd.) P220AGB-1 (Mitsubishi Paper Mills Limited.) P350 (Kanzaki Specialty Papers) AF50KS-E (Jujo Thermal Oy) F5041 (Mitsubishi HiTec Paper Flensburg GmbH) KT55F20, KT48F20 (Koehler Paper Group)	

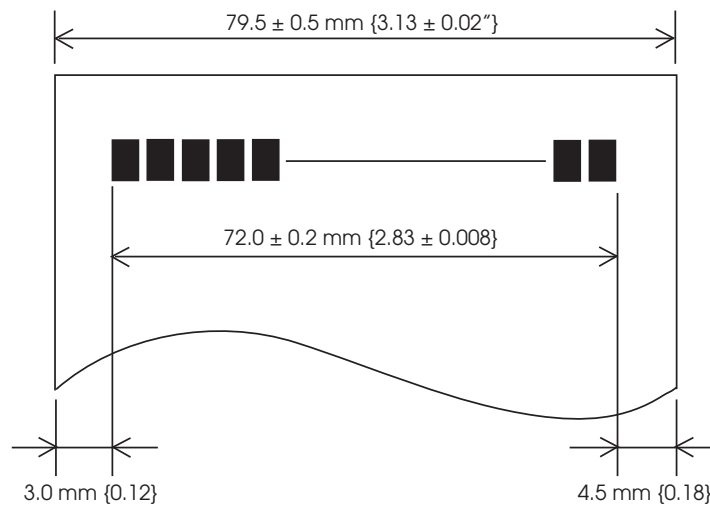
CAUTION

- Paper must not be pasted to the roll paper spool.
- For the best print quality for each paper type, it is recommended to set the print density. (See "[Setting the Memory Switches/Receipt Enhancement](#)" on page 51.)

Printable Area

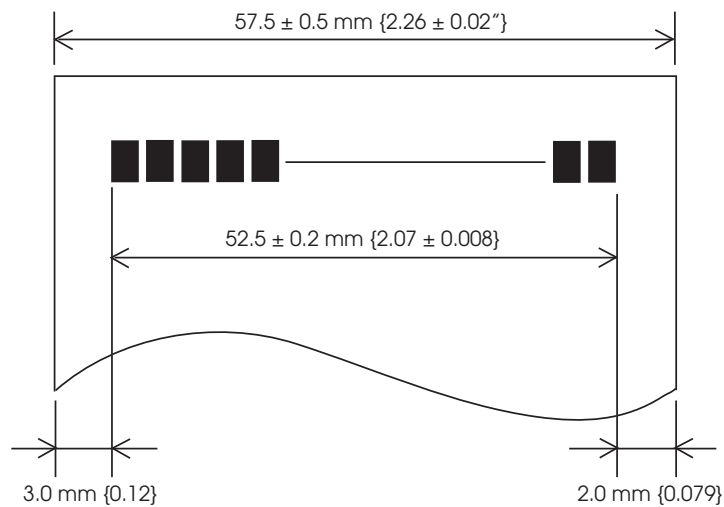
80 mm paper width printing

The maximum printable area of paper with a width of 79.5 ± 0.5 mm $\{3.13 \pm 0.02\}$ " is 72.0 ± 0.2 mm $\{2.83 \pm 0.008\}$ " (576 dots) and the approximate space is 3.0 mm $\{0.12\}$ " on the left side on the left side and 4.5 mm $\{0.18\}$ " on the right side.

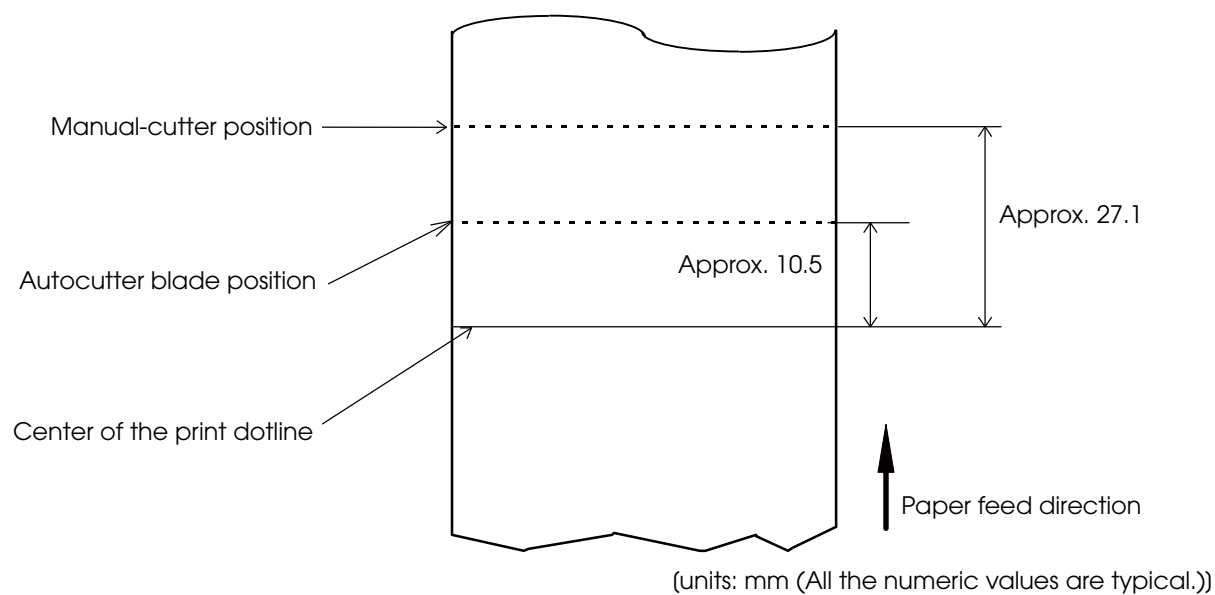


58 mm paper width printing

The maximum printable area of paper with a width of 57.5 ± 0.5 mm $\{2.26 \pm 0.02\}$ " is 52.5 ± 0.2 mm $\{2.07 \pm 0.008\}$ " (420 dots), and the approximate space is 3.0 mm $\{0.12\}$ " on the left side and 2.0 mm $\{0.079\}$ " on the right side.

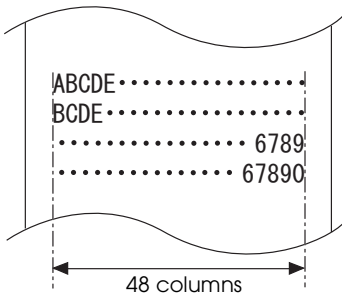


Printing and Cutting Positions

**CAUTION**

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

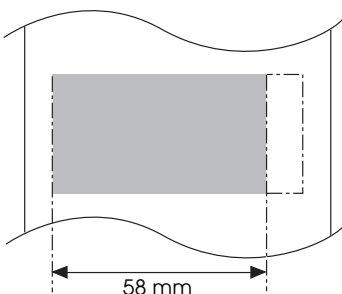
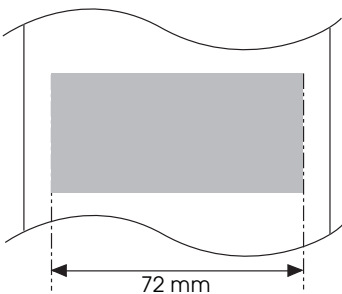
Electrical Characteristics

Operating voltage	DC 24V $\pm$ 7%
Current consumption Standby (24V, 25°C, standard print density)	Mean: Approximately 0.1 A
Operating	Mean: Approximately 1.8 A Note: When print ratio is approximately 18% • Continuous printing for 50 lines (repeating 20H-7FH) * Font A, 48 columns, ASCII character • 5 line feeding • Autocutting 

CAUTION

If printing is continuously performed with a high ratio, the overcurrent protection may be activated and result in uneven print density or a low voltage error. Therefore, the printing length must not exceed the following values when printing with high print ratio.

Print ratio: Number of dots being energized per one dot line/Total number of dots per one dot line (576 dots)

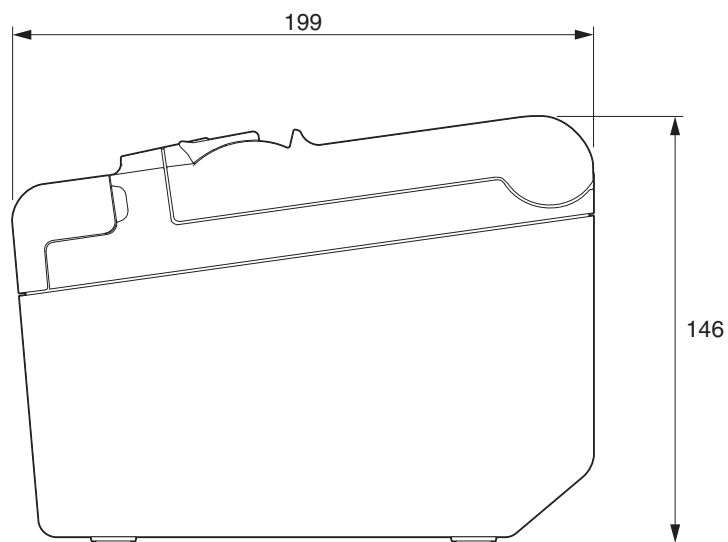
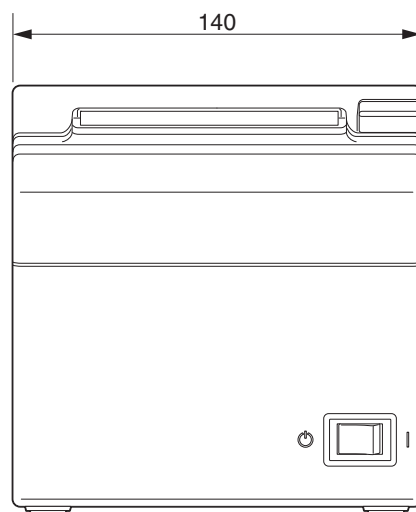
Print ratio	80%	100%
Print example		
Print length	20 mm	20 mm

Environmental Conditions

Temperature/ Humidity	Operating	5 to 45°C {41 to 113°F}, 10 to 90% RH (See the operating temperature and humidity range below.)
	Storage	-10 to 50°C {14 to 122°F}, 10 to 90% RH (except for paper)
Acoustic noise (operating)		Approximately 55 dB (bystander position) Note: The values above are measured in the Epson evaluation condition. Acoustic noise differs depending on the paper used, printing contents, and the setting values, such as print speed or print density.

External Dimensions and Mass

- Height: Approximately 146 mm {5.75"}
- Width: Approximately 140 mm {5.51"}
- Depth: Approximately 199 mm {7.83"}
- Mass: Approximately 1.7 kg {3.74 lb} (except for roll paper)



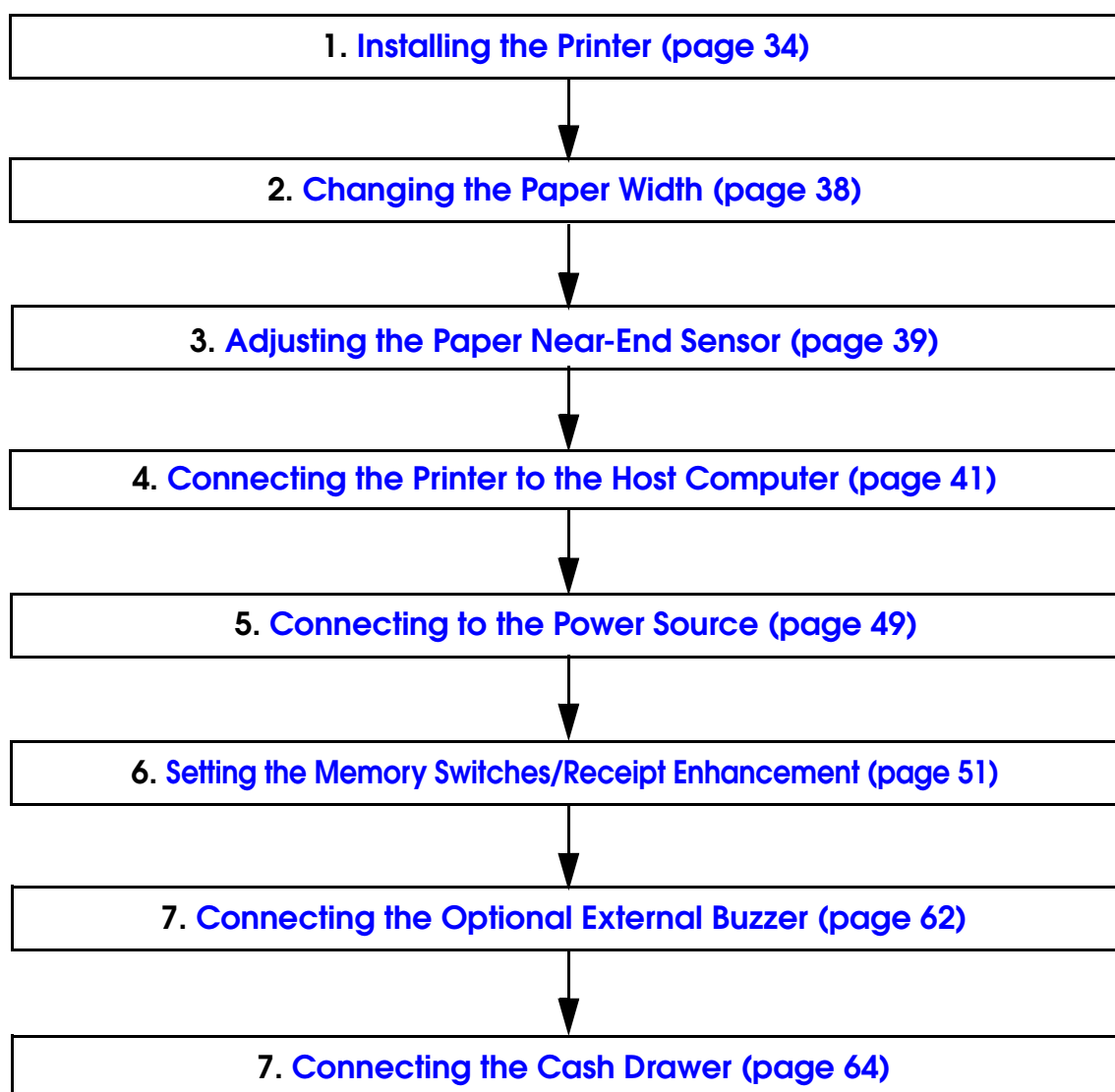
(Units: mm)

Setup

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

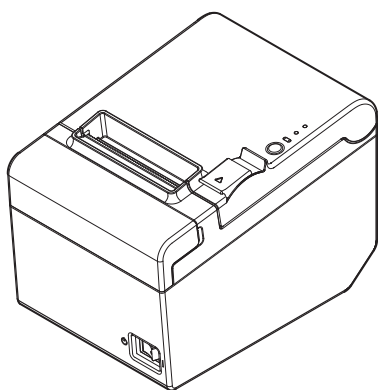
Flow of Setup

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

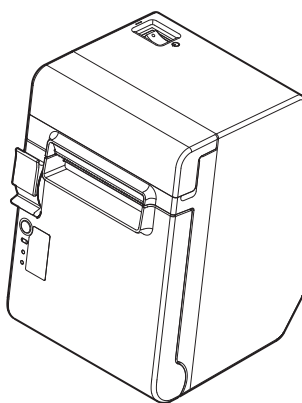


Installing the Printer

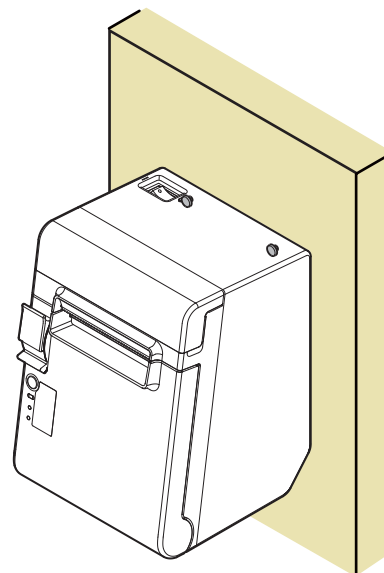
You can install the printer horizontally on a flat surface (with the paper exit on top) or vertically (with the paper exit at the front). Also, you can hang it on a wall using the included accessories.



Horizontal installation



Vertical installation



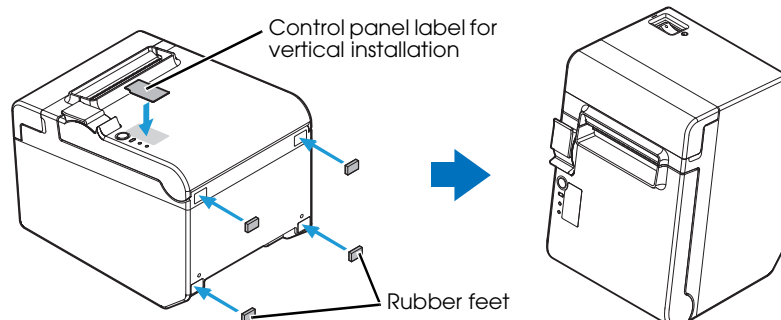
Hanging on a wall

CAUTION

- You can use the paper near-end sensor only when you install the printer horizontally. When you install the printer vertically or hang it on a wall, be sure to disable the setting. Otherwise false detections occur. For information about the paper near-end sensor, see ["Adjusting the Paper Near-End Sensor" on page 39](#).
- Take measures to prevent the printer from moving by vibration during paper cutting and when using a drawer. Affixing tape (Model: DF-10) is provided as an option.
- Do not place the printer in dusty locations.
- Do not knock or strike the printer. This may cause defective print.
- Do not catch cables or foreign matter under the printer.

