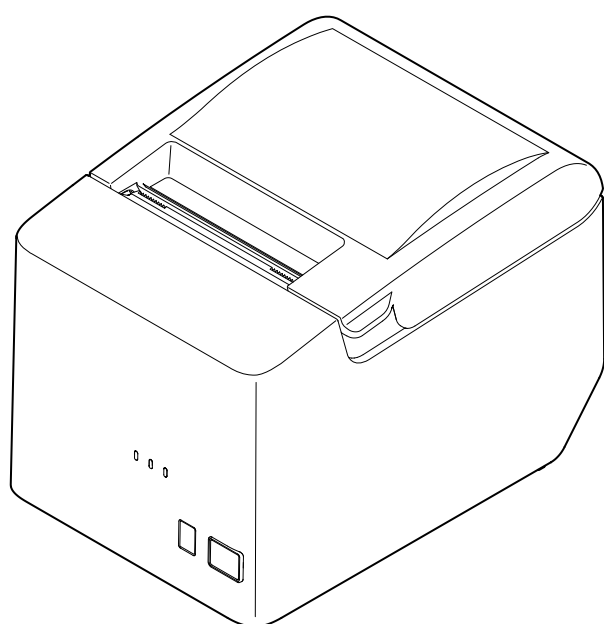


TM-T81III

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.

Replacement of the TM-T81II

Describes precautions for replacement.

Appendix

Describes general specifications and character code tables.

Cautions

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ESC/POS Command System

Epson ESC/POS is a proprietary POS printer command system that includes patented or patent-pending commands. ESC/POS is compatible with most Epson POS printers and displays. ESC/POS is designed to reduce the processing load on the host computer in POS environments. It comprises a set of highly functional and efficient commands and also offers the flexibility to easily make future upgrades.

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For Safety

Key to Symbols

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

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

Warnings

 WARNING	• To avoid risk of electric shock, do not set up this product or handle cables during a thunderstorm • Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock. • Handle the power cable with care. Improper handling may lead to fire or electric shock. * Do not modify or attempt to repair the cable. * Do not place any heavy object on top of the cable. * Avoid excessive bending, twisting, and pulling. * Do not place the cable near heating equipment. * Check that the plug is clean before plugging it in. * Be sure to push the plug all the way in. • Be sure to use the specified power source. Connection to an improper power source may cause fire or shock. • Do not place multiple loads on the power outlet. Overloading the outlet may lead to fire. Plug the power cord directly into the household power outlet (100-240 VAC). • 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 attempt to repair this product yourself. Improper repair work can be dangerous. • Never disassemble or modify this product. Tampering with this product may result in injury or fire. • Do not allow foreign matter to fall into the equipment. Penetration by foreign objects may lead to fire.
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- 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.

Cautions



- Do not connect cables in ways other than those mentioned in this manual. Different connections may cause equipment damage or fire.
- Be sure to set this equipment on a firm, stable, horizontal surface. The product may break or cause injury if it falls.
- Do not use this product in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage or fire.
- Do not place heavy objects on top of this product. Never stand or lean on this product. Equipment may fall or collapse, causing breakage and possible injury.
- Take care not to push your hand or finger against the manual cutter. Doing so may injure your hand or finger.
 - * 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.

CAUTION

If this product is used in a place where silicon-based gases including siloxane (silicon adhesive, silicon oil, silicon powder, etc.) or malignant gases (nitric acid, hydrogen sulfide, ammonia, chlorine, etc.) are present in the air, contact failure may occur in mechanical contacts such as mechanical switch or DC motor in a short time due to adhesion or oxidation of the insulation film.

Caution Labels

The caution labels on the product indicate the following precautions.



CAUTION:

Do not touch the thermal head and the frame on its side during or immediately after use. After printing, the thermal head and its surroundings can be very hot.

Restriction of Use

When this product is used for applications requiring high reliability/safety, such as transportation devices related to aviation, rail, marine, automotive, etc.; disaster prevention devices; various safety devices, etc.; or functional/precision devices, etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability.

Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgment on this product's suitability after a full evaluation.

About this Manual

Aim of the Manual

This manual provides developers/engineers with all the necessary information for design, development and installation of a POS system, and also design and development of a printer application.

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
Chapter 6	Replacement of the TM-T81II
Appendix	Product Specifications Specifications of Interfaces and Connectors Character Code Tables

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Product Overview

This chapter describes features of the product.

Features

Printing

High speed receipt printing is possible (200 mm/s maximum).

Handling

Easy drop-in paper loading

Software

- Command protocol is based on the ESC/POS Proprietary Command System.
- Windows printer drivers, OPOS ADK, and OPOS ADK for .NET are available.
- Printing of various types of bar codes, GS1-DataBar, and two-dimensional symbols (PDF417, QR code, MaxiCode, Composite Symbology) is supported.
- A maintenance counter function is supported.
- Multiple languages are supported for code pages, Windows drivers, and utility software.

Interface

The interface is selectable when purchasing the product.

Environment

Paper reduction function is available.

Others

Optional external buzzer is available.

Product Configurations

Models

- Serial (RS-232C)/USB interface model
- Ethernet interface model

Accessories

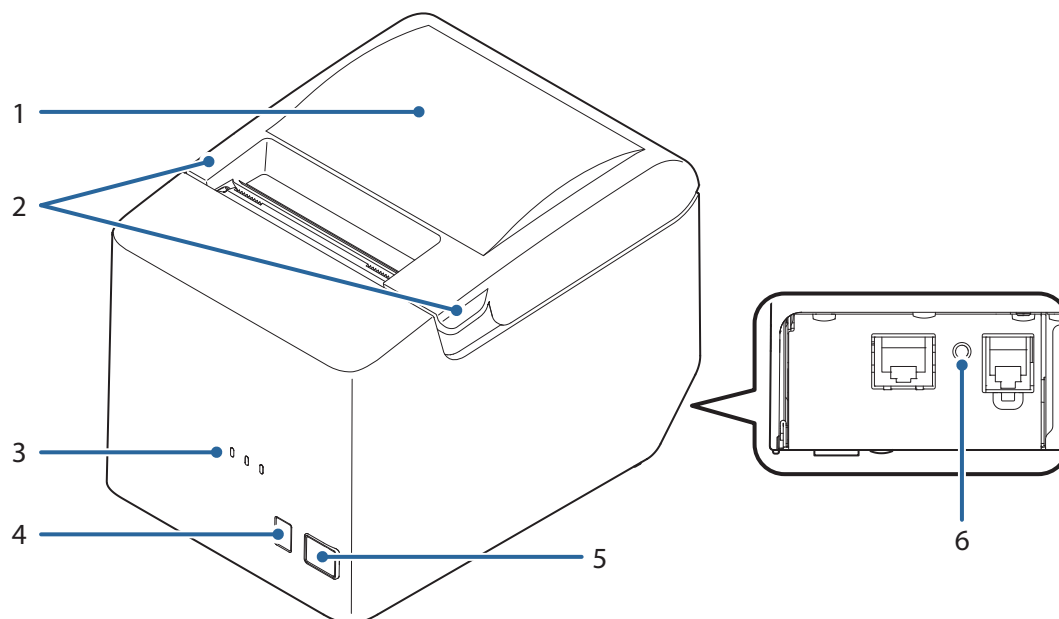
Included

- Roll paper (for operation check)
- Interface cable (Serial/USB model only)
- AC cable
- User's Guide

Options

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

Part Names and Functions



1	Roll paper cover	Open this cover to install/replace the roll paper.
2	Cover open lever	Use this button to open the roll paper cover.
3	LED lights	For details on the LED lights, see " LED Lights " on page 12.
4	 Feed button	Press this button to feed the roll paper by one line. Hold down this button to feed the roll paper continuously.
5	 Power button	Press this button to turn the printer on or off.
6	Status sheet button (Ethernet interface model only)	Press this button to print the interface status sheet, or to reset the interface settings.

NOTE

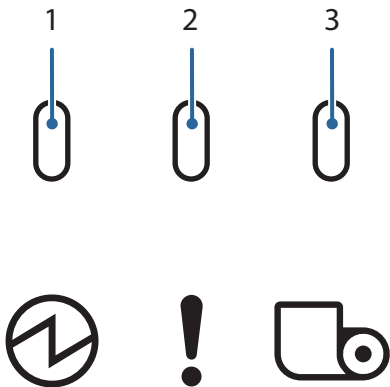
When turning off the printer without using the power button, it is recommended to send a power-off command to the printer. If you use the power-off sequence, the latest maintenance counter values are saved. (Maintenance counter values are usually saved every two minutes.) For information about ESC/POS commands, see the ESC/POS Command Reference.

LED Lights

The designs of the Power LED and Paper LED icons have been changed.

Previous icon	New icon
	
	

The new icons are shown on the following pages.



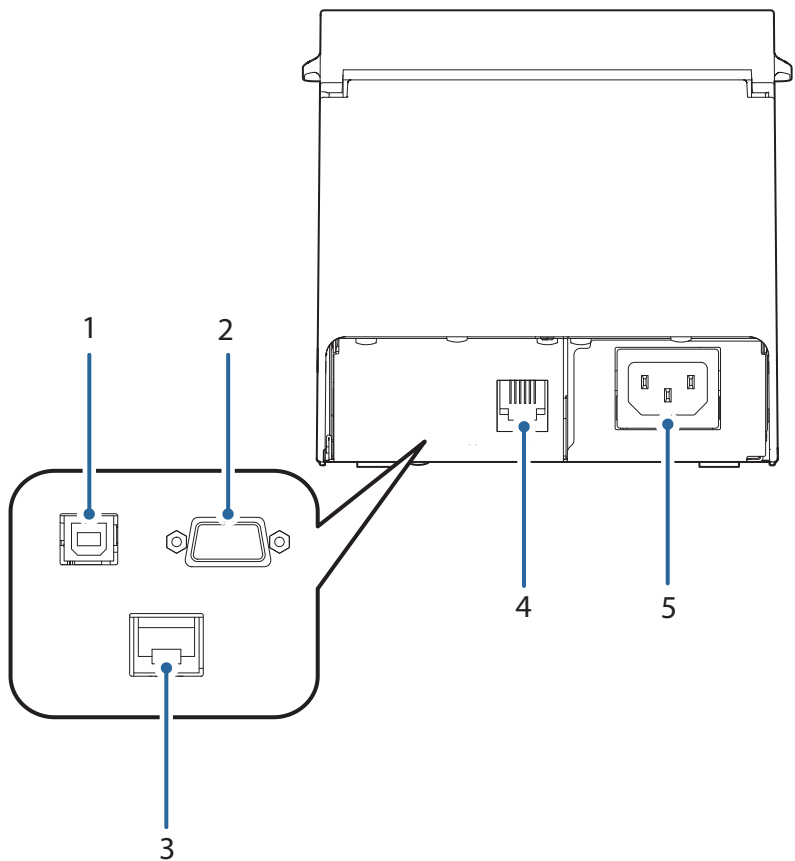
1	 Power LED	• On when the power supply is on. • Off when the power supply is off.
2	 Error LED	Lights or flashes when the printer is offline. (For information about the lighting and flashing patterns, see "Status and Errors" on page 14.) • Lights after the power is turned on or after a reset (offline). Automatically goes out after a while to indicate that the printer is ready. • Lights when the end of the roll paper is detected, and when printing has stopped (offline). If this happens, replace the roll paper. • Off when the printer is in standard mode (online).
3	 Paper LED	• Lights when there is no more roll paper. • Off when there is a sufficient amount of roll paper remaining. • Flashes when a self-test is in progress or when macro execution standby state.

