GENERAL SPECIFICATION

mPOP series

REV. NO. 5.40

◆ Refer to the online manual for detail the product setup or uses.

Trademarks

For the owners of other companies' trademarks mentioned in this document, see Trademarks (https://www.star-m.jp/trademarks.html).

Precautions regarding this document

- No part of this document may be reprinted without permission.
- The contents of this document are subject to change without notice for functional improvement.
- Although every effort has been made to ensure that the contents of this document are correct, please contact us if you notice any errors or omissions in the description.
- The precautions in this document are not exhaustive of all possible events.
  We will not be held responsible for any damage caused by the result of operating this product or negligence.

Safety information

This section contains safety information for preventing harm to users of this product, to third persons, and damage to property.

Carefully read before using this product and use the product properly.

We are not liable for any damage that occurs as a result of incorrect use other than those detailed in the safety information or in the manual for this product, or for any damage that occurs due to repairs/changes made by a third party who is not part of our company or specified by our company.

Warning

⚠Warning

- Immediately turn the power off and pull the power plug out of the electrical outlet if it emits heat, smoke, abnormal smells or abnormal sounds.

  Then contact the seller.

  If use of the product is continued, fire or electric shock may occur.
- Do not dissemble, repair or modify the product.

  Otherwise, it may cause fire, electric shock or injury.
- When pulling out the power plug, always pull the plug and not the cable.

  Otherwise, the power cable may be damaged, and a short circuit, fire or electric shock may occur.
- Do not damage, modify, forcefully bend, pull, twist, put a heavy object on, or squeeze the power cable.

  Otherwise, the power cable may be damaged, and a short circuit, fire or electric shock may occur.
- Do not use a damaged power cable or power plug, or loose electrical outlet.

  Otherwise, it may cause a short circuit, fire or electric shock.
- Do not touch the power plug with wet hands.

  Otherwise, it may cause an electric shock.
- Do not touch the cutter blade. Otherwise, it may cause an injury.
  - There is a cutter inside the paper exit, so do not touch the blade even when it is not operating, as well as when it is operating.
  - The printer cover will be opened when replacing the paper roll, but as there is a cutter inside the printer cover, do not bring your face or hands close to the cutter blade when the printer cover is opened.
- If foreign matter such as liquid or metal fragments get inside this product, immediately cut off the power and pull the power plug out of the electrical outlet. Then contact the seller.

  If use of the product is continued, fire or electric shock may occur.

Installation notes

⚠Warning

Do not install the product in the following locations.

Otherwise, an electric shock or fire may occur.

- Locations where there is a danger of electricity or water leakages
- Locations that are in the vicinity of fire, that are subject to direct sunlight, or where heat may be trapped

⚠Caution

Do not install the product in the following locations.

Otherwise, it may cause malfunction.

- Locations where there is static electricity or where a strong magnetic field is generated
- Locations where ventilation is poor or dusty locations
- This product uses DC motors and switches which require contact with electricity; therefore, avoid using in locations where silicone gas or flammable gas is volatilized.
- Locations where temperature and humidity exceed the usage environment conditions, or where condensation occurs
- Locations where the floor is not flat, or where vibrations occur, such as inside the car

  Problems such as paper feed errors may occur.
- Do not use the same electrical outlet as the one where equipment that generates noise such as copiers and refrigerators are connected to.
- Location at a distance from an electrical outlet

  Install in a location that is near the electrical outlet so that the power plug can be immediately pulled out if an abnormality occurs.

To install accessories and optional products

When installing accessories and optional products, turn the power of this product off, and pull the power plug out of the electrical outlet.

Carefully read the installation steps in the manual and install correctly.

Handling notes

⚠ Caution

- If not being used for a long time, pull the power plug out of the electrical outlet to ensure safety.
- When connecting or removing a cable, remove the power plug for both this product and the PC from the electrical outlet to ensure safety.
- Be careful not to forcibly pull the connected USB cable, LAN cable, power cable, or cash drawer cable.
- When removing the cable, always hold the plug part, and make sure that no excessive force is applied to the connector on the printer side.
- Do not connect a telephone line to the external device drive connector. In addition, to ensure safety, avoid using wiring connections that may cause an excessive voltage to be applied to the external device drive connector. Otherwise, it may lead to malfunctions.
- Do not open the printer cover while the printer is printing or cutting.
- Do not pull out the paper while the printer cover is closed.
- Be careful not to get your hands trapped when opening or closing the cover. Otherwise, it may cause an injury.
- As the heating element in the thermal printer head and the driver IC part can be easily damaged, do not allow direct contact with metals, sandpaper and such.
- Remove the cut paper from the printer promptly.
- Do not operate the printer if there is moisture (which has been caused by condensation or another factor) on the front surface of the print head.
- If the thermal sheet has a large amount of [Na+, K+, Cl-] then the life of the thermal printer head may be drastically shortened. We recommend using products with ion concentration of Na+ 500 ppm, K+ 150 ppm, Cl- 300 ppm or less.
- Use in accordance with indicated environmental specifications. Even if the environmental temperature/humidity is within specifications, avoid drastic environmental condition changes. Refer to "2.6. Environmental specifications" for the environment suitable for using this product.