Installing the Printer Vertically

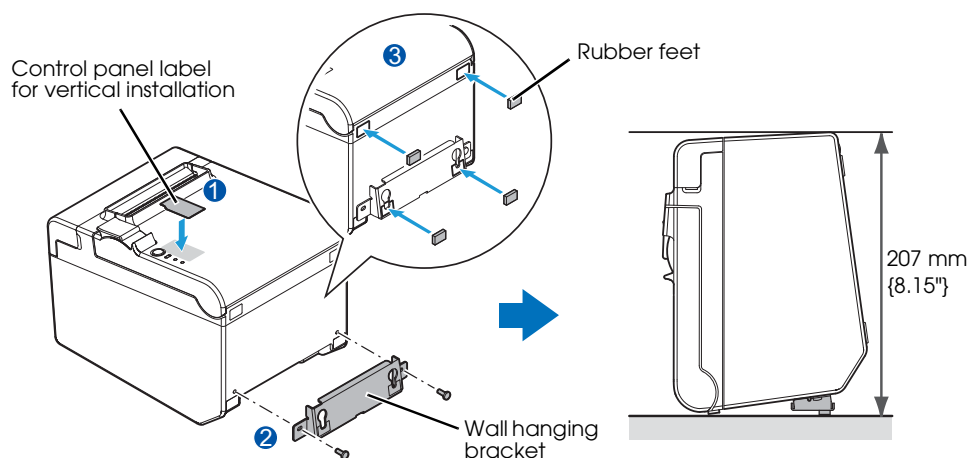
When installing the printer vertically, be sure to attach the included control panel label for vertical installation on the roll paper cover, and attach 4 rubber feet in the rectangular indents in the printer case, as shown in the illustration below.



Vertical installation

You can install the printer so that the roll paper cover is upright to the mounting surface using the included wall hanging bracket.

- 1** Attach the control panel label for vertical installation on the roll paper cover.
- 2** Install the wall hanging bracket on the printer, and fix it using 2 included screws.
- 3** Attach 2 rubber feet in the rectangular indents in the printer case, and attach 2 rubber feet within the scribed line on the hanging bracket.
- 4** Place the printer with the wall-hanging-bracket-side down.



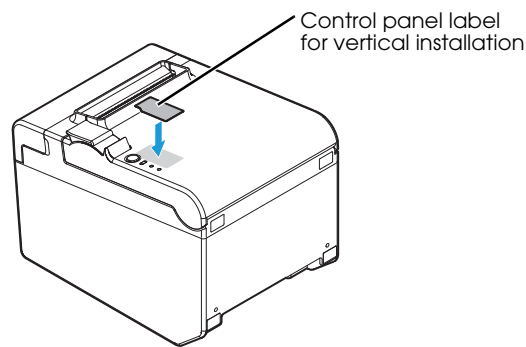
Hanging the Printer on a Wall

To hang the printer on the wall, follow the steps below.

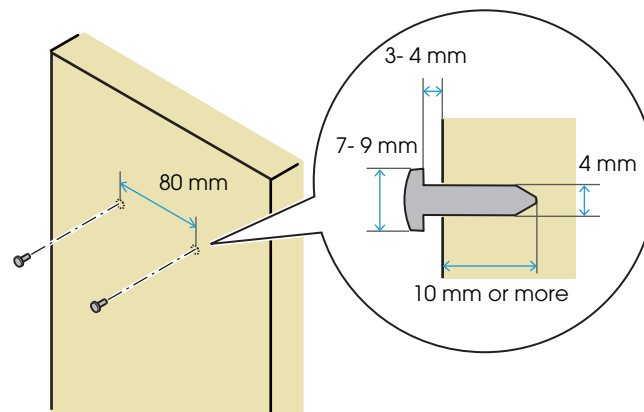
CAUTION

- To fix the printer securely, install the wall hanging bracket on a wall made of wood, concrete, or metal. The thickness of the wall should be 10 mm {0.4"} or more.
- Be sure to use metallic screws.
- The screws on the wall side must have a pull-out strength of 150 N (15.3 kgf) or more.

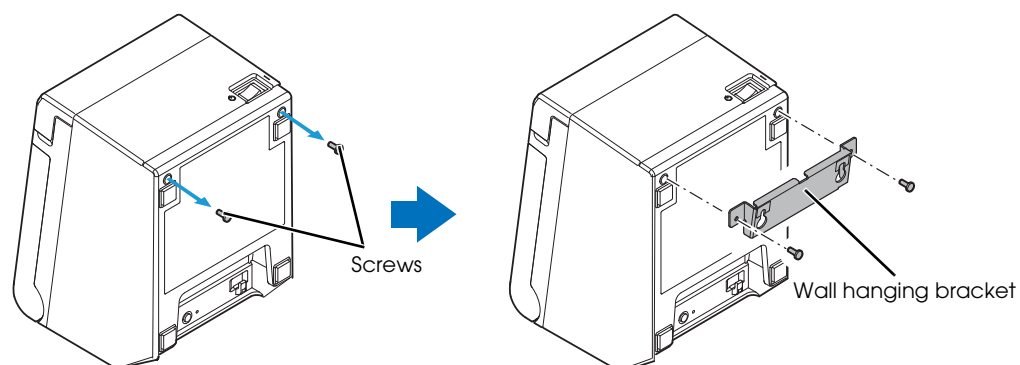
- 1 Attach the included control panel label for vertical installation on the roll paper cover.



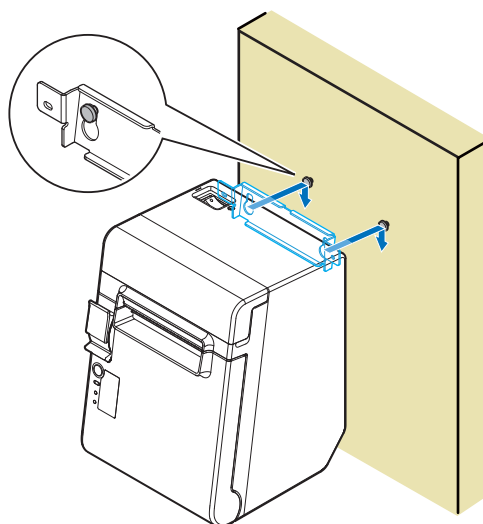
- 2 Install 2 screws (screw diameter: 4 mm {0.16"}, head diameter: 7 to 9 mm {0.28 to 0.35"}) in the wall at an interval of 80 mm {3.15"}. Make sure the length of the screw's body in the wall is 10 mm {0.39"} or more, and the length outside the wall is 3 to 4 mm {0.12 to 0.16"}.



- 3** Remove the installed 2 screws from the printer, install the wall hanging bracket on the printer, and fix it using the screws.



- 4** Align the holes in the wall hanging bracket with the screws on the wall, and hook it securely.



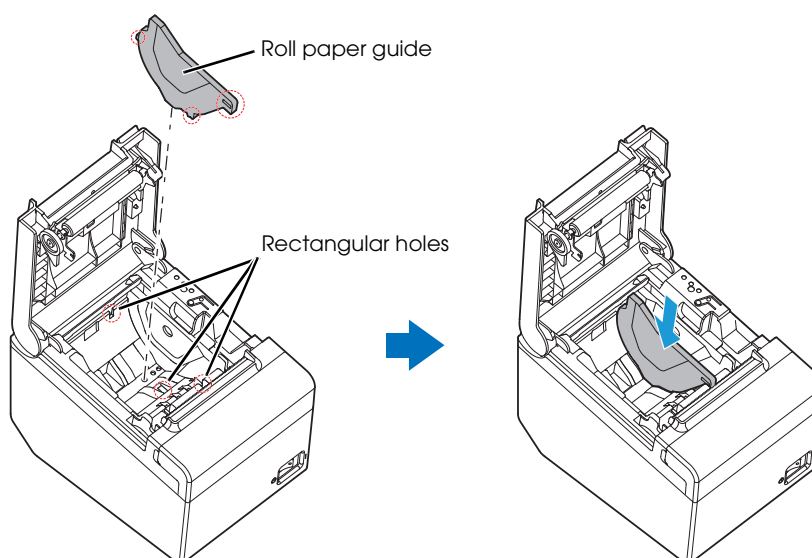
Changing the Paper Width

You can change the paper width from 80 to 58 mm by installing the included 58-mm width roll paper guide. Follow the steps below to change the paper width.

CAUTION

- Because some parts of the print head and the autocutter contact the platen and they may become worn out, once you change the paper width from 80 to 58 mm and use the printer, you cannot change it back to 80 mm.
- When changing the paper width, be sure to make the setting for the paper width with the memory switch. For information about the memory, see ["Setting the Memory Switches/Receipt Enhancement"](#) on page 51

- 1 Open the roll paper cover.
- 2 Align 3 projections on the 58-mm width roll paper guide with the rectangular holes in the printer, and push it downwards.



Adjusting the Paper Near-End Sensor

When you install the printer horizontally, you can use the paper near-end sensor.

Below are two situations where a paper near-end sensor adjustment is required.

- To adjust the detection position to suit the diameter of the roll paper core used.
- To adjust the detection position of the remaining amount of roll paper.

CAUTION

- To use the paper near-end sensor, it needs to be enabled with the memory switch. To set the memory switch, see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#).
- When you install the printer vertically or hang it on a wall, be sure to disable the paper near-end sensor. Otherwise false detections occur.
- Since roll paper cores vary slightly in shape, depending on paper roll design and manufacturing tolerances, it is impossible to detect the remaining paper exactly.
- Use roll paper with a core inner diameter of 12 mm {0.47"} and outer diameter of 18 mm {0.71"} so that the paper near-end sensor can detect the remaining paper as accurately as possible.

NOTE

- Whether to let printing stop when the roll paper is nearly out can be selected by a command. For information about ESC/POS commands, see the ESC/POS Application Programming Guide.
- Whether to let the Paper LED light when the roll paper is nearly out can be selected with the memory switch. To set the memory switch, see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#).
- Enabling/disabling of Feed button can be selected by a command. If the command is set to disable this button, it does not function. For information about ESC/POS commands, see the ESC/POS Application Programming Guide.

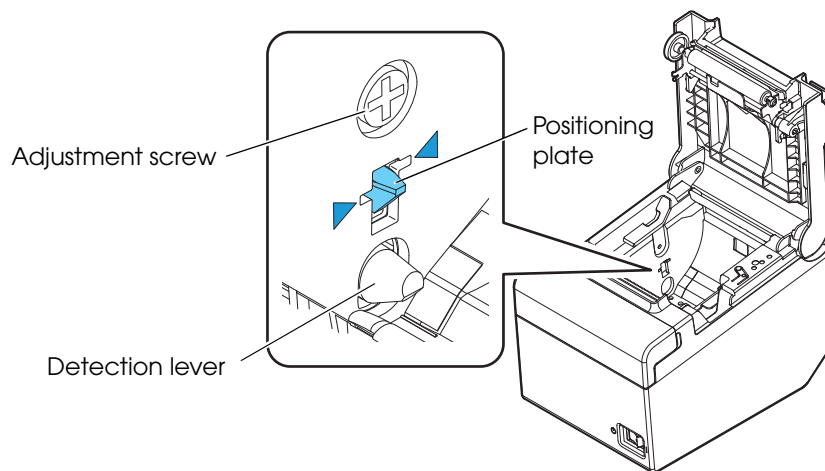
Follow the steps below to adjust the roll paper near-end sensor.

- 1 Open the roll paper cover.
- 2 Loosen the adjustment screw fastening the sensor, and align the upper edge of the positioning plate with the adjustment position.

Adjustment position	Remaining amount of paper (outer diameter)
Upper	Approx. 27 mm {1.06"}
Lower (Initial setting)	Approx. 23 mm {0.91"}

- 3 Tighten the adjustment screw.

4 Make sure that the detection lever operates smoothly.



Connecting the Printer to the Host Computer

CAUTION

- The printer uses a modular connector specifically designed for the cash drawer. Do not connect the connector to an ordinary telephone line.
- For Ethernet interface models, do not connect a telephone line or drawer kick-out cable to the Ethernet connector.

For Serial Interface

Serial interface connection diagram

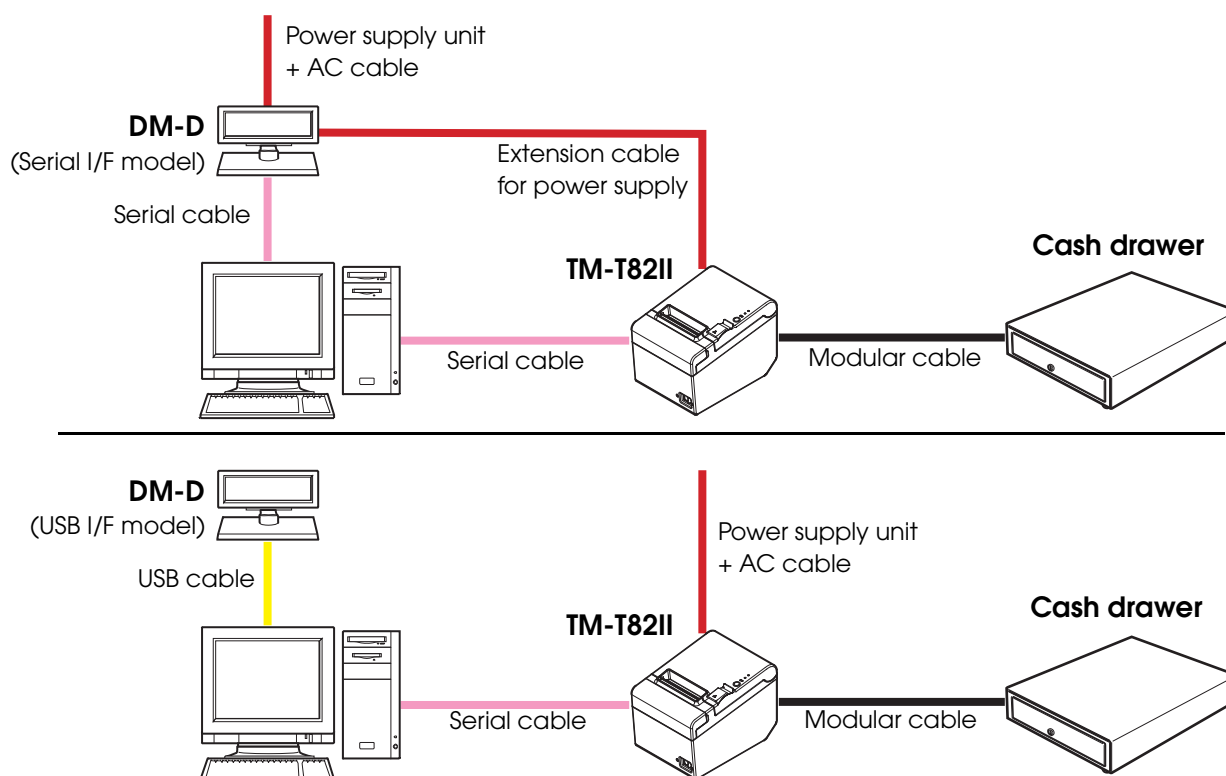
When this printer is connected to a host computer by the serial interface, two connection forms are possible; stand alone connection and pass-through connection.

NOTE

The modular cable is mounted on the cash drawer.

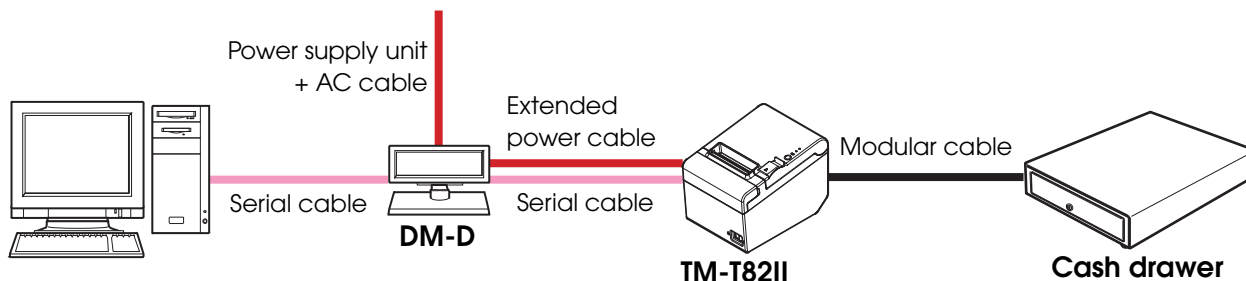
Stand alone connection

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



Pass-through connection

This printer is connected to the host computer through the serial interface via the customer display (DM-D).

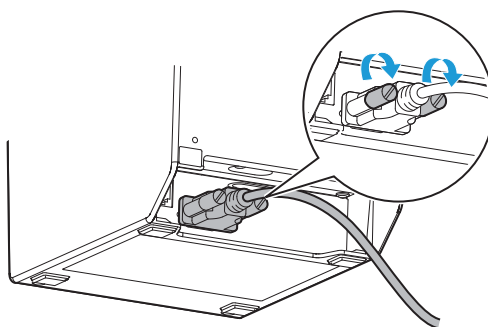


Connecting the serial interface (RS-232) cable

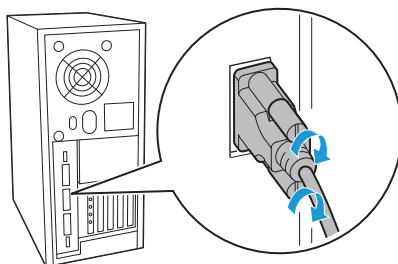


Be sure to turn off the power supply for both the printer and host computer before connecting the cables.

- 1 Insert the serial cable connector firmly into the serial interface connector.
- 2 When using connectors equipped with screws, tighten them to secure the connectors firmly.
When using interface cables equipped with a grounding line, attach the ground line to the screw hole marked "FG" on the printer.



