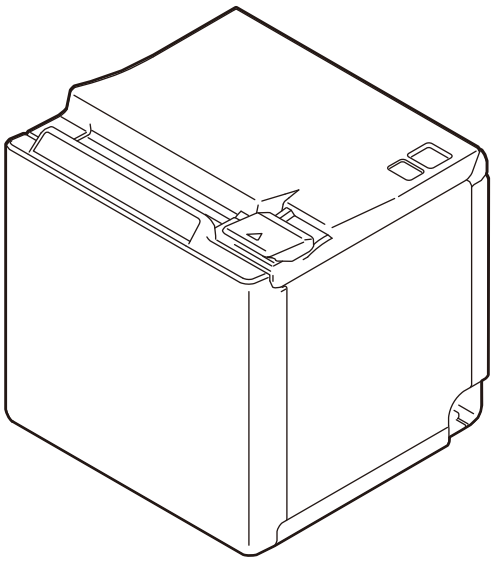
EPSON

TM-m50

Technical Reference Guide



Product Overview

Describes features of the product.

Setup

Describes setup and installation of the product and peripherals.

Advanced Usage

Describes advanced usage methods for the product.

Application Development Information

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

Handling

Describes how to handle the product.

Appendix

Describes general specifications and character code tables.

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Cautions

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ESC/POS Command System

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

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

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For Safety

Key to Symbols

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

WARNING	You must follow warnings carefully to avoid serious bodily injury.
CAUTION	Provides information that must be observed to prevent damage to the equipment or loss of data. • 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

- **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.
- **Serial model**
  Be sure to use a safety-standards-applied power source that meets the following specifications.
  Rated output: 24 V/2.1 - 10.0 A, Maximum output: 240 VA or less
  Connection to an improper power source may cause fire or shock.
- ***Bluetooth* model**
  Be sure to use the specified AC adapter V (Model: M344A).
  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 qualified service personnel.
- **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 qualified service personnel.
- **Do not use aerosol sprayers containing flammable gas inside or around this product.**
  Doing so may cause fire.
- **Do not use this product in locations subject to high humidity or dust levels.**
  Excessive humidity and dust may cause equipment damage or fire.

Cautions

CAUTION

- **Do not connect cables in ways other than those mentioned in this manual.**
  Different connections may cause equipment damage.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
  The product may break or cause injury if it falls.
- **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.**
- **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.
- **Never attempt to repair this product yourself.**
  Improper repair work can be dangerous.

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.

Note about interference

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

Open Source Software License

This product uses open source software in addition to Epson proprietary software.
For information of the open source software used in this product, see the following URL.
http://xxx.xxx.xxx.xxx/licenses.html
For “xxx.xxx.xxx.xxx” in the above URL, input your printer’s IP address.

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	Advanced Usage
Chapter 4	Application Development Information
Chapter 5	Handling
Appendix	Product Specifications Specifications of Interface and Connector Bluetooth Low Energy Technology Advertising Character Code Tables Compatibility with USB Type-A

Contents

■ **For Safety** **3**

Key to Symbols 3
Warnings 4
Cautions 5

■ **Restriction of Use** **5**

■ **Note about interference** **5**

■ **Open Source Software License** **6**

■ **About this Manual** **7**

Aim of the Manual 7
Manual Content 7

■ **Contents** **8**

Product Overview *12*

■ **Features** **12**

■ **Product Configurations** **14**

Models 14
NFC Tag 14
Accessories 15

■ **Part Names and Functions** **16**

Panel LED 17
Connectors 18
Online and Offline 20

■ **Status and Errors** **21**

Status Display 21
Bluetooth Connection Status 22
Network Connection Status 23
Error Status 23

■ **NV Memory (Non-Volatile Memory)** **25**

NV Graphics Memory 25
User NV Memory 25
Memory Switches (customized values) 25
R/E (Receipt Enhancement) 25
Maintenance Counter 26

■ **Simple Setup for Wireless LAN** **27**

■ **Useful Functions for Smart Devices** **28**

NFC Tag 28
QR Code 28

■ **Printing Using Multiple Interfaces** **29**

Setup *30*

■ **Flow of Setup** **30**

■ **Installing the Printer** **31**

Changing to the Front Eject Position 32

■ **Changing the Paper Width** **33**

■ **Connecting the Optional Wireless LAN Unit** **35**

■ **Connecting the Optional Customer Display** **36**

■ **Connecting the Optional External Buzzer** **37**

Attachment Position 37

■ **Connecting the Cash Drawer** **38**

Required specifications of cash drawers 38
Connecting the drawer kick cable 39

■ **Connecting to the Power Source** **40**

Connecting the AC cable 40

■ **Connecting the Printer to the Host Devices** **43**

USB Interface 43
Ethernet Interface 43
Wireless LAN Interface 43
Bluetooth Interface 46

■ **Attaching the Power Switch Cover** **49**

■ **Enabling the Roll Paper Near-End Detection** **50**

Advanced Usage *51*

■ **Software Settings** **51**

Functions 52

■ **Network Settings** **60**

Setup methods 60
Flow of Setup 60
Setup using EpsonNet Config 61
Setup using EpsonNet Config (Web version) 62
Setup using arp/ping commands 63
MAC Address Confirmation 63

■ **Setting/Check Modes** **64**

Self-test Mode 66
NV Graphics Information Print Mode 66
Receipt Enhancement Information Print Mode 67
Software Setting Mode 67
Restore Default Values Mode 69
Interface Setup Mode 70
TM-Intelligent Settings Information Print Mode 72
Peripheral Device Information Print Mode 72

Hexadecimal Dumping Mode 73
■ **Printing a Status Sheet 74**
■ **Resetting the Interface Settings 76**
■ **TM-Intelligent Function 77**
Server direct print 77
Status Notification 77
■ **Network Tethering (for iOS device and Bluetooth capable models only) 78**
Tablet Devices Supported by the Network Tethering 79
Firmware Versions that Supports the Network Tethering 79
Enabling the Tethering Function 79
Connection Procedure 80

Application Development Information 82

■ **Controlling the Printer 82**
ePOS-Print XML 82
ePOS-Device XML 82
ESC/POS 83
■ **Controlling the Cash Drawer 84**
■ **Controlling the Optional External Buzzer 85**
■ **Software 86**
Development Kit 86
Drivers 87
Utilities 88
Others 88
Download 89
■ **Application Development and Distribution for iOS 90**
■ **Notes on Printing Barcodes and Two-Dimensional Symbols 90**
■ **Automatic Certificate Update Feature 91**
Overview 91
Implementation 92
Operation Check 93

Handling 94

■ **Installing Roll Paper 94**
For the top eject position 94
For the front eject position 96
■ **Removing Jammed Paper 98**
■ **Roll Paper Cover does not Open 99**
■ **Cleaning the Printer 100**
Cleaning the Printer Case 100

Cleaning the Thermal Head/Platen Roller 100
■ **Preparing for Transport 101**
■ **Removing/Attaching the Rear and Bottom Covers 102**
Removing the Covers 102
Attaching the Covers 104

Appendix 106

■ **Product Specifications 106**
Printing Specifications 108
Character Specifications 109
Paper Specifications 111
Printable Area 112
Printing and Cutting Positions 113
Electrical Characteristics 113
Environmental Conditions 114
External Dimensions 115
■ **Specifications of Interface and Connector 117**
USB Interface 117
Network Interface 118
Default administrator password for setting 121
Bluetooth Interface 123
RS-232 Serial Interface 127
NFC Tag 129
■ **Bluetooth Low Energy Technology Advertising 130**
Introduction 130
Dongle specifications 130
Procedure 130
Changing the Bluetooth Low Energy Technology Advertising Packet 131
■ **Character Code Tables 142**
■ **Compatibility with USB Type-A 143**

Product Overview

This chapter describes features of the product.

Features

Printing

- High speed receipt printing is possible (350 mm/s maximum).
- By using the "Batch rotate print (Upside Down)" function, you can print pages upside down to make it easier to read the pages when they are ejected from the front side of the printer.
- Supports a variety of language (ANK (includes Thai language)/Japanese/Simplified Chinese/Traditional Chinese/Korean)

Handling

- Compact and lightweight
  Top eject position: 127 x 127 x 135 mm (5.0 × 5.0 × 5.3")
  Front eject position: 127 x 133 x 129 mm (5.0 × 5.2 × 5.1")
  Approx. 1.3 kg {2.87 lb}
- Easy drop-in paper loading.
- You can connect to the printer from an interface, other than the mainly connected interface, and run print operation, when mainly connected interface is not printing.
- The near end detector is installed as standard equipment.
- Ethernet, *Bluetooth*, and Wi-Fi connection status can be easily checked by viewing respective LED lights.
- Equipped with three USB Type-A ports for connecting the option devices.
- The USB port for connecting a tablet computer; USB-A - Device Charging, can provide up to 2.1 A.

* Interface on the printer connecting the printer to other devices varies by printer specification.

Software

- TM-Intelligent function is equipped.
  - Supports Server Direct Print that sends a request for print data from the product to the Web server at regular intervals.
  - Supports status notification function, which enables the printer to send its status to a web server at a regular interval.
- NFC tag built into the printer unit for printing to a touched printer.
- Printing triggered by bar code scan by smart device camera.
- A utility for iOS/Android™ (Epson TM Utility for iOS/Android) for making printer settings is provided.
- Printing of various types of bar codes, GS1-DataBar, and two-dimensional symbols (PDF417, QR code, MaxiCode, Composite Symbology, Aztec Code, DataMatrix) is supported.
- A maintenance counter function is supported.

Environment

- Paper saving function is available.

Others

- Paper eject position are selectable from top and front.
- Optional Wireless LAN cable set, customer display, and external buzzer are available.
- Optional wall hanging bracket is available to attach the printer to a wall.
- Enables automatic registration and periodic update of security certificates for printers. (when using the automatic CA-signed certificates update function in application software using Epson ePOS SDK for JavaScript)

Product Configurations

Models

- Serial model
- *Bluetooth*® model

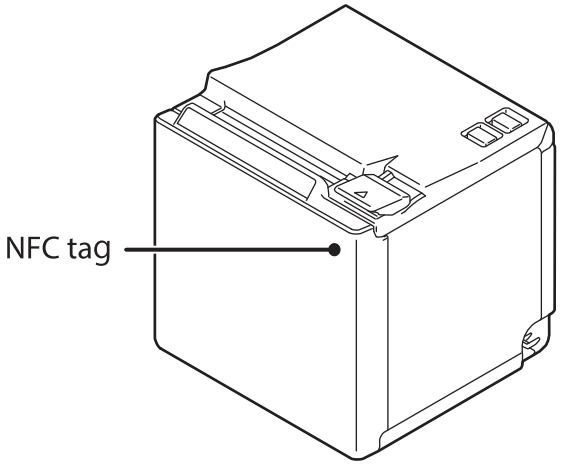
* Available models may differ depending on the area.

NFC Tag

You can select the printer you want to use by simply placing an NFC device over the NFC tag (mark) on the printer.

NOTE

- There is no data rewriting function.
- Use Epson ePOS SDK to build this function into your application.



Accessories

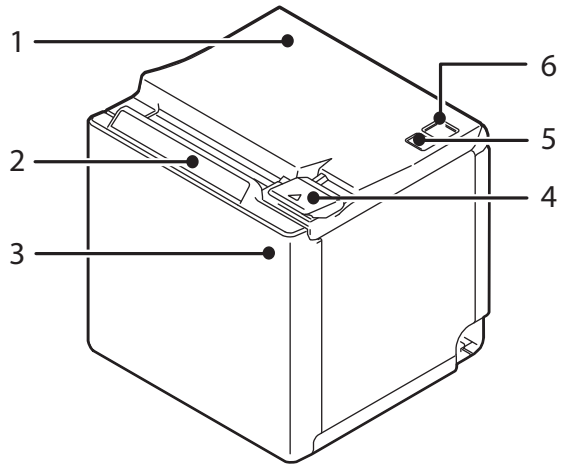
Included

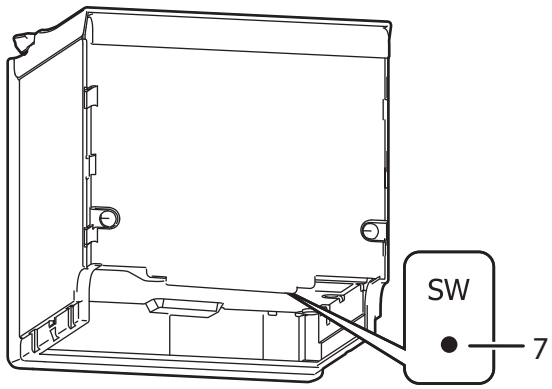
- 58 mm width roll paper guides
- 80 mm width roll paper (for operation check)
- Power switch cover
- AC adapter
- AC cable
- Manuals

Options

- Wireless LAN cable set (Model: OT-WL06)
- Customer display (Model: DM-D30/DM-D70)
- Optional external buzzer (Model: OT-BZ20)
- Wall Hanging Bracket Set (Model: OT-WH30)
- Back cover (Model: OT-CC30)

Part Names and Functions





1	Roll paper cover	Open this cover when loading or replacing roll paper.
2	Panel LED	For details on LED, see "Panel LED" on page 17.
3	NFC Tag	A mark is printed here to indicate the position of the NFC tag. To establish communication with an NFC device, bring the device close to this mark. For the functions using the NFC tag, refer to "Useful Functions for Smart Devices" on page 28.
4	Cover open lever	Operate this lever to open the roll paper cover.
5	Feed button	Pressing this button once feeds roll paper for one line. Hold down this button to continue feeding roll paper.
6	Power switch	Turns the printer on or off.
7	Status sheet button	Use this button to print a status sheet on interfaces or initialize the settings on interfaces.

NOTE

When turning off the printer without using the power switch, 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 Command Reference.

Panel LED

Power LED

- Lights when the power supply is on.
- Off when the power supply is off.
- Flashes during the network to start up, when waiting for power off, or updating firmware.

CAUTION	Do not turn on by using the power switch while waiting for the power to turn off (when the Power LED is flashing). Otherwise, it may not startup correctly.

Error LED

- Lights or flashes when an error occurs. (For information about the flashing patterns, see "Status and Errors" on page 21.)
- 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.
- Off when the printer is in standard mode (online).

Paper LED

- Lights when the roll paper is out.
- Flashes to urge user to operate the Feed button.

Wi-Fi LED

- Lights while the printer is connected to Wi-Fi.
- Off while the printer is not connected to Wi-Fi or while the printer is connected to a wired LAN.
- Flashes while communication is temporarily disabled because an IP address has not been acquired or for other reason.

Ethernet LED

- Lights while the printer is connected to Ethernet.
- Off while the printer is not connected to Ethernet or while the printer is connected to Wi-Fi.
- Flashes while communication is temporarily disabled because an IP address has not been acquired or for other reason.

Bluetooth LED

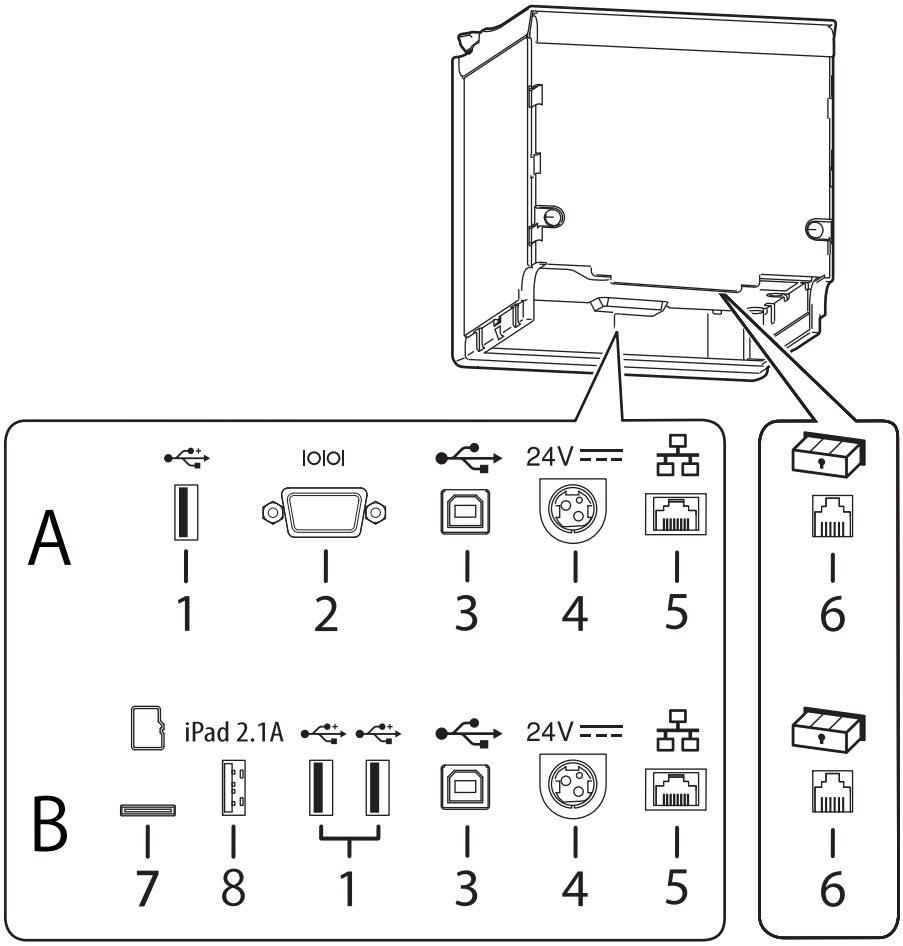
- Lights while the printer is connected via *Bluetooth*.
- Off while the printer is not connected via *Bluetooth*.
- Flashes while the printer is waiting to be paired with another device.

Connectors

All connectors are located on the lower rear of the printer. Interface types and the number of connectors vary by the printer model.

A: Serial model

B: *Bluetooth* model



1	USB connector (Type-A) The USB connector color is black	Connects an optional Wireless LAN unit, customer display, or a handheld scanner. CAUTION: It may be hard to disconnect some types of USB cable. Do not forcibly pull the cable, or the USB connector and USB cable may be damaged. Contact qualified service personnel if you encounter the trouble.
2	Serial connector	Connect the RS-232C Cable.
3	USB connector (Type-B)	Connects the USB cable for connecting to a computer. See "Connecting the Printer to the Host Devices" on page 43.
4	Power supply connector	Connect the AC adapter. See "Connecting to the Power Source" on page 40.
5	Ethernet connector	Connects the 10BASE-T/100BASE-TX ethernet cable.
6	Drawer kick connector	Connects the cash drawer or the optional external buzzer. See "Connecting the Cash Drawer" on page 38, and "Connecting the Optional External Buzzer" on page 37.

7	microSD card slot	For a special purpose and cannot be used for daily use. For more details, contact Epson sales partner.
8	USB connector (USB-A - Device Charging) The USB connector color is white	Connects a USB cable for connecting to a tablet computer.

CAUTION

- *Bluetooth* model
  When connecting a Wireless LAN unit directly to the printer, connect it to the Type-A USB connector (black connector) in order to prevent the unit from contacting with the printer case.
- To communicate with a tablet computer via *Bluetooth* while charging the tablet through the USB connector (USB-A - Device Charging) on the printer, set the "Interface selection" setting to "*Bluetooth* only". For more details, see "Software Settings" on page 51.
  Be aware that the supply current in this case varies depending on the firmware version.
  * 01.11 ESC/POS or later: Maximum of 2.1 A on an iOS device, maximum of 1.5 A on an Android device
  * Before 01.11 ESC/POS: Maximum of 0.5 A, regardless of the device

  Also, charging may not be possible depending on the connected tablet. Please carry out thorough confirmation and evaluation before use.
- When connecting an Android device to the USB connector (USB-A – Device Charging) for data communication, make sure that the device satisfies the following requirements.
  Requirements: The version of Android OS is 10 or later with kernel version 4.9.15 or later
  However, Epson does not guarantee normal operation of all Android devices even if they satisfy the requirements. Run some tests before actually using the device.

Online and Offline

Online

The printer is online and ready for normal printing unless there is a reason to go offline.

Offline

The printer automatically goes offline under the following conditions:

- While the printer power is turning on/off
- During the setting and check modes operating (except the hexadecimal dumping mode)
- While roll paper is fed using the Feed button
- When the printer stops printing due to a paper end (when the paper out detector detected the paper out)
- During an operation standby state
- When an error has occurred (See "Status and Errors" on page 21.)
- While the roll paper cover is open

Status and Errors

The status of the printer is indicated by lit and flashing LEDs.

CAUTION	You cannot print when an error has occurred.

NOTE	You cannot identify the error by the flashing patterns of the LEDs. Develop the application so that users can identify the error description and check the solutions.

Status Display

●: OFF ○: ON ☼: Flashing -: Ignore the LED light

Power LED	Error LED	Paper LED	Wi-Fi LED	Ethernet LED	*Bluetooth* LED	Printer Status
○	●	●	-	-	-	Online
○	○	○	○	○	○	While initializing after turning on the power
○	●	-	●	●	●	During a self-test
○	●	-	-	-	-	While feeding paper using the Feed button
○	○	-	-	-	-	Roll paper cover open while not printing
○	●	☼	●	●	●	Waiting for the self-test to continue
○	●	☼	-	-	-	Waiting for a Macro execution to run
○	○	☼	-	-	-	Waiting for the roll paper cover to be closed to print a status sheet.
○	○	○	-	-	-	No roll paper
○	○	-	-	-	-	Automatically Recoverable Errors
						Recoverable Errors
☼*1	●	-	-	-	-	A warning about TM-Intelligent function
○	☼*2	-	-	-	-	The connected device can only be charged through the USB port.
○	☼	-	●	●	●	Unrecoverable Errors CAUTION: Turn off the power immediately when an unrecoverable error occurs. If the same error occurs again even after turning the power back on, contact qualified service personnel.

Power LED	Error LED	Paper LED	Wi-Fi LED	Ethernet LED	*Bluetooth* LED	Printer Status
☼	●	●	●	●	●	Updating firmware
☼	●	☼	●	●	●	While forced updating firmware mode is on
☼*3	○	●	●	●	●	During turn-off process
☼*4	●	●	●	●	●	During power off NOTE: The printer enters this status while processing the power off command. It is recommended to use this method when you need to save information on the printer's operating status if the power is cut without using the power switch.

*1: The Power LED flashing pattern is: lighting for 4960 ms followed by a pause for 160 ms.
*2: The Error LED flashing pattern is: turning on and off alternately at 320 ms intervals for five seconds, then goes off.
*3: The Power LED flashing pattern is: lighting for 320 ms followed by a pause for 320 ms.
*4: The Power LED flashing pattern is: lighting for 160 ms followed by a pause for 2400 ms.

Bluetooth Connection Status

●: OFF ○: ON ☼: Flashing -: Ignore the LED light

Power LED	Error LED	Paper LED	Wi-Fi LED	Ethernet LED	*Bluetooth* LED	Printer Status
○	●	●	-	-	☼	Waiting to be paired with a device
○	●	●	-	-	○	Connecting via *Bluetooth*
○	●	●	-	-	●	Not connected via *Bluetooth*

*The LED flashing pattern is: lighting for 320 ms followed by a pause for 320 ms.

Network Connection Status

●: OFF ○: ON ☼: Flashing -: Ignore the LED light

Power LED	Error LED	Paper LED	Wi-Fi LED	Ethernet LED	*Bluetooth* LED	Printer Status
○	●	●	○	●	-	Connecting via Wi-Fi
○	●	●	☼	●	-	Wi-Fi (An IP address has not been acquired)
○	●	●	●	○	-	Connecting via Ethernet
○	●	●	●	☼	-	Ethernet (An IP address has not been acquired)
○	●	●	☼	☼	-	Starting the network firmware
○	●	●	●	●	-	Not connected to a network

*The LED flashing pattern is: lighting for 320 ms followed by a pause for 320 ms.

Error Status

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

Automatically Recoverable Errors

- Head temperature error — The printer recovers from the error when the head temperature drops.
- Cover open error (in the middle of printing) — The printer recovers from the error when the roll paper cover is closed.
- TM-Intelligent function error — The printer recovers from the error when the printer settings are corrected.

Recoverable Errors

- Autocutter error

  An error occurs if the cutter is locked due to fallen foreign material or similar cause. Although automatic recovery is performed even if there is only slight locking, if automatic recovery is not performed, remove foreign material and paper jams, and close the roll paper cover to perform recovery.

NOTE

Instead of closing the roll paper cover, you can make the printer recover from the error using a dedicated command, however, doing so will cause the printer to go offline due to a cover open error.

Unrecoverable Errors

- These include a high voltage error, CPU execution error, and communication unit error. If the error persists after turning the printer off and then on again, the printer may be defective. Contact qualified service personnel.

CAUTION

Turn off the power immediately when an unrecoverable error occurs.

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 (customized values)
- R/E (Receipt Enhancement)
- 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.

To register your graphics data, use TM-m50 Utility or ESC/POS commands.
You can check registered graphics data using TM-m50 Utility or by printing the data in the NV graphics information print mode.

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.

Memory Switches (customized values)

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 "Software Settings" on page 51.

R/E (Receipt Enhancement)

You can set the graphics data, such as a shop logo, registered in the NV graphics memory to be printed on the top of each receipt or to be printed on the bottom of each receipt just before the paper is cut.

To make the settings, use TM-m50 Utility or ESC/POS commands.

You can check the settings using TM-m50 Utility or by printing the settings information in the Receipt enhancement information print mode.

Maintenance Counter

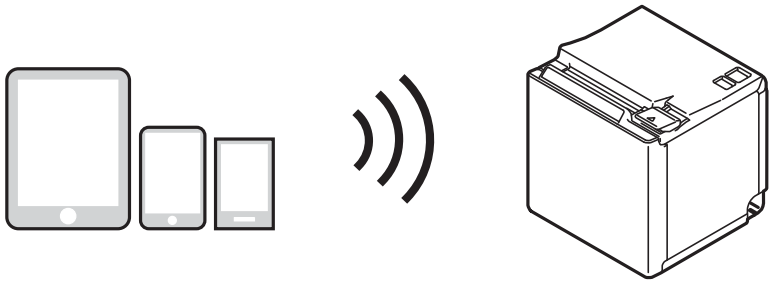
With this function, printer information, such as the number of lines printed, the number of autocuts, and printer operation time after the printer starts working, is automatically stored in printer's memory. You can read the counter information to use it for periodical checks or part replacement.

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 66).
- The maintenance counter values are automatically saved in the NV memory usually every two minutes (up to four minutes). However, the values are not saved when the printer is in power-saving mode or when it is turned off without the use of the power switch.

Simple Setup for Wireless LAN

This printer comes with a mode (SimpleAP) that allows printers to connect with a smart device or a computer without requiring a wireless access point. This allows you to easily setup a wireless LAN for the printer by using a printer settings tool (Epson TM Utility, EpsonNet Config, or EpsonNet Config (Web version)) even without a network environment such as access points.



When the wireless LAN settings of the printer have not been changed from the factory default, and the printer is turned on, the printer automatically enters the Simple AP mode and prints the following information. If you have changed the wireless LAN settings from the factory default, start the printer according to the settings to connect the printer to an access point.