Connectors

All connectors are located on the lower rear of the printer.

NOTE

Available interface may vary depending on the model.



1	USB connector	Connects the USB cable for connecting to a computer.
2	Serial interface	Connects the serial cable for connecting to a computer.
3	Ethernet connector	Connects the 10BASE-T/100BASE-TX Ethernet cable.
4	Drawer kick connector	Connects the cash drawer or the optional external buzzer. "Connecting the Cash Drawer" on page 23 "Connecting the Optional External Buzzer" on page 25
5	Power supply connector	Connects the AC cable.

Status and Errors

The LEDs light or flash to indicate the printer status.

CAUTION

The printer cannot print while an error is left unsolved.

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
- While a self-test is running
- 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 14](#))
- While the roll paper cover is open

Automatically Recoverable Errors

The printer cannot print when automatically recoverable errors occur. They can be recovered easily, as described below.

Error	Error description	Error LED status	Condition for Recovery
Roll paper cover open error	The roll paper cover was opened during printing	ON	Recovers automatically when the roll paper cover is closed
Head temperature error	A high temperature outside the thermal head drive operating range was detected	ON	Recovers automatically when the thermal head cools.

Recoverable Errors

The printer cannot print when a recoverable error occurs. It can be recovered easily by turning the power on again or sending an error recovery command from the driver after eliminating the cause of the error.

Error	Error description	Error LED status	Condition for Recovery
Autocutter error	Autocutter does not work correctly	ON	Recovers from the error when the jammed paper or foreign matter is removed, and the roll paper cover is closed.

CAUTION

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

NOTE

Use the TM-T81III Utility to change the condition for recovery. For details, see the TM-T81III Utility User's Manual.

Unrecoverable Errors

The printer cannot print when an unrecoverable error occurs. 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.

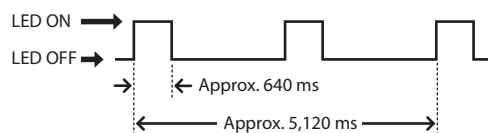
Error	Error description	Error LED flash code
R/W error in memory	After R/W checking, the printer does not work correctly.	
High voltage error	The power supply voltage is extremely high.	
Low voltage error	The power supply voltage is extremely low.	
CPU execution error	The CPU is executing an incorrect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

Status Display

	Power LED	Error LED	Paper LED
Online	ON	OFF	OFF
Initializing after power-on	ON	ON	-
Running a self-test	ON	OFF	-
Waiting to continue self-test	ON	OFF	Flashing
Feeding using the Feed button	ON	OFF	-
Waiting to execute a macro	ON	OFF	Flashing
Roll paper cover open while the printer is not printing	ON	ON	-
No paper	ON	ON	ON
While updating firmware (Main)	ON	Flashing	Flashing
While updating firmware (Boot)	ON	ON	ON
Power off standing by	ON	OFF	Flashing
The network link is down	ON	Flashing*	-
Waiting to print status sheet	ON	ON	Flashing

-: Changes depending on whether or not paper is detected.

*: The error LED flashing patterns are as follows.



NV Memory

The printer is equipped with the NV memory (Nonvolatile Memory) to store data even after the printer power is turned off. NV memory contains the following memory areas for the user:

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



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

NV Graphics Memory

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

TM-T81III Utility or ESC/POS commands can be used for the graphic registration.

TM-T81III Utility or NV Graphics Information Print Mode can be used for the confirmation.

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 Value)

You can configure various settings of the printer. For more information, see ["Software Settings" on page 26](#).

R/E (Receipt Enhancement)

Registered graphics in the NV Graphics Memory can be printed automatically, as a top logo before receipt printing or as a bottom logo before cutting paper.

TM-T81III Utility or ESC/POS commands can be used for the settings.

TM-T81III Utility or Receipt Enhancement Information Print Mode can be used for the confirmation.

User-defined Page

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

Maintenance Counter

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

NOTE

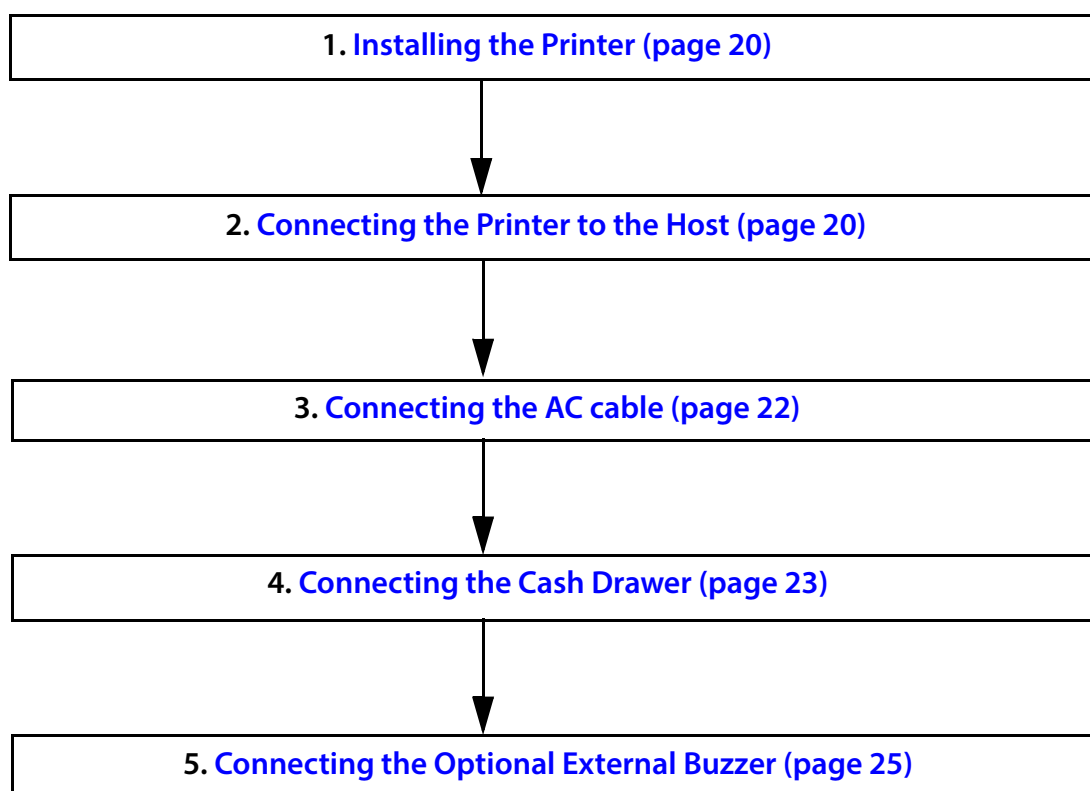
- You can also check the print head running length and number of times of auto-cutting with the self-test (see ["Self-test Mode" on page 36](#)).
- The maintenance counter value is normally saved in the NV memory every 2 minutes (maximum of 4 minutes). However, it is not automatically saved when the product is in the power-saving mode or when the power is turned off without using the power switch.

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

Observe the following precautions when installing the printer.

- The printer must be installed horizontally.
- Do not place the printer in a dusty location.
- Do not knock or strike the printer. This may cause defective print.
- Do not catch cables or place foreign matter under the printer.
- Take measures to prevent the printer from moving by vibration during paper cutting and when using a drawer. Affixing tape (Model: DF-10) is provided as an option.

Connecting the Printer to the Host

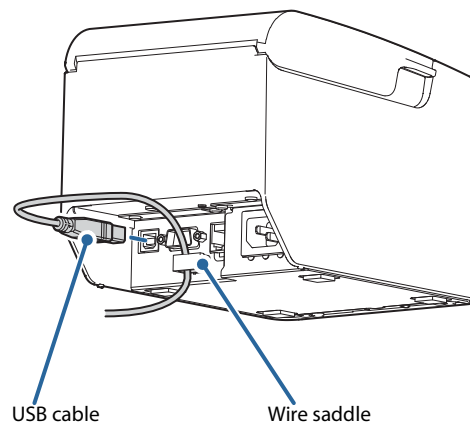
CAUTION

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

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.

When connecting the USB cable to the printer, fix the cable with the wire saddle to prevent it from being disconnected.



CAUTION

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

Serial Interface

When connecting to the host computer through a serial interface (RS-232), connect a serial cable to the printer, start the host computer, and then turn on the printer.

NOTE

When using connectors equipped with screws, tighten the screws on both sides to secure the connectors firmly.

Ethernet Interface

Use an Ethernet cable to connect the printer to network via a hub.

Use Epson TM-T81III Utility or EpsonNet Config to set network.

For details on Epson TM-T81III Utility, refer to TM-T81III Utility User's Manual.

For details on EpsonNet Config, refer to EpsonNet Config User's Guide.

CAUTION

- When LAN cables are installed outdoors, make sure they are connected through devices that have surge protection. Otherwise, the devices can be damaged by lightning.
- Never attempt to connect the drawer kick cable or a standard telephone line cable to the LAN connector.

NOTE

As same with Conventional models, you can use EpsonNet Config (Web version) in the same way. Start up a web browser and then input the printer's IP address in the address bar. On the authentication screen, input your user name and password.

The default setting for the password varies depending on the firmware version.

Firmware version	User name	Password
Before 13.04 ESC/POS	"epson"	"epson"
13.04 ESC/POS or later	"epson"	Product serial number (10 alphanumeric characters, case sensitive)

You can check the firmware version using the self-test ("[Self-test Mode](#)" on page 36).