- 3 Connect the other end of the serial cable to the host computer.



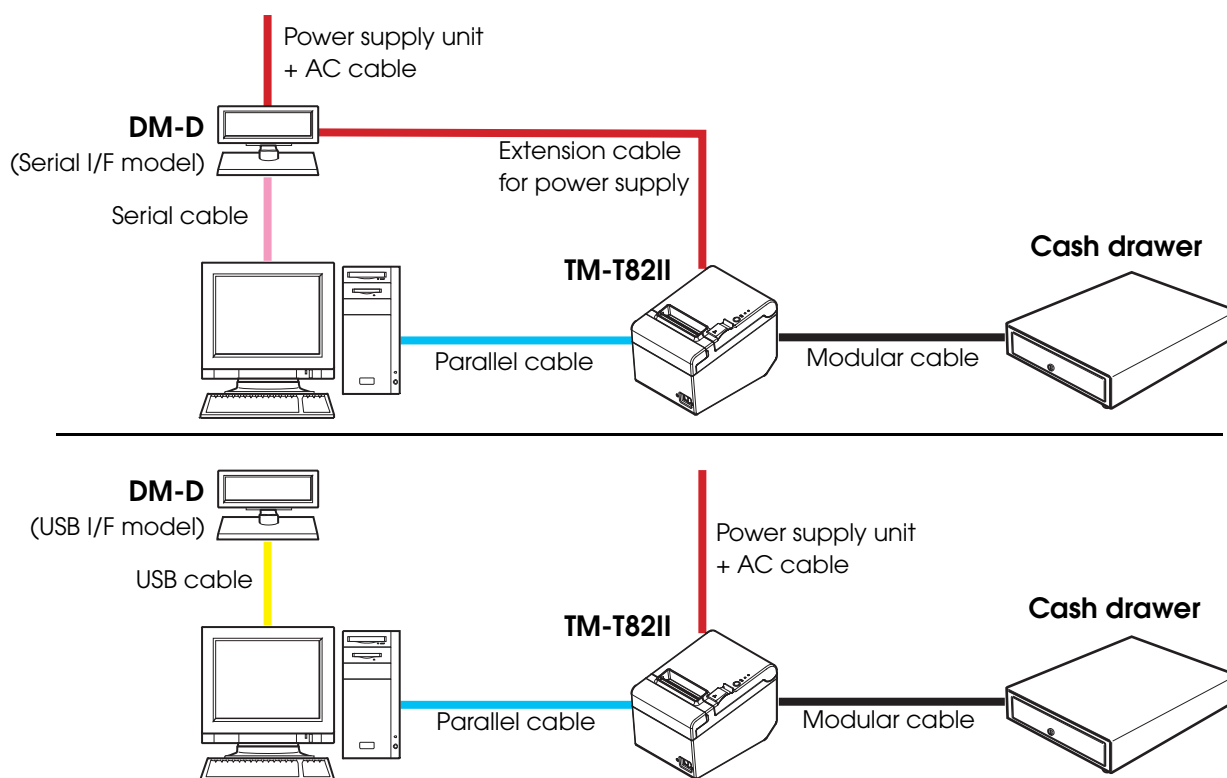
For Parallel Interface

Parallel interface connection diagram

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

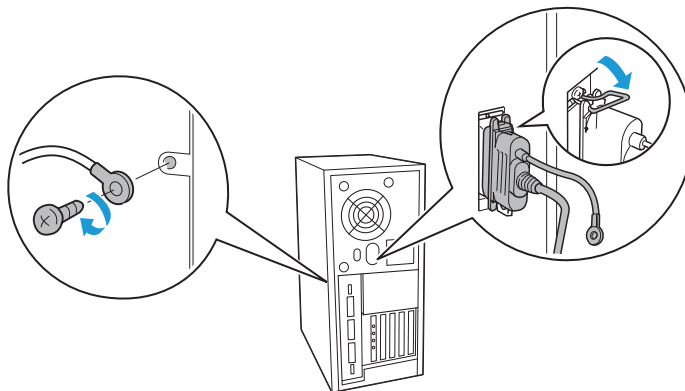
NOTE

The modular cable is connected to the cash drawer.



Connecting the parallel interface cable

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



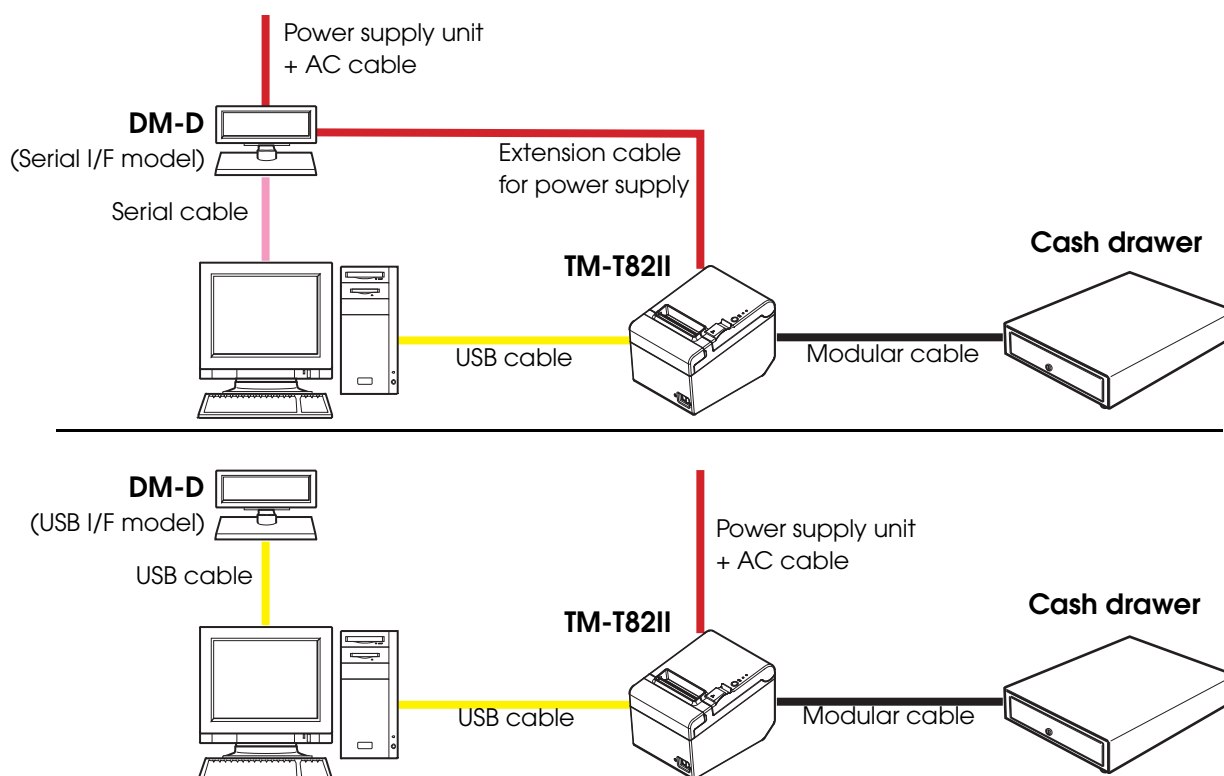
For USB Interface

USB interface connection diagram

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

NOTE

The modular cable is amounted on the cash drawer.

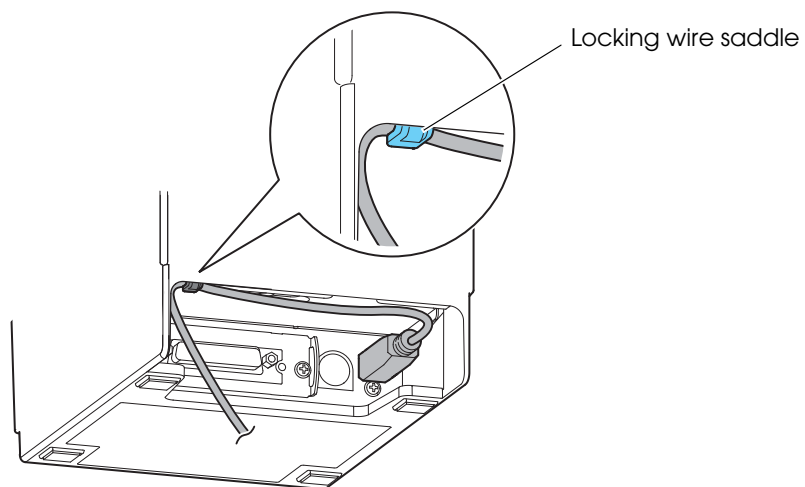


Connecting the USB interface cable

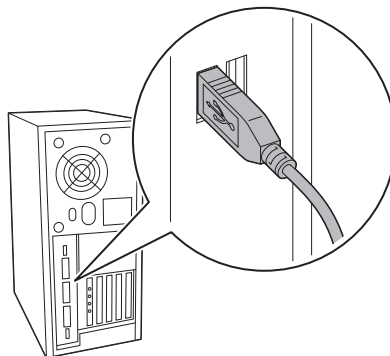
- 1 Insert the USB cable into the USB interface connector of the printer.
- 2 Put the USB cable through the locking wire saddle.

CAUTION

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



- 3 Connect the other end of the USB cable to the host computer.



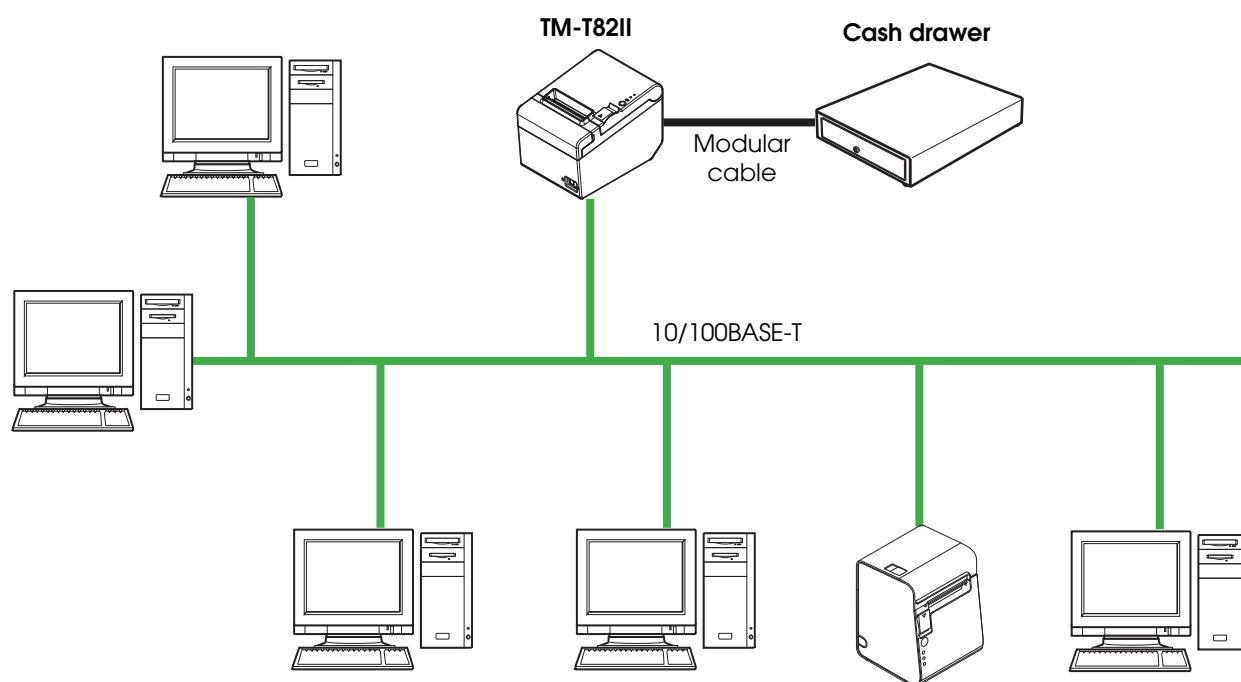
For Ethernet Interface

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

Ethernet interface connection diagram

NOTE

The modular cable is amounted on the cash drawer.



Connecting the Ethernet interface cable



CAUTION

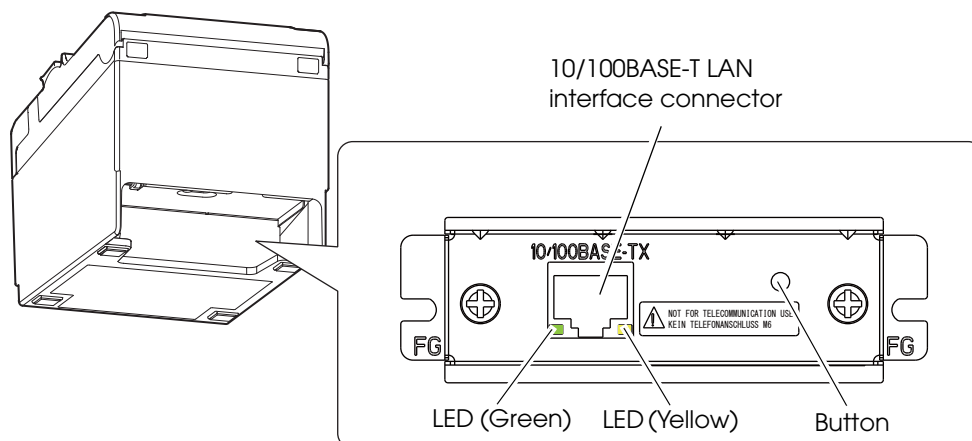
- When LAN cables are installed outdoors, make sure devices without proper surge protection are cushioned by being connected through devices that do have surge protection. Otherwise, the devices can be damaged by lightning.
- **Never attempt to connect the customer display cable, drawer kick-out cable, or a standard telephone line cable to the 10/100BASE-T LAN connector.**

NOTE

To use the Ethernet interface, the IP Address Setup Utility for UB-E02 is required. For detailed information about the setup methods, see the UB-E03 Technical Reference Guide. You can obtain the IP Address Setup Utility for UB-E03 and the UB-E03 Technical Reference Guide from one of the following URLs or ask your dealer:

- For customers in North America, go to the following web site:
<http://www.epsonexpert.com/>
- For customers in other countries, go to the following web site:
<http://download.epson-biz.com/?service=pos>

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



Press down the button for a while when the power is on to initialize to the factory settings.

Connecting to the Power Source

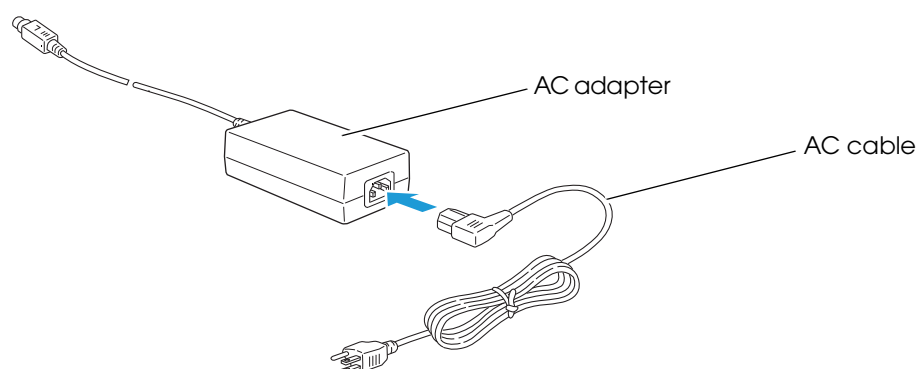


WARNING

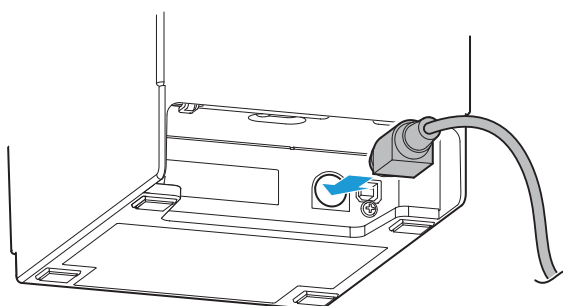
- **Never insert the AC cable plug into a socket that does not meet the rated voltage requirements of the printer.**
Doing so may result in damage to the printer.
- **Should a fault ever occur, immediately turn off the power to the printer and unplug the AC cable from the wall socket.**

Connecting the AC cable

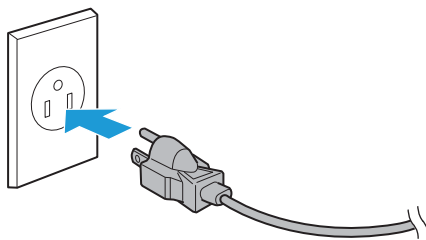
- 1 Make sure the printer is turned off.
- 2 Connect the AC cable to the AC adapter.



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



-
- 4** Insert the AC plug into a wall socket.



CAUTION

For using the USB interface, do not turn on the printer before installing the printer driver.

Setting the Memory Switches/Receipt Enhancement

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

For an outline of the functions, see the following section. Use the methods shown in the table below; TM-T82II Utility, Memory Switch Setting Mode, or ESC/POS commands, to set the memory switches and R/E functions.