SimpleAP Start
SSID : EPSON_Printer
Encryption Type : WPA2-PSK
Passphrase : 12345678

IP Address : 192.168.192.168
MAC Address : xx-xx-xx-xx-xx-xx

Useful Functions for Smart Devices

You can easily connect this product to the network by using the NFC tag built-in to the printer or the QR code printed on the status sheet.

NFC Tag

Bring a smart device that supports NFC close to the NFC tag to acquire the printer information (information for specifying the device).

By using the acquired information, the device can specify the printer to send a print job over a network or *Bluetooth*.

QR Code

Capture the QR code printed on the status sheet with the camera on your smart device to acquire the printer information (information for specifying the device).

By using the acquired information, the device can specify the printer to send a print job over a network or *Bluetooth*.

NOTE

- Programming using Epson ePOS SDK is required to use these functions. These functions are created by combining NFC touch and QR code capturing operations and the target printer specifications using Printer Easy Select API.
  See the "Epson ePOS SDK for Android/iOS User's Manual" and the Epson ePOS SDK sample program for more details. The sample program also contains a sample implementation method for reading an NFC tag and capturing a QR code.
- You can try a demo of these functions by using Epson TM Utility for iOS/Android.

Printing Using Multiple Interfaces

In models with multiple interfaces, you can use all interfaces without any limitations on which interface is to be used. You can use this function to temporarily connect a smart device to a nearby printer and print.

The printer provides each interface with an independent receive buffer and switches the active interface depending on the priority, while handling data in each receive buffer.

You can set one interface for the main connection. Data received from the main connection interface is handled with the highest priority.
By default, the interface that receives the first data transfer is set as the main connection interface; however, you can select the main connection interface in advance.

When the receive buffer for the active interface becomes empty and a preset time period (one second by default) has passed, switching to another interface is enabled, and an interface that receives print data becomes active.

CAUTION	When you do not use the *Bluetooth* function, set the *Bluetooth* security level to "Middle" or "High" to prevent unauthorized access to the printer over *Bluetooth*. You can change the security level by using Epson TM Utility, TM-m50 Utility, or in the Interface Setup mode.

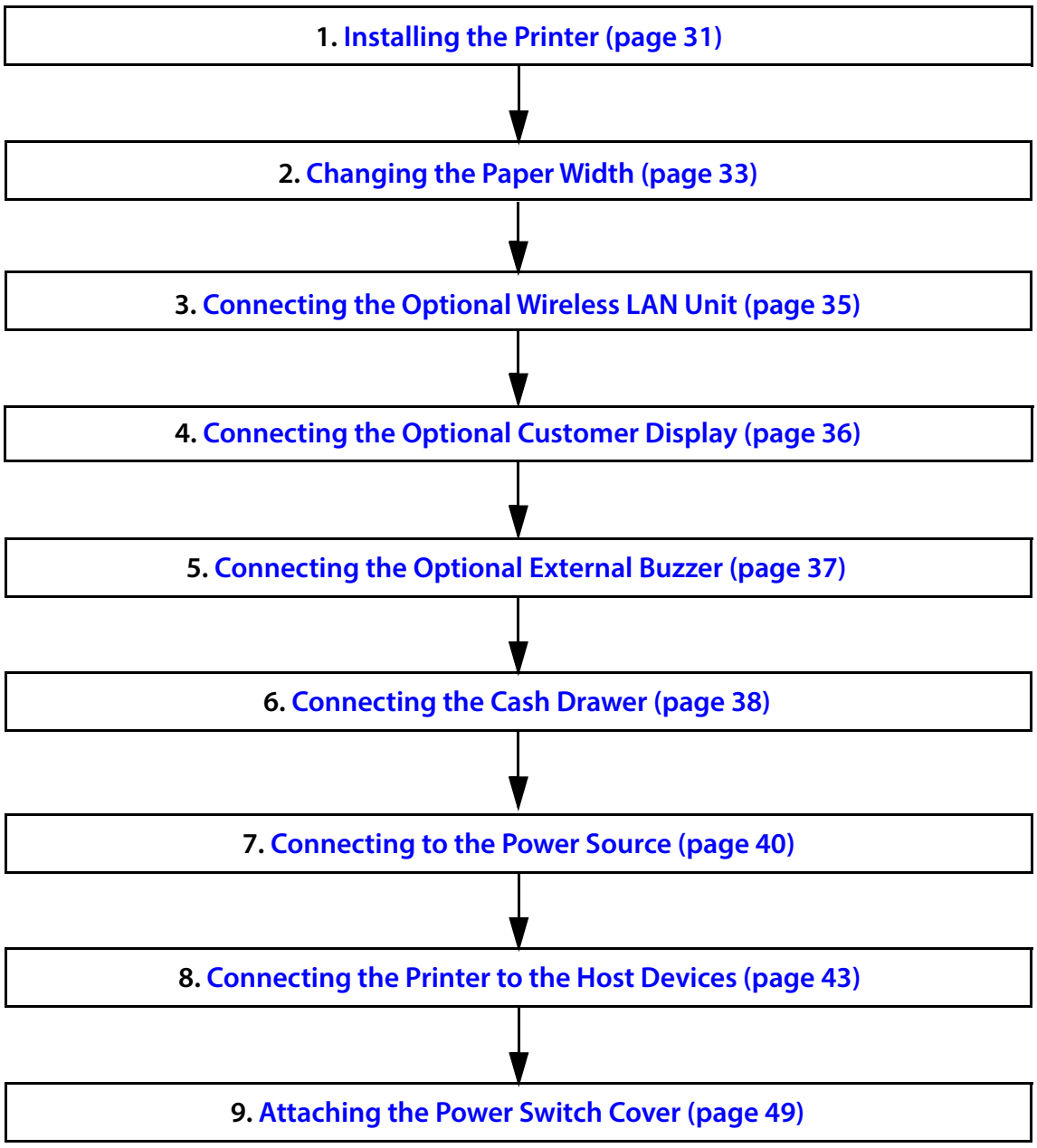
NOTE	You can select the main connection interface and set the time to enable interface switching from the software settings. For details on software settings, see "Software Settings" on page 51.

Setup

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

Flow of Setup

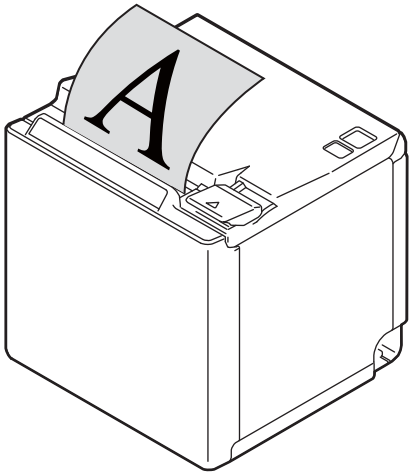
This chapter consists of the following sections along with the setup flow of the product and peripherals.



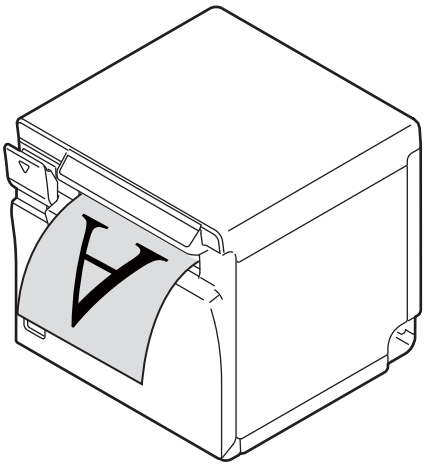
Installing the Printer

You can install the printer on a flat surface with the paper eject from top or with the paper eject from the front. Place the printer on a flat surface.

Top eject position



Front eject position

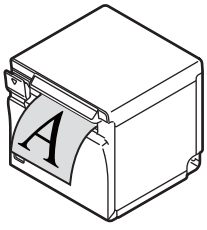


CAUTION

- Take measures to prevent the printer from moving due to vibrations when using the cash drawer.
- Do not place the printer in locations subject to high dust levels.
- Do not give a high impact on the printer during operation. Doing so may cause the print failure.
- Be careful not to place cords or foreign substances under the printer.

NOTE

- You can install the printer as a wall hanging printer if you use the optional Wall Hanging Bracket Set (OT-WH30). Refer to the installation manual of the Wall Hanging Bracket Set for details.
- When you have set the printer to eject printed paper from the front side, you can flip printed pages upside down by enabling the "Batch rotate print (Upside Down)" function. For more details, see "Software Settings" on page 51.



Changing to the Front Eject Position

You can change the eject position by replacing the rear cover and the bottom cover. At the time of purchase, paper is ejected from the top position. When changing to the front eject position, follow the steps below to replace the covers.

1 **Remove the bottom cover and the rear cover.**

See the detailed information on "For the top eject position" on page 102.

2 **Attach the rear cover and the bottom cover.**

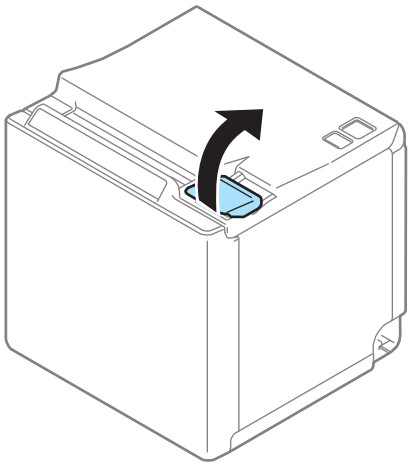
See the detailed information on "For the front eject position" on page 105.

Changing the Paper Width

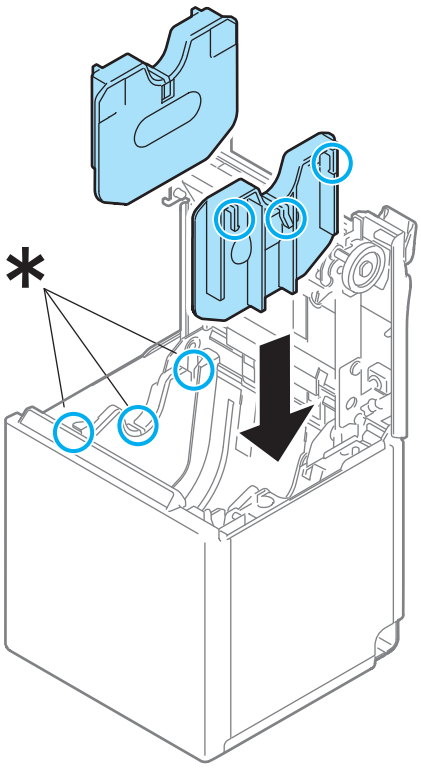
You can change the paper width from 80 to 58 mm by installing the included 58 mm width roll paper guides. Follow the steps below to change the paper width.

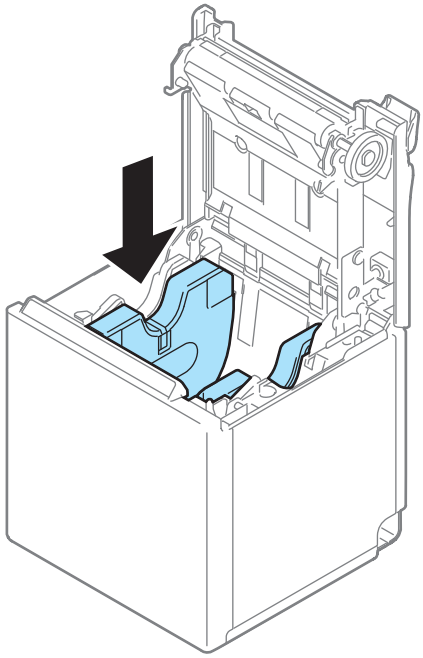
> **CAUTION** Turn off the printer when installing the roll paper guides.

1 **Open the roll paper cover.**



2 **Align the three projections on the roll paper guides with the slots (*) in the printer, and then press them down.**





CAUTION	After using the printer for an extended period at 58 mm, do not return to 80 mm. Parts of the print head that do not normally touch the paper may be damaged by the platen roller, and the autocutter may wear out.

3 **Set the paper width in software setting mode.**

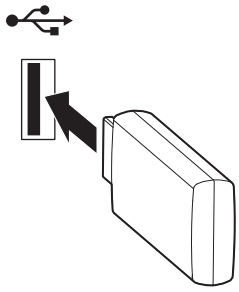
For information about the software setting mode, see "Software Settings" on page 51.

Connecting the Optional Wireless LAN Unit

The optional Wireless LAN cable set (OT-WL06) enables you to use the product with a Wi-Fi connection. For more information, refer to Technical Reference Guide of the Wireless LAN cable set.

CAUTION

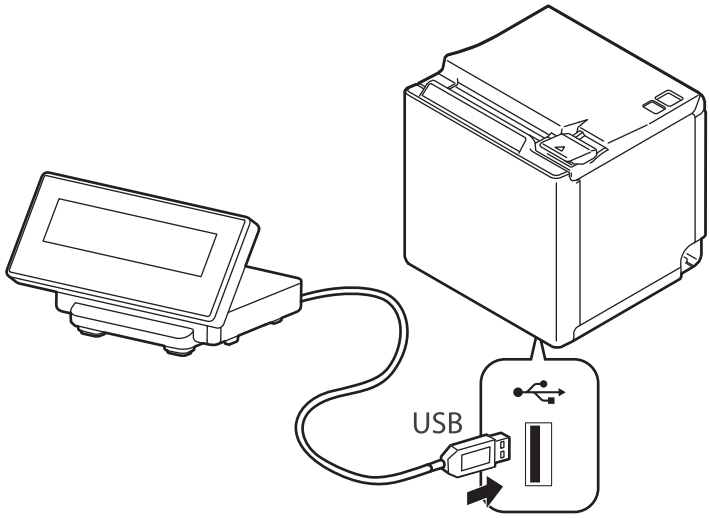
- Be sure to turn off the printer when connecting the Wireless LAN unit.
- Depending on the installation conditions of the printer and the routing for cables connected to it, the status of the radio waves for the Wireless LAN unit may decline. If this does happen, use an extension cable.
- *Bluetooth* model
  When connecting a Wireless LAN unit directly to the printer, connect it to the Type-A USB connector (black connector) in order to prevent the unit from contacting with the printer case.



Connecting the Optional Customer Display

You can connect the customer display (DM-D30 or DM-D70) to this product, using USB connection.
For more information, refer to the user's manual for the customer display.

CAUTION	Be sure to turn off the printer when connecting the customer display.



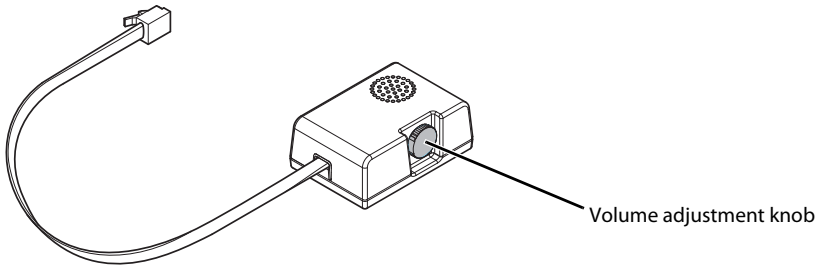
Connecting the Optional External Buzzer

When the optional external buzzer (model: OT-BZ20) is connected to the drawer kick connector of the printer, you can set the printer so that it beeps when you send commands, when an error occurs, when executed autocutting, and when detected paper end. Settings for sound patterns and frequency depending on the occasions the buzzer beeps are also available.

You need to set with the memory switch (customized values) for buzzer enable/disable setting, sound pattern setting, and frequency setting. For information about the memory switch (customized values), see "Software Settings" on page 51.

CAUTION

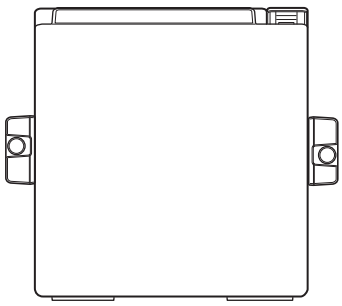
- Be sure to turn off the printer before you connect/disconnect the optional external buzzer.
- Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.



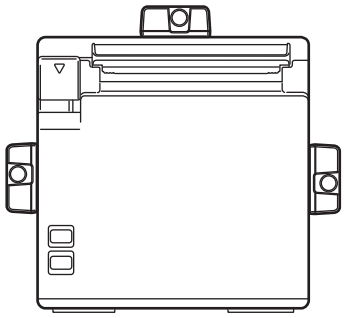
Attachment Position

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

- When using the printer in top eject position: either side
- When using the printer in front eject position: side or top



Top eject position
(Viewed from the front)



Front eject position
(Viewed from the front)

CAUTION

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

Connecting the Cash Drawer

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 (customized values) (see "Software Settings" on page 51), a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.
- Two driver transistors cannot be energized simultaneously.
- Leave intervals longer than 4 times the drawer driving pulse when sending it continuously.

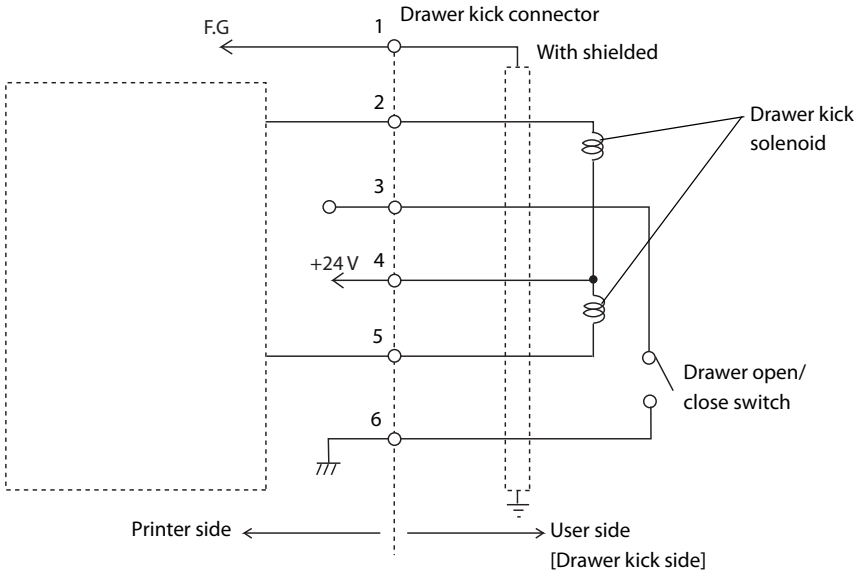
Required specifications of cash drawers

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 solenoid, must be connected between pins 4 and 2 or pins 4 and 5 of the drawer kick connector.
- When the drawer open/close signal is used, a switch must be provided between drawer kick connector pins 3 and 6.
- The resistance of the load, such as a drawer kick solenoid, must be 24Ω or more or the input current must be 1 A or less.
- Be sure to use the 24 V power output on drawer kick connector pin 4 for driving the equipment.

Drawer Connection Diagram

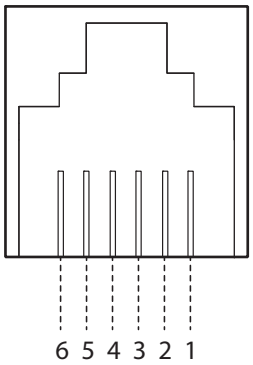


Adaptable Connector

RJ12 modular connector

Pin assignments

Pin number	Signal name	Direction
1	Frame GND	-
2	Drawer kick drive signal 1	Output
3	Drawer kick open/close signal	Input
4	+24 V	-
5	Drawer kick drive signal 2	Output
6	Signal GND	-

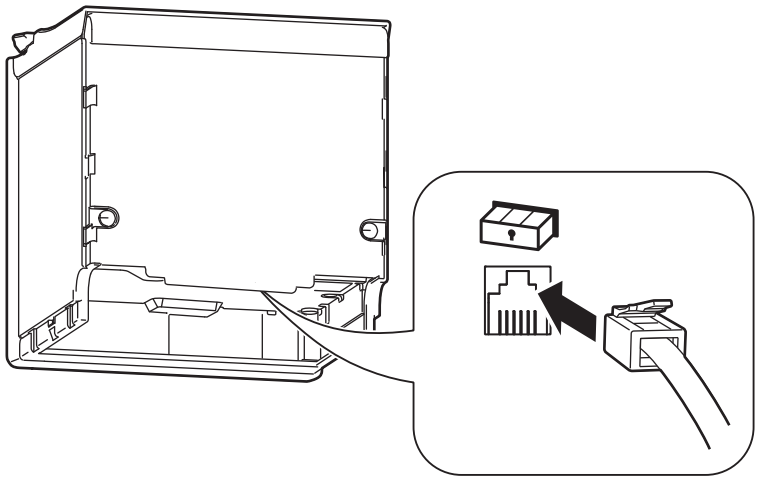


Connecting the drawer kick cable

WARNING

- **Use a shield cable for the drawer kick cable.**
- **When using cash drawer, make sure to use the power supply for printer (connector pins 4).**
- **Do not insert a telephone line into the drawer kick connector.**
  Doing so may damage the telephone line or printer.

Connect the drawer kick cable to the drawer kick connector by pressing firmly until the connector clicks into place.



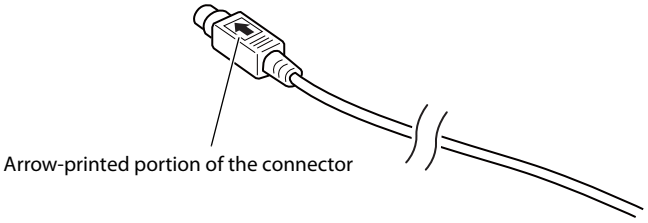
Connecting to the Power Source

WARNING

- **Serial model**
  Be sure to use a safety-standards-applied power source that meets the following specifications.
  Rated output: 24 V/2.1 - 10.0 A, Maximum output: 240 VA or less
- ***Bluetooth* model**
  Be sure to use the specified AC adapter V (Model: M344A).
- **Never insert the AC cable plug into a socket that does not meet the input voltage of the AC adapter.**
  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 socket.**

CAUTION

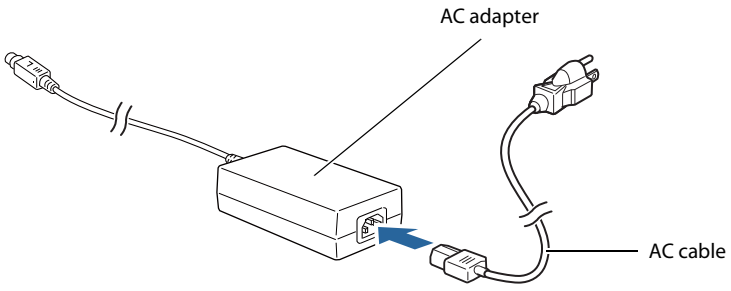
When disconnecting the DC cable of the AC adapter from the printer, make sure that the AC cable is not connected, and then hold the arrow-printed portion of the connector to pull it straight out.



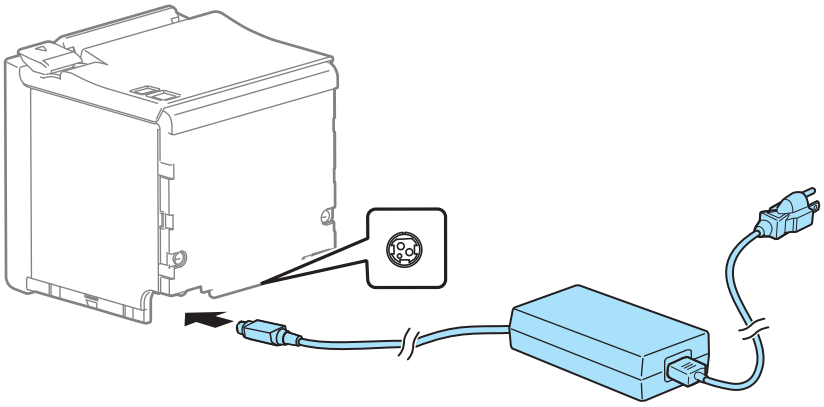
Connecting the AC cable

1 **Make sure the printer is turned off.**

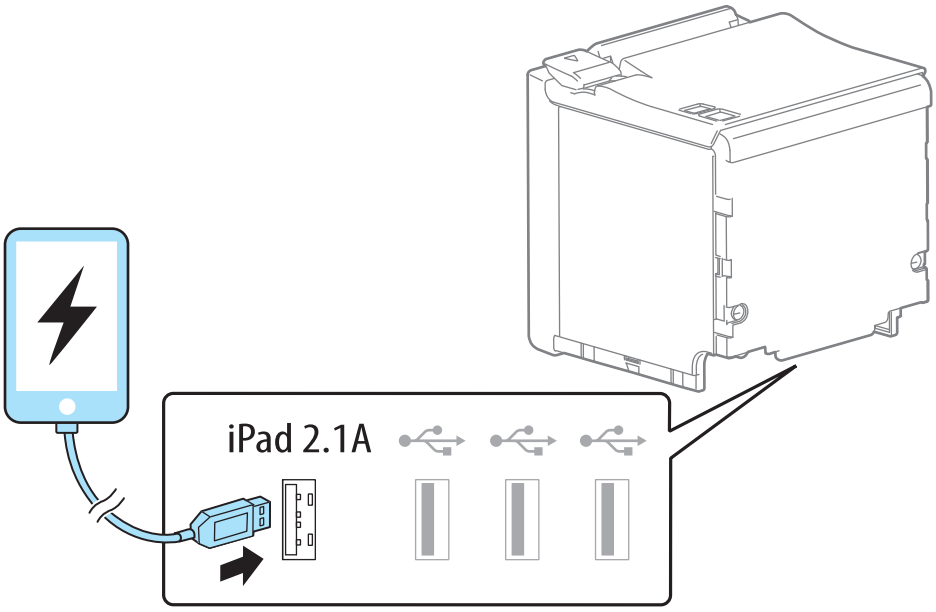
2 **Connect the AC cable to the AC adapter.**



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



4 **For *Bluetooth* model, if you want to charge your tablet, smart phone, or USB device using the printer, connect the genuine cable of the device to the white USB connector (USB-A - Device Charging) of the printer.**

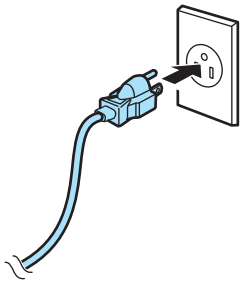


NOTE

- Make sure you use the genuine cable for the tablet, smartphone, or USB device you are using.
- Charging may not be performed depending on the device's charging specifications.
- It may take a few seconds before charging starts as the device searches for the most suitable amperage.
- If a device connected to the USB connector (USB-A Device Charging) has a rated power that exceeds the rated current of the USB connector, charging the device is stopped. See "Product Specifications" on page 106.
- Depending on how the device is being used, it may not charge to 100%.
- It may be hard to disconnect some types of USB cable. Do not forcibly pull the cable, or the USB connector and USB cable may be damaged. Contact qualified service personnel if you encounter the trouble.
- To communicate with a tablet computer via *Bluetooth* while charging the tablet through the USB connector (USB-A - Device Charging) on the printer, set the "Interface selection" setting to "*Bluetooth* only". For more details, see "Software Settings" on page 51.
  Be aware that the supply current in this case varies depending on the firmware version.
  * 01.11 ESC/POS or later: Maximum of 2.1 A on an iOS device, maximum of 1.5 A on an Android device
  * Before 01.11 ESC/POS: Maximum of 0.5 A, regardless of the device

  Also, charging may not be possible depending on the connected tablet. Please carry out thorough confirmation and evaluation before use.
- When connecting an Android device to the USB connector (USB-A - Device Charging) for data communication, make sure that the device satisfies the following requirements.
  Requirements: The version of Android OS is 10 or later with kernel version 4.9.15 or later
  However, Epson does not guarantee normal operation of all Android devices even if they satisfy the requirements. Run some tests before actually using the device.
- If the printer is connected to a wired network, a tablet connected to the printer via the USB connector can access the network. For more details, see "Network Tethering (for iOS device and Bluetooth capable models only)" on page 78.