You can check the product's serial number using a self-test ("[Self-test Mode](#)" on page 36) or on the manufacturing nameplate attached to the product.

Connecting the AC cable



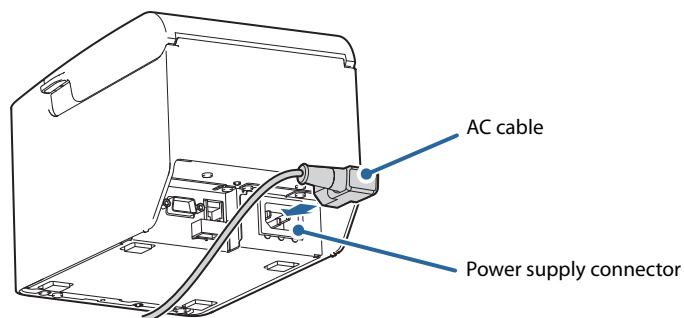
WARNING

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

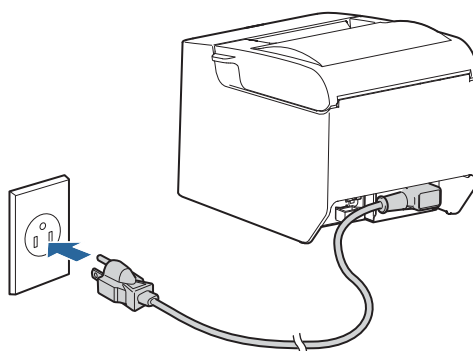
Be sure to use the included AC cable.

Connecting Procedure

- 1** Make sure the printer is turned off.
- 2** Connect the AC cable to the power supply connector.



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



CAUTION

Do not turn on the printer before installing the printer driver.

Connecting the Cash Drawer

CAUTION

- The optional external buzzer and the cash drawer cannot be used simultaneously. Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.
- The cash drawer cannot be used if the enable/disable setting for the optional external buzzer is set to "enable". When using the cash drawer, be sure to set it to "disable" using the Epson TM-T81III Utility.
- Two driver transistors cannot be energized simultaneously.
- Leave intervals longer than 4 times the drawer driving pulse when sending it continuously.

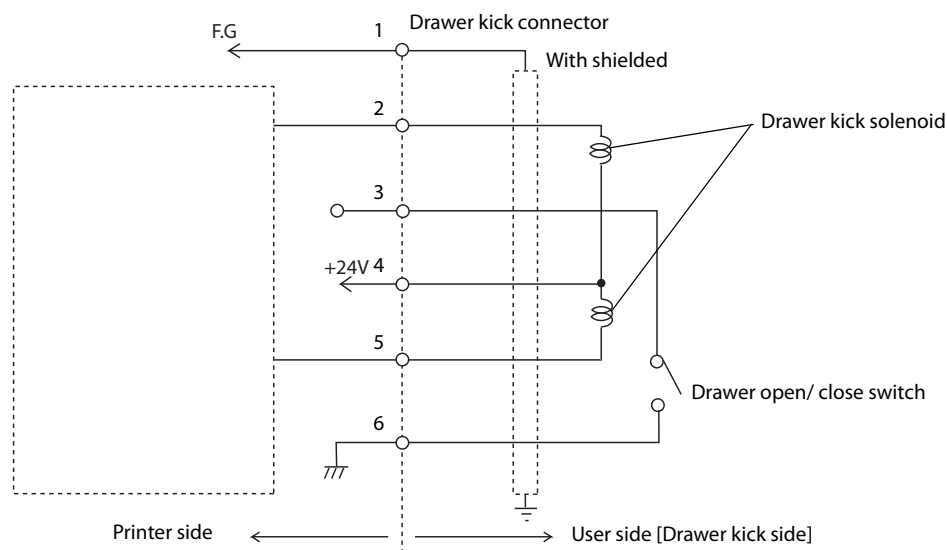
Cash Drawer Requirements

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 24 ohms or more or the input current must be 1A or less.
- Be sure to use the 24V power output on drawer kick connector pin 4 for driving the equipment.

Drawer Connection Diagram

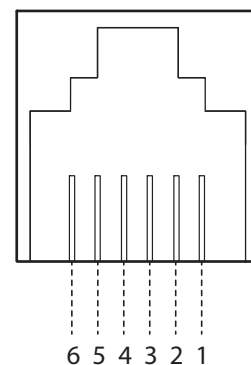


Adaptable Connector

Modular connector RJ12

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	-

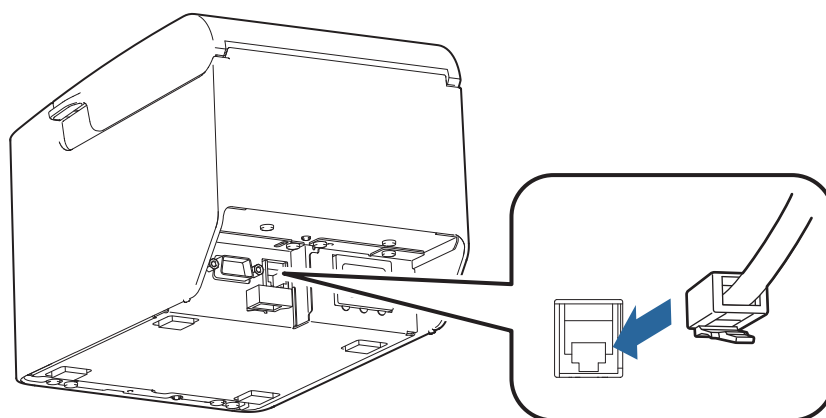


Connecting the Drawer Kick Cable



- 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.



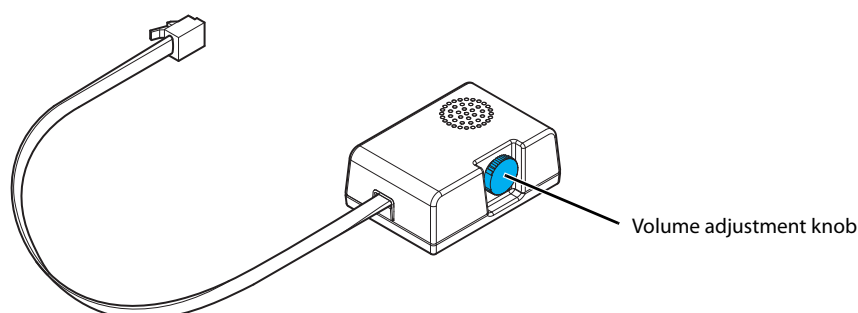
Connecting the Optional External Buzzer

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 auto cutting, and when detected paper end. Settings for sound patterns and frequency depending on the occasions the buzzer beeps are also available.

Use the TM-T81III Utility to make the buzzer settings: enable/disable setting, sound pattern setting, and frequency setting.

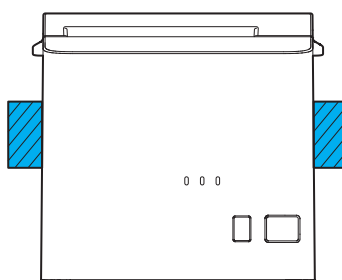
CAUTION

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



Connecting Procedure

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



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.

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 pages. Software settings are performed using the TM-T81III Utility, Software Setting Mode, or ESC/POS Commands.

Item/Method		Software Setting Mode	Epson TM-T81III Utility
Memory Switches	Automatic line feed		✓
	USB power-saving function		✓
	Pre-feed before next print		✓
	Error signal output		✓
	Data processing with reception error		✓
	Recovery conditions from receive buffer BUSY		✓
	Paper sensors to output paper end signal		✓
	Receive buffer capacity	✓	✓
	Condition for BUSY	✓	✓
Customized Values	Print density	✓	✓
	Print speed	✓	✓
	Automatic paper reduction	✓	✓
	Character code table defaults	✓	✓
	International character defaults	✓	✓
	Thai characters print method	✓	✓
	Column emulation mode	✓	✓
	Autocutting after closing the roll paper cover		✓
	Buzzer function		✓
	Shrinking/Expanding graphics data		✓
	USB class	✓	✓
	Serial Interface Communication Condition	✓	✓
	Autocutter error recovery condition		✓
	Auto top logo printing		✓
	Auto bottom logo printing		✓
	Extended settings for auto top logo/bottom logo printing		✓

NOTE

- For information about the TM-T81III Utility, see the TM-T81III Utility User's Manual.
- For information about how to use the Software Setting Mode, see ["Software Setting Mode" on page 37](#).

Feature

Automatic line feed

- Always disabled (default setting)
- Always enabled

USB power-saving function

- Disabled
- Enabled (default 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.

Error signal output

- Enabled (default setting)
- Disabled

Data processing with reception error

- Prints “?” (default setting)
- Ignored

Recovery conditions from receive buffer BUSY

- Releases the BUSY state when the remaining receive buffer capacity reaches 256 bytes (default setting)
- Releases the BUSY state when the remaining capacity of the receive buffer reaches 138 bytes.

Receive buffer capacity

- 4 KB (default setting)
- 45 bytes

Condition for BUSY

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

CAUTION

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

Print density

Selectable from levels 1 to 7 (Light ~ Dark)

Default setting: Level 4

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

Original Paper type	Density
TF50KS-EY	Level 4
PD160R	Level 4
KT48FA	Level 4

NOTE

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

Print speed

Selectable from levels 1 to 13 (Slow ~ Fast)

Default setting: Level 13

NOTE

Depending on print conditions, such as print duty, thermal 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.

USB class

- Vendor-defined class
- Printer class (default setting)

Serial Interface Communication Condition

Baud rate

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

Parity

- No parity (default setting)
- Odd parity
- Even parity

Handshaking

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

Bit length

- 7 bits
- 8 bits (default setting)

Paper reduction

Extra upper space reduction

- Disabled (default setting)
- Enabled

Extra lower space reduction

- Disabled (default setting)
- Enabled

Line space reduction rate

- Disabled (default setting)
- 25%
- 50%
- 75%

Line feed reduction rate

- Disabled (default setting)
- 25%
- 50%
- 75%

Barcode height reduction rate

- Disabled (default setting)
- 25%
- 50%
- 75%

Amount of reduction in character height

- Disabled (default setting)
- Extra character space reduction by 25%
- Extra character space reduction by 50%
- Extra character space reduction by 75%

NOTE

- Paper reduction is not performed for space dot lines of graphics printing data.
- When reducing barcode height, reading of the barcode is not guaranteed. Be sure to check that the barcode can be read with a user's barcode reader in advance.