Item \ Method		TM-T82II Utility	Memory Switch Setting Mode	ESC/POS Commands
Memory Switches	Receive buffer capacity		✓	✓
	BUSY condition		✓	✓
	Processing when data receive error		✓	✓
	Auto line feed		✓	✓
	USB power-saving function		✓	✓
	Release condition of receive buffer BUSY		✓	✓
	Paper sensor to output paper-end signals default* ¹		✓	✓
	Error signal output		✓	✓
	Paper near-end sensor	✓	✓	✓
	Customized Values	Paper width	✓	✓
		Print density	✓	✓
		Print speed	✓	✓
		Thai character print mode* ²	✓	✓
		Character code table default	✓	✓
		International character default	✓	✓
		Interface selection* ³	✓	✓
		Power supply unit capacity	✓	✓
		Number of columns	✓	✓
		Autocutting after closing cover	✓	✓
		Paper reduction	✓	✓
		Font A auto replacement	✓	✓
		Font B auto replacement	✓	✓
		Buzzer	✓	✓
		Logo 180 dpi emulation mode	✓	✓
		Communication condition of serial interface	✓	✓
		Communication condition of USB interface	✓	✓

Item \ Method		TM-T82II Utility	Memory Switch Setting Mode	ESC/POS Commands
Receipt Enhancement	Auto top logo	✓*4		✓
	Auto bottom logo	✓		✓
	Auto top/bottom logo extended functions	✓*4		✓

dpi: dots per inch

*1: Enabled only for the parallel interface

*2: Enabled only for South Asia font models

*3: Enabled only for serial/parallel interface models

*4: Excluding some function.

NOTE

- For information about the TM-T82II Utility, see the TM-T82II Utility User's Manual.
- For information about how to use the memory switch setting mode, see ["Memory Switch Setting Mode" on page 84](#).
- For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Application Programming Guide.

Functions

Receive buffer capacity

- 4KB (initial setting)
- 45 bytes

BUSY condition

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

Processing when data receive error

- Prints "?" (initial setting)
- Ignored

Auto line feed

- Always enabled (initial setting)
- Always disabled

USB power-saving function

- Disabled
- Enabled (initial setting)

CAUTION

The USB power-saving function is valid only when the USB interface communication condition is set to the vendor-defined class and the system configuration is set so that the USB driver can support the USB power-saving function.

Release condition of receive buffer BUSY

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

CAUTION

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

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

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

Error signal output

- Enabled (initial setting)
- Disabled

Paper near-end sensor

- Enabled
- Disabled (initial setting)

CAUTION

- You can use the paper near-end sensor only when you install the printer horizontally. When you install the printer vertically or hang it on a wall, be sure to disable the paper near-end sensor. Otherwise false detections occur.
- You may need to adjust the paper near-end sensor. For information about how to adjust it, see ["Adjusting the Paper Near-End Sensor" on page 39](#).

Paper width

- 80 mm (initial setting)
- 58 mm

CAUTION

To change the paper width, you need to install the 58-mm width paper guide plate. For information about how to change the paper width, see ["Changing the Paper Width" on page 38](#).

Print density

Selectable from levels 1 to 7 (85% ~ 115%).

Initial setting: level 4 (100%)

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

Original Paper type	Density Level
TF50KS-E, TF60KS-E, PD150R, PD160R, PD190R, P220AGB-1, P350, AF50KS-E, KT55F20, KT48F20	4 (100%)
F5041	5 (105%)

CAUTION

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

Print speed

Selectable from levels 1 to 13 (Slow ~ Fast)

Initial setting: level 13

NOTE

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

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

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

Character code table default

Selectable from 43 pages including user defined page

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



- For the character code table, see ["Character Code Tables" on page 100](#).
- User-defined page is not supported by South Asia font models.

International character default

Selectable from 18 sets

Initial setting for Simplified Chinese models: China

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



For the character code table, see ["International Character Sets" on page 144](#).

Interface selection (only for serial/parallel interface models)

Selectable from: automatic selection, fixed to serial/parallel interface, or fixed to built-in USB.



- The serial interface models and parallel interface models have dual interfaces: a built-in USB interface and another interface, serial or parallel interface. The tables below describe the modes you can set for the printer to control the dual interfaces.
- **Automatic selection:**
The interface of either the serial/parallel or built-in USB to which data is transmitted first is selected. Once the interface is selected, the selection is enabled until the power is turned off or the printer is reset.

For serial interface models

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

For parallel interface models

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

Power supply unit capacity

Selectable from levels 1 to 3 (Low ~ High)

Initial setting: level 3

Number of columns

- Standard mode (initial setting)
- 42 column mode

Autocutting after closing cover

- Cuts (initial setting)
- Does not cut

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%

Font A auto replacement

- Does not replace (initial setting)
- Font B

CAUTION

This function is enabled only when Number of columns is set to Standard mode.

Font B auto replacement

- Does not replace (initial setting)
- Font A

CAUTION

This function is enabled only when Number of columns is set to Standard mode.

Buzzer

NOTE

- To use the buzzer function with ANK models or South Asia font models, the optional external buzzer (OT-BZ20) needs to be connected. For information about how to connect the optional external buzzer, see ["Connecting the Optional External Buzzer" on page 62](#).
- When the optional external buzzer or Built-in buzzer is enabled, a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.

Enables/disables

- Disabled (initial setting)
- Optional external buzzer is enabled
- Built-in buzzer is enabled

Sound pattern (Error) (only for the built-in buzzer)

Selectable from Patterns A to E

Initial setting: Pattern B

Buzzer frequency (Error)

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

Sound pattern (Autocut)

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Autocut)

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

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

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Pulse 1)

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

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

Selectable from Patterns A to E

Initial setting: Pattern B

Buzzer frequency (Pulse 2)

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

Sound pattern (Paper end) (only for the built-in buzzer)

Selectable from Patterns A to E

Initial setting: Pattern C

Buzzer frequency (Paper end) (only for the built-in buzzer)

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

Sound pattern (Power on) (only for the built-in buzzer)

Selectable from Patterns A to E

Initial setting: Pattern D

Buzzer frequency (Power on) (only for the built-in buzzer)

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

Logo 180 dpi emulation mode

- Standard logo mode (initial setting)
- 180 dpi logo mode



Set to 180 dpi logo mode when you register graphics for 180 dpi so that the print result (203 dpi) is the same as one printed with a 180 dpi printer.

Communication condition of serial interface

Transmission speed

- 2400 bps
- 4800 bps
- 9600 bps
- 19200 bps
- 38400 bps (initial setting)
- 57600 bps
- 115200 bps

(bps: bits per second)

Parity

- None (initial setting)
- Even
- Odd

Data bit

- 7 bits
- 8 bits (initial setting)



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

Flow control

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

Communication condition of USB interface

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

Auto top logo



TM-T82II Utility does not support the function for Number of lines to be deleted below top logo.

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Number of lines to be deleted below top logo

Auto bottom logo

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Auto top/bottom logo extended functions

NOTE

TM-T82II Utility does not support the following functions.

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

Top logo print while paper feeding to the cutting position

- Disabled (initial setting)
- Enabled

Top logo print when printer is powered on

- Disabled (initial setting)
- Enabled

Top logo print when roll paper cover is closed

- Disabled
- Enabled (initial setting)

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

- Disabled
- Enabled (initial setting)

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

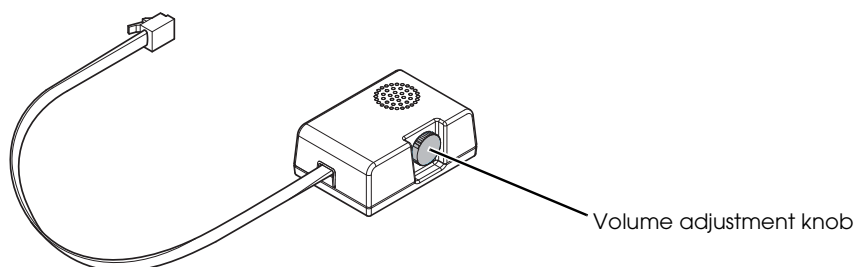
- Disabled (initial setting)
- Enabled

Connecting the Optional External Buzzer

When the optional external buzzer (model: OT-BZ20) is connected to the drawer kick-out connector of the printer, you can set the printer so that it beeps when you send commands, when an error occurs, and when the printer does specific operations such as autocutting. Settings for sound patterns and frequency depending on the occasions the buzzer beeps are also available. You need to set the memory switches for buzzer enable/disable setting, sound pattern setting, and frequency setting. For information about the memory switches, see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#).

CAUTION

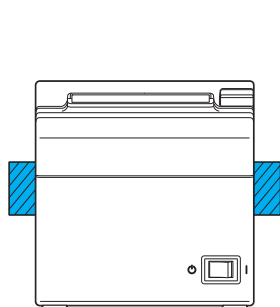
- Be sure to turn off the printer before you connect/disconnect the optional external buzzer.
- Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.



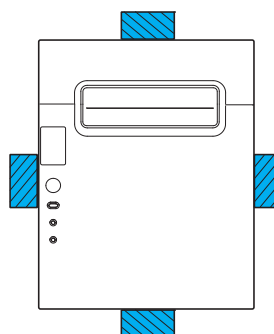
Connecting the Buzzer Unit

The buzzer unit is recommended to be installed in the following positions.

- When using the printer horizontally: either side
- When using the printer vertically or on the wall: either side/top/bottom (only for wall-hanging installation)



Horizontal installation

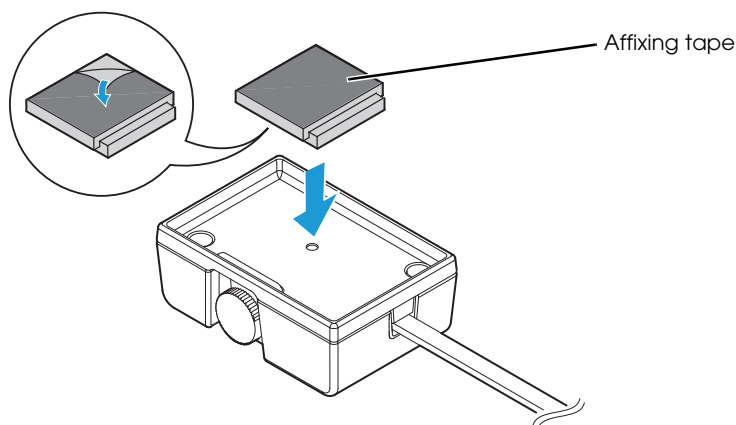


Vertical/Wall-hanging installation

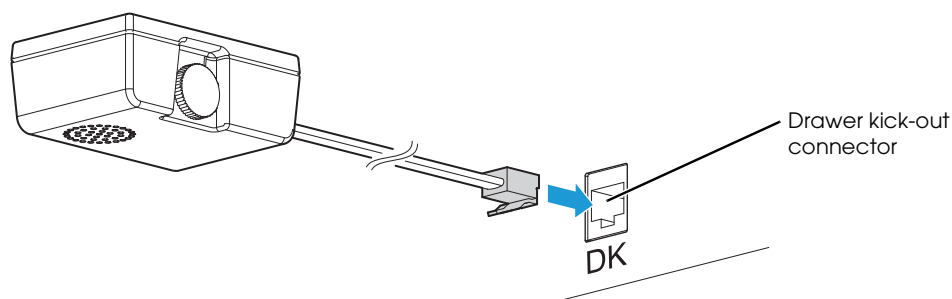
CAUTION

- Do not install the buzzer unit at the roll paper exit.
- To prevent liquid from entering inside, it is recommended to install the buzzer unit so that the volume adjustment knob is positioned sideways or downward.

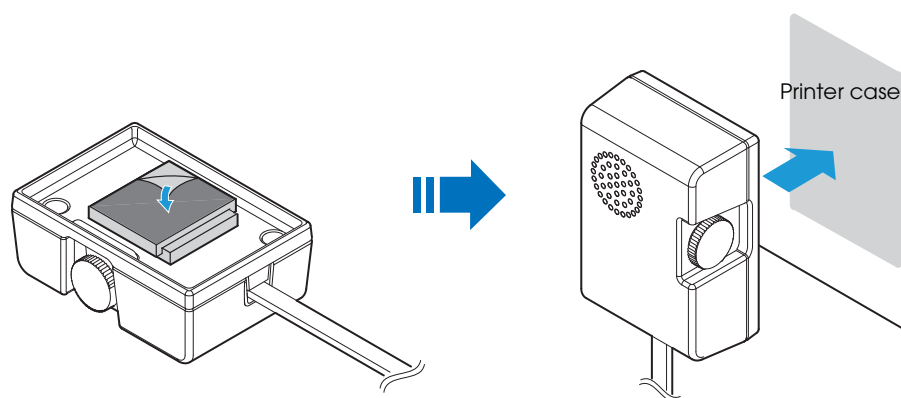
- 1** Turn off the printer.
- 2** Clean and dry the printer case where the buzzer unit will be installed.
- 3** With 2 included pieces of the affixing tape combined, peel off the backing paper on one side, and stick the tape in the center of the attaching surface of the buzzer unit.



- 4** Connect the cable of the buzzer unit to the drawer kick-out connector on the printer.



- 5** Peel off the backing paper on the other side of the affixing tape, and attach the buzzer unit to the printer case.



Connecting the Cash Drawer

Use a cash drawer handled by EPSON or your dealer.

CAUTION

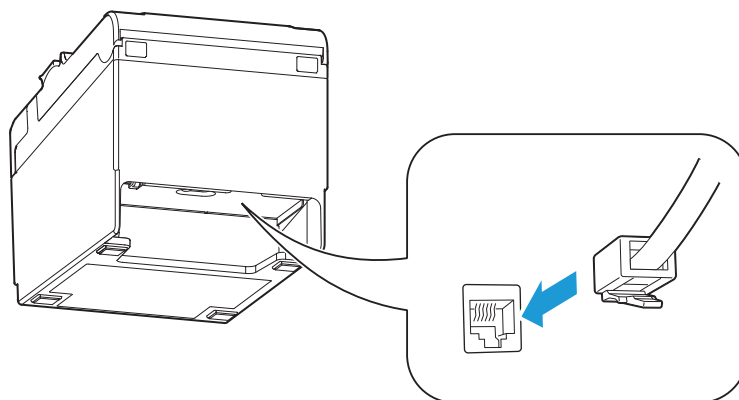
- Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.
- When the optional external buzzer is enabled with the memory switch (see ["Setting the Memory Switches/Receipt Enhancement" on page 51](#)), a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.

Connecting the Drawer Kick-out Cable

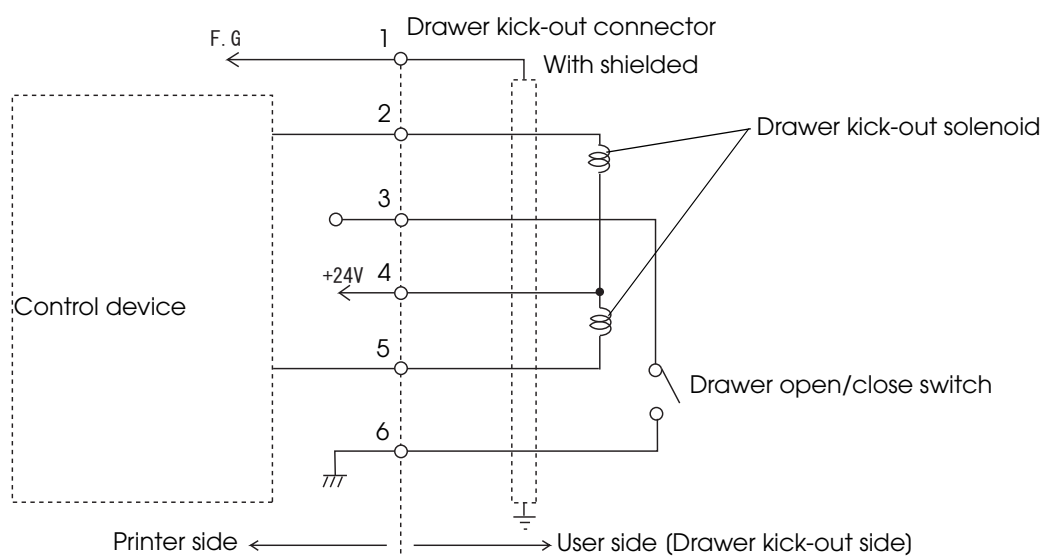
WARNING

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

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



Drawer Connection Diagram





Application Development Information

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

How to Control the Printer

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

Selecting a Driver

Choose one of the drivers listed in ["Printer Drivers" on page 74](#), depending on the application operating environment. You cannot control a single printer with more than one driver.

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

When you newly develop an application

- Use APD if you want to print TrueType fonts or print 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 68](#).)

ESC/POS Commands

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

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

The ESC/POS command functions are listed below. See the ESC/POS Application Programming Guide for more details.

ESC/POS command functions

Commands for printing
Print and line feed
Print and return to standard mode (in page mode)
Print and carriage return
Print data in page mode
Print and feed paper
Print and feed <i>n</i> lines
Commands for line spacing
Set line spacing
Select default line spacing
Commands for print character
Cancel print data in page mode
Set right-side character spacing
Select print mode(s)
Select/cancel user-defined character set
Define user-defined characters
Turn underline mode on/off
Cancel user-defined characters
Turn emphasized mode on/off
Turn double-strike mode on/off
Select character font

Select an international character set
Turn 90° clockwise rotation mode on/off
Select character code table
Turn upside-down print mode on/off
Select character size
Turn white/black reverse print mode on/off
Turn smoothing mode on/off
Commands for panel buttons
Enable/disable panel buttons
Commands for print positions
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
Commands for bit image
Select bit-image mode
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)
Define downloaded bit image
Print downloaded bit image
Define Windows BMP NV graphics data
Define Windows BMP download graphics data
Commands for status
Transmit real-time status
Enable/disable Automatic Status Back (ASB)
Transmit status
Commands for paper sensor
Select paper sensor(s) to output paper-end signals
Select paper sensor(s) to stop printing
Commands for barcode
Select print position of HRI characters
Select font for HRI characters
Set barcode height
Print barcode
Set barcode width
Commands for two-dimensional codes
PDF417: Set the number of columns in the data region
PDF417: Set the number of rows
PDF417: Set the width of module
PDF417: Set the row height

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

Write to NV user memory
Read from NV user memory
Change into the user setting mode
End the user setting mode session
Set values for the memory switch
Transmit the setting of the memory switch
Set the customized setting values
Transmit the customized setting values
Set conditions for serial interface communication
Transmit conditions for serial interface communication
Set conditions for USB interface communication
Transmit conditions for USB interface communication
Set the sound pattern of the internal buzzer
Transmit the sound pattern setting of the internal buzzer
Commands for macro function
Start/end macro definition
Execute macro
Commands for receipt enhancement
Cancel set values for top/bottom logo printing
Transmit set values for top/bottom logo printing
Set top logo printing
Set bottom logo printing
Make extended settings for top/bottom logo printing
Enable/disable top/bottom logo printing
Miscellaneous commands
Send real-time request to printer
Generate pulse in real-time
Execute power-off sequence
Sound buzzer in real-time
Clear buffer(s)

Control beeper tones
Select peripheral device
Initialize printer
Select page mode
Select standard mode
Generate pulse
Execute test print
Enable/disable real-time command
Specifies the process ID response
Select the print control mode
Select the print speed
Transmit printer ID
Set horizontal and vertical motion units
Initialize maintenance counter
Transmit maintenance counter
Commands for Kanji (only for Simplified Chinese models and Traditional Chinese models)
Set 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

Software and Manuals

The following software and manuals are provided for application development.