5 Insert the AC plug into a socket.



6 Turn on the printer.

Connecting the Printer to the Host Devices

USB Interface

When using USB cable to connect with host device, connect the USB cable to the printer, and after starting the host device, turn the printer on.

CAUTION

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

Ethernet Interface

Use ethernet cable to connect the printer to network via a hub.

Use EpsonNet Config, EpsonNet Config (Web version), or arp/ping commands to set network.

For information on setting up network, see "Network Settings" on page 60.

Wireless LAN Interface

Using Epson TM Utility, you can easily connect the printer to the network from an iOS or Android devices. We also recommend connecting the SimpleAP from a Windows computer, and setting up the Wireless LAN using the network setup tool (EpsonNet Config or EpsonNet Config (Web version)).

CAUTION

- When using wireless LAN, make sure you disconnect the LAN cable. If a LAN cable is connected, wireless LAN is disabled.
- When you set up the access point at the same time, set the access point in advance and check that it operates correctly.
- Examine the radio wave situation in the surrounding area before use.
- Avoid using the same channel that is used in the neighboring shops where Wireless LAN is used.
- When using the printer in environments where kitchen microwaves and other devices that may interfere radio waves are installed, observe the following points.
  * Keep the printer away from the devices, such as kitchen microwaves, that may cause radio wave interference.
  * Use channels that are away from the frequency bands that may cause radio wave interference.
  * Place shields between the printer and the devices that may cause radio wave interference.
  * Select either 2.4 GHz or 5 GHz, whichever is free from radio wave interference.
  * In auto channel setting for the access point, do not select a channel in which the devices may cause radio wave interference.
- When connecting to a stealth SSID with W53 or W56 using OT-WL06, firmware version 01.12 ESC/POS or later is required.

Setting up from a Smart Device

Necessary Items

Prepare the following items.

- Device for setting: iOS or Android device
- Utility for setting: Epson TM Utility for iOS/Android

Running Epson TM Utility for iOS/Android

1 **Run the Epson TM Utility for iOS/Android.**



2 **Set from "Wi-Fi Setup Wizard" in the menu.**

Follow the on-screen instructions to complete the setup.

Setting up from a Windows Computer

Necessary Items

Prepare the following items.

- Computer for setting: Windows 10/8/7
  Computer equipped with a wireless LAN function
- Utility for setting: EpsonNet Config or EpsonNet Config (Web version)

Follow the steps below to connect the printer.

1 **Turn on the printer.**

After starting the printer, check that the "SimpleAP Start" is printed.
If it is not printed, enter the Interface Setup mode and restart the printer in the SimpleAP mode. For more details, see "Interface Setup Mode" on page 70.

2 **Activate Windows Wireless Network Connection and select [EPSON_Printer] as the connection device on the screen that appears.**

If the window to enter a pass phrase appears, enter "12345678".
Default settings on printer are the following values.

Network mode	SimpleAP mode
SSID	EPSON_Printer
Pass phrase	12345678
IP Address	192.168.192.168

3 **When connecting to the printer is complete, setup the Wireless LAN using the network setup tool, EpsonNet Config or EpsonNet Config (Web version).**

For details about EpsonNet Config, see "Setup using EpsonNet Config" on page 61.
For details about EpsonNet Config (Web version), see "Setup using EpsonNet Config (Web version)" on page 62.

4 **When setting the Wireless LAN is complete, restart the printer.**

Bluetooth Interface

Pair the printer with your device using the *Bluetooth* function of the device or using other methods.
Pairing the printer is also possible by using EPSON TM *Bluetooth*® Connector (Windows) or Epson TM Utility (iOS or Android).

CAUTION

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

NOTE

- For detailed information about EPSON TM *Bluetooth*® Connector, see the TM *Bluetooth*® Connector User's Manual.
- The device name and passkey are editable with the TM-m50 Utility or Epson TM Utility.
- The *Bluetooth* security level has been set to "Middle" by default. For information on the *Bluetooth* security settings, see "Interface Setup Mode" on page 70.

Setting up from a Smart Device

Necessary Items

Prepare the following items.

- Device for setting: iOS or Android device
- Utility for setting: Epson TM Utility for iOS/Android

Running Epson TM Utility for iOS/Android

1 **Run the Epson TM Utility.**



2 **Set from "*Bluetooth* Setup Wizard" in the menu.**
Follow the on-screen instructions to complete the setup.

Setting up from a Windows Computer

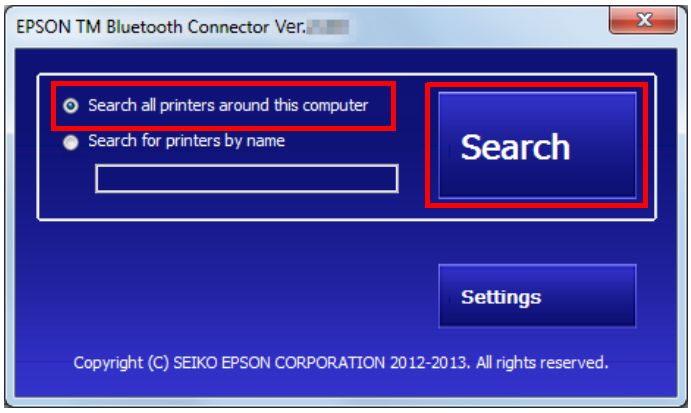
Follow the procedure below and make the settings.

1 **Have a *Bluetooth* wireless technology compatible computer ready.**
Make sure you have installed TM *Bluetooth*® Connector.

2 **Turn on the printer.**

3 **Start TM *Bluetooth*® Connector.**

4 **Select [Search all printers around this computer], and then click [Search].**

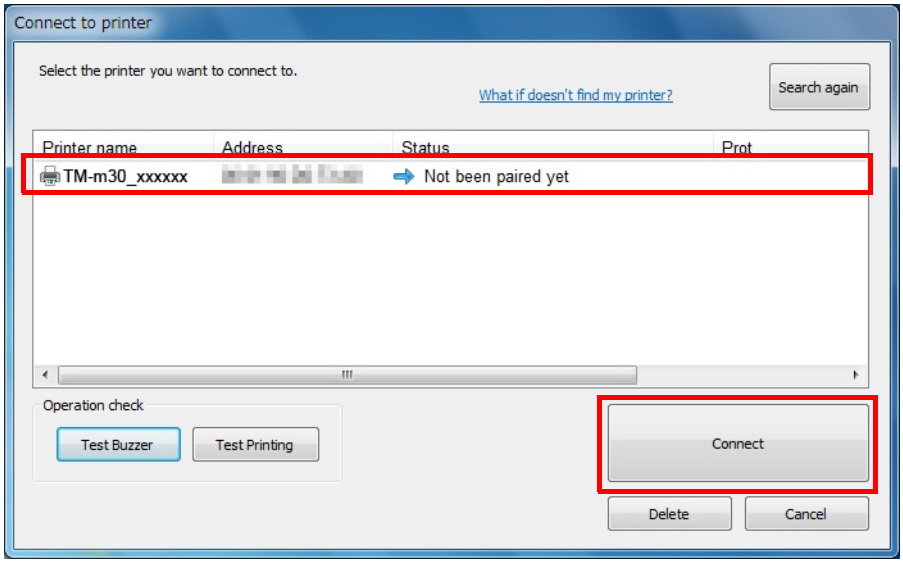


NOTE

If the printer has not detected after clicking the Search button, check the manufacturer of the *Bluetooth* software.

1. Open the Control Panel.
2. In the search box on the Control Panel, enter "*Bluetooth*", and then click Change *Bluetooth* settings.
3. In the *Bluetooth* Settings dialog box, click the Hardware tab, and then search for the Microsoft *Bluetooth* Enumerator. If it is not found, the *Bluetooth* software cannot detect the Epson *Bluetooth* printer, and you may not be able to connect to the computer.

5 **Select the printer to be paired, and then click [Connect].**



6 **If the window to enter a passkey appears, enter a passkey and click [OK].**

7 **Select the port to be used from the pull-down list, and then click [OK].**

8 **The "Connection complete" window appears. Click [Test Buzzer] or [Test Printing] to check operation.**

9 **Click [Back to Main screen] to return to the main window.**

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

NOTE

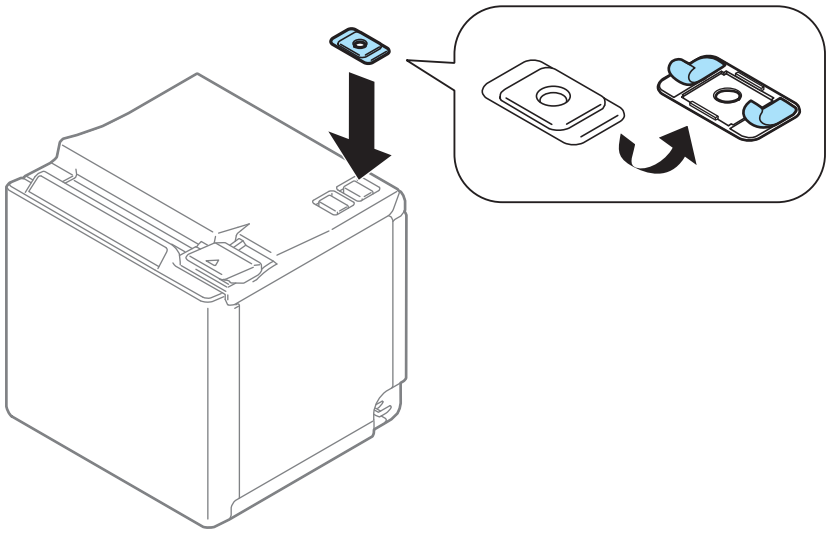
- If "Error" is displayed when you click the [Search] on the TM *Bluetooth*® Connector, check whether:
  * The *Bluetooth* adapter is installed to the computer.
  * *Bluetooth* is ON in the Windows settings.
- If the device is not displayed on the TM *Bluetooth*® Connector or the TM *Bluetooth*® Connector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

Attaching the Power Switch Cover

By attaching the power switch cover supplied, you can prevent accidental operations of the power switch. You can press the power switch by inserting a sharp-pointed object in the holes on the power switch cover.

WARNING

If an accident occurs with the power switch cover attached, unplug the power cord immediately. Continued use may cause fire or shock.

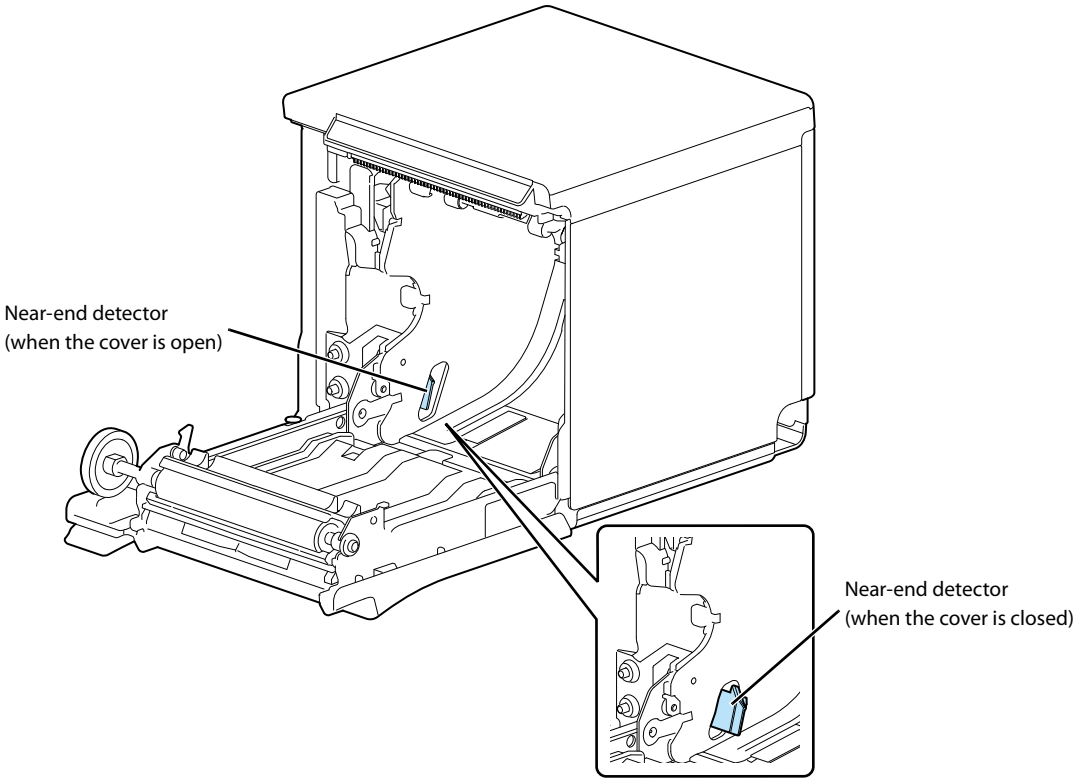


Enabling the Roll Paper Near-End Detection

When the "Roll paper near-end detection" function is enabled, the printer can detect that remaining amount of roll paper is low. To enable the function, use TM-m50 Utility or Epson TM Utility for iOS/Android.

CAUTION

- This function can be used only with a 80 mm width roll paper and only when the printer has been set up to eject printed paper from the front side.
- Accurate detection of the roll paper near-end status is impossible because the shape of the core varies from one roll paper to another.



Advanced Usage

Software Settings

With the memory switches and customized values, which are software settings for this printer, you can set the various functions.

For an outline of the functions, see the following section. You can make/change the settings using the methods described in the table below, or using ESC/POS commands.

Item\Method		TM Utility for iOS, for Android	TM-m50 Utility for Windows	Software Setting Mode
Memory Switches	Receive buffer capacity	✔	✔	✔
	BUSY condition	✔	✔	✔
	Auto line feed	✔	✔	✔
	USB power-saving function	✔	✔	✔
	Release condition of receive buffer BUSY	✔	✔	✔
	Select paper out detector enabled for paper out signal output	✔	✔	✔
	Error signal settings	✔	✔	✔
	Pre-feed before next print	✔	✔	✔
	Roll paper near-end detection	✔	✔	✔
	Network tethering	✔*1	✔	✔
Customized Values	User NV memory capacity			✔
	NV graphics memory capacity			✔
	Paper width	✔	✔	✔
	Print density	✔	✔	✔
	Print speed	✔	✔	✔
	Thai characters print mode	✔	✔	✔
	Character code table defaults		✔	✔
	International character defaults		✔	✔
	Interface selection	✔	✔	✔
	Column emulation mode	✔	✔	✔
	Command execution during offline	✔	✔	✔
	Amount of top margin by backfeed	✔	✔	✔
	Interface switch waiting time	✔	✔	✔
	Main connection interface	✔	✔	✔
	Power supply capacity	✔	✔	✔
	Autocutting after closing cover	✔	✔	✔
	Paper reduction	✔	✔	✔
	Font A auto replacement			✔

Item\Method		TM Utility for iOS, for Android	TM-m50 Utility for Windows	Software Setting Mode
Customized Values	Font B auto replacement			✔
	Multi-tone print density	✔	✔	✔
	Optional buzzer		✔	✔
	Batch rotate print (Upside Down)	✔	✔	
Communication condition of USB interface			✔	✔
Communication condition of *Bluetooth* interface		✔	✔	
Bluetooth communication interval during power saving mode		✔	✔	✔

*1: Available only with TM Utility for iOS.

NOTE

- For information about how to use the software setting mode, see "Software Setting Mode" on page 67.
- All the settings are available using the ESC/POS commands.

Functions

Receive buffer capacity

- 4 KB (initial setting)
- 45 bytes

NOTE

The receive buffer capacity for the *Bluetooth* interface is 64 K bytes.
The receive buffer capacity of the USB-A Device Charging connector is 8 K bytes.

BUSY condition

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

NOTE

In either case above, the printer enters the BUSY state after power is turned on, and when a self-test is being run.

Auto line feed

- Normally disabled (initial setting)
- Normally enabled

USB power-saving function

- Disabled
- Enabled (initial setting)

NOTE

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

NOTE

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

Select paper out detector enabled for paper out signal output

- Roll paper out detector (initial settings)
- Disabled

Error signal settings

- Enabled (initial setting)
- Disabled

Pre-feed before next print

- Disabled (initial setting)
- Enabled

NOTE

- When using this function, the top margin is approximately 10.5 mm.
- This setting becomes invalid if you change the "Amount of top margin by backfeed" setting from the initial setting (9.5 mm (no backfeed)).

Roll paper near-end detection

- Disabled (initial setting)
- Enabled

Network tethering

- Disabled (initial setting)
- Enabled

Paper width

- 80 mm (initial setting)
- 58 mm

Print density

Selectable from 70% to 130% (5% increment)

Initial setting: 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.

Supported papers	Print density
TF50KS-EY, P220AGB-1	90%
PD160R, KT55FA, TF60KS-E, PD190R, AP45KS-ND, AP50KS-ND, KT55PF, KT48FA	100%
P5047(48), P5047(55)	105%
KT48PF	110%

NOTE

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

Print speed

Selectable from levels 1 to 14 (Slow ~ Fast)

Initial setting: level 14

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.

Thai characters print mode

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

Character code table defaults

Selectable from 43 pages including user defined page

Initial setting: PC437: USA, Standard Europe

International character defaults

Selectable from 18 sets

Initial setting: USA

Interface selection

- *Bluetooth* only (only for *Bluetooth* capable models)
- Serial interface only (only for serial models)
- Standard USB only
- Ethernet/Wi-Fi only
- USB-A - Device Charging only
- Enable all the interfaces (initial setting)
- Enable all the interfaces except for *Bluetooth* (only for *Bluetooth* capable models)

NOTE

If you want to connect a tablet and the printer via *Bluetooth* while charging the tablet through the USB connector (USB-A - Device Charging), select "*Bluetooth* only".
Be aware that the supply current in this case varies depending on the firmware version.

- 01.11 ESC/POS or later: Maximum of 2.1 A on an iOS device, maximum of 1.5 A on an Android device
- Before 01.11 ESC/POS: Maximum of 0.5 A, regardless of the device

Also, charging may not be possible depending on the connected tablet. Please carry out thorough confirmation and evaluation before use.

Column emulation mode

- 42/30 column mode (Standard column mode) (initial setting)
- 48/36 column mode

Command execution during offline

- Enabled (initial settings)
- Disabled

Amount of top margin by backfeed

- 2.0 mm
- 9.5 mm (no backfeed) (initial settings)

CAUTION

- Remove all ejected paper before printing with backfeed.
- Disable the automatic top logo setting when enabling backfeed.
- Even if the "backfeed" has been enabled, it is not performed during the self-test.
- If setting a top margin of 5 mm {0.2"} or less, confirm that no errors occur in your environment of usage. Usage in a hot and humid environment or usage of paper that curls easily may increase the risk of paper jams.
- When the paper is fed backward, the paper may get wrinkled or smeared due to a slack in the roll. It is recommended to use thermal paper that has high resistance to abrasion.
- Make sure to feed the paper by at least 20 mm before moving the auto cutter. It the paper feed length is not enough, it may cause a paper jam.

NOTE

You can specify values in 0.5 mm steps if you use TM-m50 Utility or TM Utility for iOS/Android.

Interface switch waiting time

Select from 1 to 10 seconds (in intervals of 1 second)

1 second (initial setting)

Main connection interface

- Auto (interface that receives data first) (initial setting)
- Serial (only for serial models)
- USB
- *Bluetooth* (only for *Bluetooth* capable models)
- Ethernet/Wi-Fi
- No main connection I/F

CAUTION

- When using this printer with multiple interfaces, make sure the interface that is always connected to be set as the main connection.
- When using multiple interfaces, set the receive buffer capacity to 4 KB.
- You cannot use wired LAN and wireless LAN at the same time.
- When you do not use the *Bluetooth* function, set the *Bluetooth* security level to "Middle" or "High" to prevent unauthorized access to the printer over *Bluetooth*. You can change the security level by using Epson TM Utility, TM-m50 Utility, or in the Interface Setup mode.

NOTE

- The displayed items vary depending on the interface configuration.
- For information about the function, see "Printing Using Multiple Interfaces" on page 29.

Power supply capacity (only for serial models)

1 to 3 (lowest to highest capacity)

Initial setting: 3

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%

Character height reduction

- Not reduced (initial setting)
- 25% reduction of inner spacing
- 50% reduction of inner spacing
- 75% reduction of inner spacing
- 75% reduction of inner spacing and shrinking the character height

Barcode height reduction rate

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

NOTE

- No reduction is applied to blank dot lines that exist in a graphic data.
- Reduced barcodes are not guaranteed to be correctly scanned. Make sure to check whether they are properly read by a barcode reader that is actually used.

Font A auto replacement

- Does not replace (initial setting)
- Font B
- Font C

Font B auto replacement

- Does not replace (initial setting)
- Font A
- Font C

Multi-tone print density

Selectable from 70% to 130% (5% increment)

Initial setting: 100%

Optional buzzer

NOTE

- For information about how to connect the optional external buzzer, see "Connecting the Optional External Buzzer" on page 37.
- When the optional external buzzer is enabled, a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.

Enables/disables

- Disabled (initial setting)
- Enabled

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)

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)

Selectable from Patterns A to E

Initial setting: Pattern B

Buzzer frequency (Pulse 2)

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

Batch rotate print (Upside Down)

- Disabled (initial setting)
- Enabled

Communication condition of USB interface

Class

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

NOTE	This setting only applies to the USB connector (Type-B).

Communication condition of *Bluetooth* interface

- Device name (initial setting: TM-m50_xxxxxx)
- Passkey (initial setting: 0000)
- Security (initial setting: Low)
- Auto Re-Connect with iOS device (initial setting: Enabled)

NOTE	The device name is initially set to TM-m50_xxxxxx. (xxxxxx refers to the last 6 digits of the serial number labeled on the back of your printer.)

Bluetooth communication interval during power saving mode

- Level 1 (Standard) (Initial setting)
- Level 2 (Short)

NOTE	By changing the setting to "Level 2 (Short)," you can shorten the time until printing begins or the time until information is shown on the customer display connected to the printer. However, because the communication frequency increases, the power consumption of the printer and the host also increases. Also, depending on the host, this setting may not be enabled, and the host-specified communication interval may be used.

Network Settings

The following explains the procedure for network settings in order to connect the product to your network.

Setup methods

There are three methods for set up.

Method 1: Setup using EpsonNet Config

This method involves installing the network configuration tool, EpsonNet Config, on your computer for setting.

As it does not require any settings in advance to allow set up, you can easily perform set up using a computer already connected to the network.

Download EpsonNet Config from the Epson website.

Method 2: Setup using EpsonNet Config (Web version)

This method involves opening the Web application equipped in the printer from a Web browser to perform settings.

Because you specify the printer's IP address to open it, you need to set your computer to the same network segment as the printer.

With EpsonNet Config (Web version), you can set more items than with EpsonNet Config.

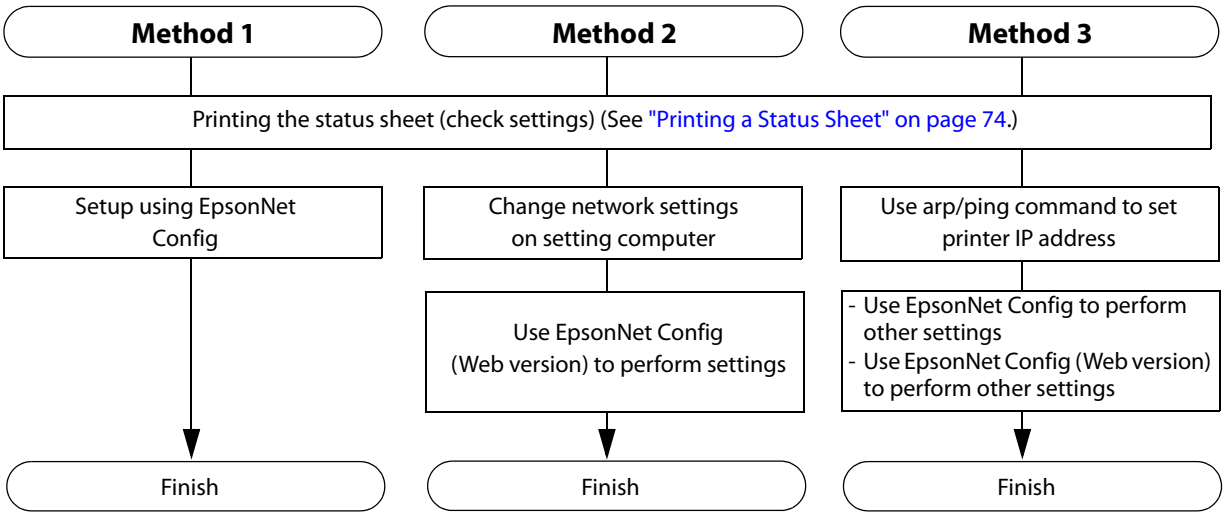
Method 3: Setup using arp/ping commands

This method involves setting the printer's IP address in the setting computer's arp/ping commands, then using the setting tool to change the other settings.

The setting computer must be in the same segment as the printer. Also, settings can be done only when the printer's arp+ping IP setting is set to Enable.

Use EpsonNet Config or EpsonNet Config (Web version) for settings other than the IP address.

Flow of Setup



Setup using EpsonNet Config

Execute EpsonNet Config, select the target printer from the displayed device list, then check and change the settings.

If the printer is still set to factory defaults, the printer's MAC address is listed up, even if the computer does not have the same network address.

CAUTION

- The initial setting uses an IP address for the printer provided by a DHCP server. Since you cannot complete setup if there are conflicting IP addresses on the network, make sure that there are no other devices on the network that conflict with the IP address provided by the DHCP server. If a DHCP server is not available, a fixed IP address (192.168.192.168) is set approximately one minute after turning on the printer. Also, if the Ethernet cable is not connected, connect the Ethernet cable and then run this process.
- When DHCP is enabled, the provided IP address is printed automatically. However, if the Ethernet cable is not connected, and the Wireless LAN unit is not installed, printing is not performed.

1 Connect the printer to the same network as the computer where you installed EpsonNet Config.

2 Start up EpsonNet Config.

The tool automatically detects printers connected to the network and displays a list.
It may take up to a minute for the printer to be displayed in the list.
If it is not displayed, check that [Filter] is set to "(All)" or "Network-connected devices", then click [Refresh]. Or, select [Tools], then [Option], and check the settings of [Search Parameters].

3 Select the target printer, then click [Configuration].

If you cannot determine the target printer from the product name or the IP address, use the MAC address. You can check the printer's MAC address on the status sheet.