Character code table defaults

Selectable from 43 pages including user-defined page

Default setting: PC437: USA, Standard Europe

International character defaults

Selectable from 18 sets

Default setting: USA*

*: The default setting for the Simplified Chinese characters model is China.

Thai characters print method

- 3 Pass
- 1 Pass (default setting)

Column emulation mode

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

Autocutting after closing the roll paper cover

- Cuts (default setting)
- Does not cut

Optional buzzer

NOTE

- For information about how to connect the optional external buzzer, see ["Connecting the Optional External Buzzer" on page 25](#).
- 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 (default setting)
- Enabled

Buzzer frequency (Error)

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

Sound pattern (Autocut)

Selectable from Patterns A to E

Default setting: Pattern A

Buzzer frequency (Autocut)

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

Sound pattern (Pulse 1)

Selectable from Patterns A to E

Default setting: Pattern A

Buzzer frequency (Pulse 1)

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

Sound pattern (Pulse 2)

Selectable from Patterns A to E

Default setting: Pattern B

Buzzer frequency (Pulse 2)

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

Shrinking/Expanding graphics data

Resizing

- No resizing (default setting)
- Automatic shrinking
- Manual adjustment

Algorithm

- Thinning out method
- Nearest neighbor method (default setting)
- Bilinear method
- Bicubic method

Scaling factor (manual adjustment)

50% to 200%

Auto top logo printing



TM-T81III Utility does not support the setting for Number of lines to be deleted below top logo.

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Number of lines to be deleted below top logo

Auto bottom logo printing

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Extended settings for auto top logo/bottom logo printing

NOTE

TM-T81III Utility does not support the following settings.

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

Top logo print while paper feeding to the cutting position

- Disabled (default setting)
- Enabled

Top logo print when printer is powered on

- Disabled (default setting)
- Enabled

Top logo print when roll paper cover is closed

- Disabled
- Enabled (default setting)

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

- Disabled
- Enabled (default setting)

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

- Disabled (default setting)
- Enabled

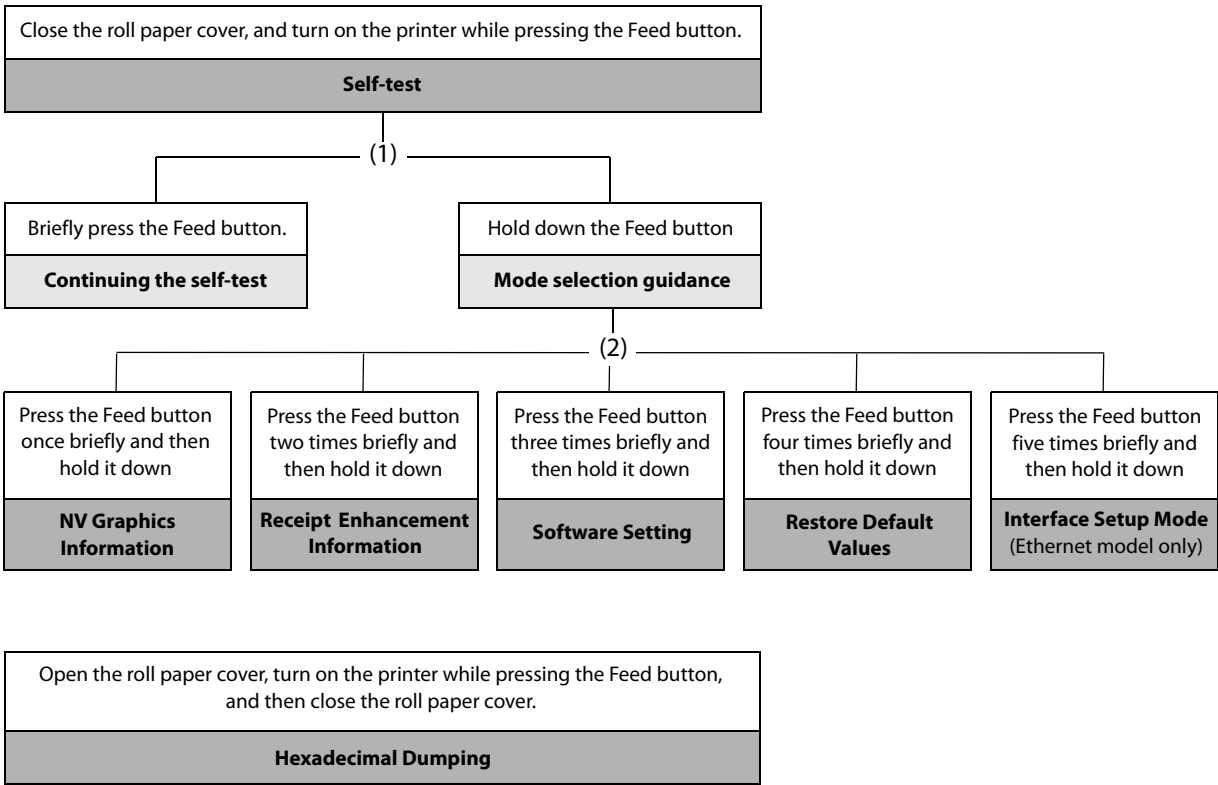
Setting/Checking Modes

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 setting mode
- Restore default values mode
- Interface setup mode (Ethernet model only)
- Hexadecimal dumping mode

To enter the Self-test mode or the Hexadecimal dumping mode, turn the printer on with the special operations as described below.

To enter one of the other modes, first enter the Self-test mode, and then select one mode by operating the Feed button as described below.



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 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 information
- Resident fonts
- Maintenance counter information (print head running length, number of times of auto-cutting)

Follow the steps below. The self-test can also be executed using 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 Power 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 graphics information registered to the printer.

- 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



For details on NV graphics, see ["NV Graphics Memory" on page 17](#).

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 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:

- Auto top logo printing setting
- Auto bottom logo printing setting
- Extended settings for auto top/bottom logo printing

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 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

You can change the printer settings. For information on available setting items, see ["Software Settings" on page 26](#).

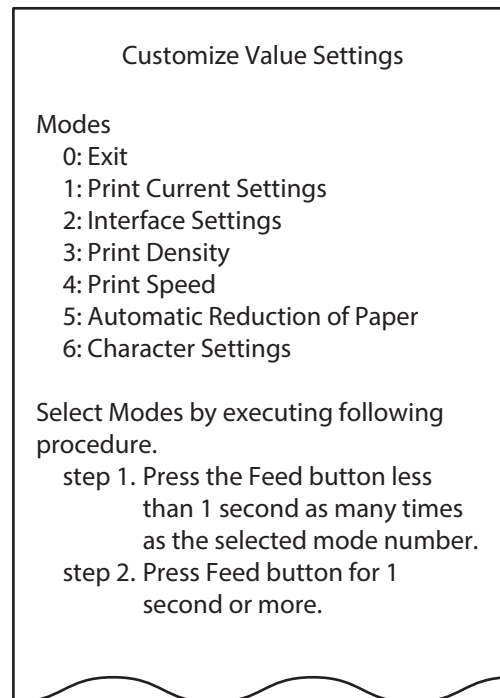
Follow the steps below.

- 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 setting mode (Customize Value Settings).

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 default 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 26](#).

CAUTION

When set to a value other than those in the software setting mode, the current settings are not printed.

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 default settings. When any error occurs, you can use to specify the reason.

Setting Contents	Setting Items	Restore Default Values and Delete Defined Data
Customized value	✓	✓
Memory switches	✓	✓
R/E (Receipt Enhancement) settings	✓	✓
Communication condition of USB interface	✓	✓
Communication condition of serial interface	✓	✓
Communication condition of network interface	✓	✓
NV graphics	-	✓
NV bit image	-	✓
User-defined page	-	✓
User NV Memory	-	✓

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 When only restoring the default settings:
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 restoration complete message is printed.)**

When restoring default settings and deleting user defined data:

Briefly press the Feed button twice (less than one second), and then hold it down for at least one second. (Hold down the Feed button until the restoration complete message is printed.)

- 4 To finish, turn off the power.**

Interface Setup Mode (Ethernet model only)

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 [Ethernet Setup] and select [Initialize] to initialize the network setting parameter. The printer is reset and restarted.

Hexadecimal Dumping Mode

In the hexadecimal dumping mode, the printer prints the data transmitted from a host computer in hexadecimal numbers and their corresponding characters. It enables you to check if data is transmitted to the printer correctly.

NOTE

- If there is no character corresponding to 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. Hexadecimal Dumping Mode can also be executed using 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.**
The printer starts printing data received from then on in hexadecimal numbers and their corresponding 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 Ethernet interface settings.

NOTE

When the power LED is flashing, wait until it remains lit to start printing.

Using the Status Sheet Button

- 1

Check that the printer is turned on.

Make sure the roll paper cover is closed.
- 2

Hold down the status sheet button (for 3 seconds or longer).

The status sheet is printed. After printing, the printer returns to the standard mode.

Using the Feed button

- 1

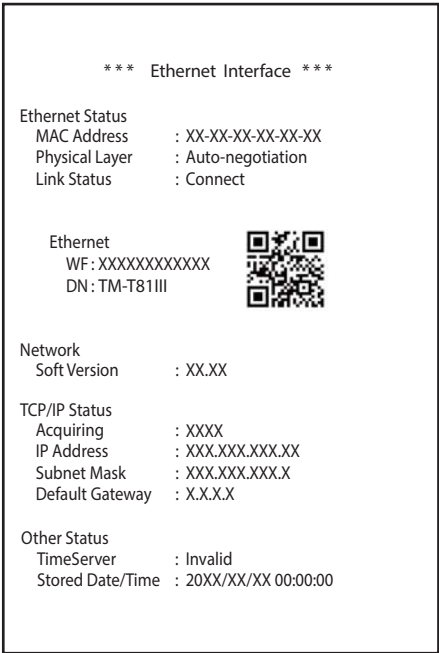
Check that the printer is turned on.
- 2

Open the roll paper cover.
- 3

Hold down the Feed button (for 1 seconds or longer).
- 4

Close the roll paper cover.

The status sheet is printed. After printing, the printer returns to the standard mode.



Resetting the Interface Settings

Follow the steps below to reset the interface settings.

NOTE

- You can return the interface settings to their defaults from the Interface Setup mode. For details on the Interface Setup mode, see "[Interface Setup Mode \(Ethernet model only\)](#)" on page 40.
- Only network settings are returned to their defaults.