  However, when you want to charge your smartphone or tablet from the printer, use both the printer and device within the temperature range that satisfies the environmental specifications of the respective products.
- When disposing of this product, be sure to follow local ordinances and regulations.

Table of Contents

1. Product Overview

1.1. Features

This unit is a stationary cash drawer with a built-in 2 inch thermal printer.

It is certified by the Apple MFi licensing program, which allows not only Apple products, such as iPhone and iPad, but also Android devices, to be connected via Bluetooth (*) or USB. The use of such mobile devices allows the construction of a mPOS system.

<Notes>

1) Apple MFi licensing program: "Made for iPod", "Made for iPhone", "Made for iPad" means each is designed to connect to an iPod, iPhone or iPad, and is an electronic accessory that is certified by the developer indicating that the performance standards stipulated by Apple are met.
2) * Only models which support Bluetooth
3) Apple does not bear responsibility for compliance with safety and standards of this product.

   iPad are trademarks of Apple Inc.

1.2. Notes on usage

(1) Before using the cash drawer, ensure security measures for anti-theft or the like are in place according to the user security policy. Star Micronics Corporation shall not be held responsible for the security of the cash drawer

(2) The cash drawer is a place to temporary store cash such as sales proceeds, and not a safe. Therefore, when your store is closed, the banknotes and coins that are stored (or the cash drawer that was removed) must be stored in a location where security is ensured, based on the user security policy. Star Micronics Corporation shall not be held responsible for the theft or loss of such stored banknotes and coins

1.3. Product name

(1) Official Name : Mobile Point Of Purchase

(2) Model Name : mPOP

(3) Model Name Display Directions : See below

POP	1	0	_	-	_	_	_	_	WHT	US
①	②	③	④		⑤	⑥	⑦	⑧	⑨	⑩

① Model Name

POP : Point Of Purchase

② Series name and the generic name for the application

1 : 10 Series

③ Product Type

0 : Standard Model

④ Interface

None : Standard
(Bluetooth for MFi + USB Device + USB Host + USB Power Port)

CI : USB-C for MFi (USB-A + USB-B + USB-C)

CBI : USB-C for MFi (USB-A + USB-B + USB-C) + Bluetooth for MFi

⑤ Drawer Type

None : Standard (Vertical Bill Drawer) … Angled bill storage

F : Flat Bill Drawerl … Flat bill storage

⑥ Option

None : Standard
(Bluetooth for MFi + USB Device + USB Host + USB Power Port)

B1 : BCR Option + BCR Option Stand Bundled Model

⑦ Bluetooth Auto Connection

None : Auto Connection (Factory Default: ON)

OF : Auto Connection (Factory Default: OFF)

⑧ Character Set

None : Standard (Default character set for each destination)

⑨ Case Color

WHT : White

BLK : Black

⑩ Destination

None : Standard (Model without power cable)

US, JP, E+U (EU, UK models with AC cable included), EU, UK, AS, TW, CH

1.4. Product logo mark

mPOP is a trademark of Star Micronics Corporation. (Trademark: No.2014-90314)

1.5. Related applications

The following is information on the development of applications to control this product.

l Development kits l

Name	General description
StarXpand SDK for iOS/Android	A development kit for controlling the printer from the native application. A revamped version of StarPRNT SDK. Manual:https://www.star-m.jp/starxpandsdk-oml.html
StarXpand SDK for ReactNative	A development kit for controlling the printer from the native application using ReactNative. Manual:https://www.star-m.jp/react-native-stario10-oml.html
StarPRNT SDK	A development kit for controlling the printer from the native application. Manual:https://www.star-m.jp/starprntsdk-oml-ios.html
starwebPRNT SDK	A development kit for performing printing from various devices such as a PC and tablet via the Web browser. Manual:https://www.star-m.jp/starwebprnt-oml.html
Star PassPRNT SDK	A development kit for performing call printing from other applications by the URL scheme. Printing can be performed with the Star Micronics printer by receiving print data. Manual:https://www.star-m.jp/starpassprntsdk-oml-ios.html