4 Change the printer's settings based on the network setting information you received from the network administrator.

Select an item from the menu and change the setting.

5 Once you set the necessary items, click [Transmit].

The changed contents are sent to the printer and the printer settings are changed.

NOTE

For details about EpsonNet Config, see the manual (operation guide) installed together with the tool or the online help.

Setup using EpsonNet Config (Web version)

Follow the steps below to start up EpsonNet Config (Web version), and check or change the settings.

CAUTION

- When setting up using the EpsonNet Config (Web version), you need to set the network settings for the device to the same network segment as the printer you want to connect to.
- The initial setting uses an IP address for the printer provided by a DHCP server. Since you cannot complete setup if there are conflicting IP addresses on the network, make sure that there are no other devices on the network that conflict with the IP address provided by the DHCP server. If a DHCP server is not available, a fixed IP address (192.168.192.168) is set approximately one minute after turning on the printer. Also, if the Ethernet cable is not connected, connect the Ethernet cable and then run this process.
- When DHCP is enabled, the provided IP address is printed automatically. However, if the Ethernet cable is not connected, and the Wireless LAN unit is not installed, printing is not performed.

1 Connect the setting computer and the printer to the same network.

2 Perform network settings on the computer so that it is in the same segment as the printer's IP address.

Subnet mask: Same subnet mask as the printer
IP address: Same segment (same network address) as the printer, different host address

Check the values set in the printer on the status sheet.

E.g.)

	Printer	Setting computer
Subnet mask	255.255.255.0	255.255.255.0
IP address	192.168.192.168	192.168.192.2

3 Start up your Web browser and input the printer's IP address into the address field.

E.g.) http://192.168.192.168

NOTE

Under initial settings, when you access EpsonNet Config (Web version) from your browser, an authentication warning message may be displayed.

4 Input your user name and password on the authentication window.

The user name is "epson".
For the default password, see "Default administrator password for setting" on page 121.

5 Change the settings based on the network setting information you received from the network administrator.

Select an item from [Configuration] menu and change the setting.

6 After changing the necessary parameters, click the [Send] button.

The changes are sent to the printer.

7 Click the [Reset] button on the Web page displayed after sending.

The sent contents are enabled.
Depending on the changes, such as the IP address, the connection with the setting computer may be cut and the EpsonNet Config window may not be displayed. To reconnect, you need to set the

network settings of the setting computer to the same network segment as the printer for which settings were changed.

Setup using arp/ping commands

You can change the printer's IP address by changing the ARP table (table of IP address and MAC addresses) managed by the OS on the setting computer.

Check that the setting computer is connected to the network in the same segment as the printer, and that the arp+ping IP setting for the printer is set to Enable. (The factory default is Disable.)

You can check the printer settings on the status sheet.

1 **Delete the IP address you want to set to the printer from the ARP table.**
arp -d (IP address)
E.g.) arp -d 192.168.0.10

2 **Add the printer's MAC address and the IP address you want to set to the ARP table.**
arp -s (IP address) (MAC address)
E.g.) arp -s 192.168.0.10 00-26-AB-7B-00-00

3 **Execute the ping command and enable settings.**
ping (IP address you want to set)
E.g.) ping 192.168.0.10
When a message like "Reply From 192.168.0.10: Bytes=32 Time < 10 ms TTL=255" is displayed, the IP address setting is complete.

Use EpsonNet Config or EpsonNet Config (Web version) for settings other than the IP address.

MAC Address Confirmation

You can check the printer's MAC address using the following procedures.

- Printing the status sheet (MAC Address)
- A printer self-test (Only supported on Ethernet. For wireless, see the status sheet.)
- Using EpsonNet Config to confirm
- Using a Web browser to confirm (EpsonNet Config (Web version) function)

You can check the MAC address for network tethering using the following method.

- Printing the status sheet (MAC Address2)

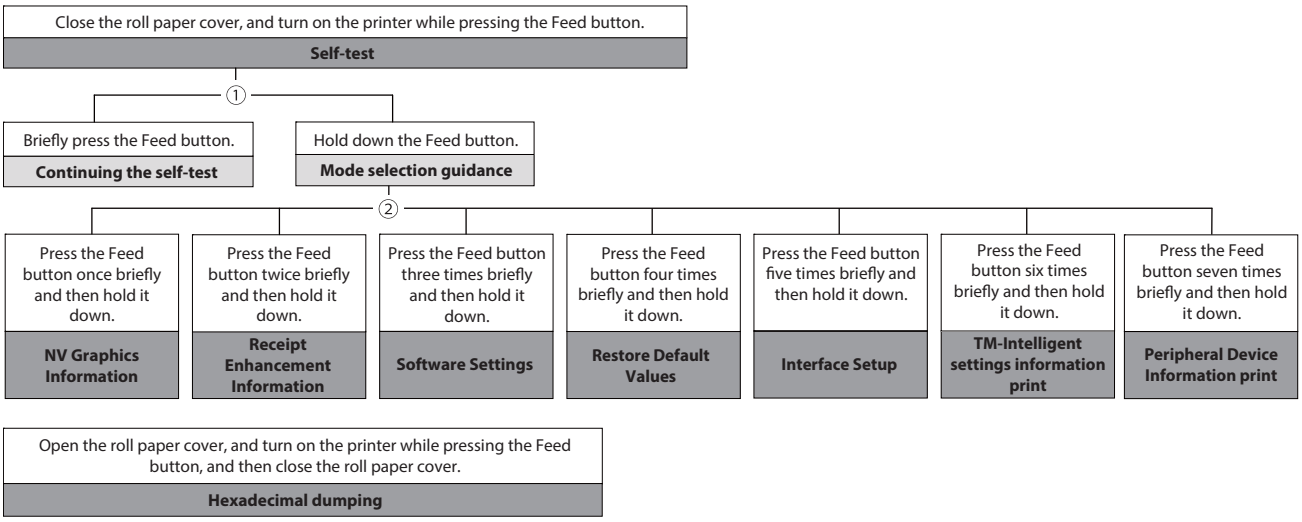
Setting/Check Modes

As well as print mode, the following modes are also provided for making various printer settings and checking items.

- Self-test mode
- NV graphics information print mode
- Receipt Enhancement information print mode
- Software settings mode
- Restore default values mode
- Interface setup mode
- Hexadecimal dumping mode

The self-test mode or hexadecimal dumping mode is selected depending on the operation performed when the power is turned on.

NV graphic information print mode, Receipt Enhancement information print mode, Software settings mode, and Restore default settings mode are selected depending on the Feed button operation performed during a self-test.



In 1 and 2, the following guidances are printed, the Paper LED flashes, and instructs the user's operations.

1. Continuing self-test guidance

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

2. Mode selection guidance

Mode Selection

Modes
- 0: Exit and Reboot Printer
- 1: NV Graphics Information
- 2: Receipt Enhancement Information
- 3: Customize Value Settings
- 4: Restore Default Values
- 5: Interface Setup
- 6: TM-Intelligent Information
- 7: Peripheral Device Information
- 8 or more: None

Select Modes by executing following procedure.
- step 1. Press the Feed button less than 1 second as many times as the selected mode number.
- step 2. Press Feed button for 1 second or more.

Self-test Mode

You can check the following items using the self-test.

- Product name
- Firmware version
- Product serial number
- Interface type
- Peripheral device information
- Resident fonts
- Maintenance counter information (head running length, number of times of autocutting)

Follow the steps below. You can also run the self-test using the ESC/POS commands.

1 **Close the roll paper cover.**

2 **While pressing the Feed button, turn on the printer. (Hold down the Feed button until printing starts.)**
After printing the current print status, a Continuing self-test guidance is printed, and the Paper LED flashes.

3 **Briefly press the Feed button (less than one second) to continue the self-test.**
The printer prints a rolling pattern on the roll paper, using the built-in character set.
After "*** completed ***" is printed, the printer initializes and switches to standard mode.

NV Graphics Information Print Mode

Prints the following NV graphic information registered to the printers.

- 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 to be defined.
- NV graphics data

NOTE

For details on NV graphics, see "NV Graphics Memory" on page 25.

Follow the steps below.

1 **After running a self test, hold down the Feed button for at least one second, and then select the Mode selection.**
The Mode selection guidance is printed, and the Paper LED flashes.

2 **After briefly (less than one second) pressing the Feed button once, hold it down for at least one second, to print the NV graphics information.**
After information printing, the Mode selection guidance is printed again.

3 **To finish, turn off the power, or select "Exit and Reboot Printer".**

Receipt Enhancement Information Print Mode

You can check the following items using the R/E information mode:

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

Follow the steps below.

1 **After running a self test, hold down the Feed button for at least one second, and then select the Mode selection.**
The Mode selection guidance is printed, and the Paper LED flashes.

2 **After briefly (less than one second) pressing the Feed button twice, hold it down for at least one second, to print the R/E information.**
After information printing, the Mode selection guidance is printed again.

3 **To finish, turn off the power, or select "Exit and Reboot Printer".**

Software Setting Mode

Set the printer's memory switches and customized values.

- Print Density
- Automatic Paper Reduction
- Enable/Disable Auto Paper Feed&Cut at cover close
- Paper Width
- Thai characters print mode
- Selection of character set
- Embedded Font Replacement
- Communication condition of USB Interface
- Print Speed
- NV Memory Capacity
- Command execution during offline
- Amount of top margin by backfeed
- Buzzer Control

- Power supply capacity (only for serial models)
- Interface Settings
- Interface switch waiting time
- Main connection interface
- LED indicator when I/F starting
- Pre-feed before next print
- Enabling/disabling the roll paper near-end detector
- Enabling/disabling the Network tethering

NOTE

- For details on the memory switches and customized values, see "Software Settings" on page 51.
- You can also make the software settings using the ESC/POS commands.

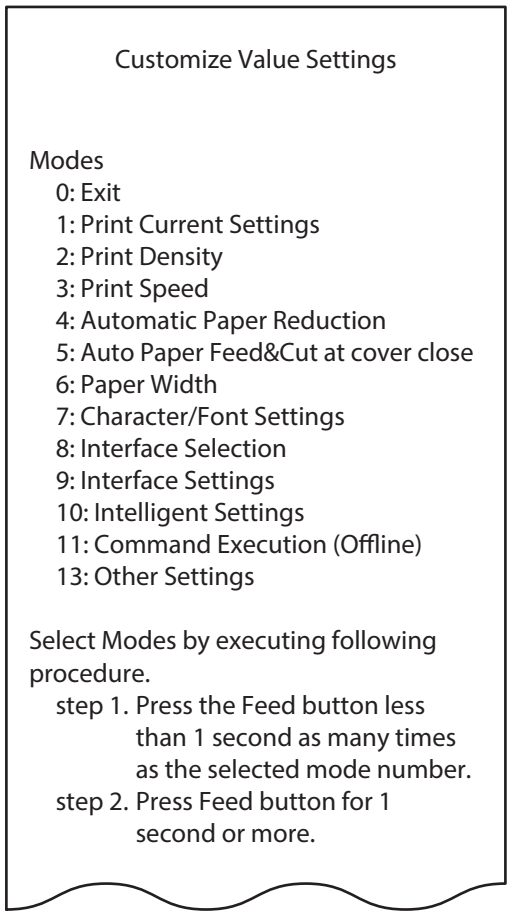
Follow the steps below.

1 **After running a self test, hold down the Feed button for at least one second to enter the Mode selection.**

The Mode selection guidance is printed, and the Paper LED flashes.

2 **Briefly press the Feed button three times (less than one second), hold it down for at least one second to enter the Software settings mode (Customized value setting).**

The Software setting mode guidance is printed, and the Paper LED flashes.



3 **After briefly pressing the Feed button (less than one second) for the number of times shown in the print result, hold down the button for more than one second to select the setting items.**

The setting selected as the setting item, the current settings and initial settings are printed.
Depending on the setting item, you may need to continue selecting the setting item before the settings are printed.
For details on setting items, see "Software Settings" on page 51.

4 **Select a setting by briefly pressing the Feed button (less than one second) for the number of times applicable to the setting, and then hold down the button for more than one second to confirm your selection.**

After saving the settings, the Software setting mode guidance is printed, and the Paper LED flashes.

5 **To close Software setting mode, turn off the printer, or select "Exit" to return to Mode selection guidance, and then select "Exit and Reboot Printer".**

NOTE

- To select 0 as the item number, hold down the Feed button until printing starts.
- If the button is pressed a number of times that is not displayed by the Setup guidance, the operation is invalid and the same guidance is printed.

Restore Default Values Mode

In Restore default values mode, following values saved on NV Memory will be set back to initial settings. When any error occurs, you can use to specify the reason.

- Memory switch
- Customized Value
- Communication Condition of USB Interface
- Status
- Character types
- Accessories
- Barcode
- Two-Dimensional Symbol
- Print Position
- Logo Setting
- TM-Intelligent function settings

Follow the steps below.

1 **After running a self test, hold down the Feed button for at least one second to enter the Mode selection.**

The Mode selection guidance is printed, and the Paper LED flashes.

2 **Briefly press the Feed button four times (less than one second), hold it down for at least one second to enter the Restore Default Values.**
The guidance is printed.

3 **Briefly press the Feed button once (less than one second), hold it down for at least one second. (Hold down the Feed button until the message of restore completion is printed.)**

Interface Setup Mode

Use this mode to setup the interface and other settings.

Follow the steps below.

1 **After running a self test, hold down the Feed button for at least one second to enter the Mode selection.**
The Mode selection guidance is printed, and the Paper LED flashes.

2 **Briefly press the Feed button five times (less than one second), hold it down for at least one second to enter the Interface Setup mode.**
The guidance is printed.

3 **After briefly pressing the Feed button (less than one second) for the number of times shown in the print result, hold down the button for more than one second to select the setting items.**

Initialize

Select [Wi-Fi & Ethernet Setup] or [*Bluetooth* Setup] and select [Initialize] to restore the communication settings to the factory default. The printer is reset and restarted.

SimpleAP mode (When using the Wireless LAN unit)

When using the Wireless LAN unit, select [Wi-Fi & Ethernet Setup] and select [SimpleAP] to start in SimpleAP mode (the same as the factory default setting). The printer is reset and restarted, and it begins printing the "SimpleAP Start" information.

Select this to quickly set up a network connection.

NOTE

For information on the Quick connection function, see "Simple Setup for Wireless LAN" on page 27.

Auto re-connect to iOS device (*Bluetooth* model)

In *Bluetooth* model, select [*Bluetooth* Setup] and then select [Auto Re-Connect iOS], you can select whether to enable or disable auto reconnection to iOS devices.

NOTE

- For details on the auto re-connect function, see "Auto Reconnect Feature" on page 123.
- You can change the settings with TM-m50 Utility and TM Utility for iOS.

Bluetooth Security Settings (*Bluetooth* model)

For *Bluetooth* models, select [*Bluetooth* Setup], and then select [Security], and you can change the *Bluetooth* security settings.

CAUTION

When the security settings are changed from "Middle" or "Low" to "High", or vice versa, the link key (pairing information) is deleted. If the printer is already paired with a terminal, unpair them and then pair again.

NOTE

You can change the settings with TM-m50 Utility and TM Utility for iOS/Android.

Security	Pairing Mode	Pairing Method
Low	Pairing is always possible	Just Works
Middle (initial setting)	Pairing is possible for one minute after turning the printer on or after printing the status sheet	Just Works
High	Pairing is possible for one minute after printing the status sheet	Numeric Comparison/Passkey Entry

Pairing method when the security is set to Middle/High (from the printer)

When the security is set to Middle/High and the printer is ready to be paired, perform the following procedure.

1 **Load paper in the printer, and then turn it on.**

CAUTION

- Make sure no errors have occurred and that the printer is not off-line.
- You cannot pair the printer while the network is starting up immediately after the power is turned on.

2 **Open the roll paper cover, hold down the FEED button (two seconds), and then close the roll paper cover.**

3 **A status sheet is printed, and the *Bluetooth* LED flashes a pattern indicating that pairing is now possible.**

NOTE

- Pairing is possible for one minute after printing the status sheet.
- You can enable pairing also by printing the status sheet by pressing the status sheet button.

Pairing method when the security is set to High (from the host)

When the security is set to High and the printer is ready to be paired, perform the following procedure.

1 **Search for the printer on the *Bluetooth* settings screen on the host device.**

2 **Select the printer you want to pair with.**
The printer prints the Passkey.

3 **Check that the printed Passkey and the Passkey displayed on the host device match, and then select "Pairing" on the host device.**

TM-Intelligent Settings Information Print Mode

This function allows you to print TM-Intelligent setting information currently registered in the printer.

Follow the steps below.

1 **After running a self-test, hold down the Feed button for at least one second to enter the Mode selection.**
The Mode selection guidance is printed, and the Paper LED flashes.

2 **Briefly press the Feed button six times (less than one second), hold it down for at least one second to print the TM-Intelligent setting information.**
After information printing, the Mode selection guidance is printed again.

3 **To finish, turn off the power, or select “Exit and Reboot Printer”.**

Peripheral Device Information Print Mode

This function allows you to print information for the device currently connected to the printer.

- Customer display information
- Wi-Fi adapter information
- *Bluetooth* adapter information
- Handheld scanner information

Follow the steps below.

1 **After running a self-test, hold down the Feed button for at least one second to enter the Mode selection.**
The Mode selection guidance is printed, and the Paper LED flashes.

2 **Briefly press the Feed button seven times (less than one second), hold it down for at least one second to print the Peripheral Device Information.**
After information printing, the Mode selection guidance is printed again.

3 **To finish, turn off the power, or select "Exit and Reboot Printer".**

Hexadecimal Dumping Mode

In hexadecimal dumping mode, data from the host device is printed in hexadecimal numbers and characters. By comparing the print outs and the program, you can check whether or not data is being sent to the printer correctly.

NOTE

- When there are no characters that correspond to the print data, " . " is printed.
- If you press the Feed button when there is less than one line of print data, one line is printed.
- During hexadecimal dumping mode, applications that check the printer status may not operate correctly. The printer only returns the status for the "Real-time transmission status" command.

Follow the steps below. Entering the hexadecimal dumping mode is also possible using the ESC/POS commands.

1 **Open the roll paper cover.**

2 **While pressing the Feed button, turn on the printer. (Hold down the Feed button until the Error LED turns on.)**

3 **Close the roll paper cover.**
From this point, all data received by the printer is printed in the corresponding hexadecimal numbers and ASCII characters.

Example of printing in hexadecimal dumping mode:

```
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  ***
```

4 **To close hexadecimal dumping mode, turn off the printer after printing is complete, or press the Feed button for three times.**

Printing a Status Sheet

Follow the steps below to check the interface settings.

NOTE

You cannot print after turning on the power while the Power LED is flashing.

Using the Status Sheet Button

1 **Check that the printer is turned on.**
Make sure the roll paper cover is closed.

2 **If there is a bottom cover, remove the cover.**
See "Removing the Covers" on page 102 for details on removing the bottom cover.

3 **Hold down the status sheet button for at least three seconds.**
The status sheet is printed. After printing, the printer returns to the standard mode.

Using the Feed button

1 **Check that the printer is on.**

2 **Open the roll paper cover.**

3 **Hold down the Feed button for at least one second.**

4 **Close the roll paper cover.**
The status sheet is printed. After printing, the printer returns to the standard mode.

NOTE

- After the status sheet is printed, only the print settings of the mainly connected interface are retained. For the mainly connected interface, see "Printing Using Multiple Interfaces" on page 29.
- Ethernet and Wi-Fi status sheets are not printed while the printing communication protocol is being established. They will be printed after the connection is cut off (including being cut due to a time out).
- The *Bluetooth* status sheet is not printed if status sheet printing is performed under the following conditions.
  * *Bluetooth* is connected when the *Bluetooth* security is set to "Medium" or "High"
  * An error occurs when the *Bluetooth* security is set to "Medium" or "High"
  * Time between when a pairing request is received and Passkey printing starts when the *Bluetooth* security is set to "High"
- "(none)" is printed for the "Connected Peripheral" if no peripherals are connected to the USB downstream port connector.

*** Wi-Fi & Ethernet Interface ***

Wi-Fi Status
MAC Address : Unmounted
SSID : EPSON_Printer
Network Mode : Infrastructure
Comm Standard : 802.11b/g/n
Encryption Type : WPA2-PSK
Link Status : Unknown
Channel : Unknown
Transmission : Unknown
Access Point : Unknown
Signal Level : Unknown

Ethernet Status
MAC Address : XX-XX-XX-XX-XX-XX
MAC Address2 : XX-XX-XX-XX-XX-XX
Physical Layer : Auto-negotiation
Link Status : Disconnect

Ethernet
WF : XXXXXXXXXXXX
DN : TM-m50

Network
Soft Version : 01.00(1930.20.00)

TCP/IP Status
Acquiring : Auto
IP Address : (NONE)
Subnet Mask : (NONE)
Default Gateway : (NONE)

Service Status
Time Server : (off)
Server Direct Print : (off)
Status Notification : (off)

Other Status
Date/Time : 2020/01/01 00:00:00
Wi-Fi Device ID : Unknown
Wi-Fi Region ID : 1

*** Bluetooth Interface ***

Bluetooth Status
BD_ADDR : XX:XX:XX:XX:XX:XX
Passkey : XX
Device Name: TM-m50_XXXXXX
Module Ver : X.XX
Module Info : BT401-XXXXX
Mode : Auto re-connect enable
Security : Low

Bluetooth Status
BT : XXXXXXXXXXXX
DN : TM-m50

*** Wi-Fi & Ethernet Interface ***

Wi-Fi Status
MAC Address : Unmounted
SSID : EPSON_Printer
Network Mode : Infrastructure
Comm Standard : 802.11b/g/n
Encryption Type : WPA2-PSK
Link Status : Unknown
Channel : Unknown
Transmission : Unknown
Access Point : Unknown
Signal Level : Unknown

Ethernet Status
MAC Address : XX-XX-XX-XX-XX-XX
MAC Address2 : XX-XX-XX-XX-XX-XX
Physical Layer : Auto-negotiation
Link Status : Disconnect

Ethernet
WF : XXXXXXXXXXXX
DN : TM-m50

Network
Soft Version : 01.00(1930.20.00)

TCP/IP Status
Acquiring : Auto
IP Address : (NONE)
Subnet Mask : (NONE)
Default Gateway : (NONE)

Service Status
Time Server : (off)
Server Direct Print : (off)
Status Notification : (off)

Other Status
Date/Time : 2020/01/01 00:00:00
Wi-Fi Device ID : Unknown
Wi-Fi Region ID : 1

Resetting the Interface Settings

Follow the steps below to restore the network settings to the factory default.

> NOTE
>
> You can return the interface settings to their defaults from the Interface Setup mode. See "Interface Setup Mode" on page 70 for details on the Interface Setup mode.

1 **Turn off the printer and close the roll paper cover.**

2 **If the bottom cover is attached, remove the cover.**
See "Removing the Covers" on page 102 for details on removing the bottom cover.

3 **Hold down the status sheet button while turning on the printer.**
A message is printed indicating that resetting is being performed, and the printer restarts.

TM-Intelligent Function

This product supports the TM-Intelligent function and provides the following functions.

- Server direct print
- Status Notification

You can set each function in the Setup Utilities. For details on the setting method for Epson TM-m50 Utility for Windows, see the TM-m50 Utility User's Manual.
You can also download a dedicated manual and sample programs from our homepage.

Server direct print

The server direct function allows this product to acquire print data from a Web server and then print.
By including print data in a response to request from this product, the Web server application can print to this product.

The features are as follows.

- You can acquire print data from three different URLs.
- Print data is available in ePOS-Print XML format.

Regarding details on server direct printing, see the Server Direct Printing User's Manual.

Status Notification

Status Notification is used to periodically notify the TM printers with SDP support status to the Web server. The Web server automatically responds with an empty response.

Operating the printer management application created by the user with the Web server enables grasp of the status of the printers installed in a shop from a remote place.

For more details about the Status Notification, refer to the "Server Direct Print User's Manual".

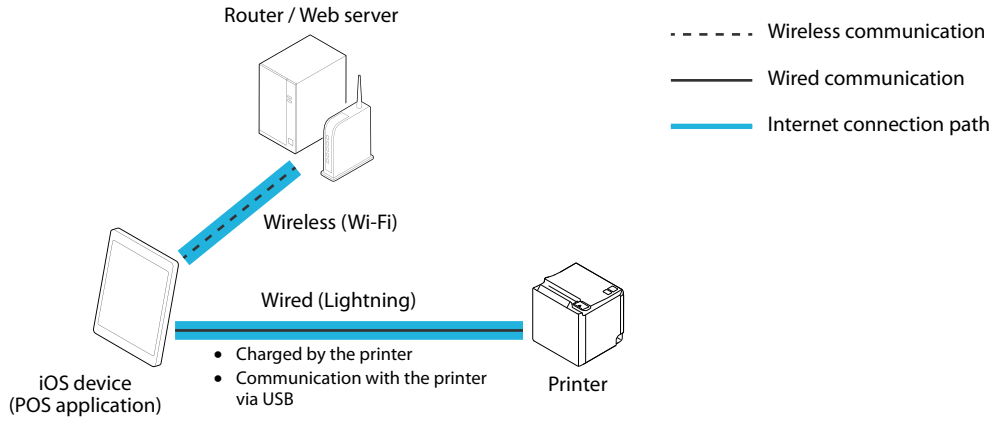
Network Tethering (for iOS device and Bluetooth capable models only)

A tablet POS system is a POS system that uses a tablet computer in which the POS application is installed. If the tablet communicates via Wi-Fi, the communication may become unstable depending on the radio wave condition in the shop or store and it may cause the POS system to malfunction.
The network tethering provides network function to an iOS device that is connected to the printer using a Lightning to USB cable. This enables stable and reliable operation of the POS system. In addition, the iOS device can be charged at the same time.
Enable the network tethering of the printer to use the function.

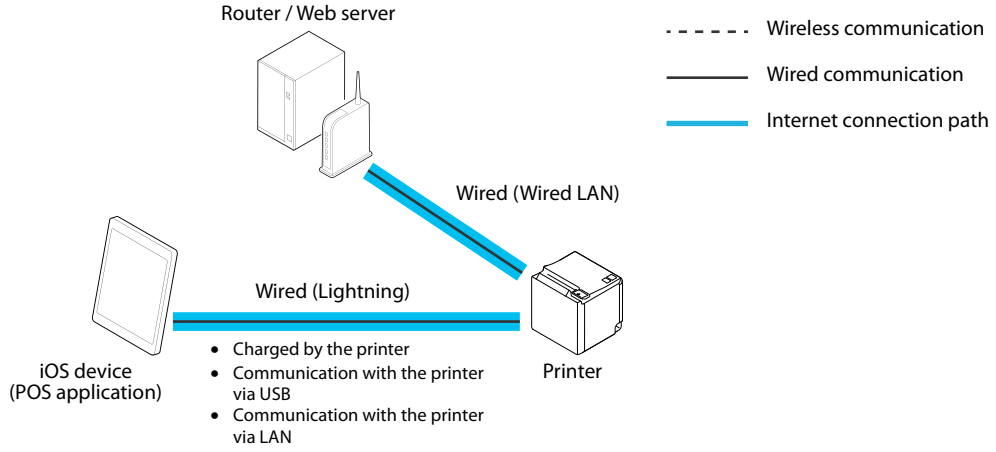
CAUTION

- If the network tethering is enabled and an iOS device is connected to the USB-A Device Charging connector (white connector) on the printer that is connected to a wired network, the iOS device can communicate over the wired network using the tethering function instead of Wi-Fi communication.
- The speed of the wired network communication using the network tethering is about 1.5 Mbps. Depending on the environment, the speed may slower than Wi-Fi communication.