- 1 Turn off the printer and close the roll paper cover.**
- 2 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.

CAUTION

Hold down the status sheet button until the initialization execution message is printed.

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 ESC/POS commands.

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

- EPSON Advanced Printer Driver (APD)
- OPOS ADK
- OPOS ADK for .NET
- Epson ePOS SDK

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 for TM Printers that can be accessed from the following URL:

https://support.epson.net/publist/reference_en/

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 so that the drawer opens at the start of printing. 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.

The buzzer can be buzzed at any time using a driver or a command.

You can also set the timing and the beep pattern for the buzzer.

ESC/POS Commands

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 POS Printer (TM-T81III)”.

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.



For details on setting the optional external buzzer, see ["Connecting the Optional External Buzzer" on page 25](#).

Software

The following software is provided for application development.

Development Kits

Software	Description
EPSON OPOS ADK	This OCX driver can control POS peripherals using OLE technology.* Because controlling POS peripherals with original 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 (Windows/Linux)	JavaPOS is the standard specification which defines an architecture and device interface (API) to access various POS devices from a Java based system. Using JavaPOS standard API allows control with Java based applications of functions inherent to each device. A flexible design with Java language and JavaPOS enables many different types of computer systems, such as stand alone or network configuration, to use a same application. You can use JavaPOS to build applications and drivers independently of platforms. This allows flexible configurations using thin clients to meet the system requirements.
Epson ePOS SDK	This is a development kit for controlling TM printers from native applications of smart devices. This includes libraries, manuals, and sample programs.
for Android	
for iOS	

* 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
TM Series Printer Driver for Linux	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.	GNU/Linux

Utilities

Software	Description	Operating environment
TM-T81III Utility	A utility for checking and changing various printer settings. Use this utility to: • Check the current settings • Test operation • Store logos • Set paper reduction • Set printing control • Set communication interfaces • Set the network • Save/restore settings	Windows
EpsonNet Config	A network setting tool for Epson network products.	Windows, Mac
Epson 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
Epson 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 in a batch.	Windows

Download

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

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

<https://www.epson.com/support/>

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

<https://epson.sn>

Notes on Printing Barcodes and Two-dimensional Symbols

- The user must set the quiet zone, depending on the barcode standards.
- When printing PDF417 (two-dimensional symbols), the following 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 barcodes and two-dimensional symbols may vary depending on widths of the modules, print density, environmental temperature, type of paper, and characteristics of the reader. Therefore, the user must check the recognition rate before setting the use conditions so that the restrictions of the reader are satisfied.
- Reading quality of barcodes and two-dimensional symbols in graphics multiple tone printing is not guaranteed.
- When printing ladder barcodes or two-dimensional symbols with graphics printing, set the print speed to speed level 2.

Handling

This chapter describes basic handling of the printer.

Installing and Replacing Roll Paper

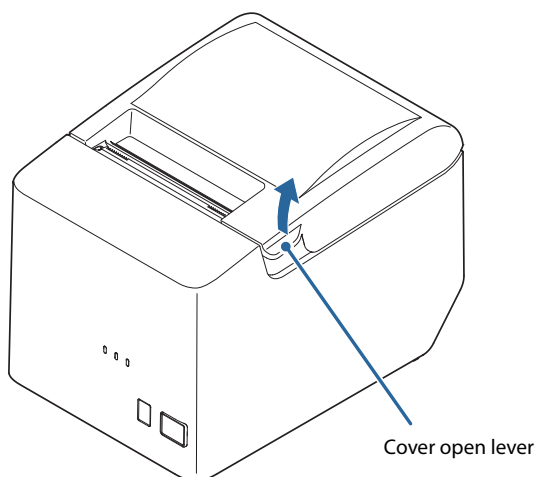


- Do not open the roll paper cover during printing. The printer may be damaged.
- Do not touch the manual cutter with your hands when installing or replacing the roll paper. Otherwise, you may be injured because the manual cutter blade is sharp.

CAUTION

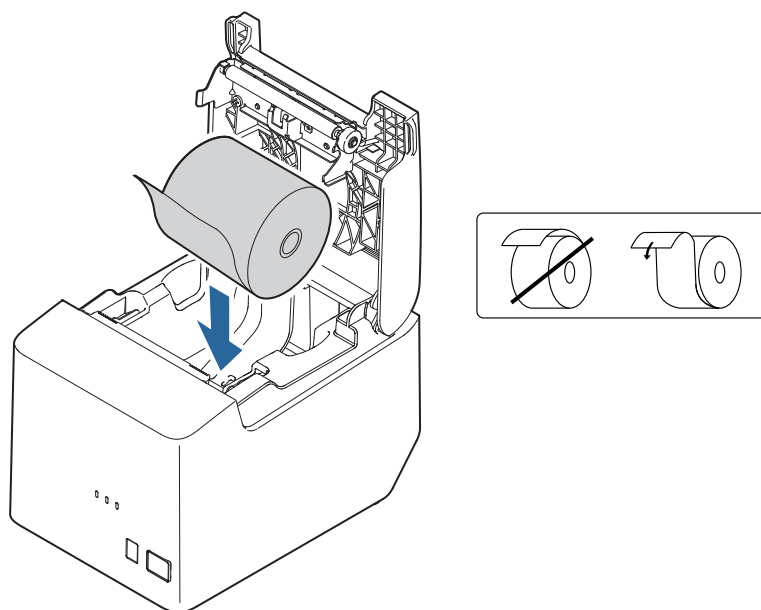
- Use roll paper that meets the printer specification. For details about paper specification, see ["Paper Specifications" on page 64](#).
- Paper must not be pasted to the roll paper spool.

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

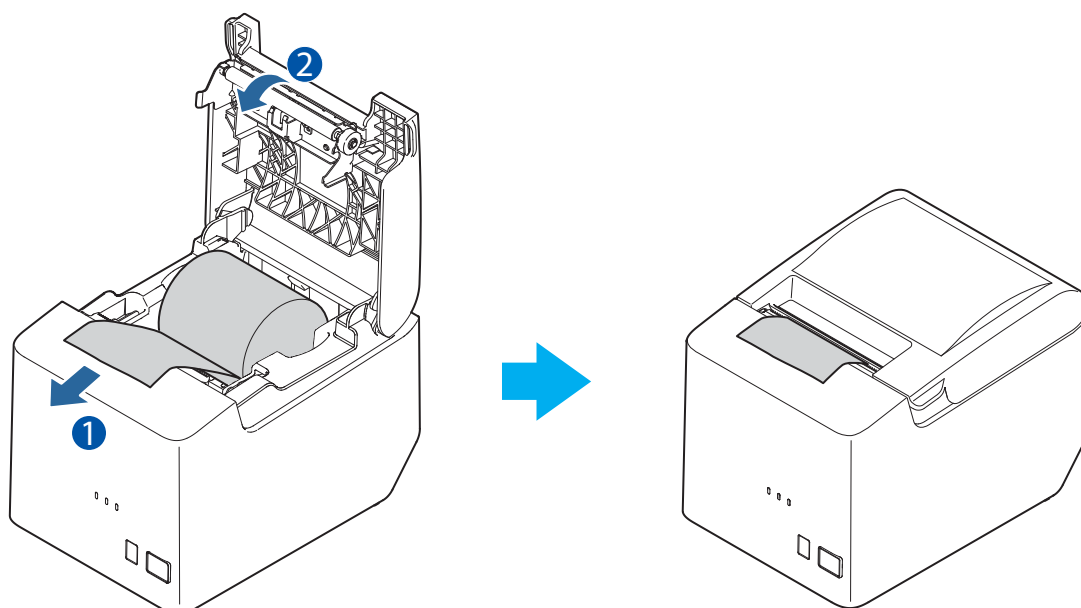


- 2** Remove the used roll paper core, if any.

3 Install the roll paper in the correct direction.



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



Removing Jammed Paper

When a paper jam occurs, never pull out the paper forcibly. Open the roll paper cover, and then remove the jammed paper.



Do not touch the thermal head. (See "[Cleaning the Thermal Head/Platen Roller](#)" on page 54.)
After printing, the thermal head and its surroundings can be very hot.

When the Roll Paper Cover Cannot be Opened

If the roll paper cover cannot be opened after powering on the printer, the printer may be defective. Contact qualified service personnel.

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

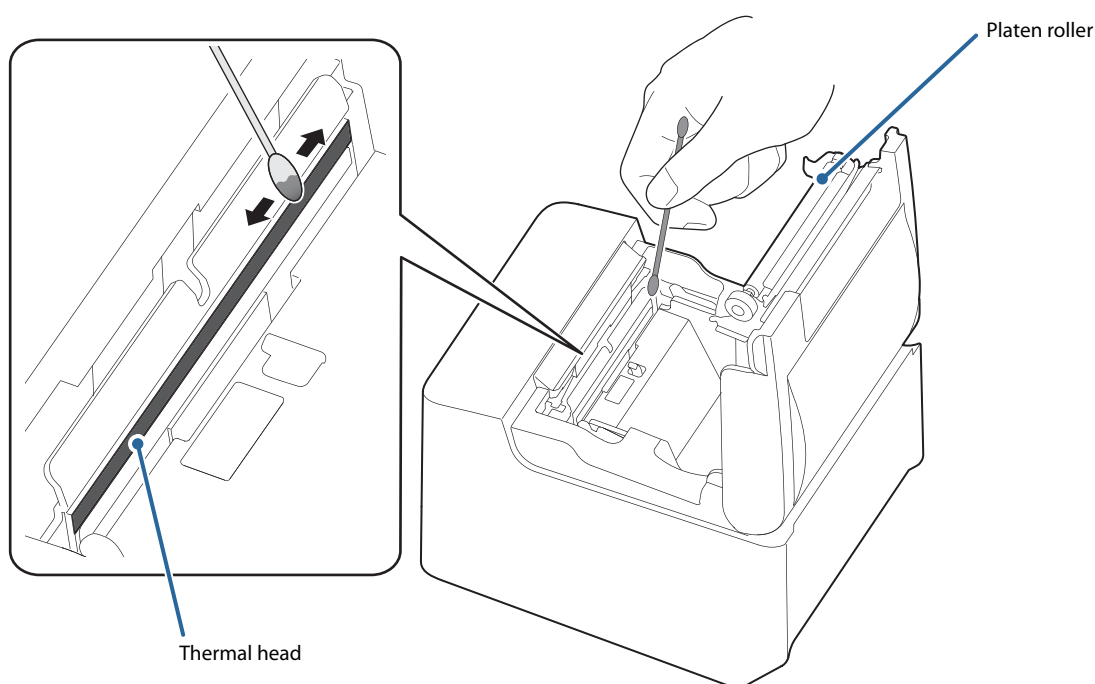
Epson recommends cleaning the thermal head periodically (generally every 3 months) to maintain receipt print quality. Depending on the roll paper used, paper dust may stick to the platen roller and cause an irregular paper feed. To remove the paper dust, clean the platen roller with a cotton swab moistened with water. Turn on the printer power only after the water has completely dried.