Printer Drivers

Software	Manual
EPSON Advanced Printer Driver (APD): In addition to ordinary Windows driver functions, this driver has controls specific to POS, such as controls for paper cut, a cash drawer, and customer display. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	• APD Install Manual • APD TM/BA/EU Printer Manual • APD Printer Specification • Status API Manual • Devmode API/PRINTERINFO Manual • Sample Program Guide • TM-T82II Software User's Manual
EPSON OPOS ADK: This OCX driver can control POS peripherals using OLE technology* ¹ . Because controlling POS peripherals with original commands is not required on the application side, efficient system development is possible.	• OPOS Installation Manual • User's Manual • Application Development Guide • UnifiedPOS Retail Peripheral Architecture*² • Sample Program Guide
EPSON OPOS ADK for .NET: OPOS ADK for .NET allows you to develop applications that are compatible with Microsoft POS for .NET. When developing applications, use a separate development environment such as Microsoft Visual Studio .NET.	• OPOS ADK for .NET Installation Guide • User's Reference (SetupPOS) • Application Development Guide (POSPrinter TM-T82II) • UnifiedPOS Retail Peripheral Architecture*²
EPSON JavaPOS ADK (Windows/Linux): JavaPOS is the standard specification which defines an architecture and device interface (API) to access various POS devices from a Java based system. Using JavaPOS standard API allows control with Java-based applications of functions inherent to each device. A flexible design with Java language and JavaPOS enables many different types of computer systems, such as stand alone or network configuration, to use a same application. You can use JavaPOS to build applications and drivers independently of platforms. This allows flexible configurations using thin clients to meet the system requirements.	JavaPOS ADK Installation Guide

Software	Manual
EPSON TM Virtual Port Driver: This driver is a Serial-USB/Ethernet and Parallel-USB/Ethernet conversion driver to make an EPSON TM/BA/EU printer connected via USB/Ethernet accessible from a POS application through virtual COM ports and a virtual LPT port. Without making changes in the POS application that controls devices connected through serial or parallel interfaces, devices connected via USB/Ethernet can be directly controlled with ESC/POS commands.	TM Virtual Port Driver User's Manual
TM-T82II Mac Printer Driver: Mac printer driver allows you to control the TM-T82II using Common UNIX Printing System (CUPS) on Mac OS X. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer controls are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing. It also provides API and dialogues for print setting, sample applications, and logo setting utility.	TM-T82II Mac Printer Driver User's Manual
Epson TM/BA Series Thermal Printer Driver: This driver allows you to control the TM-T82II using Common UNIX Printing System (CUPS) on GNU/Linux. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer control are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing.	• Epson TM/BA Series Thermal Printer Driver Installation Manual • Epson TM/BA Series Thermal Printer Driver Manual • TM-T82II Thermal Printer Driver Manual

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

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

Utilities

Software	Manual
TM-T82II Utility: Use for the following functions: • Checking current settings • Operation check • Storing logos • Coupon settings • Paper reduction settings • Automatic paper cut settings • Printing control settings • Font settings • Buzzer settings • Communication I/F settings • Backup/restore	• TM-T82II Software User's Manual • TM-T82II Utility User's Manual
EpsonNet Config: Use for IP address setting.	• EpsonNet Config Operations Guide • UB-E02/E03 Technical Reference Guide*
EpsonNet Simple Viewer: Use for checking the status of EPSON printers connected to a network and EPSON TM/BA printers connected to computers on a network.	EpsonNet Simple Viewer User's Manual
TM/BA/EU Printer Remote Configuration Tool: This is a package of EpsonNet Simple Viewer and TM-T82II Utility. First install this software in the computer with the administrator's authority, and set up the firewall. Next, install the printer driver in each client computer and set up the firewall. Then you can check the status of and configure the printer connected to a client computer on the network from the computer with the administrator's authority.	TM/BA/EU Printer Remote Configuration Tool User's Manual

*: See the following sections in Chapter 2;

- * Setting IP Address Using EPSON TMNet WinConfig
- * Setting IP Address Using arp/ping Command
- * Checking/Changing the Settings
- * Initializing
- * ESPON TMNet WebConfig

How to Get Drivers, Manuals, and the Utility

Drivers, manuals, and the TM-T82II Utility can be installed by the TM-T82II installer in the included TM-T82II Software & Documents Disc.

You can also obtain them from the following URL.

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

Setting/Checking Modes

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

- Self-test Mode
- Hexadecimal Dumping Mode ([page 80](#))
- NV Graphics Information Print Mode ([page 81](#))
- Receipt Enhancement Information Print Mode ([page 83](#))
- Memory Switch Setting Mode ([page 84](#))

Self-test Mode

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

The current status print includes the following information:

- Control ROM version
- Interface type
- Receive buffer size
- BUSY condition
- Resident fonts
- Thai character print mode
- Auto line feed
- Print density
- Maintenance counter information (head running length, number of times of autocutting)
- Memory switch settings

Starting the self-test mode

Follow the steps below to run this mode.

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

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

“Select Modes by pressing Feed button.

Continue SELF-TEST: Less than 1 second

Mode Selection: 1 second or more”

3 Press the Feed button to start the test print (less than 1 second).

The printer starts test printing. (A rolling pattern is printed using only the resident character set.)

NOTE

If you select “Mode Selection,” the printer goes to ["NV Graphics Information Print Mode" \(page 81\)](#), ["Receipt Enhancement Information Print Mode" \(page 83\)](#), or ["Memory Switch Setting Mode" \(page 84\)](#).

After the test printing has finished, the printer prints the following message, and then 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. It enables you to check if data is transmitted to the printer correctly.

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.