❏ For Wi-Fi Communication



❏ For Wired LAN Communication (Using the Network tethering)



Tablet Devices Supported by the Network Tethering

Operation of this function has been checked with iOS devices running iOS 10.1 or later.

Firmware Versions that Supports the Network Tethering

01.03A ESC/POS or later, or 01.03B ESC/POS or later

NOTE

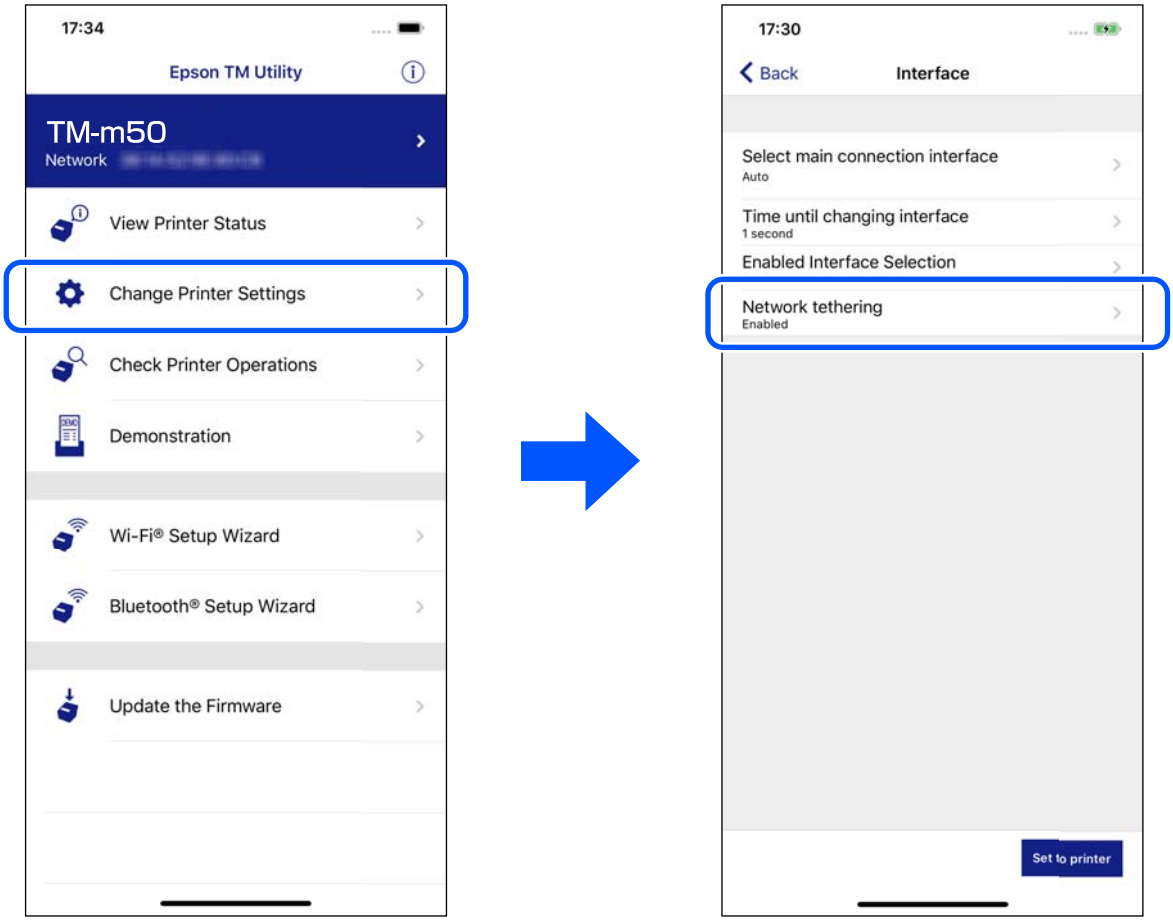
- See "Self-test Mode" on page 66 to check the firmware version of the printer.
- See "Utilities" on page 88 to update the firmware.

Enabling the Tethering Function

Enable the tethering function of the printer using Epson TM Utility for iOS, TM-m50 Utility, or in the software settings mode.

Enabling by Using Epson TM Utility

Select [Change Printer Settings] - [Network tethering] in that order to enable (or disable) the tethering function.



NOTE

See "Download" on page 89 for information on how to get Epson TM Utility.

Enabling by Using TM-m50 Utility

Select [Detailed Settings] - [Interface] - [Network tethering] in that order, and then enable (or disable) it. For more details, see TM-m50 Utility User's Manual.

Enabling in the Software Settings Mode

Select [3. Customize Value Settings] - [13. Other Settings] - [8. Network Tethering] in that order, and then enable (or disable) it.

See "Software Settings" on page 51.

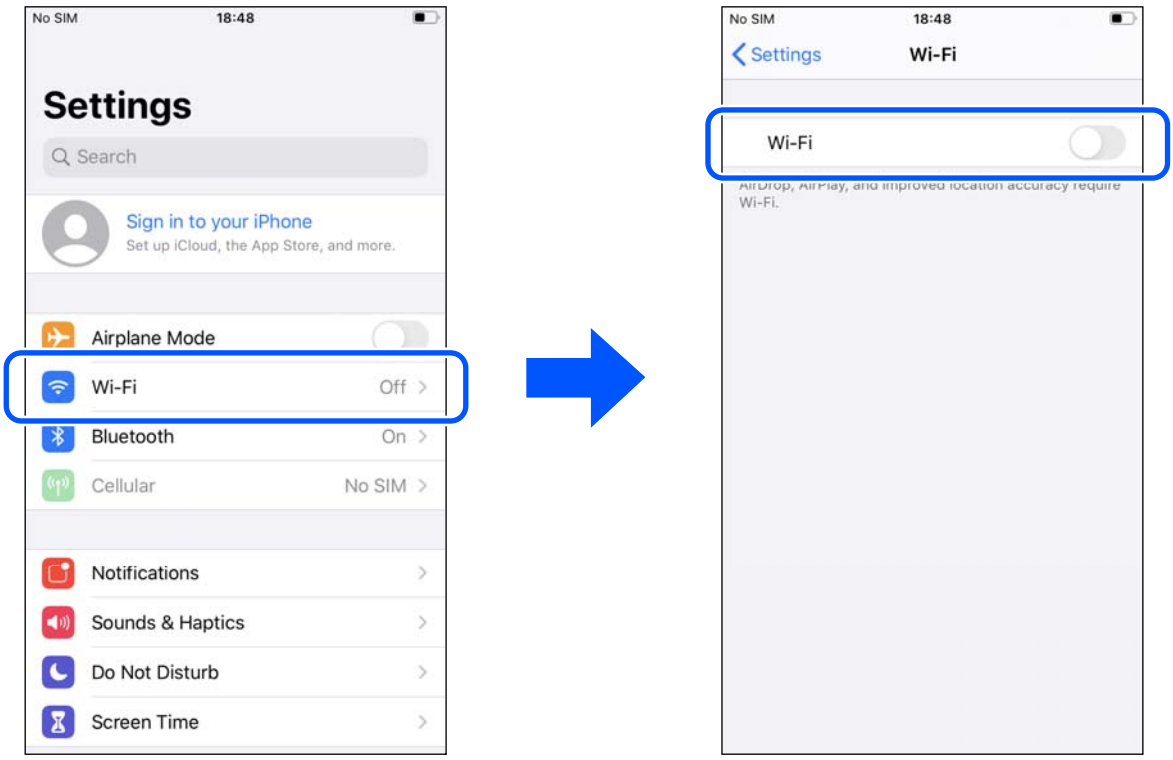
Connection Procedure

Follow the procedure below to connect a tablet using the tethering function.

1 **Connect the printer to a wired network.**

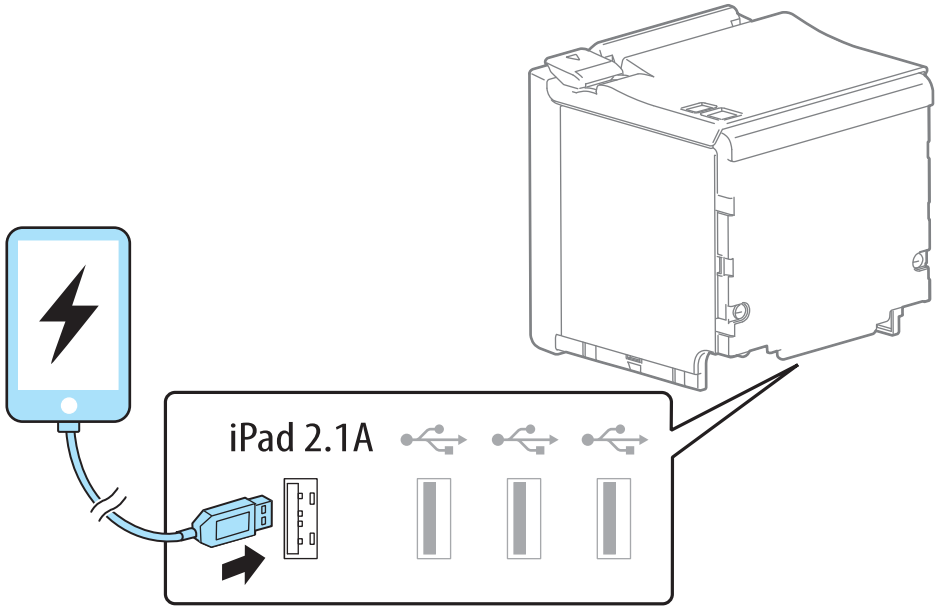
2 **Turn on the printer, and then wait until the Ethernet LED stops flashing and stays on.**

3 **On the iOS device, tap [Settings] - [Wi-Fi], and disable Wi-Fi.**

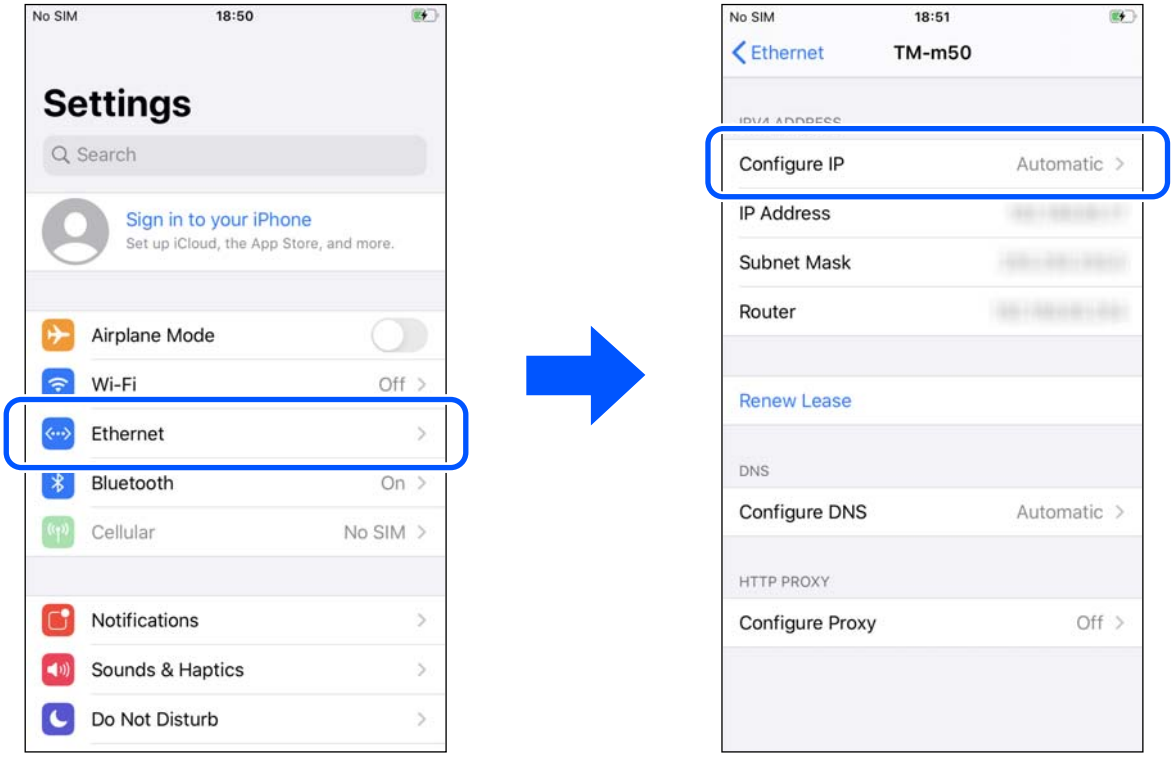


4 Connect the iOS device to the printer using a Lightning to USB cable.

Make sure to connect the cable to the USB-A Device Charging connector (white connector).



5 On the iOS device, tap [Settings] - [Ethernet], and then check that an IP address has been set.



NOTE

- If [Ethernet] does not appear in [Settings] of the iOS device, the tethering function of the printer might have been disabled. See "Enabling the Tethering Function" on page 79 to enable the tethering.
- If a DHCP server is not used in the network, set the IP address and subnet mask manually.
- To print from the iOS device, select one of the interfaces; USB or network, in the application.

Application Development Information

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

Controlling the Printer

The printer supports the following command systems:

- ePOS-Print XML
- ePOS-Device XML
- ESC/POS

Users can control the printer by using the aforementioned commands, or the following development kits or drivers.

- Epson ePOS SDK
- OPOS ADK
- OPOS ADK for .NET
- JavaPOS ADK
- EPSON Advanced Printer Driver (APD)
- EPSON TM Virtual Port Driver
- Mac Printer Driver
- Epson TM/BA Series Thermal Printer Driver

ePOS-Print XML

ePOS-Print XML is the Epson original control command system for POS printers defined in XML. With ePOS-Print XML commands, you can print in environments where http communication is available and from OS applications. For detailed information about ePOS-Print XML, see the ePOS-Print XML User's Manual.

ePOS-Device XML

ePOS-Device XML is a command system that uses XML to define functions to control various POS peripherals (including this product printer unit) connected to this product. An application creates a request message in XML format and sends it to this product using socket communications. For detailed information about ePOS-Device XML, see the ePOS-Device XML User's Manual.

ESC/POS

ESC/POS is the Epson original printer command system for POS printers and customer display. With ESC/POS commands, you can directly control all the printer functions, but detailed knowledge of printer specifications or combination of commands is required, compared to using drivers and applications.

For detailed information about ESC/POS commands, see the ESC/POS Command Reference that can be accessed from the following URL.

☞ https://www.epson-biz.com/pos/reference/

Controlling the Cash Drawer

A pulse output is sent to drawer kick connector pin 2 or pin 5, and you can open the drawer.

You can also check the open/close status of the drawer by checking the signal level of the drawer kick connector pin 3.

These controls are executed by a driver or by commands.

ESC/POS Commands

Prepare the output command for the specified pulse and the status transmission command.

For details, see the ESC/POS Command Reference.

For Windows Printer Drivers (APD)

You can set the drawer to open when printing is started. For details, see the manual for drivers.

For details on control, see the manual for Status API of the driver.

OPOS (OCX Driver)

Register a cash drawer using the SetupPOS Utility, and control using the OpenDrawer method or the DirectIO function.

For details, see the "EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE Cash Drawer" and the "UnifiedPOS Specification".

OPOS for .NET

Register a cash drawer using the SetupPOS Utility, and control using the OpenDrawer method or the DirectIO function.

For details, see the "EPSON OPOS ADK for .NET MANUAL Application Development Guide Cash Drawer (EPSON Standard)" and the "UnifiedPOS Specification".

Epson ePOS SDK

The output command for the drawer kick pulse and the status transmission command are provided in each SDK library. For details, see the user's manuals provided with each SDK.

NOTE

- Whether or not pin 2 or pin 5 operates the drawer kick connector depends on the connected cash drawer.
- You can acquire documents regarding the UnifiedPOS from the following link.
  https://www.omg.org/spec/UPOS

Controlling the Optional External Buzzer

You can set the optional external buzzer to buzz when an error occurs and when an automatic cut off occurs.

By using the driver or the command, you can specify when to sound the buzzer.

In addition, the beep pattern and how many times to sound the buzzer can be changed.

ESC/POS Command

Use the buzzer control command or the output command for the specified pulse.

For details, see the ESC/POS Command Reference.

For Windows Printer Drivers (APD)

Use the DirectIO function or the API for opening the drawer. For details, see the manual for Status API of the drivers.

OPOS (OCX Driver)

Register a POS printer using the SetupPOS Utility and control using the DirectIO function.

For details, see the "EPSON OPOS ADK MANUAL APPLICATION DEVELOPMENT GUIDE POSPrinter (TM Series)".

OPOS for .NET

Register a POS printer using the SetupPOS Utility and control using the DirectIO function.

For details, see the "EPSON OPOS ADK for .NET MANUAL Application Development Guide POSPrinter".

Epson ePOS SDK

The command for the buzzer function is provided in each SDK library. For details, see the user's manuals provided with each SDK.

NOTE

For details on setting the optional external buzzer, see "Connecting the Optional External Buzzer" on page 37.

Software

The following software is provided for application development.

Development Kit

Software	Description
Epson ePOS SDK	This is a development kit for controlling TM printers from native applications of smart devices or web applications. This includes libraries, manuals, and sample programs.
for Android	
for iOS	
for JavaScript	
EPSON OPOS ADK	This OCX driver can control POS peripherals using OLE technology.*1 Because controlling POS peripherals with vendor specific commands is not required on the application side, efficient system development is possible.
EPSON OPOS ADK for .NET	The OPOS ADK for .NET is a POS industry standard printer driver compatible with Microsoft POS for .NET. It allows you to develop applications that are compatible with the UPOS (Unified POS) specification. When developing applications, use a separate development environment such as Microsoft Visual Studio .NET.
EPSON JavaPOS ADK	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.
Epson TM Print Assistant	A native application that relays print data between an application and the TM printer. Epson TM Print Assistant allows you to develop a system that enables printing from a Web application or a URL-scheme capable application such as FileMaker, on a smart device connected to the TM printer.
for Android	
for iOS	

*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 printer drivers. It is not a driver to be used for printing from commercial applications.
You can acquire documents regarding the UnifiedPOS from the following link.
https://www.omg.org/spec/UPOS

Drivers

Software	Description	Operating environment
EPSON Advanced Printer Driver (APD)	In addition to ordinary Windows printer driver functions, this driver has controls specific to POS. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	Windows
EPSON TM Virtual Port Driver	This is a serial/parallel-USB/LAN conversion driver to make an Epson TM/BA/EU printer connected via USB or LAN accessible from a POS application through a virtual serial or parallel port. It allows you to directly control devices connected via USB or LAN with ESC/POS commands without making changes in the POS application that controls devices connected via a serial or parallel interface.	Windows
Mac Printer Driver	Mac printer driver allows you to control the printer 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.	Mac OS X
Epson TM/BA Series Thermal Printer Driver	This driver allows you to control the printer 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.	GNU/Linux

Utilities

Software	Description	Operating environment
Epson TM Utility	A utility that is available on the App Store or Google Play. Use this to perform wireless connection setup and change settings on the printer from iOS and Android devices. In addition, the utility has the following functions. • Sample receipt printing • Printer status display • Quick pairing by NFC/QR code • Firmware update	iOS, Android
TM-m50 Utility	A utility for checking and changing various printer settings. Use this utility to: • Check the current settings • Test operation • Store logos • Set paper saving • Set printing control • Set communication interfaces • Configure the network settings • Configure the TM-Intelligent function settings • Save/restore settings	Windows
EpsonNet Config	A network setting tool for Epson network products.	Windows, Mac
TM *Bluetooth*® Connector	Pairs the *Bluetooth* printer with your device, and sets the *Bluetooth* port to be used by the printer driver and/or an application. Using this software makes it easy to pare the printer because the software searches for and displays only Epson *Bluetooth* printers, and allows you to search the printer by its product name.	Windows
Deployment Tool	Use to make network and printer settings simultaneously. Allows you to make settings efficiently at the time of introducing TM printers for the first time, or when configuring multiple TM printers at the same time.	Windows
Monitoring Tool	Use to check a list of status for the Epson printers connected to the network. You can also update certificates for multiple printers used for WPA-Enterprise in a batch.	Windows
TM-m50 Firmware Updater	Use this tool to update the printer's firmware. An executable file and the firmware are packaged together.	Windows

Others

Manual	Description
ePOS-Print XML User's Manual	Describes ePOS-Print XML statements. This manual comes with sample programs.

Download

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

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

☞ https://www.epson.com/support/

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

☞ https://www.epson-biz.com/

Application Development and Distribution for iOS

If your application enables communication with the printer using *Bluetooth* or a Lightning-USB cable, Epson must submit the application to Apple before you submit it to the App Store. Please apply for each application you want to submit to the App Store from the URL below.

☞ https://global.epson.com/products_and_drivers/tm/en/mfi.html

Notes on Printing Barcodes and Two-Dimensional Symbols

- Ensure adequate space around the code; "quiet zone" that is required for the code.
- To print PDF417 (two-dimensional symbol), the following settings are recommended.

  Module height: 3 to 5 times the module width

  Vertical size of the symbol: approximately 5 mm {0.20"} or more
- The recognition rate of ladder bar codes and two-dimensional symbols may vary depending on widths of the modules, print density, environmental temperature, type of paper, and characteristics of the reader. Make sure to check the recognition rate beforehand to determine the settings and use conditions so that the restrictions of the reader are satisfied.
- Reading quality of multi-gradation bar codes and two-dimensional symbols is not guaranteed.
- When printing a ladder barcode or two-dimensional symbol that is created as a graphics data, set the print speed to level 5.

Automatic Certificate Update Feature

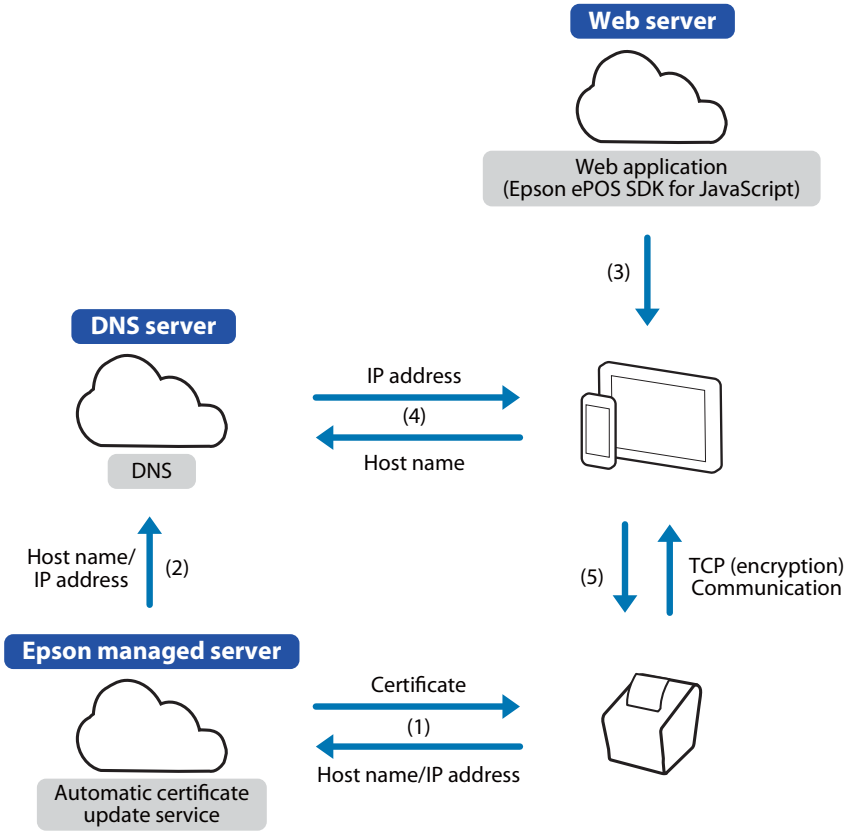
This function automates registration and periodic updating of the security certificates registered to the printer. This reduces the burden on the user of tasks such as updating.

Overview

When printing from application software that uses Epson ePOS SDK for JavaScript, if using security communication (SSL/TLS communication), security certificates must be registered on the printer and updated periodically.

Using this function automates the registration and periodic updates of security certificates so that users do not have to perform this task.

Use of this function requires the serial number of the connected printer to be entered.



(1) The printer downloads a certificate from the Epson-managed server and sends the host name and IP address.

(2) The Epson server sets the host name and IP address to the DNS.

(3) The host device uses a browser and web application to print.

(4) The host device acquires the IP address associated with the host name from the DNS.

(5) The host device uses TCP (encryption) communications with the printer to print.

NOTE

No personal information is acquired from the customer on the Epson-managed server side.

Use environment

- Printer firmware version: 01.18 ESC/POS or later
- Application software developed using Epson ePOS SDK for JavaScript Ver.2.24.0b or later
- Both the host device and printer are connected to an Internet environment

Software required

- Epson ePOS SDK for JavaScript Ver.2.24.0b or later

One of the following setting utilities.

- TM-m50 Utility
- Epson TM Utility
- EpsonNet Config (Web version)

Refer to "Software" on page 86 for information on software.
Refer to "Setup using EpsonNet Config (Web version)" on page 62 for EpsonNet Config (Web version).

Limitations

- The security certificate is updated at printer startup and at a set time (if the printer has an update time set). If the printer is to run continuously without being turned off, be sure to set the update time.
- The printer will restart when the security certificate is updated. Since the printer cannot be used during the restart, set the update time to a time when the printer is not in use.
- Use NTP, etc., to set the printer time. This function may not operate correctly if the printer time is very incorrect.
- Depending on the proxy configuration, this function may not be usable.
  In this case, add the following to the browser's proxy exclusion list.

  *.omnilinkcert.epson.biz
- If a security certificate is already registered, overwrite it.
- This function requires ISRG Root X1 in the host device certificate store.

Implementation

Programming in Epson ePOS SDK for JavaScript

For information on how to program in Epson ePOS SDK for JavaScript, refer to the user manual and samples included in Epson ePOS SDK for JavaScript.

Printer settings

1 **Use TM-m50 Utility, Epson TM Utility, or EpsonNet Config (Web version) to configure the following settings.**

- Automatic Update of CA-signed certificates: Enable the setting
- Update time: Set the time to update the certificate
- Time Configuration: Set correct time (TimeServer or UTC, and time difference)
- Proxy: Set up proxy as needed

2 **Connect the host device and printer to an Internet environment.**

3 **Print from application software developed using Epson ePOS SDK for JavaScript.**
To use this function, the host name of the printer must be designated when executing a connect method. The host name is generated by converting the serial number of the printer.
A program to enter the printer's serial number is necessary on the application side.
Refer to the sample programs in Epson ePOS SDK for JavaScript for information on how to convert to the host name.