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



CAUTION

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



Preparing for Transport

Follow the steps below to transport the printer.

- 1** Turn off the printer.
- 2** Ensure that the POWER LED has turned off.
- 3** Disconnect the AC cable.
- 4** Remove the roll paper.
- 5** Pack the printer upright.

Replacement of the TM-T81II

The TM-T81III is designed so that it can smoothly replace the TM-T81II. This chapter describes precautions for the replacement.

Compatibility

Printing

The printing and character specifications are the same as those of the TM-T81II.
Without special configurations, the TM-T81III prints the same results as the TM-T81II prints.

Print Speed

The TM-T81III prints faster than the TM-T81II.

	TM-T81III	TM-T81II
Maximum print speed	Up to 200 mm/s	Up to 150 mm/s
Print speed setting	Level 1 to 13	Level 1 to 13

NOTE

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

Cutting Method

TM-T81III uses the same partial cutting method as the TM-T81II uses, but the point left uncut has been changed from one point in the left edge to one point at the center.

Logo Registration

The TM-T81III can register logos in the NV memory (NVRAM) with the Setup Utilities.

Driver Compatibility

You can operate the TM-T81III with a driver for the TM-T81II.

USB Low Power Consumption Mode

With the TM-T81III, you can enable the USB low power consumption mode using the Epson TM-T81III Utility.

Paper Width

TM-T81II: Only 80 mm width paper can be used.

TM-T81III: There are two types: one dedicated to 80mm width and the other to 58mm width.

Note: Available models may differ depending on the area.

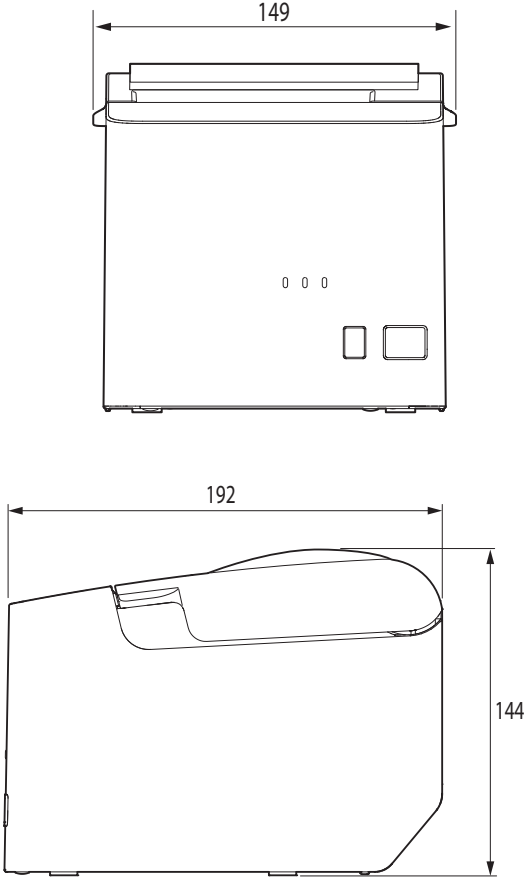
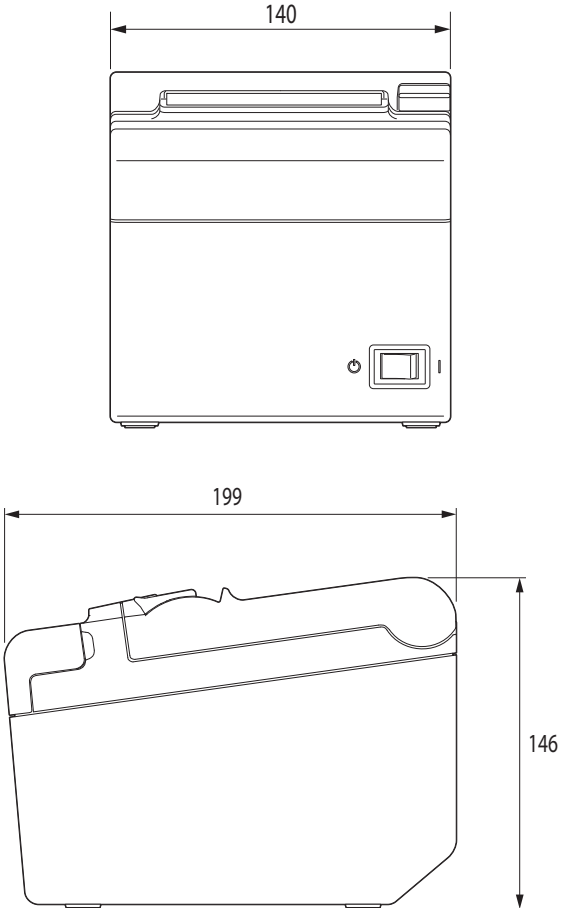
IP Address Setting

The IP address setting method for the Ethernet model of the TM-T81III has been changed from the manual to automatic method. (*) The IP address is now automatically assigned to the printer when it is connected to the DHCP server. If the printer is not connected to the DHCP server, the fixed IP address (192.168.192.168) is assigned in one minute after the printer is powered on.

*: Some models use manual setting.

Overall Dimensions

You can place the TM-T81III in the same location as the TM-T81II, since its overall dimensions and weight are almost the same as those of the TM-T81II.

TM-T81III W:149 × D:192 × H:144 mm Approx. 1.5 kg {W:5.87" × D:7.56" × H:5.67" Approx. 3.31 lb}	TM-T81II W:140 × D:199 × H:146 mm Approx. 1.7 kg {W:5.52" × D:7.84" × H:5.75" Approx. 3.75 lb}
	

Units: mm

Appendix

Product Specifications

Printing method		Thermal line printing
Paper feed speed		Approx. 200 mm/s {approx. 7.88"/s} (continuous paper feeding with the Feed button)
Cutting Method		Partial cut (cutting with one point at center left uncut)
Interface		USB: USB 2.0 Full-speed (12 Mbps) Ethernet: 10BASE-T/100BASE-TX Serial: RS-232
Buffers	Receive buffer	4 KB/45 bytes (selectable using the memory switches)
	Downloaded buffer	Approx. 12 KB (both for user-defined characters and downloaded images)
	NV graphics data	256 KB
	Downloaded graphics data	208 KB
Barcode/two-dimensional symbol/ composite symbol printing		UPC-A, UPC-E, JAN 8 (EAN 8), JAN 13 (EAN 13), CODE 39, ITF, CODABAR (NW-7), CODE 93, CODE 128, GS1-128, GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Expanded Stacked, PDF417, QR CODE, MaxiCode, Composite Symbology
Drawer kick connector drive function		2 drives
Power supply		Rated voltage: 100 to 240 VAC 50/60Hz, Rated current: 1.0 A
AC power consumption (100 to 230 V/50 to 60 Hz)*1	Operating	Approx. 27.8 W
	Standby	Approx. 0.96 W
Life*2	Mechanism	15 million lines
	Thermal head	100 km
	Autocutter	1,500,000 cuts
MTBF*3		360,000 hours
MCBF*4		60,000,000 lines
Temperature/humidity		Operating: 5 to 45°C {41 to 113°F}, 10 to 90% RH Storage: -10 to 50°C {14 to 122°F}, 10 to 90% RH
Overall dimensions (H × W × D)		140 × 149 × 192 mm {5.51 × 5.87 × 7.56"}
Mass		Approx. 1.5 kg {3.31 lb} (roll paper excluded)

*1: According to our operation conditions

- *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

			80 mm model	58 mm model
Printing method			Thermal line printing	
Paper feed direction			Unidirectional with friction feed	
Dot density			203 × 203 dpi	
Printing width	Standard mode (default setting)		72.0 mm {2.83"}, 576 dots	52.5 mm {2.07"}, 420 dots
	42 column mode		68.3 mm {2.69"}, 546 dots	47.3 mm {1.86"}, 378 dots
Characters per line	Standard mode (default setting)	Font A	48	35
		Font B	64	46
		Kanji font	24	17
		Special Font A	48	35
		Special Font B	64	46
	42 column mode	Font A	42	42
		Font B	60	31
		Kanji font	21	15
		Special Font A	42	42
		Special Font B	60	31
Character spacing	Standard mode (default setting)	Font A	0.25 mm {0.0098"} 2 dots	
		Font B	0.25 mm {0.0098"} 2 dots	
		Kanji font	0.00 mm, 0 dot	
		Special Font A	0.25 mm {0.0098"}, 2 dots	
		Special Font B	0.25 mm {0.0098"}, 2 dots	
	42 column mode	Font A	0.38 mm {0.015"} 3 dots	0.25 mm {0.0098"} 2 dots
		Font B	0.25 mm {0.0098"} 2 dots	0.25 mm {0.0098"} 2 dots
		Kanji font	0.25 mm {0.0098"}, 2 dots	0.00 mm, 0 dot
		Special Font A	0.38 mm {0.015"}, 3 dots	0.25 mm {0.0098"}, 2 dots
		Special Font B	0.25 mm {0.0098"}, 2 dots	0.25 mm {0.0098"}, 2 dots
Line spacing			3.75 mm {0.15"} (default setting, programmable by command)	
Maximum print speed			200 mm/s {7.88"/s}*	

dpi: dots per inch

*: The maximum is 63 mm/s {2.48"/s} when printing ladder barcodes or two-dimensional symbols.

NOTE

- Printing speed may be slower, depending on such items as the data transmission speed.
- Special font A/B is only equipped to the South Asia model.