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

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

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 ***
```

NV Graphics Information Print Mode

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

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

Starting the NV graphics information print mode

Follow the steps below to run this mode.

- 1 Close the roll paper cover.
- 2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing current status of the printer.
When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

“Select Modes by pressing Feed button.

Continue SELF-TEST: Less than 1 second

Mode Selection: 1 second or more”
- 3 Press the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing instructions.
- 4 Press the Feed button once.

-
- 5** Then press the Feed button. (Keep pressing the Feed 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.

Receipt Enhancement Information Print Mode

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

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

Starting the R/E information print mode

Follow the steps below to run this mode.

- 1** Close the roll paper cover.
- 2** While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing current status of the printer.
When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

“Select Modes by pressing Feed button.

Continue SELF-TEST: Less than 1 second

Mode Selection: 1 second or more”
- 3** Press the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing instructions.
- 4** Press the Feed button twice.
- 5** Then press the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing the R/E information.

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

Memory Switch Setting Mode

In the memory switch setting mode, you can set the following memory switches.

- Print density
- Communication condition of serial interface
- Paper width
- Character code table default
- Font auto replacement
- Buzzer control
- Receive buffer capacity
- Processing when data receive error
- USB power-saving function
- Paper sensor to output paper-end signals default
- Paper near-end sensor setting
- Auto paper reduction
- Power supply unit capacity
- Print speed
- Autocutting after closing cover
- Thai character print mode (only for South Asia font models)
- International character default
- Communication condition of USB interface
- Column emulation mode
- BUSY condition
- Auto line feed
- Release condition of receive buffer BUSY
- Error signal output
- Logo emulation mode
- Interface selection

Starting the memory switch setting mode

Follow the steps below to run this mode.

- 1** Close the roll paper cover.
- 2** While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing current status of the printer.
When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

“Select Modes by pressing Feed button.

Continue SELF-TEST: Less than 1 second

Mode Selection: 1 second or more”

- 3** Press the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing instructions.
- 4** Press the Feed button three times.
- 5** Then press the Feed button. (Keep pressing the Feed button until the printer starts printing.)
The printer starts printing instructions for settings. Follow the instructions.

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



Handling

This chapter describes basic handling of the printer.

Installing and Replacing Roll Paper



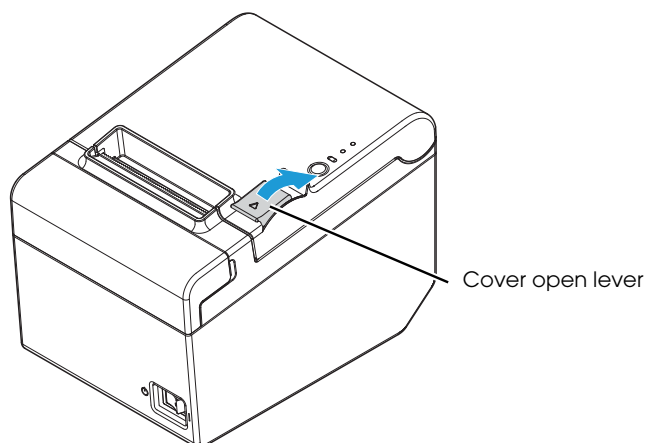
CAUTION

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

CAUTION

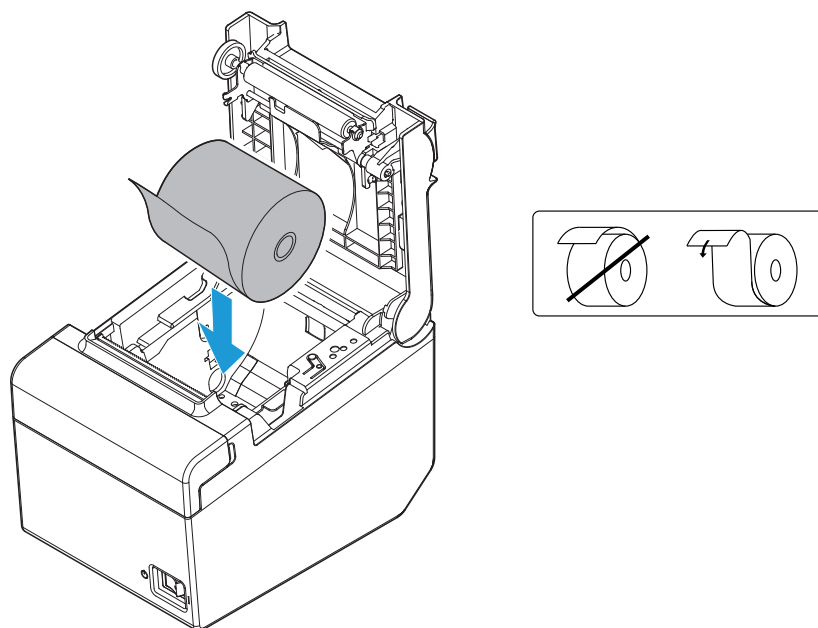
- Use roll paper that meets the printer specification. For details about paper specification, see ["Paper Specifications" on page 27](#).
- Paper must not be pasted to the roll paper spool.

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

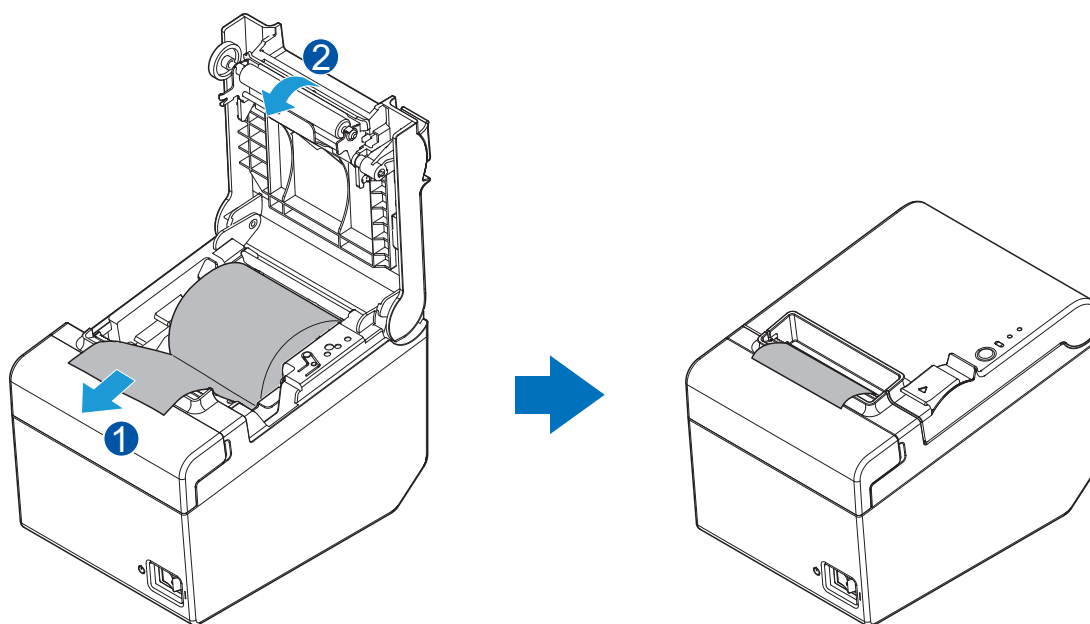


- 2 Remove the used roll paper core, if any.

- 3** Install the roll paper in the correct direction.



- 4** Pull out some roll paper, and close the roll paper cover.
When the printer power is on, the roll paper is automatically cut. (initial setting)



Removing Jammed Paper

When a paper jam occurs, never pull out the paper forcibly. Turn off the printer power, open the roll paper cover, and then remove the jammed paper.

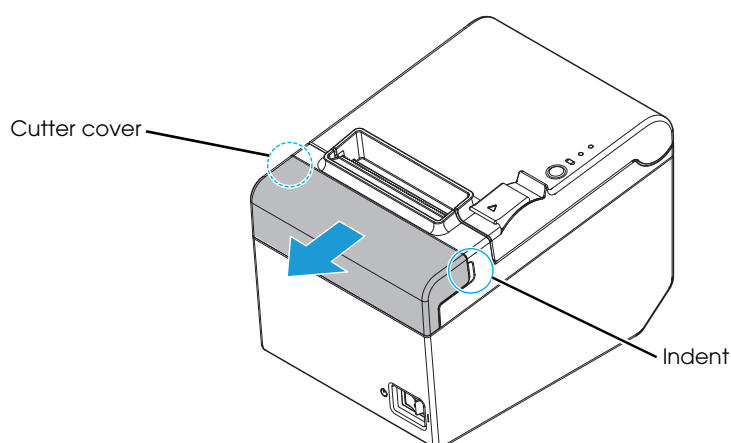


Do not touch the thermal head. (See "[Cleaning the Printer](#)" on page 91.)
It can be very hot after printing.

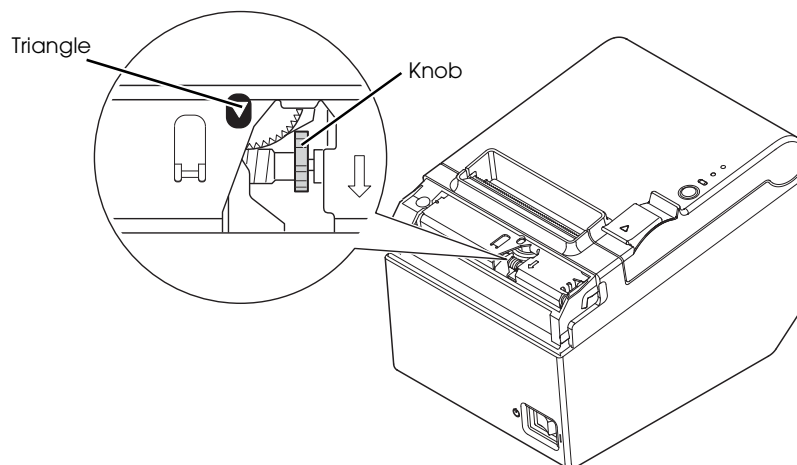
When the Roll Paper Cover Cannot be Opened

When the roll paper cover cannot be opened due to jammed paper, follow the steps below to open it.

- 1** Turn off the printer.
- 2** Slide the cutter cover toward the front to open it.



- 3** Turn the knob until you see a triangle in the opening.
This returns the cutter blade to the normal position.



- 4** Install the cutter cover.

Cleaning the Printer

Cleaning the Printer Case

Be sure to turn off the printer, and wipe the dirt off the printer case with a dry cloth or a damp cloth.



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

Cleaning the Thermal Head/Platen Roller

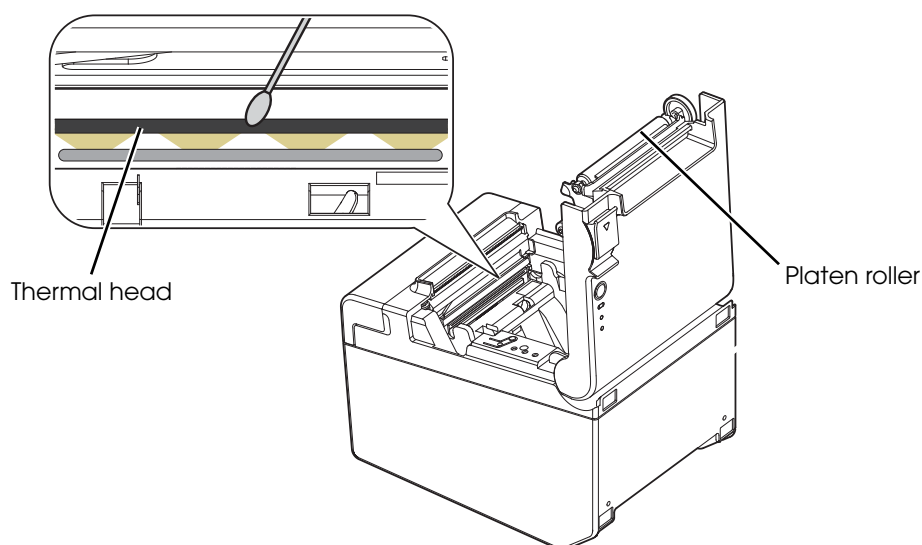
Epson recommends cleaning the thermal head periodically (generally every 3 months) to maintain receipt print quality.

Depending on the roll paper used, paper dust may stick to the platen roller and the paper may not be fed correctly. To remove the paper dust, clean the platen roller.

Turn off the printer, open the roll paper cover, and clean the thermal elements of the thermal head/platen roller with a cotton swab moistened with an alcohol solvent (ethanol or IPA).



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





Preparing for Transport

Follow the steps below to transport the printer.

- 1** Turn off the printer.
- 2** Disconnect the AC cable from the socket.
- 3** Remove the roll paper.
- 4** Pack the printer upright.

Appendix

Specifications of Interface and Connector

USB (Universal Serial Bus) Interface

USB interface connector

Has a USB upstream port connector (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	Select USB printer class or USB vendor-defined class with the memory switch.	

USB descriptor

		USB vendor-defined class	USB printer class
Vendor ID		04b8h	04b8h
Product ID		0202h	0E11h
String Descriptor	Manufacturer	EPSON	EPSON
	Product	TM-T82II	TM-T82II
	Serial number	Character string based on the product serial number	Character string based on the product serial number

RS-232 Serial Interface

Interface board specifications (RS-232-compliant)

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

Functions of each connector pin

Pin no.	Signal name	Signal direction	Function
1	FG	—	Frame ground
2	TXD	Output	Transmission data
3	RXD	Input	Reception data
4	RTS	Output	Equivalent to DTR signal
6	DSR	Input	This signal indicates whether the host computer can receive data. SPACE indicates that the host computer can receive data. MARK indicates that the host computer cannot receive data. When DTR/DSR control is selected, the printer transmits data after confirming this signal (except if transmitted using some ESC/POS commands). When XON/XOFF control is selected, the printer does not check this signal. The printer is reset when the signal remains MARK for a pulse width of 1 ms or more.
7	SG	—	Signal ground
20	DTR	Output	1) When DTR/DSR control is selected, this signal indicates whether the printer is BUSY. - SPACE status Indicates that the printer is ready to receive data. - MARK status Indicates that the printer is BUSY. Set BUSY conditions with the memory switch. 2) When XON/XOFF control is selected, the signal indicates that the printer is properly connected and ready to receive data from the host. The signal is always SPACE, except in the following cases: - During the period from when power is turned on to when the printer is ready to receive data. - During the self-test.
25	INT	Input	The printer is reset if the signal remains at SPACE for a pulse width of 1 ms or more.

XON/XOFF

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

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

Code

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

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

CAUTION

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

IEEE 1284 Parallel Interface

Modes

The IEEE 1284 parallel interface supports the following two modes.

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

Compatibility Mode

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

Specification

Data transmission	8-bit parallel
Synchronization	Externally supplied nStrobe signals
Handshaking	nAck and BUSY signals
Signal levels	TTL-compatible connector
Connector	ADS-B36BLFDR176 (HONDA) or equivalent product

Reverse Mode

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

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

Interface signals

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

Pin	Source	Compatibility Mode	Nibble Mode	Byte Mode
28		GND	GND	GND
29		GND	GND	GND
30		GND	GND	GND
31	Host	nInit	nInit	nInit
32	Printer	nFault	nDataAvail/Data0,4	nDataAvail
33		GND	ND	ND
34	Printer	DK_STATUS	ND	ND
35	Printer	+5V	ND	ND
36	Host	nSelectIn	1284-Active	1284-Active

NC: Not Connected

ND: Not Defined

CAUTION

- A prefix “n” to signal names indicates “L” active signals. For the host computer not provided with all of the signal lines listed above, bidirectional communication fails.
- For interfacing, signal lines shall use twisted pair cables with the return sides connected to signal ground level. Follow the IEEE Std 1284 for the specifications of the interface cable.
- Make sure the signals satisfy electrical characteristics.
- Set the leading edge and trailing edge times to 0.5 ms or less.
- Data transmission shall not ignore the signal nAck or Busy. An attempt to transmit data with either signal, nAck or Busy, ignored can cause data loss.
- Interface cables shall be the minimum required length and as short in length as possible.

Character Code Tables

CAUTION

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

Common to All Pages

When International character set (See ["International Character Sets" on page 144.](#)) 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	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	⌞ 179	⌞ 195	⌚ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	⌞ 180	— 196	⌞ 212	Σ 228	ƒ 244
5	à 133	ò 149	Ñ 165	⌞ 181	† 197	ƒ 213	σ 229	ℓ 245
6	å 134	û 150	ä 166	⌞ 182	† 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	¿ 168	ƒ 184	⌞ 200	† 216	Φ 232	° 248
9	ë 137	ö 153	ƒ 169	⌞ 185	ƒ 201	ℓ 217	Θ 233	• 249
A	è 138	Ü 154	ƒ 170	⌞ 186	⌞ 202	ƒ 218	Ω 234	• 250
B	ï 139	Φ 155	½ 171	π 187	π 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	⌞ 188	⌞ 204	■ 220	ω 236	ⁿ 252
D	ì 141	¥ 157	ì 173	⌞ 189	= 205	⌞ 221	φ 237	² 253
E	Ä 142	℥ 158	« 174	⌞ 190	⌞ 206	⌞ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	⌞ 191	⌞ 207	■ 223	∩ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	ー 128	ㇿ 144	SP 160	ー 176	タ 192	ミ 208	ニ 224	ㇿ 240
1	ー 129	ㇿ 145	。 161	ア 177	チ 193	ム 209	ト 225	円 241
2	ー 130	ㇿ 146	ㇿ 162	イ 178	ツ 194	メ 210	ㇿ 226	年 242
3	ー 131	ㇿ 147	ㇿ 163	ウ 179	ㇿ 195	モ 211	ㇿ 227	月 243
4	ー 132	ー 148	、 164	エ 180	ト 196	ヤ 212	▲ 228	日 244
5	ー 133	ー 149	・ 165	オ 181	ナ 197	ㇿ 213	▲ 229	時 245
6	ー 134	ㇿ 150	ヲ 166	カ 182	ニ 198	ヨ 214	▼ 230	分 246
7	ー 135	ㇿ 151	ア 167	キ 183	ヌ 199	ㇿ 215	▼ 231	秒 247
8	ㇿ 136	ㇿ 152	イ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	ㇿ 137	ㇿ 153	ウ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	ㇿ 138	ㇿ 154	エ 170	コ 186	ハ 202	レ 218	♦ 234	区 250
B	ㇿ 139	ㇿ 155	オ 171	サ 187	ヒ 203	ㇿ 219	♣ 235	町 251
C	ㇿ 140	ㇿ 156	ヤ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	ㇿ 141	ㇿ 157	ユ 173	ス 189	ㇿ 205	ㇿ 221	〇 237	人 253
E	ㇿ 142	ㇿ 158	ヨ 174	セ 190	ホ 206	ㇿ 222	/ 238	ㇿ 254
F	ㇿ 143	ㇿ 159	ㇿ 175	ㇿ 191	マ 207	。 223	ㇿ 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	ð 208	ó 224	- 240
1	ü 129	æ 145	í 161	⌘ 177	Ł 193	ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	Ŧ 194	Ê 210	ô 226	= 242
3	â 131	ô 147	ú 163	ı 179	ţ 195	Ë 211	ò 227	$\frac{3}{4}$ 243
4	ä 132	ö 148	ñ 164	ı 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	İ 214	µ 230	÷ 246
7	ç 135	ù 151	ö 167	À 183	Ä 199	Î 215	þ 231	· 247
8	ê 136	ÿ 152	ı 168	© 184	Ł 200	İ 216	þ 232	° 248
9	ë 137	ö 153	® 169	ı 185	Ŧ 201	ı 217	ú 233	¨ 249
A	è 138	Ü 154	¬ 170	ı 186	Ł 202	ı 218	û 234	• 250
B	ï 139	ø 155	$\frac{1}{2}$ 171	ı 187	Ŧ 203	■ 219	ù 235	¹ 251
C	î 140	£ 156	$\frac{1}{4}$ 172	ı 188	Ŧ 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	Ŧ 206	İ 222	- 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	Ç 128	É 144	á 160	⌘ 176	Ł 192	⌚ 208	ɑ 224	≡ 240