Operation Check

Print the status sheet to check the status of the automatic update of CA-signed certificates.

```
Auto Cert Update : Enable
 Server Access   : OK
```

Auto Cert Update / Automatic update of CA-signed certificates setting

- Disable: Certificates are not automatically updated
- Enable: Certificates are automatically updated

Server Access / Result of the last communication with the server for automatic certificate update

- OK: Successfully communicated
- Unknown: Was not communicating or is in communication
- NG (Failure): Communication failed

If "NG (Failure)" is printed, check the following.

- Is the printer connected to the Internet?
- Is the time setting of the printer correct?

Handling

This chapter describes basic handling of the printer.

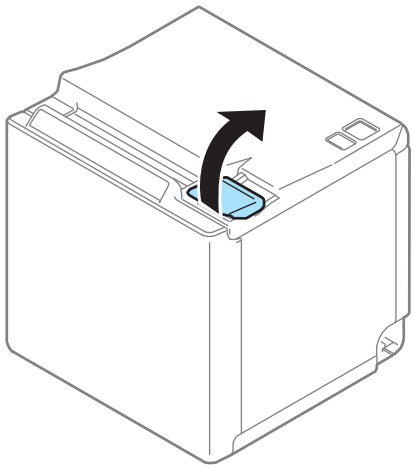
Installing Roll Paper

Follow the steps below to install the roll paper.

CAUTION	Make sure you use a specified roll paper type.

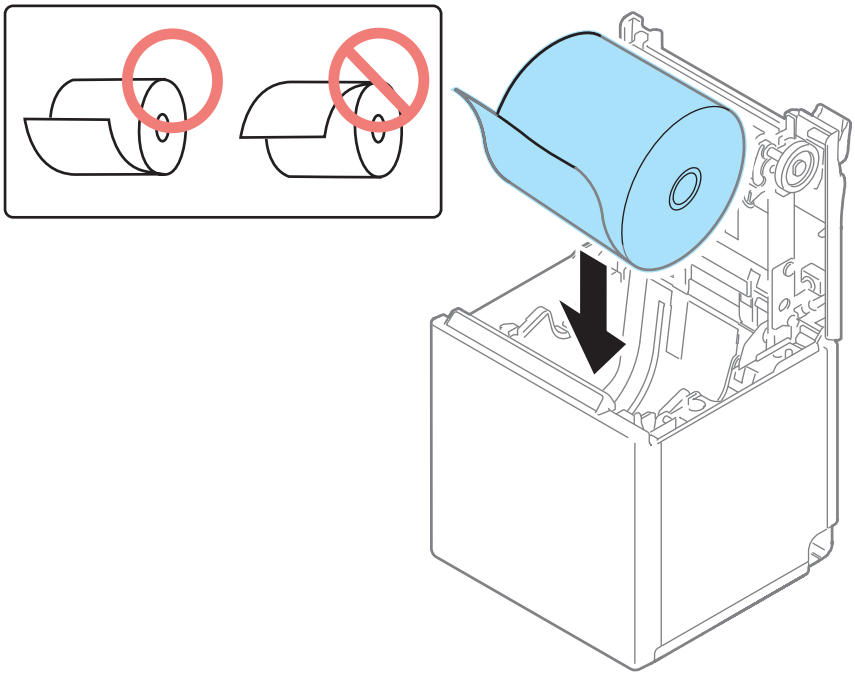
For the top eject position

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



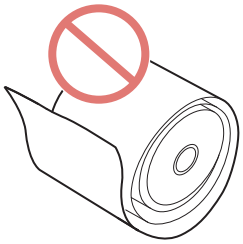
2 **Remove the used roll paper core if any, and insert the roll paper.**

3 Load the roll paper in the correct direction.



CAUTION

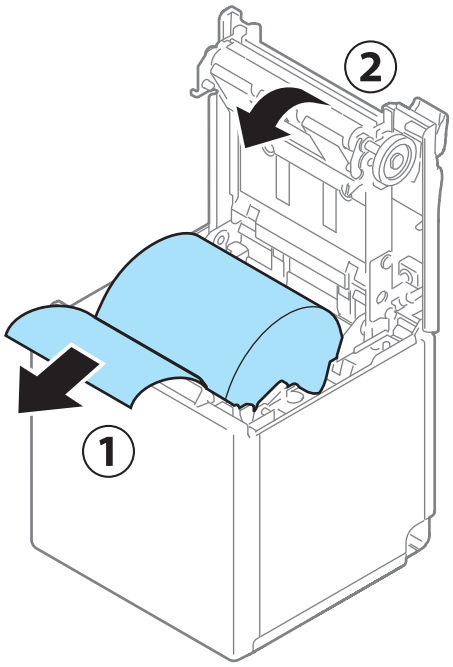
- Before installing the roll paper, take up any slack in the roll paper by pulling its leading edge. If you install a slack roll paper, a paper jam or print quality problems may occur.



- Before installing the roll paper, make sure that the roll paper is not deformed. Using a deformed roll paper will cause the printer to malfunction.

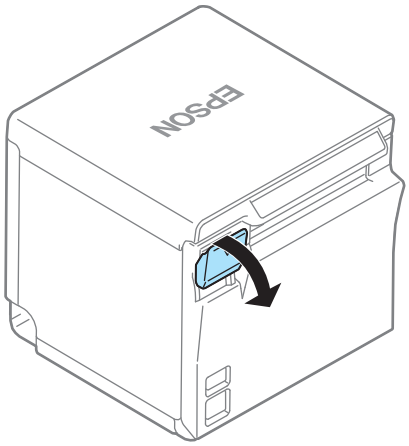
4 **Pull out some paper, and close the roll paper cover.**

When the printer power is on, the roll paper is automatically cut.



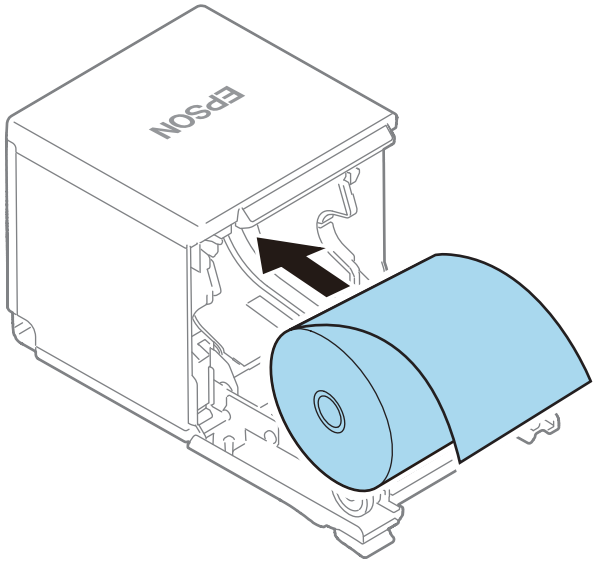
For the front eject position

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



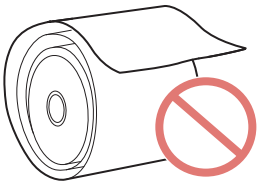
2 **Remove the used roll paper core if any, and insert the roll paper.**

3 Load the roll paper in the correct direction.



CAUTION

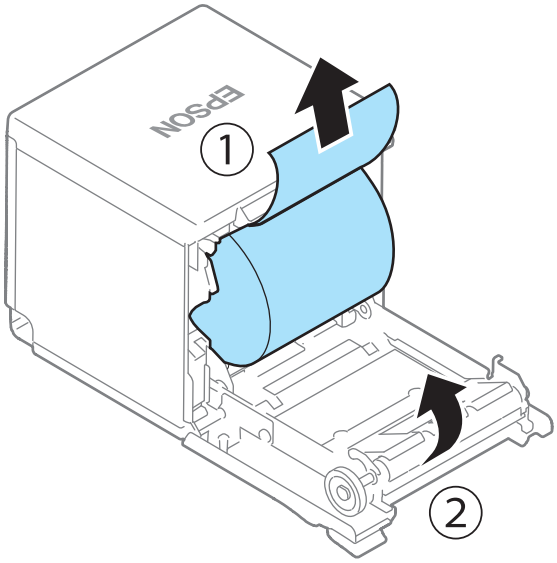
- Before installing the roll paper, take up any slack in the roll paper by pulling its leading edge. If you install a slack roll paper, a paper jam or print quality problems may occur.



- Before installing the roll paper, make sure that the roll paper is not deformed. Using a deformed roll paper will cause the printer to malfunction.

4 Pull out some paper, and close the roll paper cover.

When the printer power is on, the roll paper is automatically cut.



Removing Jammed Paper



CAUTION

Do not touch the thermal head and its surroundings. After printing, the thermal head and its surroundings can be very hot.

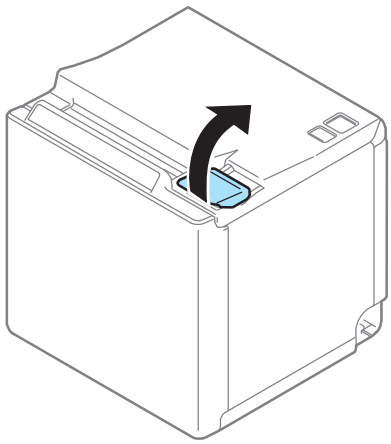
CAUTION

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

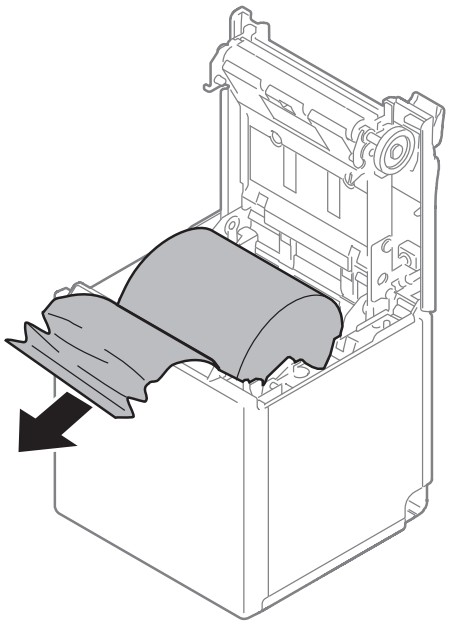
Follow the steps below if the roll paper is jammed.

1 **Turn off the printer**

2 **Open the roll paper cover.**



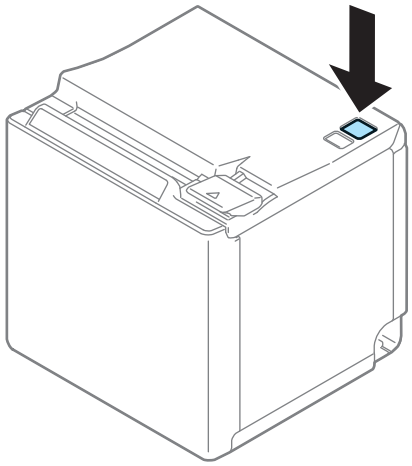
3 **Remove the jammed paper.**



4 **Close the covers.**

Roll Paper Cover does not Open

When the roll paper cover does not open using the lever, restart the printer.



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. Be sure to unplug the AC cable while cleaning.

CAUTION

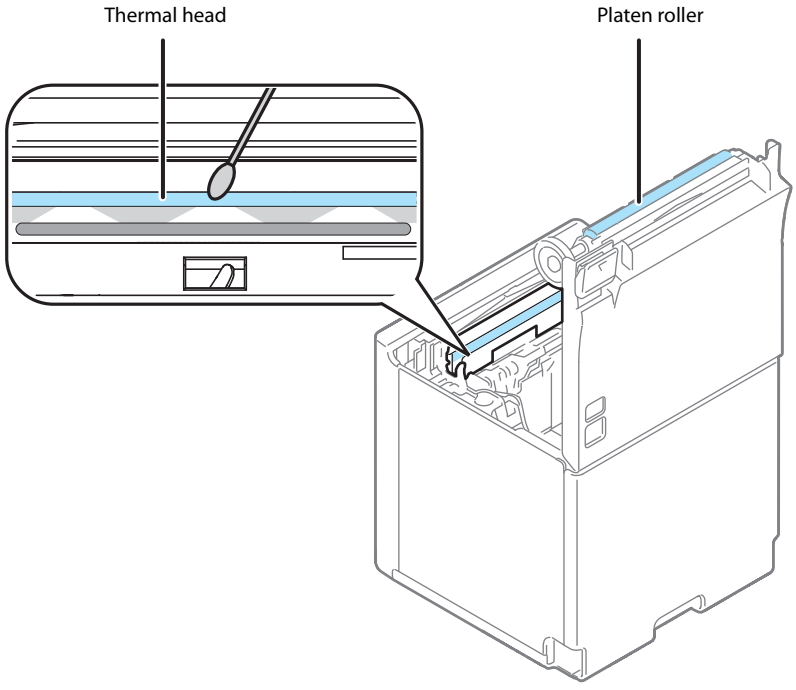
Never clean the product with alcohol, benzine, thinner, or other such solvents.
Doing so may damage or break the parts made of plastic and rubber.

Cleaning the Thermal Head/Platen Roller

Epson recommends cleaning the thermal head to maintain receipt print quality. We recommend cleaning periodically (about once every 3 months). To clean the thermal head, use a cotton swab moistened with an alcohol solvent (ethanol or isopropyl alcohol).
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 with a cotton swab moistened with water. Turn on the product power only after the water has completely dried.

CAUTION

- **After printing, the thermal head and its surroundings 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. **Confirm that the Power LED is off.**
3. **Disconnect the AC cable from the socket.**
4. **Remove the roll paper.**
5. **Pack the printer upright.**

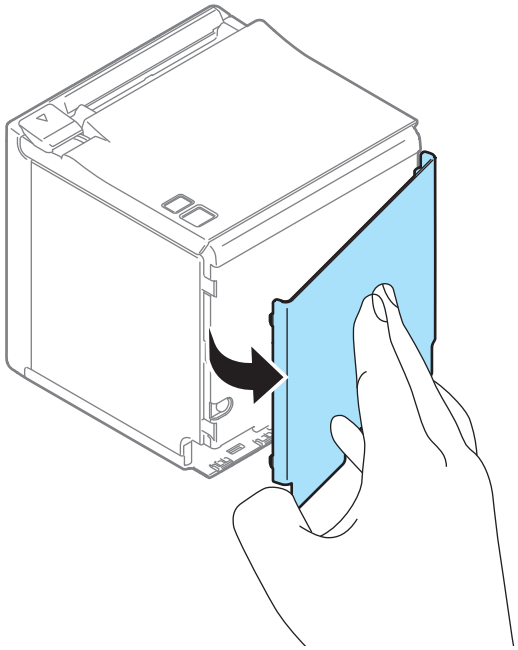
Removing/Attaching the Rear and Bottom Covers

Removing the Covers

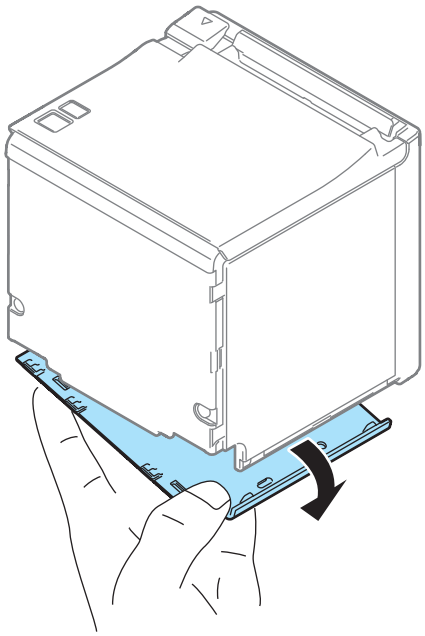
Follow the steps below to remove the covers.

For the top eject position

1 **Use your finger to remove the rear cover as shown in the illustration.**

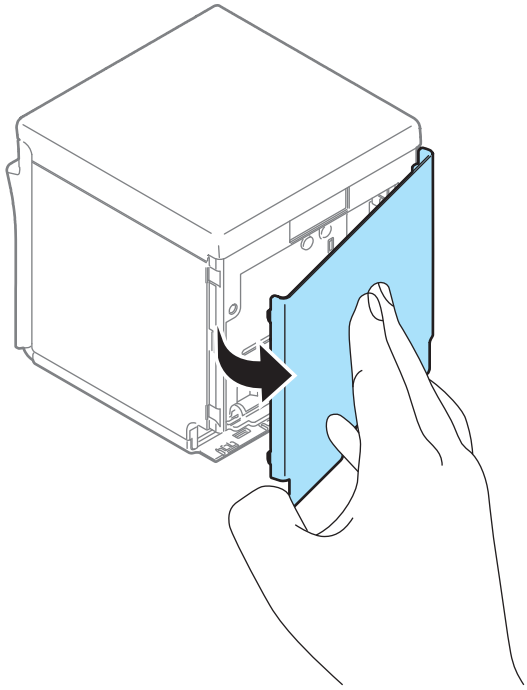


2 **Use your finger to remove the bottom cover as shown in the illustration.**

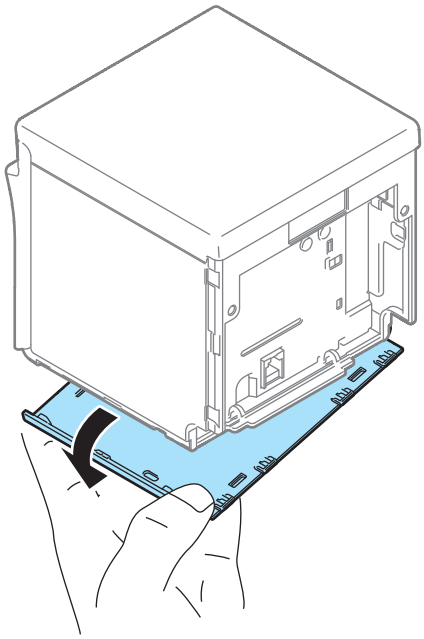


For the front eject position

1 **Use your finger to remove the rear cover as shown in the illustration.**



2 **Use your finger to remove the bottom cover as shown in the illustration.**

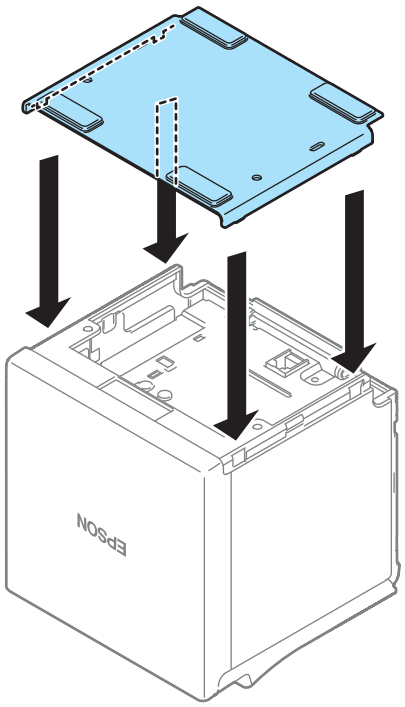


Attaching the Covers

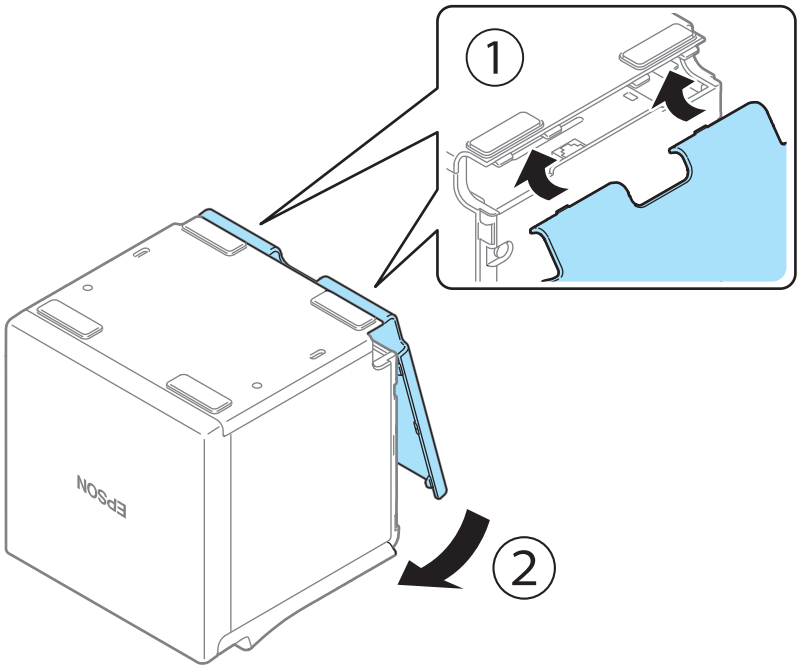
Follow the steps below to attach the covers.

For the top eject position

1 **Align the catches and attach the bottom cover to the printer.**

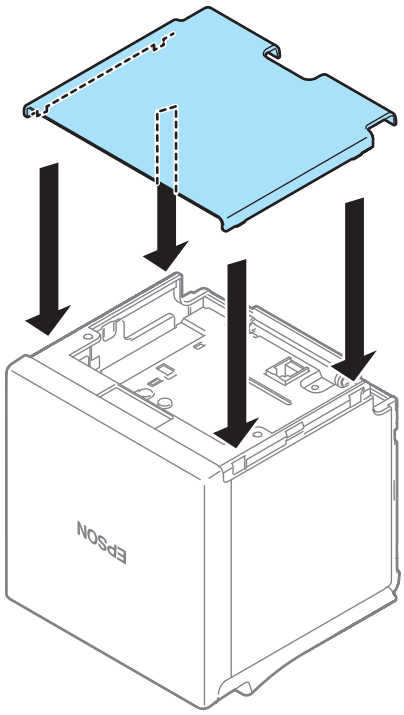


2 **Hook the catches into the bottom cover and attach the rear cover to the printer.**

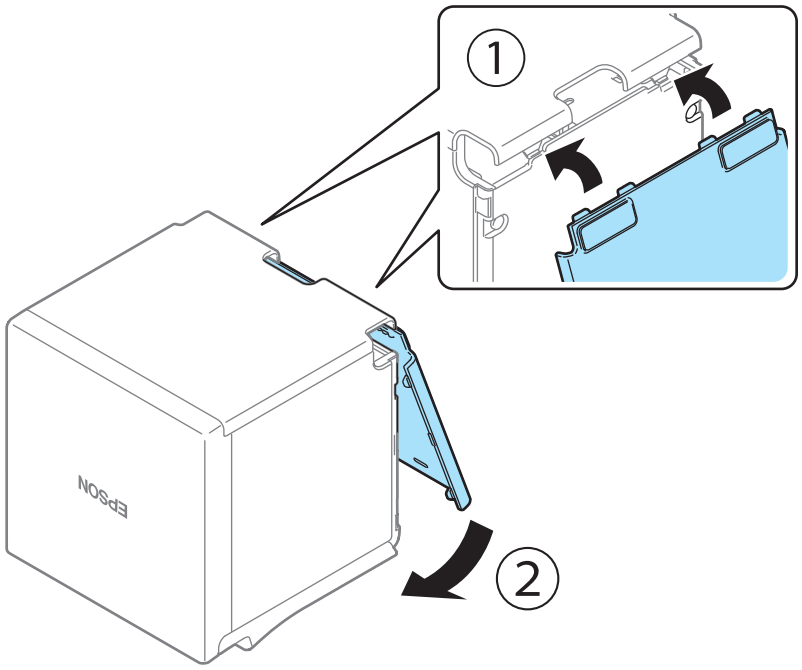


For the front eject position

1 **Align the catches and attach the rear cover to the printer.**



2 **Hook the catches into the rear cover and attach the bottom cover to the printer.**



Appendix

Product Specifications

Printing method		Thermal line printing
Printing direction		Two directional with friction feed
Paper feed speed		200 mm/s {5.9"/s} (continuous paper feeding with the Feed button)
Cutting method		Partial cut (cutting with one point in center left uncut)
Interface	Serial model	RS-232 Serial interface [D-Sub9pin] Wireless LAN [IEEE802.11 b/g/n or IEEE802.11 a/b/g/n/ac] Ethernet [10BASE-T/100BASE-TX] USB Type-B [USB 2.0, Full-speed (12 Mbps)] USB Type-A [USB 2.0, Full-speed (12 Mbps)]
	Bluetooth model	*Bluetooth* [*Bluetooth* 3.0 (EDR supported)] Wireless LAN [IEEE802.11 b/g/n or IEEE802.11 a/b/g/n/ac] Ethernet [10BASE-T/100BASE-TX] USB Type-B [USB 2.0, Full-speed (12 Mbps)] USB Type-A [USB 2.0, Full-speed (12 Mbps)]
Buffers	Receive buffer	4 KB/45 bytes 64 KB for *Bluetooth* interface 8 KB for USB-A Device Charging interface
	Downloaded buffer (user-defined characters and user-defined images)	12 KB
	NV graphics memory	384 KB
Barcode/ two-dimensional symbol printing		UPC-A, UPC-E, JAN8 / EAN 8, JAN13 / EAN13, Code39, Code93, Code128, ITF, CODABAR(NW-7), GS1-128, GS1 DataBar, Code128 auto, PDF417, QR code, Maxi Code, Data Matrix, Aztec Code, Two-dimensional GS1 DataBar, Composite Symbology
Cash drawer function		2 drives
Power supply	Serial model	Rated output: 24 V/2.1 - 10.0 A, Maximum output: 240 VA or less
	Bluetooth model	AC adapter V (Model: M344A).
AC power consumption (100 to 230 V/50 to 60 Hz)[*1]	Operating	39.1 W (AC 115 V/60 Hz)
	Standby	1.6 W (AC 115 V/60 Hz)
Operating voltage		DC 24 V ±7%

USB connector for charging (USB-A - Device Charging, white connector)		Rated current: 2.1 A Rated voltage: 5.1 V
Life*2	Printer mechanism	20 million lines (printing + paper feeding)
	Thermal head	200 km
	Autocutter	2.2 million cuts
MTBF*3		360,000 hours
MCBF*4		70 million lines
Temperature/Humidity		Operating: 5 to 45°C {41 to 113°F}, 10 to 90% RH Storage: -20 to 60°C {-4 to 140°F}, 10 to 90% RH
Overall dimensions (W × D × H)		Top eject position: 127 X 127 X 135 mm (5.0 × 5.0 × 5.3") Front eject position: 127 X 133 X 129 mm (5.0 × 5.2 × 5.1")
Weight (mass)		Approx. 1.3 kg {2.87 lb}

*1: According to our operation conditions. It may differ depending on the usage conditions and product model.

*2: Indicates the point at which the wear-out failure period starts.

*3: Indicates the mean time between failures during the random failure period.

*4: Indicates the overall mean time between failures, including wear-out and random failures, before the life is reached.

Printing Specifications

			Paper width 58 mm	Paper width 80 mm
Printing method			Thermal line printing	
Dot density			180 × 180 dpi	
Printing width	42/30 column mode (Standard column mode)		50.8±0.2 mm {2.00±0.01"}, 360 dots	72.2±0.2 mm {2.84±0.01"}, 512 dots
	48/36 column mode		50.8±0.2 mm {2.00±0.01"}, 360 dots	67.7±0.2 mm {2.67±0.01"}, 480 dots
The number of characters	42/30 column mode (Standard column mode)	Font A	30*1	42*1
		Font B	40	56
		Special Font A	30	42
		Special Font B	40	56
		Kanji Font A	15*1	21*1
		Kanji Font B	Korean: 22	Korean: 32
	48/36 column mode	Font A	36	48
		Font B	40	53
		Special Font A	30	40
		Special Font B	40	53
		Kanji Font A	15	20
		Kanji Font B	Korean: 22	Korean: 30
Line spacing			4.23 mm {1/6"} (initial setting, programmable by command)	
Maximum print speed*2			350 mm/s {13.78"/s}*3	
Multi-tone graphics printing			Up to 16 shades of gray (when printed on Epson specified paper)	

dpi: dots per inch

*1: Initial setting

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

*3: The values are those when the paper width is set to 80 mm. When it is set to 58 mm, 300 mm/s {11.8"/s} maximum. The maximum is 100 mm/s {3.94"/s} when printing ladder barcodes, 2-dimensional symbols, or multi-tone graphics.