Character Specifications

			80 mm model	58 mm model
Number of characters			Single-byte code characters • Alphanumeric characters: 95 characters • Extended graphics: 128 characters × 43 pages (including user-defined page) • International characters: 18 sets Multi-byte code characters • Simplified Chinese: GB18030-2022 28,806 characters (Lv.2) (for Simplified Chinese characters model)	
Character structure (W x H dots)	Standard mode (default setting)	Font A	12 × 24 (Right-side dot space: 2)	
		Font B	9 × 17 (Right-side dot space: 2)	
		Kanji font	24 × 24 (Right-side dot space: 0)	
		Special Font A	12 × 24 (Right-side dot space: 2)	
		Special Font B	9 × 24 (Right-side dot space: 2)	
	42 column mode	Font A	13 × 24 (Right-side dot space: 3)	9 × 17 (Right-side dot space: 2)
		Font B	9 × 17 (Right-side dot space: 2)	12 × 24 (Right-side dot space: 2)
		Kanji font	26 × 24 (Right-side dot space: 2)	24 × 24 (Right-side dot space: 0)
		Special Font A	13 × 24 (Right-side dot space: 3)	9 × 24 (Right-side dot space: 2)
		Special Font B	9 × 24 (Right-side dot space: 2)	12 × 24 (Right-side dot space: 2)

		80 mm model	58 mm model
Character size* (Standard/ Double-height/ Double-width/ Double-width, double-height)	Standard mode (default setting)	Font A	$1.25 \times 3.00 \text{ mm } \{0.05 \times 0.12''\}$ $1.25 \times 6.00 \text{ mm } \{0.05 \times 0.24''\}$ $2.50 \times 3.00 \text{ mm } \{0.10 \times 0.12''\}$ $2.50 \times 6.00 \text{ mm } \{0.10 \times 0.24''\}$
		Font B	$0.88 \times 2.13 \text{ mm } \{0.03 \times 0.08''\}$ $0.88 \times 4.26 \text{ mm } \{0.03 \times 0.16''\}$ $1.76 \times 2.13 \text{ mm } \{0.06 \times 0.08''\}$ $1.76 \times 4.26 \text{ mm } \{0.06 \times 0.16''\}$
		Kanji font	$3.00 \times 3.00 \text{ mm } \{0.12 \times 0.12''\}$ $3.00 \times 6.00 \text{ mm } \{0.12 \times 0.24''\}$ $6.00 \times 3.00 \text{ mm } \{0.24 \times 0.12''\}$ $6.00 \times 6.00 \text{ mm } \{0.24 \times 0.24''\}$
		Special Font A	$1.25 \times 3.00 \text{ mm } \{0.05 \times 0.12''\}$ $1.25 \times 6.00 \text{ mm } \{0.05 \times 0.24''\}$ $2.50 \times 3.00 \text{ mm } \{0.10 \times 0.12''\}$ $2.50 \times 6.00 \text{ mm } \{0.10 \times 0.24''\}$
		Special Font B	$0.88 \times 3.00 \text{ mm } \{0.03 \times 0.12''\}$ $0.88 \times 6.00 \text{ mm } \{0.03 \times 0.24''\}$ $1.76 \times 3.00 \text{ mm } \{0.07 \times 0.12''\}$ $1.76 \times 6.00 \text{ mm } \{0.07 \times 0.24''\}$
	42 column mode	Font A	$1.25 \times 3.00 \text{ mm } \{0.05 \times 0.12''\}$ $1.25 \times 6.00 \text{ mm } \{0.05 \times 0.24''\}$ $2.50 \times 3.00 \text{ mm } \{0.10 \times 0.12''\}$ $2.50 \times 6.00 \text{ mm } \{0.10 \times 0.24''\}$
		Font B	$0.88 \times 2.13 \text{ mm } \{0.03 \times 0.08''\}$ $0.88 \times 4.26 \text{ mm } \{0.03 \times 0.16''\}$ $1.76 \times 2.13 \text{ mm } \{0.06 \times 0.08''\}$ $1.76 \times 4.26 \text{ mm } \{0.06 \times 0.16''\}$
		Kanji font	$3.00 \times 3.00 \text{ mm } \{0.12 \times 0.12''\}$ $3.00 \times 6.00 \text{ mm } \{0.12 \times 0.24''\}$ $6.00 \times 3.00 \text{ mm } \{0.24 \times 0.12''\}$ $6.00 \times 6.00 \text{ mm } \{0.24 \times 0.24''\}$
		Special Font A	$1.25 \times 3.00 \text{ mm } \{0.05 \times 0.12''\}$ $1.25 \times 6.00 \text{ mm } \{0.05 \times 0.24''\}$ $2.50 \times 3.00 \text{ mm } \{0.10 \times 0.12''\}$ $2.50 \times 6.00 \text{ mm } \{0.10 \times 0.24''\}$
		Special Font B	$0.88 \times 3.00 \text{ mm } \{0.03 \times 0.12''\}$ $0.88 \times 6.00 \text{ mm } \{0.03 \times 0.24''\}$ $1.76 \times 3.00 \text{ mm } \{0.07 \times 0.12''\}$ $1.76 \times 6.00 \text{ mm } \{0.07 \times 0.24''\}$

Note:

*: Space between characters is not included.

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

Paper Specifications

		80 mm model	58 mm model
Paper types		Specified thermal paper	
Form		Roll paper	
Size	Roll paper diameter	Max.: 83 mm {3.27"}	
	Roll paper spool outer diameter	Min.: 18 mm {0.71"}	
	Roll width when taken up	80+0.5/-1.0 mm {3.15+0.02/-0.04"}	58+0.5/-1.0 mm {2.28+0.02/-0.04"}
	Paper width	79.5±0.5 mm {3.13±0.02"}	57.5±0.5 mm {2.26±0.02"}
	Paper thickness	Maximum of 75 µm, minimum of 53 µm	
Specified original paper type		TF50KS-EY (Nippon Paper Industries Co., Ltd.) PD160R (Oji Imaging Media Co., Ltd.) KT48FA (Koehler Paper Group) Epson Certified Media List for Thermal Receipt Printers  https://support.epson.net/publist/bsredirect.php?code=M001035	

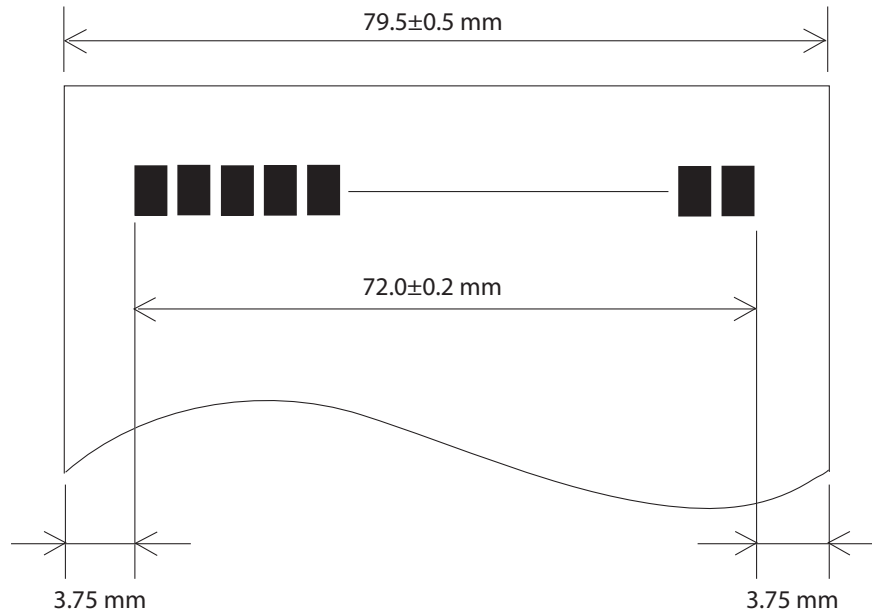
CAUTION

- Paper must not be pasted to the roll paper spool.
- For the best print quality for each paper type, it is recommended to set the print density. (See "[Software Settings](#)" on page 26.)
- 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

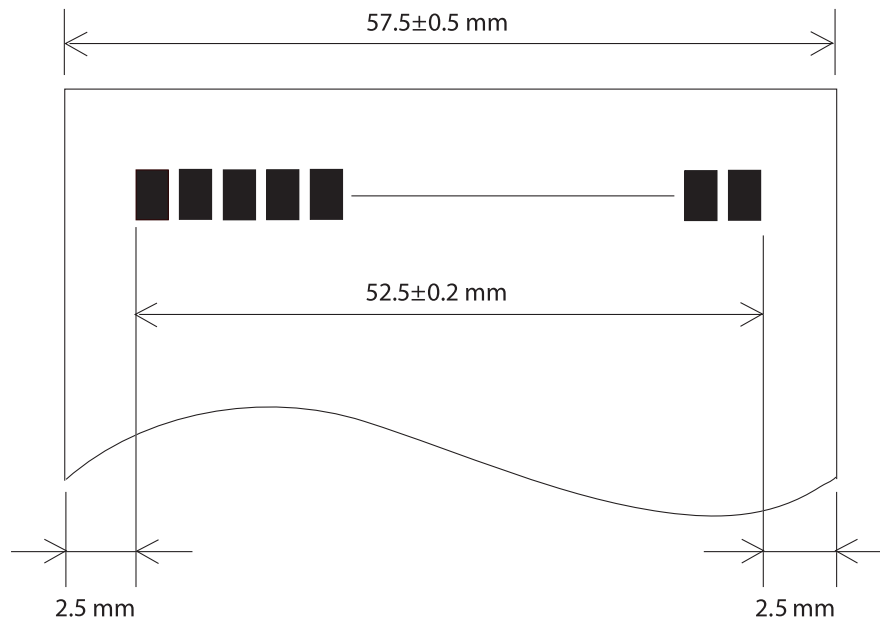
80 mm model

The maximum printable area of paper with a width of 79.5 ± 0.5 mm $\{3.13 \pm 0.02\}$ " is 72.0 ± 0.2 mm $\{2.83 \pm 0.008\}$ " (576 dots) and the approximate space is 3.75 mm $\{0.15\}$ " on the left side and 3.75 mm $\{0.15\}$ " on the right side.