1	Ü 129	À 145	í 161	⌘ 177	⌞ 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	⌞ 179	⌞ 195	⌚ 211	π 227	≤ 243
4	ã 132	õ 148	ñ 164	⌞ 180	– 196	⌞ 212	Σ 228	ƒ 244
5	à 133	ò 149	Ñ 165	⌞ 181	† 197	ƒ 213	σ 229	ℵ 245
6	Á 134	Ú 150	ä 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	Õ 153	Ò 169	⌞ 185	ƒ 201	ℵ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	⌞ 186	⌞ 202	ƒ 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	Ù 157	ì 173	⌞ 189	= 205	⌞ 221	φ 237	² 253
E	Ă 142	℥ 158	« 174	⌞ 190	⌞ 206	⌞ 222	ε 238	■ 254
F	Â 143	Ó 159	» 175	⌞ 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	Ɑ 208	ɑ 224	≡ 240
1	Ü 129	È 145	Í 161	⋷ 177	⊥ 193	ṭ 209	β 225	± 241
2	é 130	Ê 146	Ó 162	⋸ 178	τ 194	π 210	Γ 226	≥ 242
3	â 131	ô 147	Ú 163	⋹ 179	⋍ 195	Ɱ 211	π 227	≤ 243
4	Â 132	Ë 148	“ 164	⋺ 180	– 196	ℓ 212	Σ 228	ƒ 244
5	à 133	Ī 149	” 165	⋻ 181	† 197	ƒ 213	σ 229	ℵ 245
6	ŋ 134	û 150	³ 166	⋼ 182	ƒ 198	π 214	μ 230	÷ 246
7	ç 135	ù 151	– 167	π 183	⋽ 199	⋈ 215	τ 231	≈ 247
8	ê 136	æ 152	Î 168	ƒ 184	ℓ 200	† 216	φ 232	° 248
9	ë 137	Ô 153	ƒ 169	⋽ 185	ƒ 201	ℵ 217	θ 233	• 249
A	è 138	Ü 154	ƒ 170	⋽ 186	Ɑ 202	ƒ 218	Ω 234	• 250
B	ï 139	ϕ 155	½ 171	π 187	π 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	⋽ 188	⋽ 204	■ 220	ω 236	ⁿ 252
D	= 141	Û 157	¾ 173	Ɑ 189	= 205	⋮ 221	φ 237	² 253
E	À 142	Û 158	« 174	ƒ 190	⋈ 206	⋮ 222	ε 238	■ 254
F	§ 143	ƒ 159	» 175	ƒ 191	Ɑ 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	⌞ 179	⌞ 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	ƒ 213	σ 229	ℵ 245
6	å 134	û 150	ä 166	⌞ 182	ƒ 198	π 214	μ 230	÷ 246
7	ç 135	ù 151	ø 167	π 183	⌞ 199	⌞ 215	τ 231	≈ 247
8	ê 136	ÿ 152	č 168	ƒ 184	Ł 200	† 216	φ 232	° 248
9	ë 137	ö 153	ƒ 169	⌞ 185	ƒ 201	ℵ 217	θ 233	• 249
A	è 138	ü 154	ƒ 170	⌞ 186	⌚ 202	ƒ 218	Ω 234	• 250
B	ï 139	ø 155	½ 171	π 187	π 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	⌞ 188	⌞ 204	■ 220	ω 236	ⁿ 252
D	ì 141	Ø 157	ì 173	⌞ 189	= 205	⌞ 221	φ 237	² 253
E	Ä 142	℥ 158	« 174	⌞ 190	⌞ 206	⌞ 222	ε 238	■ 254
F	Å 143	ƒ 159	Ꝥ 175	⌞ 191	⌚ 207	■ 223	∩ 239	SP 255

Page 11 (PC851: Greek)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	İ 144	İ 160	⋯ 176	Ł 192	Ƨ 208	Ʒ 224	- 240
1	Ü 129	SP 145	İ 161	⋯ 177	⊥ 193	Υ 209	η 225	± 241
2	é 130	Ɔ 146	ó 162	⋯ 178	Ƨ 194	Φ 210	θ 226	υ 242
3	â 131	ô 147	ú 163	ı 179	Ƨ 195	Χ 211	ι 227	φ 243
4	ä 132	ö 148	À 164	ı 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	Ϻ 152	Ε 168	Ν 184	ℒ 200	γ 216	ξ 232	° 248
9	ë 137	ö 153	Ζ 169	Η 185	ℒ 201	Ј 217	ο 233	¨ 249
A	è 138	Ü 154	Η 170	Ι 186	ℒ 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	Ψ 188	ℒ 204	■ 220	σ 236	Û 252
D	Ǝ 141	é 157	Ι 173	≡ 189	= 205	δ 221	ς 237	ώ 253
E	Ä 142	ñ 158	« 174	Ο 190	‡ 206	ε 222	τ 238	■ 254
F	Ƨ 143	İ 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	L 192	SP 208	Ó 224	- 240
1	Ü 129	Ĉ 145	í 161	177	Ł 193	SP 209	ß 225	SP 241
2	é 130	Ċ 146	ó 162	178	Ṭ 194	Ê 210	ô 226	ł 242
3	â 131	ô 147	ú 163	ı 179	ţ 195	Ë 211	ò 227	ħ 243
4	ä 132	ö 148	ñ 164	ı 180	- 196	È 212	ġ 228	244
5	à 133	ò 149	Ñ 165	Á 181	† 197	ı 213	ġ 229	§ 245
6	ĉ 134	û 150	ǧ 166	Â 182	Ŝ 198	İ 214	μ 230	÷ 246
7	ç 135	ù 151	ǧ 167	À 183	Ŝ 199	Î 215	℥ 231	247
8	ê 136	î 152	Ĥ 168	Ş 184	Ł 200	İ 216	ħ 232	° 248
9	ë 137	ö 153	ĥ 169	ı 185	ŕ 201	ı 217	Ú 233	249
A	è 138	ü 154	SP 170	ı 186	Ł 202	ı 218	Û 234	250
B	ï 139	ĝ 155	½ 171	ı 187	Ț 203	219	Ù 235	SP 251
C	î 140	£ 156	Ĵ 172	ı 188	ı 204	220	Ŭ 236	³ 252
D	ì 141	Ĝ 157	Ş 173	Ž 189	= 205	SP 221	Ű 237	² 253
E	Ä 142	× 158	« 174	Ž 190	ı 206	İ 222	238	254
F	Ĉ 143	Ĵ 159	» 175	ı 191	207	223	239	SP 255

Page 13 (PC857: Turkish)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	176	Ł 192	o 208	Ó 224	- 240
1	ü 129	æ 145	í 161	177	Ł 193	a 209	ß 225	± 241
2	é 130	Æ 146	ó 162	178	Ŧ 194	Ê 210	Ô 226	SP 242
3	â 131	ô 147	ú 163	ı 179	ƒ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	ı 180	- 196	È 212	Õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	† 197	€ 213	Ö 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	Ã 183	Ä 199	Î 215	SP 231	· 247
8	ê 136	î 152	ı 168	© 184	Ł 200	İ 216	× 232	° 248
9	ë 137	ö 153	® 169	ƒ 185	Ŧ 201	ƒ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	186	Ł 202	Ŧ 218	Û 234	• 250
B	ï 139	ø 155	½ 171	¶ 187	Ŧ 203	■ 219	Ü 235	¹ 251
C	î 140	£ 156	¼ 172	¶ 188	Ŧ 204	■ 220	İ 236	³ 252
D	ı 141	Ø 157	ı 173	¢ 189	= 205	ı 221	ÿ 237	² 253
E	Ä 142	Ş 158	« 174	¥ 190	Ŧ 206	İ 222	- 238	■ 254
F	Å 143	Ş 159	» 175	ı 191	¤ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	Α 128	Ρ 144	Λ 160	⋈ 176	ℒ 192	℔ 208	ω 224	Ϟ 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	⋋ 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	℥ 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	⋏ 183	⊩ 199	⦌ 215	ύ 231	≈ 247
8	Ι 136	α 152	ρ 168	⋐ 184	℔ 200	⦍ 216	ϋ 232	° 248
9	Κ 137	β 153	σ 169	⋑ 185	Ϟ 201	⋈ 217	ώ 233	• 249
A	Λ 138	γ 154	ς 170	⋒ 186	℔ 202	⋈ 218	Α 234	• 250
B	Μ 139	δ 155	τ 171	⋓ 187	͂ 203	■ 219	Έ 235	√ 251
C	Ν 140	ε 156	υ 172	⋔ 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	⋖ 190	⦌ 206	⋈ 222	Ό 238	■ 254
F	Π 143	θ 159	ψ 175	⋗ 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	ĩ 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	Ð 165	˘ 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	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	SP 137	SP 153	@ 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	ˆ 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	SP 139	SP 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ϋ 251
C	SP 140	SP 156	¬ 172	Ό 188	Μ 204	ά 220	μ 236	ό 252
D	SP 141	SP 157	- 173	½ 189	Ν 205	έ 221	ν 237	ύ 253
E	SP 142	SP 158	SP 174	Υ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	- 175	Ϝ 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	¦ 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	л 208	р 224	ё 240
1	Б 129	С 145	б 161	␣ 177	Л 193	л 209	с 225	ё 241
2	В 130	Т 146	в 162	␣ 178	Т 194	т 210	т 226	ё 242
3	Г 131	У 147	г 163	Г 179	Г 195	У 211	у 227	ё 243
4	Д 132	Ф 148	д 164	Г 180	— 196	Е 212	ф 228	ї 244
5	Е 133	Х 149	е 165	Г 181	Г 197	Г 213	х 229	ї 245
6	Ж 134	Ц 150	ж 166	Г 182	Г 198	П 214	ц 230	ѣ 246
7	З 135	Ч 151	з 167	П 183	Г 199	Г 215	ч 231	ѣ 247
8	И 136	Ш 152	и 168	Г 184	Ц 200	Г 216	ш 232	° 248
9	Й 137	Щ 153	й 169	Г 185	Г 201	Г 217	щ 233	° 249
A	К 138	Ъ 154	к 170	Г 186	Г 202	Г 218	ъ 234	° 250
B	Л 139	Ы 155	л 171	Г 187	Г 203	■ 219	ы 235	ѣ 251
C	М 140	Ь 156	м 172	Г 188	Г 204	■ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	Г 189	= 205	Г 221	э 237	ѣ 253
E	О 142	Ю 158	о 174	Г 190	Г 206	Г 222	ю 238	■ 254
F	П 143	Я 159	п 175	Г 191	Г 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	ð 209	ß 225	˘ 241
2	é 130	ĭ 146	ó 162	⌘ 178	Ŧ 194	Ǿ 210	ô 226	˙ 242
3	â 131	ô 147	ú 163	ı 179	ƒ 195	Ě 211	ń 227	˘ 243
4	ä 132	ö 148	À 164	ı 180	- 196	ď 212	ň 228	˘ 244
5	û 133	Ľ 149	ą 165	Á 181	† 197	ň 213	ň 229	§ 245
6	ć 134	ĩ 150	ž 166	Â 182	Ǻ 198	í 214	š 230	÷ 246
7	ç 135	š 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	ı 185	ŕ 201	ı 217	ú 233	˘ 249
A	õ 138	ü 154	€ 170	ı 186	Ł 202	ı 218	ř 234	˙ 250
B	õ 139	ř 155	ž 171	ı 187	Ŧ 203	■ 219	Ů 235	ů 251
C	î 140	ř 156	č 172	ı 188	Ŧ 204	■ 220	ý 236	ř 252
D	ž 141	ł 157	š 173	ž 189	= 205	Ŧ 221	ý 237	ř 253
E	Ǻ 142	× 158	« 174	ž 190	Ŧ 206	Ů 222	ţ 238	■ 254
F	Ć 143	Č 159	» 175	ı 191	Ǻ 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	ð 208	ó 224	- 240
1	ü 129	æ 145	í 161	⌘ 177	Ł 193	ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	Ŧ 194	Ê 210	ô 226	= 242
3	â 131	ô 147	ú 163	⌘ 179	Ŧ 195	Ë 211	ò 227	¾ 243
4	ä 132	ö 148	ñ 164	⌘ 180	- 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	† 197	€ 213	õ 229	§ 245
6	å 134	û 150	ä 166	Â 182	ã 198	Í 214	μ 230	÷ 246
7	ç 135	ù 151	ö 167	Ã 183	Ä 199	Î 215	þ 231	· 247
8	ê 136	ÿ 152	¿ 168	© 184	ℒ 200	Ï 216	þ 232	° 248
9	ë 137	ö 153	® 169	⌘ 185	Ŧ 201	Ɔ 217	ú 233	¨ 249
A	è 138	Ü 154	¬ 170	⌘ 186	ℒ 202	Ɔ 218	û 234	• 250
B	ï 139	ø 155	½ 171	⌘ 187	Ŧ 203	■ 219	ù 235	¹ 251
C	î 140	£ 156	¼ 172	⌘ 188	Ŧ 204	■ 220	ý 236	³ 252
D	ì 141	Ø 157	ì 173	¢ 189	= 205	¡ 221	ÿ 237	² 253
E	Ä 142	× 158	« 174	¥ 190	≡ 206	Ï 222	- 238	■ 254
F	Å 143	f 159	» 175	Ŧ 191	¤ 207	■ 223	˘ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	ร 128	อ 144	SP 160	ผ 176	ย 192	ไ 208	ั 224	๓ 240
1	๖ 129	๑ 145	ก 161	ฦ 177	ร 193	แ 209	๗ 225	๓+ 241
2	ล 130	๒ 146	ป 162	ด 178	ถ 194	โ 210	๘ 226	๓๔ 242
3	จ 131	๓ 147	ค 163	ต 179	ฉ 195	ใ 211	๙ 227	๓- 243
4	ี 132	๔ 148	ฆ 164	ถ 180	ว 196	๖ 212	๑ 228	๓๕ 244
5	เ 133	๕ 149	ง 165	ท 181	ศ 197	๗ 213	๑ 229	๓๖ 245
6	๓ 134	๖ 150	จ 166	ธ 182	ษ 198	๗ 214	๑ 230	๓+ 246
7	๓ 135	๗ 151	ฉ 167	น 183	ส 199	๑ 215	๑๑ 231	๓- 247
8	๓ 136	๘ 152	ช 168	บ 184	ห 200	๑ 216	๑๒ 232	๓๕ 248
9	๓ 137	๙ 153	ซ 169	ป 185	ฬ 201	๑ 217	๑๓ 233	๓๖ 249
A	๓ 138	๐ 154	ฦ 170	ผ 186	อ 202	๑ 218	๑๔ 234	๓+ 250
B	๓ 139	๑ 155	ฦ 171	ผ 187	ฮ 203	๑ 219	๑๕ 235	๓- 251
C	๓ 140	๑ 156	ฦ 172	ผ 188	๑ 204	๑ 220	๑๖ 236	๓๕ 252
D	๓ 141	๑ 157	ฦ 173	ผ 189	ฦ 205	๑ 221	๑๗ 237	๓๖ 253
E	๓ 142	๑ 158	ฦ 174	ฦ 190	๗ 206	๑ 222	๑๘ 238	๓+ 254
F	๓ 143	๑ 159	๗ 175	๓ 191	๗ 207	๑ 223	๑๙ 239	SP 255

Page 21 (TIS11: Thai)

HEX	8	9	A	B	C	D	E	F
0	๕- 128	๕+ 144	เ 160	๕๕ 176	ภ 192	๕๖ 208	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	ฌ 178	ย 194	ำ 210	โ 226	๒ 242
3	๕+ 131	๕๖ 147	บ 163	ฌ 179	ร 195	ำ 211	โ 227	๓ 243
4	๕- 132	๕+ 148	ค 164	ด 180	ถ 196	๕ 212	โ 228	๔ 244
5	๕๕ 133	๐- 149	ค 165	ด 181	ถ 197	๕ 213	ำ 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	๕ 216	๕ 232	๘ 248
9	๕- 137	๕ 153	ฉ 169	น 185	๕ 201	๕ 217	๕ 233	๙ 249
A	๕๕ 138	๕ 154	ช 170	บ 186	๕ 202	๕ 218	๕ 234	๐ 250
B	๕๖ 139	๕ 155	ช 171	ป 187	ห 203	๕ 219	๕ 235	๑ 251
C	๕+ 140	๕ 156	ฌ 172	ผ 188	ฬ 204	๕ 220	๕ 236	๒ 252
D	๕- 141	๕ 157	ฌ 173	ผ 189	อ 205	๕ 221	๕ 237	๓ 253
E	๕๕ 142	๕ 158	ภ 174	ผ 190	ฮ 206	๕ 222	๕ 238	๔ 254
F	๕๖ 143	๕ 159	ภ 175	ผ 191	๕ 207	๕ 223	๕ 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	ร 128	ร 144	SP 160	ร 176	ร 192	ร 208	ร 224	ร 240
1	ร 129	ร 145	ร 161	ร 177	ร 193	ร 209	ร 225	ร 241
2	ร 130	ร 146	ร 162	ร 178	ร 194	ร 210	ร 226	ร 242
3	ร 131	ร 147	ร 163	ร 179	ร 195	ร 211	ร 227	ร 243
4	ร 132	ร 148	ร 164	ร 180	ร 196	ร 212	ร 228	ร 244
5	ร 133	ร 149	ร 165	ร 181	ร 197	ร 213	ร 229	ร 245
6	ร 134	ร 150	ร 166	ร 182	ร 198	ร 214	ร 230	ร 246
7	ร 135	ร 151	ร 167	ร 183	ร 199	ร 215	ร 231	ร 247
8	ร 136	ร 152	ร 168	ร 184	ร 200	ร 216	ร 232	ร 248
9	ร 137	ร 153	ร 169	ร 185	ร 201	ร 217	ร 233	ร 249
A	ร 138	ร 154	ร 170	ร 186	ร 202	ร 218	ร 234	ร 250
B	ร 139	ร 155	ร 171	ร 187	ร 203	ร 219	ร 235	ร 251
C	ร 140	ร 156	ร 172	ร 188	ร 204	ร 220	ร 236	ร 252
D	ร 141	ร 157	ร 173	ร 189	ร 205	ร 221	ร 237	ร 253
E	ร 142	ร 158	ร 174	ร 190	ร 206	ร 222	ร 238	ร 254
F	ร 143	ร 159	ร 175	ร 191	ร 207	ร 223	ร 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	ề 210	ỗ 226	ũ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	ễ 211	ó 227	ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	ễ 212	ọ 228	ụ 244
5	SP 133	SP 149	SP 165	à 181	SP 197	ế 213	ồ 229	ừ 245
6	SP 134	SP 150	SP 166	ả 182	ă 198	ệ 214	ổ 230	ử 246
7	SP 135	SP 151	SP 167	ã 183	ầ 199	ì 215	ỗ 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	ở 234	ỳ 250
B	SP 139	SP 155	ô 171	ă 187	ậ 203	SP 219	ở 235	ỷ 251
C	SP 140	SP 156	ơ 172	ã 188	è 204	ĩ 220	ỡ 236	ỹ 252
D	SP 141	SP 157	ư 173	ã 189	SP 205	í 221	ở 237	ý 253
E	SP 142	SP 158	đ 174	ă 190	ẻ 206	ị 222	ợ 238	ỵ 254
F	SP 143	SP 159	SP 175	SP 191	ễ 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	Ǻ 161	SP 177	SP 193	Ė 209	Ỏ 225	Ủ 241
2	SP 130	SP 146	Ā 162	SP 178	SP 194	Ề 210	Ỗ 226	Ữ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	Ễ 211	Ó 227	Ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	Ễ 212	Ọ 228	Ụ 244
5	SP 133	SP 149	SP 165	À 181	SP 197	Ễ 213	Ồ 229	Ừ 245
6	SP 134	SP 150	SP 166	Ả 182	Ǻ 198	Ệ 214	Ỗ 230	Ữ 246
7	SP 135	SP 151	Đ 167	Ǻ 183	Ā 199	Ì 215	Ỗ 231	Ữ 247
8	SP 136	SP 152	SP 168	Á 184	Ǻ 200	Ỉ 216	Ổ 232	Ứ 248
9	SP 137	SP 153	SP 169	Ạ 185	Ǻ 201	SP 217	Ộ 233	Ự 249
A	SP 138	SP 154	Ê 170	SP 186	Ǻ 202	SP 218	Ở 234	Ỡ 250
B	SP 139	SP 155	Ô 171	Ǻ 187	Ā 203	SP 219	Ở 235	Ỡ 251
C	SP 140	SP 156	Ớ 172	Ǻ 188	Ề 204	Ỉ 220	Ỗ 236	Ỡ 252
D	SP 141	SP 157	Ừ 173	Ǻ 189	SP 205	Ỉ 221	Ổ 237	Ỡ 253
E	SP 142	SP 158	SP 174	Ǻ 190	Ề 206	Ỉ 222	Ớ 238	Ỡ 254
F	SP 143	SP 159	SP 175	SP 191	Ễ 207	Ồ 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	ٲ 176	ل 192	ل 208	ض 224	ٲ 240
1	SP 129	ٲ 145	ة 161	ٲ 177	ل 193	ٲ 209	ط 225	ٲ 241
2	é 130	ٲ 146	ن 162	ٲ 178	ٲ 194	ٲ 210	ظ 226	ٲ 242
3	â 131	ô 147	ث 163	ل 179	ٲ 195	ل 211	ع 227	ٲ 243
4	SP 132	ٲ 148	ج 164	ٲ 180	ٲ 196	ل 212	غ 228	ٲ 244
5	à 133	ٲ 149	ح 165	ٲ 181	ٲ 197	ٲ 213	ف 229	ٲ 245
6	SP 134	û 150	خ 166	ل 182	ٲ 198	ٲ 214	ٲ 230	ٲ 246
7	ç 135	ù 151	د 167	ٲ 183	ٲ 199	ٲ 215	ق 231	ٲ 247
8	ê 136	ٲ 152	ذ 168	ٲ 184	ٲ 200	ٲ 216	ك 232	ٲ 248
9	ë 137	ٲ 153	ر 169	ل 185	ٲ 201	ٲ 217	ل 233	ٲ 249
A	è 138	ٲ 154	ز 170	ل 186	ٲ 202	ٲ 218	م 234	ٲ 250
B	ï 139	ؤ 155	س 171	ٲ 187	ٲ 203	ٲ 219	ن 235	ٲ 251
C	î 140	ع 156	ش 172	ل 188	ٲ 204	ٲ 220	ه 236	n 252
D	SP 141	ل 157	ص 173	ل 189	= 205	ٲ 221	و 237	2 253
E	SP 142	ئ 158	« 174	ل 190	ٲ 206	ٲ 222	ي 238	ٲ 254
F	SP 143	ا 159	» 175	ل 191	ٲ 207	ٲ 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	Ṭ 194	ę 210	ō 226	“ 242