CAUTION

- The print speed changes automatically depending on the applied voltage and head temperature.
- If the data transmission speed is slower than the maximum print speed, the print 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 print speed, intermittent printing will occur.

Character Specifications

Number of characters

Character set		ANK	95 alphanumeric characters
			128 extended graphics characters x 43 pages (includes user-defined pages)
			18 international character sets
		Japanese	6,879 characters of JIS X0208-1990, 845 special characters
			11,233 characters of JIS X0213:2004, One special character
		Simplified Chinese	28,806 characters of GB18030-2022 (Lv.2)
		Traditional Chinese	13,502 characters of Big5
		Korean	8,224 characters of KSC5601
Character code[*1]		Japanese	ISO-2022-JP / Shift_JIS / Shift_JIS-2004
		Simplified Chinese	GB18030-2022 (Lv.2)
		Traditional Chinese	Big5
		Korean	KSC5601
		Unicode[*2]	UTF-8
The number of dots per character	42/30 column mode (Standard column mode)	Font A	12 × 24 (includes 2-dot horizontal spacing)
		Font B	9 × 17 (includes 2-dot horizontal spacing)
		Special Font A	12 × 24 (includes 2-dot horizontal spacing)
		Special Font B	9 × 24 (includes 2-dot horizontal spacing)
		Kanji Font A	24 × 24
		Kanji Font B	Korean: 16 × 16
	48/36 column mode	Font A	10 × 24 (includes 1-dot horizontal spacing)
		Font B	9 × 17 (includes 2-dot horizontal spacing)
		Special Font A	12 × 24 (includes 2-dot horizontal spacing)
		Special Font B	9 × 24 (includes 2-dot horizontal spacing)
		Kanji Font A	24 × 24 (includes 2-dot horizontal spacing)
		Kanji Font B	Korean: 16 × 16

Character size*3 (W × H)	42/30 column mode (Standard column mode)	Font A	1.41 × 3.39 mm {0.06 × 0.13"}
		Font B	0.99 × 2.40 mm {0.04 × 0.09"}
		Special Font A	1.41 × 3.39 mm {0.06 × 0.13"}
		Special Font B	0.99 × 3.39 mm {0.04 × 0.13"}
		Kanji Font A	3.39 × 3.39 mm {0.13 × 0.13"}
		Kanji Font B	Korean: 2.26 × 2.26 mm {0.09 × 0.09"}
	48/36 column mode	Font A	1.27 × 3.39 mm {0.05 × 0.13"}
		Font B	0.99 × 2.40 mm {0.04 × 0.09"}
		Special Font A	1.41 × 3.39 mm {0.06 × 0.13"}
		Special Font B	0.99 × 3.39 mm {0.04 × 0.13"}
		Kanji Font A	3.39 × 3.39 mm {0.13 × 0.13"}
		Kanji Font B	Korean: 2.26 × 2.26 mm {0.09 × 0.09"}

*1: Installed character codes vary by printer model.

*2: Only the character sets installed on the printer can be printed.

*3: Space between characters is not included. Characters can be scaled up to 64 times as large as the standard size.

NOTE

By specifying UTF-8 character encoding, all the installed character sets can be printed.
For more details on printing Unicode characters, see "FS (C" of the ESC/POS command reference, or manual of the software you use. ("Application Development Information" on page 82)

Paper Specifications

		Paper width 58 mm	Paper width 80 mm
Paper types		Specified thermal paper	
Form		Roll paper	
Size	Roll paper diameter	83 mm {3.27"} maximum	
	Roll paper core	Outside: 18 mm {0.71"}	
	Roll width when taken up	58+0.5/-1.0 mm {2.28+0.02/-0.04"}	80+0.5/-1.0 mm
	Paper width	57.5±0.5 mm {2.26±0.02"}	79.5±0.5 mm
	Paper thickness	Maximum of 80 µm, minimum of 48 µm	
Specified original paper type		TF50KS-EY, TF60KS-E PD160R, PD190R P220AGB-1 AP45KS-ND, AP50KS-ND F50417(55), F50417(48) KT55FA, KT48FA, KT55PF, KT48PF	NIPPON Paper Industries Co., Ltd. OJI Paper Mfg. Co., Ltd. Mitsubishi Paper Mills Limited. Jujo Thermal Oy Mitsubishi HiTec Koehler Paper Group

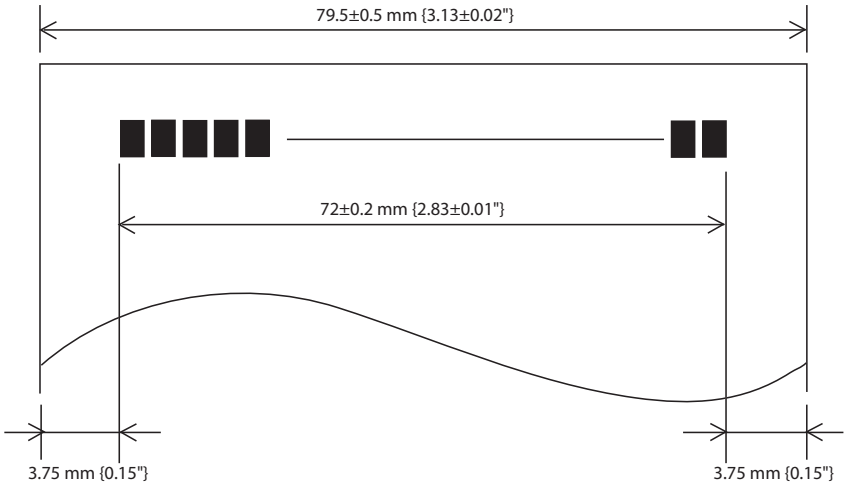
CAUTION

- Paper must not be pasted to the roll paper core.
- To keep the print quality, it is recommended to change the print densities for each roll paper. See "Software Settings" on page 51.
- Use of thermal paper with a pre-printed recording surface should be avoided. Using it can cause the thermal head to stick to the thermal paper surface during printing, and cause printing failure and other problems. The pre-printing also can result in reduced print density. Using thermal paper with a pre-printed recording surface, pre-printing should be done in accordance with the conditions (ink type, printing and other conditions) recommended by the paper manufacturer, and the thermal paper should be checked to ensure that there is no faulty printing, loss of print density, or other problems.

Printable Area

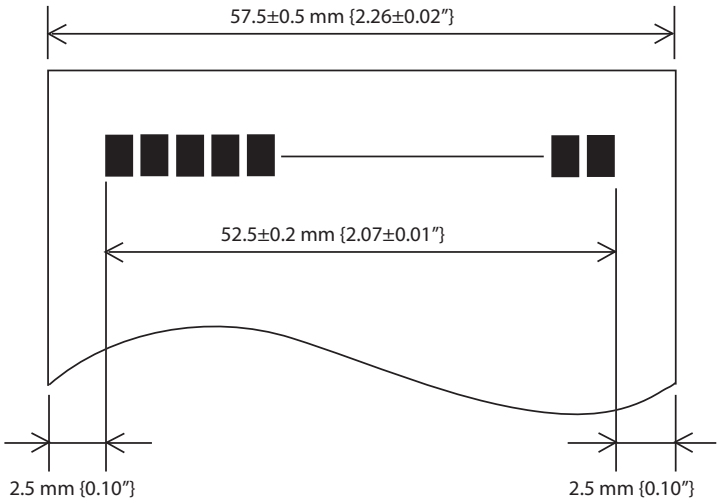
For paper width 80 mm

The maximum printable area of paper with a width of 79.5±0.5 mm {3.13±0.02"} is 72±0.2 mm (576 dots), and the approximate space is 3.75 mm on both sides.

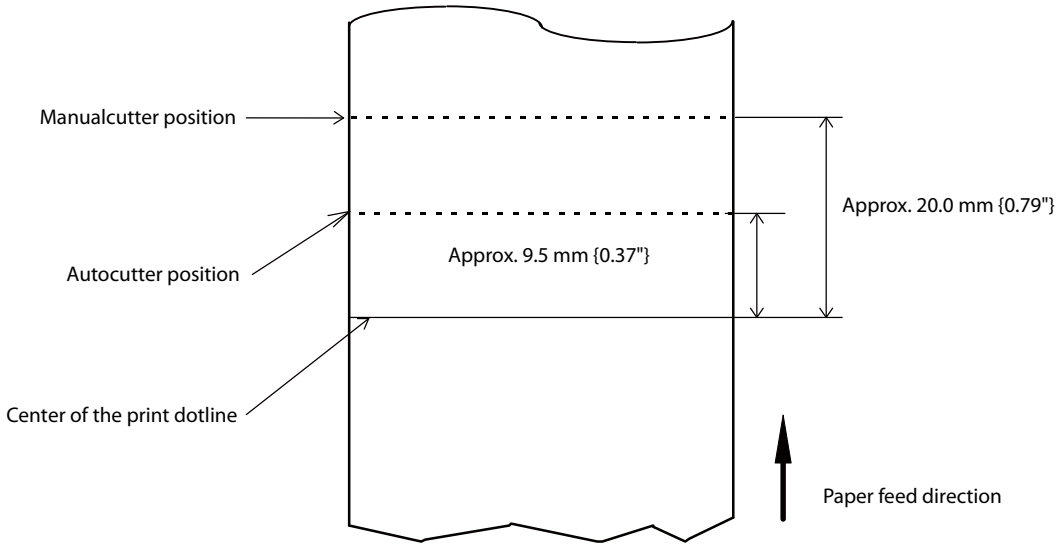


For paper width 58 mm

The maximum printable area of paper with a width of 57.5±0.5 mm is 52.5±0.2 mm (420 dots), and the approximate space is 2.5 mm on both sides.



Printing and Cutting Positions



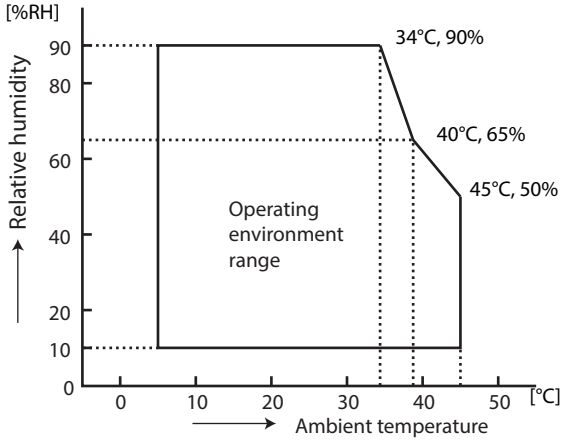
CAUTION

- 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.
- When removing cut paper, the remaining roll paper is pulled at the uncut section and the pitch of the next print may be reduced. When printing after cutting paper for prints with no pitch reduction, feed the paper about 1 mm {16/406 inches} before printing. When the Pre-feed before next print function is enabled, this operation is performed automatically. See"Software Settings" on page 51 for more details.

Electrical Characteristics

Operating voltage		DC 24 V ±7%
Current consumption (24V, 25°C, standard print density)	Standby	Mean: 0.1 A
	Operating	Mean: 1.8 A* *: When charging at 2.1 A Note: When print ratio is approximately 18% • Continuous printing for 30 lines (repeating 20H-7FH) ＊ Font A, 42 columns, ASCII character • 5 lines feeding • Autocutting

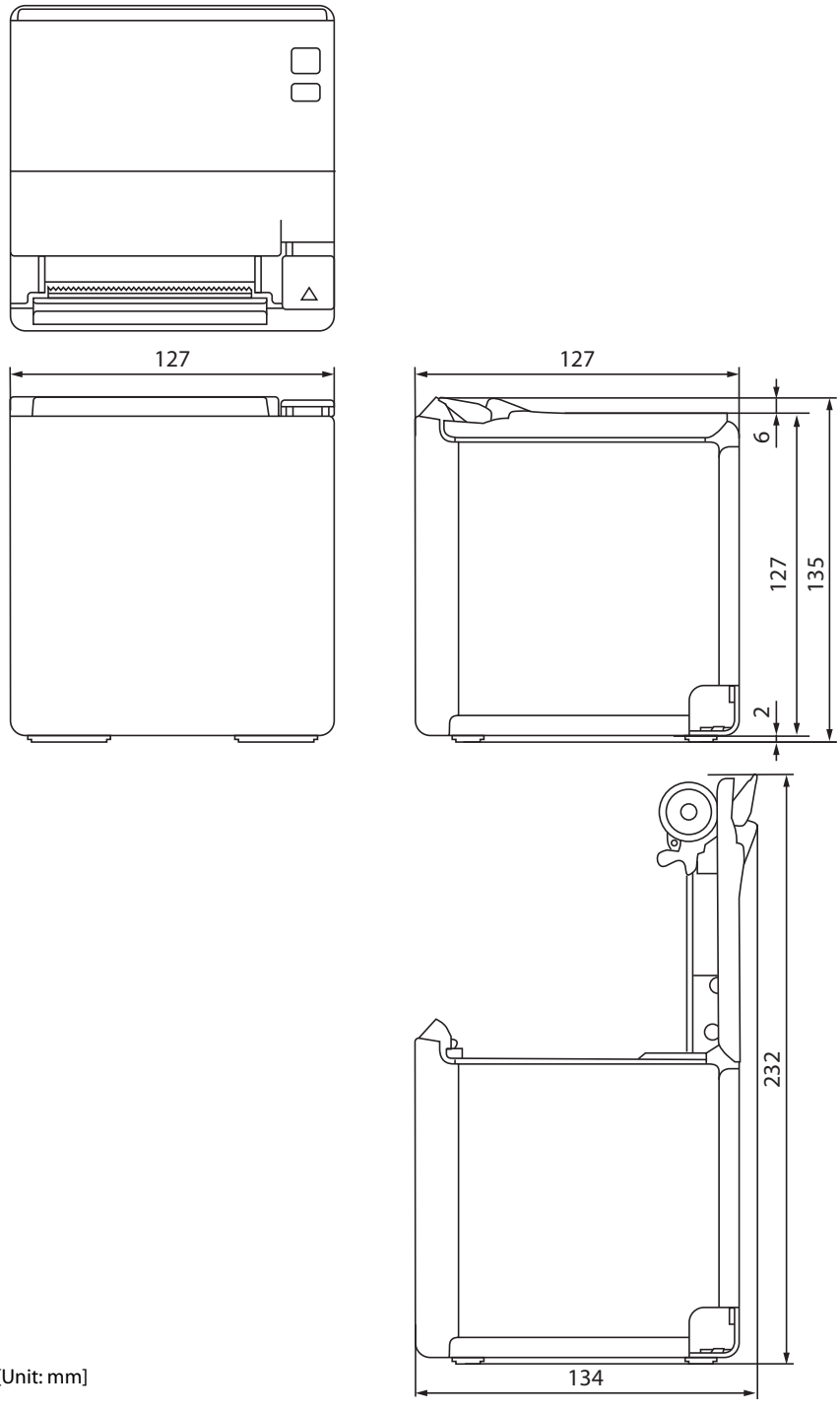
Environmental Conditions

Temperature/ Humidity	Operating	5 to 45°C {41 to 113°F}, 10 to 90% RH (See the operating temperature and humidity range below.)
	Storage	-20 to 60°C {-4 to 140°F}, 10 to 90% RH (except for paper)
		
Vibration resistance	When packed	Frequency: 5 to 55 Hz Acceleration: Approximately 19.6 m/s^2 {2 G} Sweep: 10 minutes (half cycle) Time: 1 hour Orientation: x, y, and z There is no external or internal visible damage and the unit operates normally after being subjected to vibration.
Shock resistance	When packed	Packing: Epson standard package specifications Height: 60 cm {23.62"} Orientation: 1 corner, 3 edges, and 6 surfaces There is no external or internal visible damage and the unit operates normally after being dropped.
	When unpacked	Height: 5 cm {1.97"} Orientation: Lift one edge and release it (for all 4 edges) There is no external or internal visible damage and the unit operates normally after being dropped while not operating.
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.
Drip proof function*		IPX2 equivalent Note: At front eject position.
Altitude		3,000 m or less

* The value measurements are equivalent to JISC0920 (IEC60529:2001) standard. Therefore, safety standard application, and failure and breakage of the printer are not guaranteed.

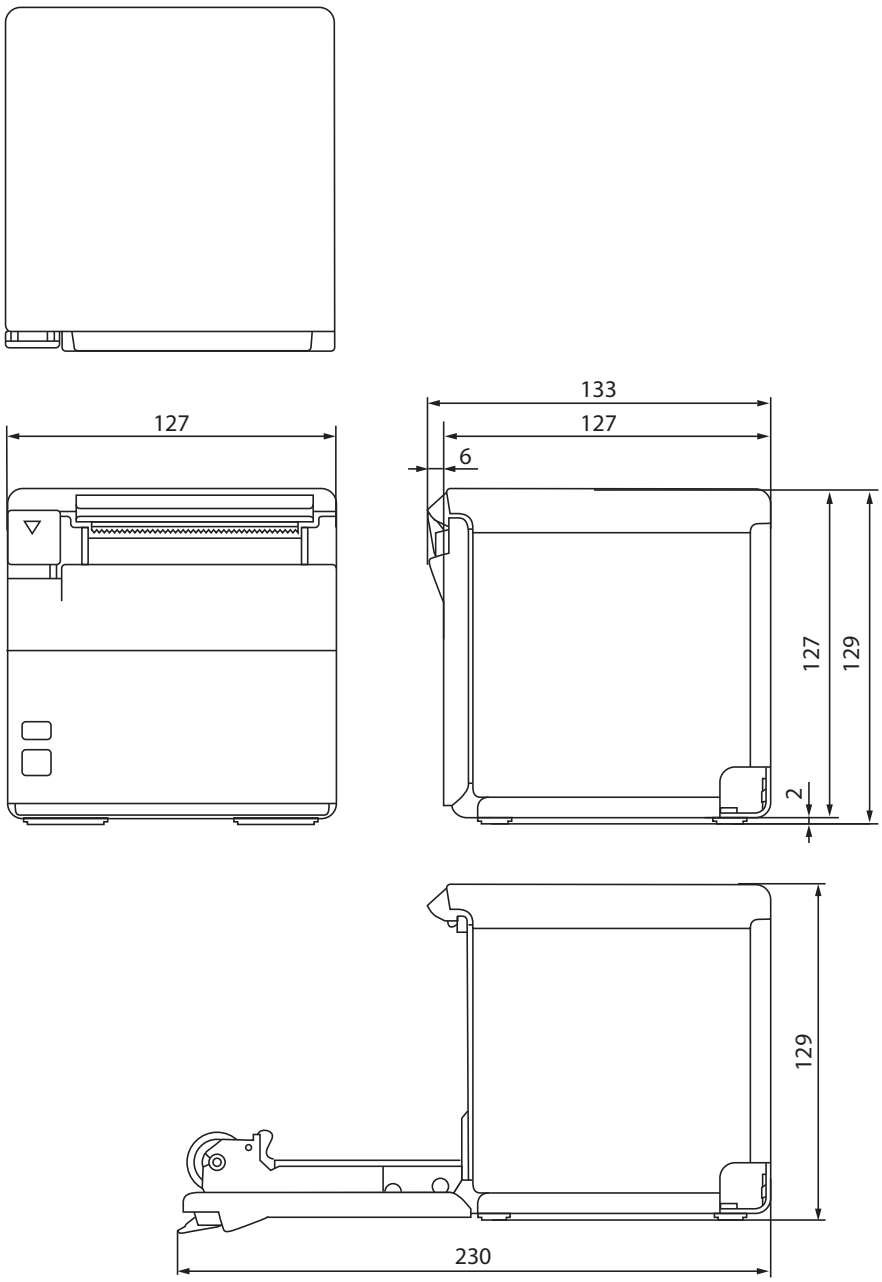
External Dimensions

Top eject position



[Unit: mm]

Front eject position



[Unit: mm]

Specifications of Interface and Connector

USB Interface

USB interface 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		Both USB vendor-defined class and USB printer class are supported.

NOTE

To set the USB device class, see "Software Settings" on page 51.

USB descriptor

		USB vendor-defined class	USB printer class
Vendor ID		04B8H	04B8H
Product ID		0202H	0E2AH
String Descriptor	Manufacturer	EPSON	EPSON
	Product	TM-m50	TM-m50
	Serial number	Character string based on the product serial number	Character string based on the product serial number

Network Interface

For both Ethernet interface and Wi-Fi interface

Support protocols

Protocols	Usage
IP, ARP, ICMP, UDP, TCP	Basic communication protocols
LP, LPR, TCP Socket Port	Printing protocols
HTTP/HTTPS	Used in ePOS-Print and EpsonNet Config (Web version)
SNMP, ENPC	Used in setting and monitoring
DHCP, APIPA	Used in automatic setting for the IP address and so on

Network parameters

Item	Initial settings
IP address acquisition	Automatic
APIPA	Disabled
arp/ping	Disabled
Socket Timeout	90 seconds
Community name 1 (Read Only)	Fixed at "public"
Community name 2 (Read/Write)	Unavailable
SNMP IP Trap 1	Disabled
SNMP IP Trap 2	Disabled
Communication mode	Auto negotiation

Printing communication protocol

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

LP, LPR

- Max. simultaneous connections: 6
- Number of connections for which printing is available: 1 (occupied until the connection is released.)
- Time out: 90 seconds (changeable)
- Job cancel: Not available
- Banner printing: Not available

Socket communication

• Port type	TCP communication port for direct printing
• Port number	9100
• Port communication direction	bidirectional
• Max. simultaneous connections	6
• Number of connections for which printing is available	1 (occupied until the connection is released.)
• Time out:	90 seconds (changeable)

For Ethernet interface

Communication specifications

10BASE-T/100BASE-TX

For Wi-Fi Interface

NOTE

- Countries and regions where Wi-Fi can be used are limited. Since notes are provided for each country or region, check the sheet supplied with the product.
- When using wireless LAN, make sure you disconnect the LAN cable. If a LAN cable is connected, wireless LAN is disabled.

Specification

- IEEE802.11b/g/n (2.4 GHz band) or IEEE802.11a/b/g/n/ac (2.4 GHz or 5 GHz band) compliant Wi-Fi communication compatible.
- Support the IP address automatic acquisition function (DHCP, APIPA).

Communication Standard

- IEEE802.11b (2.4 GHz)
- IEEE802.11g (2.4 GHz)
- IEEE802.11n (2.4 GHz)
- IEEE802.11a (5 GHz)
- IEEE802.11n (5 GHz)
- IEEE802.11ac (5 GHz)

Security

Security can be selected from among the following:

- WPA-PSK(AES)
- WPA2-Personal
- WPA2-Enterprise

Initial settings

These settings apply when the printer is initialized in the Interface Setup mode.

Parameter	Setting value
Communication standard	802.11b/g/n
Network mode	Infrastructure mode
SSID	EPSON_Printer
Encryption type	WPA2-Personal
Passphrase	EpsonNet
IP Address	Automatically acquired by DHCP

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

Settings in SimpleAP mode (Factory default settings)

Parameter	Setting value
SSID	EPSON_Printer
Passphrase	12345678
IP Address	192.168.192.168
Subnet mask	255.255.255.0

* In SimpleAP mode, DHCP Server is working and assign IP address to host automatically.

Notes on using the Wireless LAN unit

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

Notes on Wi-Fi connection

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

Notes on use

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

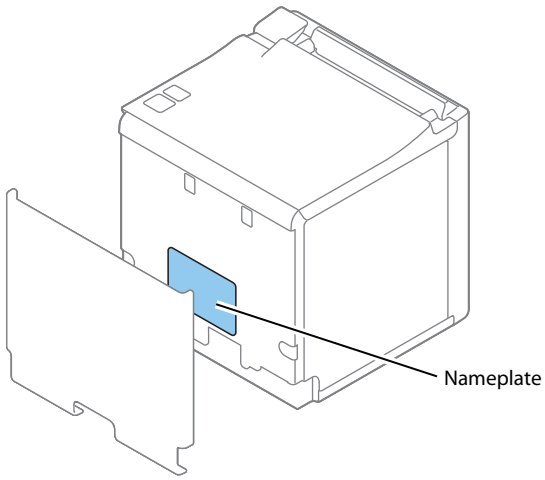
Default administrator password for setting

The default password is as follows:

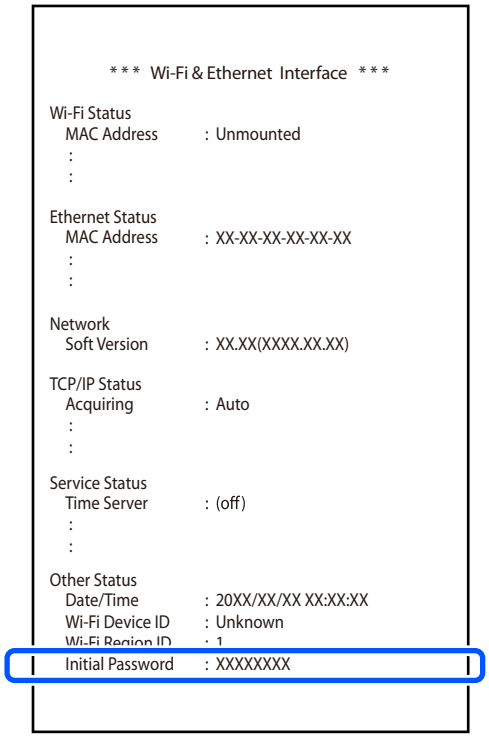
Password label	Password
Attached to the product	Printed on the label
Not attached to the product	Serial number (10-digit alphanumeric characters, case-sensitive)

The password label is attached to the bottom of the printer.
Example of the password label: 02345678

You can find the serial number by running the self-test or on the nameplate attached at the location shown below.



If the password label is lost, the default password can be checked by printing the status sheet. (If there is no password on the status sheet, the default password is a serial number.)



*** Wi-Fi & Ethernet Interface ***

Wi-Fi Status
MAC Address : Unmounted
:
:

Ethernet Status
MAC Address : XX-XX-XX-XX-XX-XX
:
:

Network
Soft Version : XX.XX(XXXX.XX.XX)

TCP/IP Status
Acquiring : Auto
:
:

Service Status
Time Server : (off)
:
:

Other Status
Date/Time : 20XX/XX/XX XX:XX:XX
Wi-Fi Device ID : Unknown
Wi-Fi Region ID : 1
Initial Password : XXXXXXXX

To improve security, it is recommended to change the administrator password from the default password.
The password can be changed using EpsonNet Config (Web version), TM-m50 Utility, or Epson TM Utility.

Bluetooth Interface

CAUTION

Countries and regions where *Bluetooth* can be used are limited. Since notes are provided for each country or region, check the sheet supplied with the product.