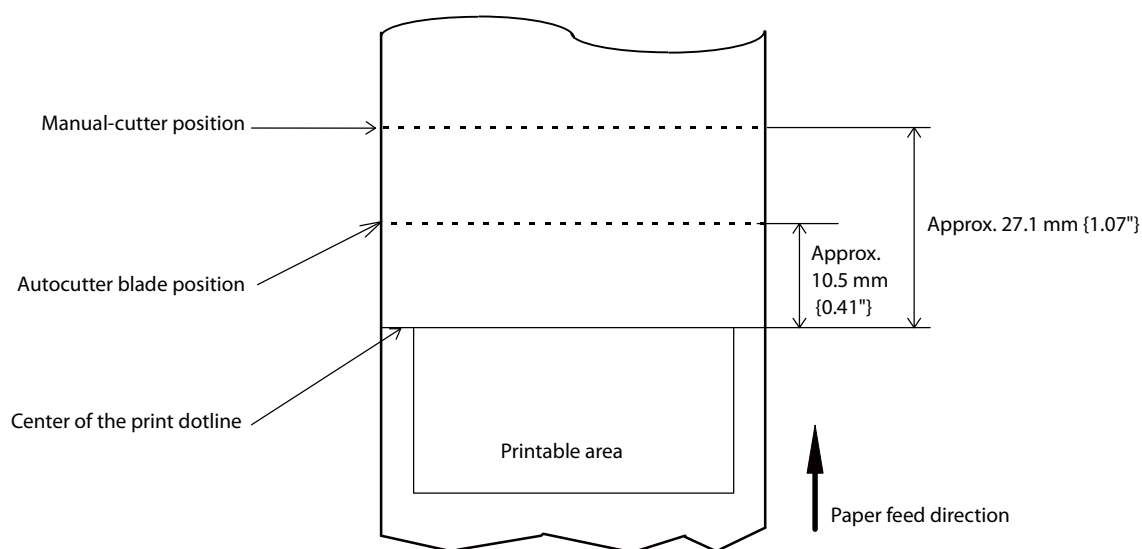


58 mm model

The maximum printable area of paper with a width of 57.5 ± 0.5 mm $\{2.26 \pm 0.02\}$ " is 52.5 ± 0.2 mm $\{2.07 \pm 0.008\}$ " (420 dots), and the approximate space is 2.5 mm $\{0.10\}$ " on the left side and 2.5 mm $\{0.10\}$ " on the right side.



Printing and Cutting Positions



CAUTION

- The values above may vary slightly as a result of paper slack or variations in the paper. Take this into account when setting the cutting position of the autocutter.
- 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 leaving paper loaded for an extended period of time, make sure you feed about 40 mm of paper. This can prevent paper from wrinkling and causing prints to be too light.

Electrical Characteristics

Rated voltage/frequency	100 to 240 VAC 50/60 Hz
Rated current	1.0 A

CAUTION

If printing is continuously performed with a high print ratio, the overcurrent protection may be activated and result in uneven print density or a low voltage error. Therefore, the printing length must not exceed the following values when printing with high print ratio.
 Print ratio: Number of dots being energized per one dot line / Total number of dots per one dot line (576 dots)

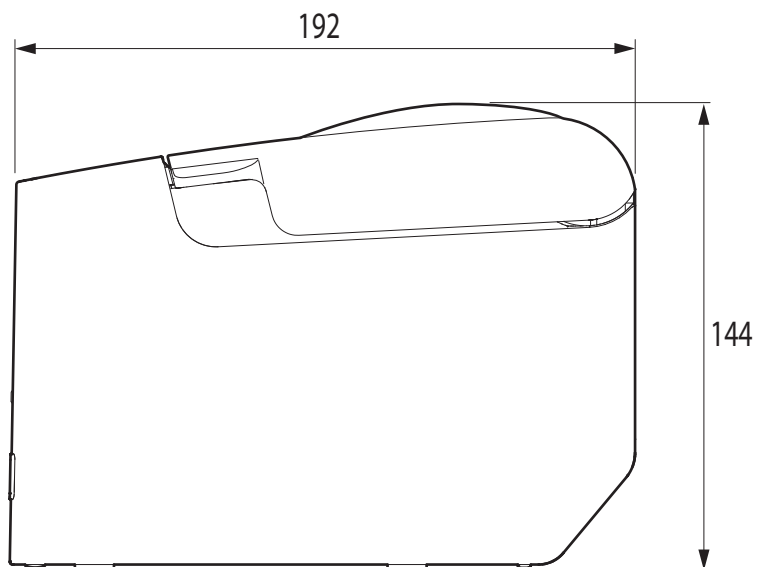
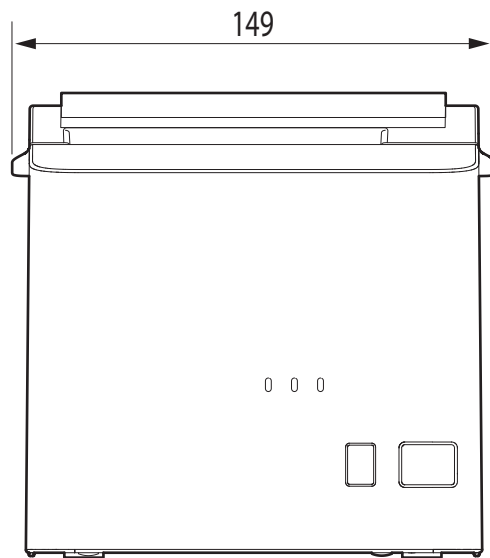
Print ratio	80%	100%
Print example		
Print length	30 mm	20 mm

Environmental Conditions

Temperature/ Humidity	Operating	5 to 45°C {41 to 113°F}, 10 to 90% RH (See the operating environment range below.)
	Storage	-10 to 50°C {14 to 122°F}, 10 to 90% RH (except for paper)
		Relative humidity ↑ Operating environment range → Ambient temperature
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.
Impact resistance	When packed	Packing: Epson standard package specifications Height: 90 cm {35.43"} 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)		Approx. 55 dB (bystander position) Note: The values above are measured in the Epson evaluation condition. Acoustic noise differs depending on the paper used, printing contents, and the setting values, such as print speed or print density.

External Dimensions and Mass

- Height: Approx. 144 mm {5.67"}
- Width: Approx. 149 mm {5.87"}
- Depth: Approx. 192 mm {7.56"}
- Mass: Approx. 1.5 kg {3.31 lb} (excluding roll paper)



[Units: mm]

Specifications of Interfaces and Connectors

Description

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

USB Interface

USB interface connector

USB type-B connector

USB transmission specifications

USB function

Item		Specifications
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 26.

USB descriptor

		USB vendor-defined class	USB printer class
Vendor ID		04B8h	04B8h
Product ID		0202h	0E27h
String Descriptor	Manufacturer	EPSON	EPSON
	Product	TM-T81III	TM-T81III
	Serial number	Character string based on the product serial number	Character string based on the product serial number

RS-232 Serial Interface

Interface board specifications (RS-232-compliant)

Item		Specifications
Data transfer method		Serial
Synchronization		Asynchronous
Handshaking		Select one of the following in the software setting mode. • DTR/DSR • XON/XOFF
Signal level	MARK	-3 to -15V logic "1"/OFF
	SPACE	+3 to +15V logic "0"/ON
Bit length		Select one of the following in the software setting mode. • 7 bit • 8 bit
Transmission speed		Select one of the following in the software setting mode. 2400/4800/9600/19200/38400/57600/115200 bps [bps: bits per second]
Parity check		Select one of the following in the software setting mode. • Yes • No
Parity selection		Select one of the following in the software setting mode. • Even • Odd
Stop bit		1 or more bits However, the stop bit for data transfer from the printer is fixed to 1 bit.
Connector	Printer side	D-Sub 9-pin (male)

Functions of each connector pin

Pin no.	Signal name	Signal direction	Function
1	FG	-	Frame ground
2	RXD	Input	Reception data
3	TXD	Output	Transmission data
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. Select the BUSY condition in the software setting mode. 2) When XON/XOFF control is selected, this signal indicates that the printer is properly connected and ready to receive data from the host. • SPACE status The signal indicates that the printer is properly connected and ready to receive data from the host. The signal is always SPACE, except in the following cases: • During the period from when power is turned on to when the printer is ready to receive data. • While the self-test is in progress.
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	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. Select the BUSY condition in the software setting mode. 2) When XON/XOFF control is selected, this signal indicates that the printer is properly connected and ready to receive data from the host. • SPACE status The signal indicates that the printer is properly connected and ready to receive data from the host. The signal is always SPACE, except in the following cases: • During the period from when power is turned on to when the printer is ready to receive data. • While the self-test is in progress.

XON/XOFF

When XON/XOFF control is selected, the printer transmits the XON or XOFF signals as follows.

The transmission timing differs, depending on the BUSY condition.

Signal	Printer status	BUSY condition	
		Receive buffer full	Receive buffer full/ Offline
XON	When the printer goes online after turning on the power (or reset using the interface)	Transmit	Transmit
	When the receive buffer is released from the buffer full state	Transmit	Transmit
	When the printer switches from offline to online	-	Transmit
	When the printer recovers from an error using some ESC/POS commands	-	Transmit
XOFF	When the receive buffer becomes full	Transmit	Transmit
	When the printer switches from online to offline	-	Transmit

Code

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

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

CAUTION

- When the printer goes from offline to online and the receive buffer is full, XON is not transmitted.
- When the printer goes from online to offline and the receive buffer is full, XOFF is not transmitted.
- When handshaking is set to DTR/DSR, XON is not transmitted as long as the printer is offline, even if a receive buffer full state has been cleared.

Ethernet Interface

Communication specifications

10BASE-T/100BASE-TX

Support protocols

Protocols	Usage
IP, ARP, ICMP, UDP, TCP	Basic communication protocols
LP, LPR	Printing protocols
TCP Socket Port	Used to transfer printing data and printer status via (bidirectional) direct socket communication.
HTTP/HTTPS	Used by browsers to display and set module status
SNMP	Used by dedicated and general MIB tools to acquire and set module and printer status
ENPC	Used to acquire and set module and printer status
DHCP	Used to acquire the IP address
APIPA	Used to assign the IP address

Network parameters

Item	Default settings
IP Address	192.168.192.168 ^{*1}
Subnet mask	255.255.255.0 ^{*1}
Default gateway	0.0.0.0 ^{*1}
IP address acquisition	Automatic ^{*2}
APIPA	Disabled
arp/ping	Disabled
IP Address Printing	Enabled ^{*2}
Socket Timeout	90 seconds
Standard Community Name (Read Only)	"public"
Community name (Read Only)	No
Community name (Read/Write)	No
SNMP IP Trap 1	Disabled
SNMP IP Trap 2	Disabled

Item	Default settings
Communication mode	Auto negotiation
IP Filter	Disabled

*1: Initial value when “Acquiring the IP Address” is set to “Manual.”

*2: Initial value varies depending on the model.

Character Code Tables

See the Character Code Tables for TM Printers that can be accessed from the following URL:
https://support.epson.net/publist/reference_en/