3	ā 131	ō 147	ž 163	ł 179	ṭ 195	è 211	ń 227	¾ 243
4	ä 132	ö 148	ž 164	ł 180	- 196	ì 212	õ 228	¶ 244
5	ġ 133	Ġ 149	ž 165	Ł 181	† 197	š 213	õ 229	§ 245
6	å 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	Ė 184	Ł 200	ž 216	ķ 232	° 248
9	ē 137	ö 153	® 169	Ħ 185	Ŧ 201	Ĵ 217	ķ 233	• 249
A	Ŕ 138	Ü 154	¬ 170	186	Ł 202	ŕ 218	Ł 234	• 250
B	Ŗ 139	Ø 155	½ 171	Π 187	Π 203	■ 219	Ź 235	¹ 251
C	ī 140	£ 156	¼ 172	Π 188	Π 204	■ 220	Ź 236	³ 252
D	ž 141	Ø 157	Ł 173	İ 189	= 205	İ 221	Ē 237	² 253
E	Ä 142	× 158	« 174	Š 190	‡ 206	İ 222	Ņ 238	■ 254
F	Å 143	ⱥ 159	» 175	Ṭ 191	Ž 207	■ 223	’ 239	SP 255

Page 34 (PC855: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	ђ 128	љ 144	а 160	џ 176	л 192	л 208	я 224	- 240
1	ћ 129	љ 145	А 161	џ 177	Љ 193	Л 209	р 225	ы 241
2	ѓ 130	њ 146	б 162	џ 178	т 194	м 210	р 226	ы 242
3	ѓ 131	њ 147	Б 163	Љ 179	Ћ 195	М 211	с 227	з 243
4	ё 132	ћ 148	ц 164	џ 180	- 196	н 212	С 228	З 244
5	Ё 133	ћ 149	Ц 165	Х 181	Ћ 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	Ћ 185	Ѓ 201	Ј 217	Ж 233	Щ 249
A	і 138	џ 154	ф 170	Љ 186	Љ 202	Г 218	Ж 234	Щ 250
B	І 139	џ 155	Ф 171	Ћ 187	Ћ 203	■ 219	В 235	Ч 251
C	ї 140	ю 156	Г 172	Ј 188	Ћ 204	■ 220	В 236	Ч 252
D	İ 141	Ю 157	Г 173	Й 189	= 205	П 221	Ь 237	§ 253
E	ј 142	џ 158	« 174	Й 190	Ћ 206	Я 222	Ь 238	■ 254
F	Ј 143	џ 159	» 175	Г 191	Ѓ 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	⌘ 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	å 134	û 150	Ó 166	⌘ 182	ƒ 198	π 214	μ 230	÷ 246
7	ç 135	ý 151	Ú 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	Ƶ 217	Θ 233	• 249
A	è 138	Ü 154	ƒ 170	⌘ 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	⌘ 188	⌘ 204	■ 220	ω 236	ⁿ 252
D	þ 141	Ø 157	ı 173	⌘ 189	= 205	⌘ 221	ϕ 237	² 253
E	Ä 142	℥ 158	« 174	ƒ 190	⌘ 206	⌘ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	ƒ 191	⌘ 207	■ 223	∩ 239	SP 255

Page 36 (PC862: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	𐤀 128	𐤁 144	á 160	𐤄 176	𐤅 192	𐤆 208	𐤇 224	≡ 240
1	𐤂 129	𐤃 145	í 161	𐤅 177	𐤆 193	𐤇 209	β 225	± 241
2	𐤄 130	𐤅 146	ó 162	𐤆 178	𐤇 194	𐤈 210	𐤉 226	≥ 242
3	𐤅 131	𐤆 147	ú 163	𐤇 179	𐤈 195	𐤉 211	π 227	≤ 243
4	𐤆 132	𐤇 148	ñ 164	𐤈 180	— 196	𐤉 212	Σ 228	𐤊 244
5	𐤇 133	𐤈 149	Ñ 165	𐤉 181	† 197	𐤊 213	σ 229	𐤋 245
6	𐤈 134	𐤉 150	ä 166	𐤊 182	𐤋 198	𐤌 214	μ 230	÷ 246
7	𐤉 135	𐤊 151	o 167	𐤋 183	𐤌 199	𐤍 215	τ 231	≈ 247
8	𐤊 136	𐤋 152	č 168	𐤌 184	𐤍 200	𐤎 216	φ 232	° 248
9	𐤋 137	𐤌 153	𐤍 169	𐤎 185	𐤏 201	𐤐 217	θ 233	• 249
A	𐤌 138	𐤍 154	𐤎 170	𐤏 186	𐤐 202	𐤑 218	Ω 234	• 250
B	𐤍 139	𐤎 155	½ 171	𐤐 187	𐤑 203	■ 219	δ 235	√ 251
C	𐤎 140	£ 156	¼ 172	𐤑 188	𐤒 204	■ 220	ω 236	n 252
D	𐤏 141	¥ 157	i 173	𐤒 189	= 205	■ 221	φ 237	² 253
E	𐤐 142	𐤑 158	« 174	𐤒 190	𐤓 206	■ 222	ε 238	■ 254
F	𐤑 143	f 159	» 175	𐤓 191	𐤔 207	■ 223	𐤓 239	SP 255

HEX	8	9	A	B	C	D	E	F
0	° 128	β 144	SP 160	• 176	¢ 192	ذ 208	- 224	™ 240
1	• 129	∞ 145	- 161	۱ 177	ء 193	ر 209	ف 225	™ 241
2	• 130	φ 146	˜ 162	۲ 178	آ 194	ز 210	ق 226	ن 242
3	√ 131	± 147	£ 163	۳ 179	أ 195	س 211	ك 227	ه 243
4	☼ 132	½ 148	¤ 164	ε 180	ؤ 196	ش 212	ل 228	ه 244
5	- 133	¼ 149	ل 165	ه 181	ع 197	ص 213	م 229	ى 245
6	134	≈ 150	SP 166	٦ 182	ئ 198	ظ 214	ن 230	ي 246
7	† 135	« 151	€ 167	۷ 183	ا 199	ط 215	ه 231	غ 247
8	‡ 136	» 152	ل 168	۸ 184	ب 200	ظ 216	و 232	ق 248
9	‡ 137	لا 153	ب 169	۹ 185	ة 201	ع 217	ى 233	لا 249
A	‡ 138	لا 154	ن 170	ف 186	ت 202	غ 218	ب 234	لا 250
B	‡ 139	SP 155	ث 171	؛ 187	ث 203	ا 219	ض 235	ل 251
C	٦ 140	SP 156	، 172	سر 188	ج 204	ا 220	ع 236	ك 252
D	‡ 141	لا 157	ج 173	شر 189	ح 205	÷ 221	غ 237	ي 253
E	‡ 142	لا 158	ح 174	صر 190	خ 206	× 222	غ 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	ῑ 161	⋯ 177	⊥ 193	Υ 209	η 225	± 241
2	SP 130	ϐ 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	ς 245
6	Α 134	Υ 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	ϐ 152	Ε 168	Ν 184	Λ 200	γ 216	ξ 232	° 248
9	¬ 137	² 153	Ζ 169	Η 185	Γ 201	Ј 217	ο 233	… 249
A	Ι 138	³ 154	Η 170	Θ 186	⋯ 202	Γ 218	π 234	ω 250
B	‘ 139	ά 155	½ 171	Π 187	Π 203	■ 219	ρ 235	Ü 251
C	’ 140	£ 156	θ 172	Ψ 188	Π 204	■ 220	σ 236	Ü 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	Η 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	í 224	đ 240
1	 129	Ł 145	À 161	à 177	Á 193	Ñ 209	á 225	ñ 241
2	 130	T 146	˘ 162	˙ 178	Â 194	Ň 210	â 226	ň 242
3	I 131	ƚ 147	Ł 163	ł 179	Ǻ 195	Ó 211	ǻ 227	ó 243
4	ƚ 132	– 148	ǻ 164	˘ 180	Ǻ 196	Ô 212	ǻ 228	ô 244
5	J 133	† 149	Ĺ 165	ĺ 181	Ĺ 197	Õ 213	Í 229	õ 245
6	ƚ 134	■ 150	Š 166	š 182	Ć 198	Ö 214	Ć 230	ö 246
7	■ 135	■ 151	Š 167	˘ 183	Ç 199	× 215	Ç 231	÷ 247
8	© 136	Ł 152	˘ 168	˙ 184	Č 200	Ř 216	č 232	ř 248
9	ƚ 137	ƚ 153	Š 169	š 185	É 201	Û 217	é 233	û 249
A	138	154	Š 170	š 186	Ę 202	Ú 218	ę 234	ú 250
B	ƚ 139	ƚ 155	Ÿ 171	ÿ 187	Ě 203	Ů 219	ě 235	ů 251
C	ƚ 140	ƚ 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	ƚ 158	Ž 174	ž 190	Î 206	İ 222	î 238	ı 254
F	ŀ 143	® 159	Ž 175	ž 191	Ǿ 207	ß 223	ď 239	· 255

Page 40 (ISO8859-15: Latin9)

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

HEX	8	9	A	B	C	D	E	F
0	SP 128	ؤ 144	ح 160	۰ 176	ل 192	ع 208	ک 224	- 240
1	SP 129	ئ 145	خ 161	۱ 177	ل 193	ع 209	ک 225	۵ 241
2	، 130	ب 146	ح 162	۲ 178	ل 194	ع 210	ک 226	۶ 242
3	؛ 131	ب 147	د 163	۳ 179	ل 195	غ 211	ک 227	- 243
4	؟ 132	پ 148	ذ 164	۴ 180	- 196	غ 212	ل 228	۰ 244
5	” 133	پ 149	ر 165	ض 181	ل 197	غ 213	ل 229	۱ 245
6	آ 134	ت 150	ز 166	ض 182	ظ 198	غ 214	م 230	۲ 246
7	آ 135	ت 151	ژ 167	ط 183	ع 199	ف 215	م 231	۳ 247
8	آ 136	ث 152	س 168	ط 184	ل 200	ف 216	ن 232	۴ 248
9	ا 137	ث 153	ع 169	ل 185	ل 201	ل 217	ن 233	۵ 249
A	ا 138	ج 154	ش 170	ل 186	ل 202	ر 218	و 234	۶ 250
B	ب 139	ج 155	ش 171	ل 187	ل 203	۰ 219	ه 235	۷ 251
C	ء 140	چ 156	ص 172	ل 188	ل 204	■ 220	ه 236	۸ 252
D	آ 141	چ 157	ص 173	ل 189	= 205	ق 221	ه 237	۹ 253
E	آ 142	خ 158	« 174	ظ 190	ل 206	ق 222	ه 238	■ 254
F	آ 143	ح 159	» 175	ل 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	ą 224	≡ 240
1	ü 129	æ 145	í 161	⌘ 177	Ł 193	č 209	β 225	± 241
2	é 130	Æ 146	ó 162	⌘ 178	τ 194	ę 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	ı 179	ı 195	è 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	ı 180	- 196	ì 212	Σ 228	” 244
5	à 133	ò 149	Ñ 165	À 181	† 197	š 213	σ 229	“ 245
6	å 134	û 150	a 166	Č 182	Ų 198	ų 214	μ 230	÷ 246
7	ç 135	ù 151	o 167	Ę 183	Ū 199	ū 215	τ 231	≈ 247
8	ê 136	ÿ 152	č 168	Ė 184	Ł 200	ž 216	Φ 232	° 248
9	ë 137	ö 153	ŗ 169	Ĳ 185	Ŗ 201	Ĳ 217	Θ 233	• 249
A	è 138	Ü 154	ŗ 170	Ĳ 186	Ł 202	ŗ 218	Ω 234	˙ 250
B	ï 139	Φ 155	½ 171	Π 187	Π 203	■ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	Π 188	Π 204	■ 220	ω 236	n 252
D	ì 141	¥ 157	ı 173	İ 189	= 205	ı 221	φ 237	² 253
E	Ä 142	℥ 158	« 174	Š 190	† 206	ı 222	ε 238	■ 254
F	Å 143	f 159	» 175	ı 191	Ž 207	■ 223	Π 239	SP 255

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

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	Ї 193	ї 209	с 225	ё 241
2	В 130	Т 146	в 162	⌘ 178	Т 194	т 210	т 226	Г 242
3	Г 131	У 147	г 163	І 179	І 195	ц 211	у 227	г 243
4	Д 132	Ф 148	д 164	І 180	— 196	Е 212	ф 228	Є 244
5	Е 133	Х 149	е 165	І 181	† 197	Г 213	х 229	є 245
6	Ж 134	Ц 150	ж 166	І 182	Ї 198	П 214	ц 230	І 246
7	З 135	Ч 151	з 167	П 183	І 199	І 215	ч 231	і 247
8	И 136	Ш 152	и 168	Ї 184	Ц 200	† 216	ш 232	ї 248
9	Й 137	Щ 153	й 169	І 185	Г 201	Ј 217	щ 233	ї 249
A	К 138	Ь 154	к 170	І 186	л 202	Г 218	ь 234	÷ 250
B	Л 139	Ы 155	л 171	П 187	Ї 203	■ 219	ы 235	± 251
C	М 140	Ь 156	м 172	Ј 188	І 204	■ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	Ј 189	= 205	І 221	э 237	¤ 253
E	О 142	Ю 158	о 174	Ј 190	І 206	І 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	Đ 208	í 224	đ 240
1	SP 129	‘ 145	˘ 161	± 177	Á 193	Ń 209	á 225	ń 241
2	, 130	, 146	˘ 162	• 178	Â 194	Ň 210	â 226	ň 242
3	SP 131	“ 147	Ł 163	Ż 179	Ǻ 195	Ó 211	ǻ 227	ó 243
4	” 132	” 148	ł 164	ż 180	ǻ 196	Ô 212	ǽ 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	ª 185	É 201	Û 217	é 233	û 249
A	Š 138	š 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ě 203	Ů 219	ě 235	ů 251
C	Ś 140	ś 156	¬ 172	Ľ 188	Ě 204	Ü 220	ś 236	ü 252
D	Ŧ 141	ŧ 157	- 173	˜ 189	Í 205	Ý 221	í 237	ý 253
E	Ž 142	ž 158	@ 174	ǰ 190	Î 206	İ 222	î 238	ţ 254
F	Ž 143	ž 159	Ž 175	ž 191	Đ 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	ѣ 161	± 177	Б 193	С 209	б 225	с 241
2	’ 130	’ 146	ѣ 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	ѡ 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	П 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	џ 172	ј 188	М 204	Ь 220	м 236	ь 252
D	Ќ 141	ќ 157	– 173	Ѕ 189	Н 205	Э 221	н 237	э 253
E	ћ 142	ћ 158	® 174	ѕ 190	О 206	Ю 222	о 238	ю 254
F	џ 143	џ 159	Ї 175	ї 191	П 207	Я 223	п 239	я 255

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	ĩ 192	Π 208	Ü 224	π 240
1	SP 129	‘ 145	“ 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	, 130	’ 146	Ά 162	² 178	Β 194	SP 210	β 226	ς 242
3	f 131	“ 147	£ 163	³ 179	Γ 195	Σ 211	γ 227	σ 243
4	” 132	” 148	α 164	´ 180	Δ 196	Τ 212	δ 228	τ 244
5	… 133	• 149	¥ 165	μ 181	Ε 197	Υ 213	ε 229	υ 245
6	† 134	- 150	¡ 166	¶ 182	Ζ 198	Φ 214	ζ 230	φ 246
7	‡ 135	- 151	§ 167	• 183	Η 199	Χ 215	η 231	χ 247
8	SP 136	SP 152	“ 168	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	‰ 137	™ 153	@ 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	α 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	‹ 139	› 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ϋ 251
C	SP 140	SP 156	¬ 172	ο 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	ϙ 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	Â 192	Ğ 208	à 224	ğ 240
1	SP 129	‘ 145	İ 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	İ 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	ן 240
1	SP 129	‘ 145	ı 161	± 177	˘ 193	· 209	ג 225	ו 241
2	’ 130	’ 146	¢ 162	² 178	˙ 194	· 210	ך 226	ז 242
3	ƒ 131	“ 147	£ 163	³ 179	˚ 195	˙ 211	ת 227	ח 243
4	” 132	” 148	¤ 164	´ 180	· 196	ן 212	ה 228	ט 244
5	… 133	• 149	¥ 165	μ 181	˙ 197	ן 213	ו 229	פ 245
6	† 134	– 150	ı 166	¶ 182	˘ 198	” 214	ת 230	צ 246
7	‡ 135	– 151	§ 167	· 183	– 199	’ 215	ן 231	ק 247
8	^ 136	~ 152	ˆ 168	˘ 184	˙ 200	” 216	ז 232	ך 248
9	‰ 137	™ 153	© 169	¹ 185	· 201	SP 217	ו 233	ש 249
A	SP 138	SP 154	× 170	÷ 186	SP 202	SP 218	ת 234	ן 250
B	‹ 139	› 155	« 171	» 187	˘ 203	SP 219	ן 235	SP 251
C	SP 140	SP 156	¬ 172	$\frac{1}{4}$ 188	· 204	SP 220	ז 236	SP 252
D	SP 141	SP 157	– 173	$\frac{1}{2}$ 189	· 205	SP 221	ו 237	SP 253
E	SP 142	SP 158	® 174	$\frac{3}{4}$ 190	– 206	SP 222	ן 238	SP 254
F	SP 143	SP 159	– 175	¿ 191	– 207	SP 223	ל 239	SP 255

Page 50 (WPC1256: Arabic)

HEX	8	9	A	B	C	D	E	F
0	€ 128	ƒ 144	SP 160	° 176	^ 192	ذ 208	à 224	” 240
1	پ 129	‘ 145	‘ 161	± 177	ء 193	ر 209	ل 225	” 241
2	، 130	’ 146	¢ 162	² 178	آ 194	ز 210	â 226	” 242
3	f 131	“ 147	£ 163	³ 179	أ 195	س 211	م 227	’ 243
4	” 132	” 148	¤ 164	´ 180	ؤ 196	ش 212	ن 228	ô 244
5	… 133	• 149	¥ 165	μ 181	ل 197	ص 213	ه 229	’ 245
6	† 134	- 150	¡ 166	¶ 182	ئ 198	ض 214	و 230	’ 246
7	‡ 135	- 151	§ 167	· 183	ا 199	× 215	ç 231	÷ 247
8	^ 136	ك 152	¨ 168	ر 184	ب 200	ط 216	è 232	” 248
9	% 137	™ 153	© 169	¹ 185	ة 201	ظ 217	é 233	ù 249
A	ٹ 138	ڑ 154	ھ 170	؛ 186	ت 202	ع 218	ê 234	° 250
B	< 139	> 155	« 171	» 187	ث 203	غ 219	ë 235	û 251
C	£ 140	œ 156	¬ 172	$\frac{1}{4}$ 188	ج 204	- 220	ی 236	ü 252
D	چ 141	SP 157	- 173	$\frac{1}{2}$ 189	ح 205	ف 221	ي 237	SP 253
E	ژ 142	SP 158	® 174	$\frac{3}{4}$ 190	خ 206	ق 222	î 238	SP 254
F	ڈ 143	ں 159	- 175	؟ 191	د 207	ك 223	ï 239	ه 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	Ĭ 193	Ń 209	į 225	ń 241
2	’ 130	’ 146	¢ 162	² 178	Ā 194	Ņ 210	ā 226	ņ 242
3	SP 131	“ 147	£ 163	³ 179	Ć 195	Ó 211	ć 227	ó 243
4	” 132	” 148	¤ 164	´ 180	Ä 196	Ō 212	ä 228	ō 244
5	… 133	• 149	SP 165	μ 181	Å 197	Õ 213	å 229	õ 245
6	† 134	- 150	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	Ų 216	č 232	ų 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ł 217	é 233	ł 249
A	SP 138	SP 154	Ð 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	Ġ 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	Ĺ 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	¡ 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	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	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	Һ 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	ѓ 131	“ 147	Ә 163	і 179	Г 195	У 211	г 227	у 243
4	” 132	” 148	Җ 164	ө 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ө 165	μ 181	Е 197	Х 213	е 229	х 245
6	† 134	– 150	і 166	¶ 182	Ж 198	Ц 214	ж 230	ц 246
7	‡ 135	– 151	§ 167	• 183	З 199	Ч 215	з 231	ч 247
8	€ 136	SP 152	Ё 168	ё 184	И 200	Ш 216	и 232	ш 248
9	‰ 137	™ 153	© 169	№ 185	Й 201	Щ 217	й 233	щ 249
A	Љ 138	Љ 154	Ғ 170	Ғ 186	К 202	Ъ 218	к 234	ъ 250
B	‹ 139	› 155	« 171	» 187	Л 203	Ы 219	л 235	ы 251
C	Њ 140	Њ 156	ҫ 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	Ҫ 143	Ҫ 159	Ү 175	ү 191	П 207	Я 223	п 239	я 255

Page 255 (User-Defined Page)

This page is not supported by South Asia font models.

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

International Character Sets

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