Specification

- *Bluetooth* 3.0 (EDR supported)
- *Bluetooth* Power Class 2
- Built-in antenna
- Pass key setting is possible
- Device name setting is possible
- Pairing information of up to 8 devices can be registered

Initial Settings

Setting Contents	Setting Items	Initial Settings
Bluetooth communication settings	*Bluetooth* passkey	"0000"
	Bluetooth device name	"TM-m50_xxxxxx" (Where xxxxxx is the last six digits in the serial number)
	Bundle Seed ID	"TXAEAV5RN4"
	Enable/Disable auto reconnect to iOS device	"1" (Enable)
	Bluetooth Security	Low
	Bluetooth communication interval during power saving mode	Level 1 (Standard)

Auto Reconnect Feature

The auto reconnect feature allows the printer to automatically restore a connection in the following situations if the *Bluetooth* connection to the iOS device is lost.

- When the printer is turned on
- When the signal is dropped and then restored

The following shows the printer operations and connection methods when the auto reconnect feature is enabled or disabled.

Auto Reconnect Feature	Enabled	Disabled
Printer operations when *Bluetooth* is disconnected	Perform the following reconnection sequence. **[Reconnection sequence]** 1. The printer tries to connect to the iOS device to which it was last connected. 2. When step 1 fails, the printer waits for connections from other devices. 3. If connection is not established in step 2, the printer tries again to connect to the iOS device to which it last connected. Steps 1 and 2 are repeated until a connection is established.	Wait for a connection from the *Bluetooth* device.
Reconnecting to iOS device	Reconnect automatically.	Make settings on the *Bluetooth* settings screen on the iOS device.
Switch to connection from other device	Method 1: After disabling the *Bluetooth* feature of the connected iOS device, make connection settings on the *Bluetooth* device that you want to connect. (When the auto reconnect feature is enabled, it may take some time to connect.)	
	Method 2: After disconnecting from the connected iOS device using applications with the TM Utility or Epson ePOS SDK disconnection feature, make settings on the *Bluetooth* device you want to connect.	

* In the following situations, even if the feature is enabled, the same operations are performed as when it is disabled.
  - When the last *Bluetooth* device connected was not an iOS device.
  - When wireless communication settings are initialized from the printer.
  - When the *Bluetooth* connection is cut from the "Printer Selection" screen of the Epson TM Utility.
  - When the *Bluetooth* connection is cut using disconnectDevice API for Epson ePOS SDK for iOS.
* We recommend disabling this feature when using the printer from devices that are not running iOS.
* When using a single printer between multiple iOS devices, disable this feature to prevent unintended reconnections via *Bluetooth*. Otherwise, if you cut the *Bluetooth* connection using disconnectDevice API on an iOS device that stopped using the printer, the connection will just be restored when the printer is restarted.

Notes on use

Time required until printing starts

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

After opening the port, leave an interval of 300 msec or more before sending data to the port.

Timing to shut the connection off

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

Multi-tone printing

When performing multi-tone printing over *Bluetooth*, the print speed may fluctuate or intermittent printing may occur due to data transfer conditions, also the print shade may change or white lines may occur.

Interference from Wi-Fi

2.4 GHz Wi-Fi may interfere with *Bluetooth* communication. Using the optional Wireless LAN cable set with 2.4 GHz may disrupt *Bluetooth* communication or printing. 5 GHz Wi-Fi is recommended when using Wi-Fi with *Bluetooth*.

Notes when communicating with Android devices

- The printer cannot connect to Android 2.3 and 2.3.2.
- When communicating with Android 2.3.3 or later versions, communicate through an insecure connection.
- When connecting an Android device to the USB connector (USB-A – Device Charging) for data communication, make sure that the device satisfies the following requirements.
  Requirements: The version of Android OS is 10 or later with kernel version 4.9.15 or later
  However, Epson does not guarantee normal operation of all Android devices even if they satisfy the requirements. Run some tests before actually using the device.

Notes when communicating with iOS devices

Print data deletion and *Bluetooth* disconnections occur

Situation

Depending on the specifications of the iOS device, print data sent to the printer may be deleted. When this occurs, the *Bluetooth* connection between the printer and the iOS device is disconnected.

Conditions

This occurs when the printer is not ready to print, and 64 KB or more of print data is sent to the printer.

<Status in which the printer cannot print>

- When the roll paper cover is open
- When the paper is out

Solution

Do not send data to the printer if the printer is not ready to print.

For developers using the SDK from Epson, see the User's Manual - Chapter 3 Programming Guide - "Printing After Checking the Printer Status".

Since *Bluetooth* is disconnected when this occurs, if the auto reconnect feature is not enabled, you need to reconnect from the *Bluetooth* settings screen on the iOS device.

When using the SDK from Epson, this connection process is not necessary.

The iOS application cannot receive the data sent from the printer

Situation

Although the printer sends data to the iOS device and the data is received by the iOS device, depending on the combination of the iOS version and the iOS device, the iOS application may not be able to receive the data.

Conditions

This may occur in combinations of the following conditions.

- iOS version: 7.1, 7.1.1
- iOS device: iPhone 5s, iPhone 5c, iPhone 5, iPad Air, iPad mini 3, iPad (4th generation), iPad mini, iPod touch (5th generation), iPhone 4s, iPhone 4, iPad (3rd generation), iPad 2
- Application processing: If the *Bluetooth* port is closed and then reopened while the application is running.

Solution

The solution differs depending on the iOS device being used. See the following table.

iOS Device	Solution
iPhone 4s iPhone 4 iPad (3rd generation) iPad 2	This situation can be avoided by using the Epson ePOS SDK for iOS.

RS-232 Serial Interface

Interface board specifications (RS-232-compliant)

Item		Specifications
Data transfer method		Serial
Synchronization		Asynchronous
Handshake		Can be set using the commands, software settings mode, or TM-m50 Utility. • DTR/DSR control • XON/XOFF control
Signal level	MARK	-3 to -15 V logic "1"/OFF
	SPACE	+3 to +15 V logic "0"/ON
Bit length		Can be set using the commands, software settings mode, or TM-m50 Utility. • 7 bit • 8 bit
Transmission speed		Can be set using the commands, software settings mode, or TM-m50 Utility. 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps [bps: bits per second]
Parity		Can be set using the commands, software settings mode, or TM-m50 Utility. • No parity • Even parity • Odd parity
Stop bit		1 bit or more However, the stop bit is fixed to 1 bit when transfer data is sent from the printer.
Connector		D-Sub 9 pin (male) connector

Functions of each connector pin

Pin no.	Signal name	Signal direction	Function
2	RXD	Input	Reception data
3	TXD	Output	Transmission data

Pin no.	Signal name	Signal direction	Function
4	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 memory switch 1-3. 2) When XON/XOFF control is selected, the signal indicates that the printer is properly connected and ready to receive data from the host. • SPACE status 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.
5	SG	-	Signal ground
6	DSR	Input	This signal indicates whether the host computer can receive data. SPACE indicates that the host computer can receive data. MARK indicates that the host computer cannot receive data. When DTR/DSR control is selected, the printer transmits data after confirming this signal (except if transmitted using some ESC/POS commands). When XON/XOFF control is selected, the printer does not check this signal.
7	RTS	Output	Same as the DTR signal

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 settings of memory switch 1-3.

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

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.

NFC Tag

Transmission standard	ISO14443 A
Frequency	13.56 MHz
Memory	144 byte
Transmission distance	Approximately 10 mm from the NFC installation location.

NOTE

- The transmission distance is an estimate that depends on our experiment conditions and is not a guaranteed value.
- It varies based on the installation environment and target device.

Bluetooth Low Energy Technology Advertising

Introduction

When you connect the BT820 from Laird Connectivity to the USB A connector on the TM-m50 and turn it on, the *Bluetooth* low energy technology Advertising Packet is transmitted. By default, the TM-m50 transmits the packet according to the iBeacon Format from Apple. You can also change the data that is transmitted by following the steps in "Changing the Bluetooth Low Energy Technology Advertising Packet" on page 131.

Glossary:

Term	Description
Bluetooth Low Energy Technology Advertising	The name of this function.
Bluetooth Low Energy Technology Advertising Packet	The data sent by this function from the printer.
Bluetooth adapter	The BT820 from Laird Connectivity. A USB dongle to connect to the USB Type A connector.
iBeacon	The format stipulated by Apple for *Bluetooth* low energy technology Advertising Packets When using the default settings for the TM-m50 (*Bluetooth* adapter installed in the printer and the printer is on), the *Bluetooth* low energy technology Advertising Packet is transmitted in iBeacon format.

Dongle specifications

Manufacturer: Laird Connectivity

Model name: BT-820

For setting methods and settings, see the TM-m50 Utility User's Manual.

Procedure

When you install the *Bluetooth* adapter, the printer is restarted and then the adapter is enabled.

When you uninstall the *Bluetooth* adapter, the printer is restarted and then the adapter is disabled.

The USB-A – Device Charging port is disabled.

If the printer is capable of *Bluetooth* communication, the *Bluetooth* function is disabled.

Bluetooth Low Energy Technology Advertising Packet Format

In the TM-m50, the iBeacon format is used by default for the *Bluetooth* low energy technology Advertising Packet.

The UUID for the TM-m50 is "fac1ba2f-61a2-4d83-9a8c-60087c232569".

The user can edit the following specifications in the iBeacon format: UUID, Major number, Minor number, and Measured Power.

Table 1 iBeacon Packet Format

Content	Data Length	Value	Description
Length of this data	1 byte	02H	
AD type	1 byte	01H	Adtype: flags
Flags	1 byte	06H	Fixed value (06H)
Length of this data	1 byte	1AH	Fixed value (1AH)
AD type	1 byte	FFH	Adtype: Company identifier
Company Identifier code	2 bytes	004CH	Apple's manufacture ID
iBeacon type	1 byte	02H	Incomplete List of 16-bit service UUIDs
iBeacon length	1 byte	15H	15H=21=16+2+2+1
UUID	16 bytes	-	Default UUID = fac1ba2f-61a2-4d83-9a8c-60087c232569
Major Number	2 bytes	-	
Minor Number	2 bytes	-	
Measured Power	1 byte	BDH	BDH: -67dB

Changing the *Bluetooth* Low Energy Technology Advertising Packet

The TM-m50 can acquire a configuration script from the printer.

You can also change settings by transmitting the configuration script to the printer.

The configuration script only supports UTF-8 encoding.

The iBeacon Format is defined in the configuration script by default for the TM-m50.

You can change this Packet Format to support Eddystone-UID or Eddystone-URL.

However, the TM-m50 only supports single Advertising Data Packets.

You can change the settings using either of the following two methods.

- Changing settings using the Epson TM-m50 Utility for Windows (see the TM-m50 Utility User's Manual for details)
- Changing settings using an HTTP Request

The method of changing settings via an HTTP Request is explained below.

Digest authentication

You need Digest authentication to communicate with the printer.

The ID for the authentication is "epson".

For the default password, refer to "Default administrator password for setting" on page 121.

Escape processing for configuration scripts

When reading/writing a configuration script for a printer, the strings (content of the configuration script) being transmitted and received uses the following escape processing. However, escape is not performed for uXXXX (hexadecimal strings) such as Japanese.

Table 2 Escape Processing

Escape	Description
\"	quotation mark
\\	reverse solidus
\b	backspace
\f	form feed
\n	line feed
\r	carriage return
\t	tab
\u002F	solidus
\u003C	<
\u003E	>
\u002B	+

Acquiring the configuration script from the printer using an HTTP request

A response for the json format is acquired using the GET method for the HTTP request.

Request

Table 3 Request Header

Request header: Content-Type: text/plain; charset=utf-8 http://(printer IP address)/webconfig/beacon.cgi?Type=(one of the following Table 4 Types)

Table 4 Types

Type	Description
(none)	If a Type is left out, the same operation is performed as when current is specified.
current	Specifies the currently enabled configuration script.
volatile	Specifies the configuration script stored in RAM.
static	Specifies the configuration script stored in ROM.
default	Specifies the default configuration script.
status	Acquires information for the *Bluetooth* adapter.

Response

Table 5 Response Header

Content-Type: application/json; charset=utf-8 Access-Control-Allow-Origin: * Access-Control-Allow-Methods: POST, GET, OPTIONS, HEADER Access-Control-Allow-Headers: Content-Type, Content-Length, Authorization X-Content-Type-Options: nosniff X-XSS-protection: 1; mode=block X-Frame-Options: deny Content-Security-Policy: default-src 'none' WWW-Authenticate: Digest realm="<IPaddr>", nonce="xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx", qop="auth"

Table 6 Response

Function	GET Parameter	Results	Response
Acquires the configuration script currently enabled	Type=current Or no Type is set	Acquisition successful	200 OK
Acquires the configuration script on the RAM	Type=volatile	Acquisition successful	200 OK
		Acquisition failed (No file)	404 Not Found
Acquires the configuration script on the ROM	Type=static	Acquisition successful	200 OK
		Acquisition failed (No file)	404 Not Found
Acquires the Default configuration script	Type=default	Acquisition successful	200 OK
Acquires information from the *Bluetooth* adapter	Type=status	Acquisition successful	200 OK
		Acquisition failed (No adapter connected)	404 Not Found
Others	Type = Other than the above or A parameter except for Type exists	Type is invalid	400 Bad Request

Table 7 GET Response Body

Response Status	Response Body

200 OK	{
	"message": "Success"
	"detail": null
	"description" : <Encoded string for the configuration script>
	}

Response Status	Response Body
404 Not Found	"message": "Requested file not found" "detail": null "description" : null }

400 Bad Request	{
	"message": "Invalid Parameter"
	"detail": null
	"description" : null
	}

Table 8 GET Response Body (Type=status)

Response Status	Response Body

200 OK
 	
The HCI Version for the *Bluetooth* adapter is 6 or higher
 	
Link
	{
	"message": "Success",
	"detail": null,
	"description" : {
	"VendorID": "0a12",
	"ProductID": "0001",
	"ProductName": "CSR8510 A10",
	"Bluetooth LE": "Support"
	}
	}

200 OK
 	
The HCI Version for the *Bluetooth* adapter is 5 or lower
	{
	"message": "Success",
	"detail": null,
	"description" : {
	"VendorID": "0a12",
	"ProductID": "0001",
	"ProductName": "(no name)",
	"Bluetooth LE": "Not support"
	}
	}

404 Not Found Adapter not connected	"message": "Beacon dongle not connected", "detail": null, "description" : null }

Writing the configuration script to the printer

You can save a configuration script to the printer using the HTTP POST method.

You can save the configuration script to volatile or non-volatile memory.

When changing using a low frequency less than once an hour, you can save to non-volatile memory; however, when changing at a higher frequency, you need to save to volatile memory.

When the change is successful, the advertising data is changed.

Request

```
Content-Type: text/json; charset=utf-8
http://(printer IP address)/webconfig/beacon.cgi
```

See the POST parameters in Table 10 Response for the parameters.

Response

Table 9 Response Header

```
Content-Type: application/json; charset=utf-8
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: POST, GET, OPTIONS, HEADER
Access-Control-Allow-Headers: Content-Type, Content-Length, Authorization
X-Content-Type-Options: nosniff
X-XSS-protection: 1; mode=block
X-Frame-Options: deny
Content-Security-Policy: default-src 'none'
X-RateLimit-Limit: 1            (when type=static only)
X-RateLimit-Remaining: 1 or 0   (when type=static only)
X-RateLimit-Reset: 1390941626   (when type=static only)
WWW-Authenticate: Digest realm="<IPaddr>", nonce="xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx", qop="auth"
```

Table 10 Response

Function	POST Parameters	Results	Response

Updating the configuration script in volatile memory	{
	“type” : “volatile”,
	“description”: “<The string for the configuration script that performed escape processing>”
	}
		Update successful	200 OK

		Update failed When the parameter is too long	413 Request Entity Too Large
		Update failed When an error occurs when applying a new configuration script	500 Internal Server Error

Deletes the configuration script from volatile memory	{
	“type” : “volatile”,
	“description”: “delete”
	}
		Deleting successful	200 OK

		Deleting failed	500 Internal Server Error

Function	POST Parameters	Results	Response

Updates the configuration script in non-volatile memory	{
	"type" : "static",
	"description": "<The string for the configuration script that performed escape processing>"
	}
		Update successful	200 OK
			
			It has following header:
			X-RateLimit-Limit: 1
			X-RateLimit-Remaining: 0
			X-RateLimit-Reset: xx

		Update failed When the parameter is too long	413 Request Entity Too Large It has following header: X-RateLimit-Limit: 1 X-RateLimit-Remaining: 1 X-RateLimit-Reset: xx
		Update failed When an error occurs when applying a new configuration script	500 Internal Server Error It has following header: X-RateLimit-Limit: 1 X-RateLimit-Remaining: 0 X-RateLimit-Reset: xx
		Update failed When the gap between updating is more than once an hour	429 Too Many Requests It has following header: X-RateLimit-Limit: 1 X-RateLimit-Remaining: 0 X-RateLimit-Reset: xx

Deletes the configuration script from non-volatile memory	{
	"type" : "static",
	"description": "delete"
	}
		Deleting successful	200 OK

		Deleting failed	500 Internal Server Error
Others	• No parameters • Invalid parameters • Error in escape processing	Update failed	400 Bad Request

Table 11 POST Response Body

Response Status	Body

200 OK	{
	"message": "Success",
	"detail": null,
	"description" : < The string for the configuration script that performed escape processing >
	}

400 Bad Request	{
	"message": "Invalid Parameter",
	"detail": "***", (see Table 12)
	"description" : null
	}

413 Request Entity Too Large	{
	"message": "Request Entity Too Large",
	"detail": null,
	"description" : null
	}

429 Too Many Requests	{
	"message": "You sent too many requests in a given amount of time.",
	"detail": null,
	"description": null
	}

500 Internal Server Error	{
	"message": "Failed to update settings",
	"detail": "***", (see Table 13)
	"description" : null
	}

Table 12 400 Bad Request Details

Case	Body

The correct escape processing is not performed at the point escape processing is needed	{
	"message": "Invalid Parameter",
	"detail": "Special characters must be escaped",
	"description" : null
	}

An undefined Type parameter has been specified	{
	"message": "Invalid Parameter",
	"detail": "A parameter 'type' is invalid",
	"description" : null
	}

Case	Body

No Type specified
Or an invalid parameter has been specified
	{
	"message": " Invalid Parameter ",
	"detail": "A parameter 'type' or 'description' is not specified",
	"description" : null
	}

When detecting a string with invalid escape processing	{
	"message": " Invalid Parameter ",
	"detail": "Invalid parameter is found",
	"description": null
	}

Table 13 500 Internal Server Error Details

Case	Body

Update failed	{
	"message": "Failed to update settings",
	"detail": null,
	"description" : null
	}

Deleting failed	{
	"message": "Failed to delete settings",
	"detail": null,
	"description" : null
	}

An error occurs when applying a new configuration script	{
	"message": " Failed to set the settings to the beacon.",
	"detail": <Error code from BeaconCtrl>
	"description" : null
	}

Editing the Configuration Script

In the configuration script, the settings for the module for *Bluetooth* in Linux can be written in the same way as for the Bluez hcitool, and you can customize the settings.

Make sure you include the following descriptors in the configuration script.

- Advertising stop
- Device address specifications
- Advertising parameter specifications
- Advertising start
- Advertising data specifications

Starting and stopping *Bluetooth* low energy technology Advertising

Format: cmd 0x08 0x000A n

Function: Starting and stopping transmission of the Advertising packet.

Parameter n	Length	Function
00	2 characters	Advertising stop
01	2 characters	Advertising start

NOTE When specifying a start point, make sure you start Advertising using this command before "Bluetooth low energy technology Advertising Packet specifications" on page 140.

Device address specifications

Format: cmd 0x08 0x0005 n6 n5 n4 n3 n2 n1

Function: Specify a BD Address. Specify a value in Little Endian.

NOTE As a Random Static Address is used in TM-m50, bit7 and bit6 for n1 need to be set to 1.

Bluetooth low energy technology Advertising parameter specifications

Format: cmd 0x08 0x0006 aL aH bL bH c d e f1 f2 f3 f4 f5 f6 g h

Function: Sets a variety of parameters for the Advertising packet.

Definition	Length	Default	Description
Min advertising Interval	2 bytes	aL: A0 aH: 00	00A0H * 0.625 = 100ms Period 00A0H is the minimum that can be specified.
Max advertising Interval	2 bytes	bL: A0 bH: 00	00A0H * 0.625 = 100ms Period 00A0H is the minimum that can be specified.
Advertising type	1 bytes	c: 03	03H: ADD_NONCONN_IND
Own address type	1 bytes	d: 01	01H: random device address
Peer address type	1 bytes	e: 00	00H: public device address
Peer address	6 bytes	f1-f6: 00	No use
Advertising channel map	1 bytes	g: 07	07H: All channel enabled
Advertising filter policy	1 bytes	h: 02	02H: Process scan requests from all devices and only connection requests from devices that are in the White List.

See the *Bluetooth* specifications for details.

Bluetooth low energy technology Advertising Packet specifications

Format: cmd 0x08 0x0008 d1 d2 … d32

Function: Sets the Data for the *Bluetooth* low energy technology Advertising packet.

Specify all from d1 to d32. If these are not necessary, specify 00 for each one.

Definition	Length	Default (iBeacon)	Description
Advertising data length	1 byte	d1: 1E	1EH: 30bytes
Advertising Data	31 bytes	d2: 02 d3: 01 d4: 06 d5: 1A d6: FF d7: 4C d8: 00 d9: 02 d10: 15	02H: Length
		d11-d26: FA C1 BA 2F 61 A2 4D 83 9A 8C 60 08 7C 23 25 69	TM UUID fac1ba2f-61a2-4d83-9a8c-60087c232569
		d27: 00 d28: Model No.	Major number The Default specifies the ID that indicates the model type using keywords shown in "Keywords" on page 141. You can also specify a direct value.
		d29: 00 d30: IP address 4th byte	Minor number The Default specifies the 4th sector of the IP address using keywords shown in "Keywords" on page 141. You can also specify a direct value.
		d31: BD	BDH: -67dB
		d32: 00	00H: Fixed value

Keywords

You can specify the following keywords when describing the script.

Reserve String	Length	Content	Example
$SERIAL_ADDR	6 bytes	Address that uses 1 for the MSB2bit in the last 6 digits of the printer's serial number.	When the Serial No. is ABCD123456, the Address uses 1 for the MSB2bits for the leading 1 byte in the last 6 digits. F1:32:33:34:35:36 is generated and replaced with a string using 36 35 34 33 32 F1 sorted in Little endian.
$RANDOM_ADDR	6 bytes	Address in which the printer generates a random 6 byte number, and 1 is for the MSB2bit of the leading 1 byte.	Generates a random 6 byte number in the printer and replaces it with a string that sorts the Address using 1 for the MSB2bits for the leading 1byte in Little endian.
$IPn	1 byte	Value for #n in the printer's IP address.	When the IP address is 192.168.192.168, it is replaced with the following string. IP1: C0H IP2: A8H IP3: 64H IP4: C8H
$MODEL_NO	1 byte	ID value assigned to the printer model.	21H is used for the TM-m50. 00H: no use 01H: reserve 02H: TM-T88VI 03H: TM-T88VI-iHUB 10H: TM-H6000V 20H: TM-m30II-H/TM-m30II-NT 21H: TM-m50
$MACn	1 byte	Value for #n in the MAC address.	Available range: $MAC1,$MAC2, $MAC3, $MAC4, $MAC5, $MAC6

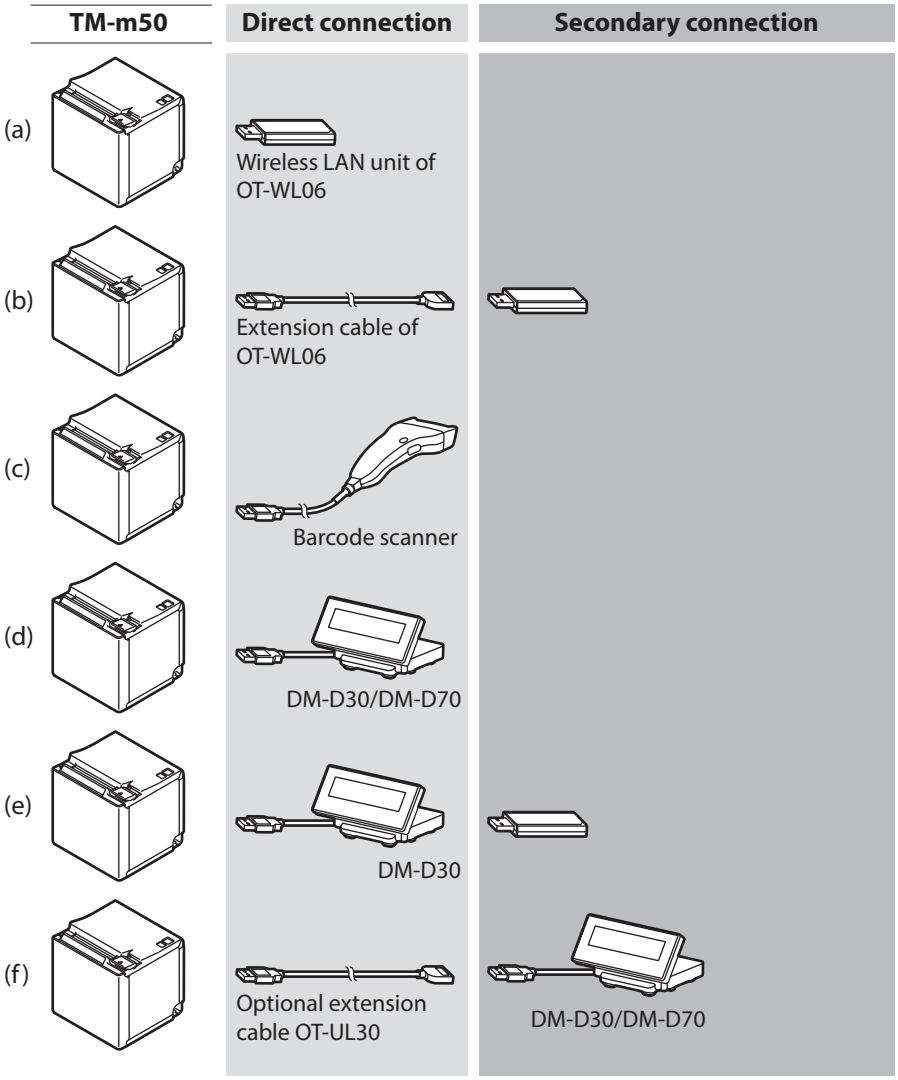
Character Code Tables

Refer to the following URL regarding the character code table.

☞ https://www.epson-biz.com/pos/reference/charcode/

Compatibility with USB Type-A

Devices can be connected to the USB Type-A connector of the TM-m50 in the following ways.



NOTE

- Any USB conversion connectors and USB extension cables other than those above cannot be used.
- Barcode scanners with USB-HID interface or with CDC-ACM interface can be used.
- To use a barcode scanner, set the scanner suffix (delimiter) to CR (carriage return code). Data cannot be obtained using any other settings.
- Epson ePOS SDK version 2.9.0 or later supports barcode scanner control.