l Drivers l

Name	General description	Operating environment
Star Windows Driver	This is required when using the Star Micronics printer via the Windows printer driver. Use the Windows printer driver to perform printing from Windows applications. It is included in Star Windows Software.	Windows
Star OPOS Driver	This is required when using the Star Micronics printer and peripherals via the OPOS driver. It is included in Star Windows Software.	Windows
Star JavaPOS Driver	This is required when using the Star Micronics printer and peripherals via the JavaPOS driver.	Windows,Linux,macOS
Star CUPS Driver	This is required when using the Star Micronics printer and peripherals via the CUPS driver.	Linux,macOS

l Utilities l

Name	General description	Operating environment
Star Quick Setup Utility	This enables communication setting, initial setting, printer behavior check, and printer setting change.	iOS,Android
Star Windows Software	This provides the Windows printer driver, the OPOS driver, and printer utilities. This enables installation of the printer driver and the OPOS driver setting. The printer utilities enable communication setting, initial setting, printer behavior check, and printer setting change.	Windows

■ How to get Star Quick Setup Utility and Star Windows Software

It can be obtained by connecting to the following website from an iOS device, Android tablet, or a Windows OS device

Download site: www.star-m.jp/mpop-app.html

<Notes>

If use an iOS or Android device, it can also be downloaded from the Apple Store or Google Play

l Download l

Download software, command specifications, and other manuals from the following URL.

https://www.star-m.jp/supportsite-wsw.html

l Authentication process of applications for MFi-supported printers l

If you design and develop an iOS application compatible with Star Micronics MFi authentication printers and register it in the Apple iTunes App Store, please check the following URL.

https://www.star-m.jp/prjump/000173.html

1.6. Accessories

(1) Setup sheet

(2) Safety guide

(3) Tablet stand

(4) Mounting bracket and two M4 screws

(5) Positioning board

(6) Power cable

The following items are included depending on the destination

- US model : US plug cable
- JP model : JP plug cable
- E + U model : UK plug cable, and EU plug cable
- EU model : EU plug cable
- UK model : UK plug cable
- AS model : AS plug cable
- CH model : CH plug cable

(7) Barcode reader (*)

(8) Barcode reader stand (*)

(9) Barcode reader stand fixing double-sided tape (*)

(10) Barcode reader stand fixing screw (two screws) (*)

(11) USB cable

<Notes>

1) The included power cable and USB cable are the same color as the mPOP body
2) * Bundled model only
3) The included barcode reader and stand are the same color as the mPOP body
4) Recharging cable to charge the tablet is not included

1.7. Various options

(1) Thermal paper roll

Manufacturer	Product name	Quality characteristics and use	Paper thickness (μm)	Roll diameter (mm)
Mitsubishi Paper Mills Limited	P220AG	Normal type	65	Φ50
	HP220A	Long-storage type	65	Φ50
Oji PaperCompany	PD160R	Long-storage type	75	Φ50

<Notes>

The above options can only be set on the JP model.

(2) Barcode reader (BCR-POP1)

1) mPOP body color : 2 colors, white model and black model

2) The following are provided as accessories

- Setup sheet
- Stand (same color as the barcode reader body)
- Stand fixing double-sided tape
- Stand fixing screws (2 pcs)

<Notes>

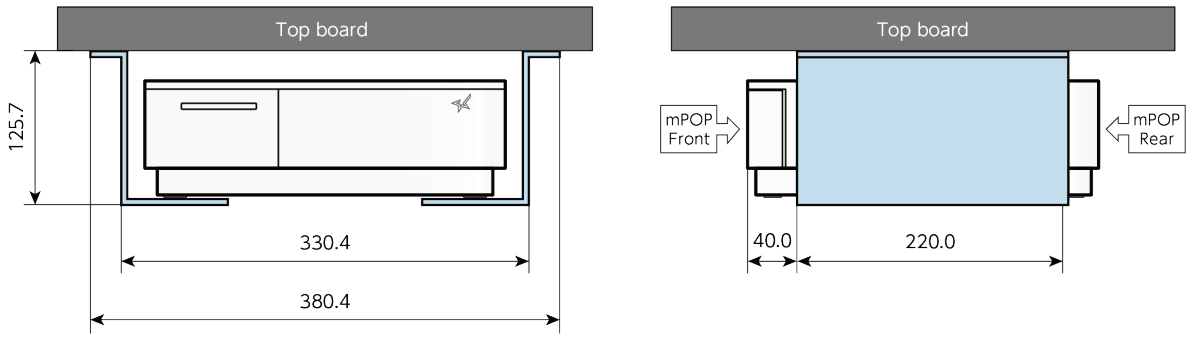
For details of the barcode reader, refer to "5.1 Barcode reader specifications (Options, settings by model)" and "9.9. Use barcode reader (Options, settings by model) "

(3) Counter mounting kit (CM-POP1)

1) The following are provided as accessories

- Setup sheet
- Setting template
- Screw small (M3-8) x 4
- Screw large (M4-12) x 4

2) The dimensions when installing the counter mount kit are as follows.

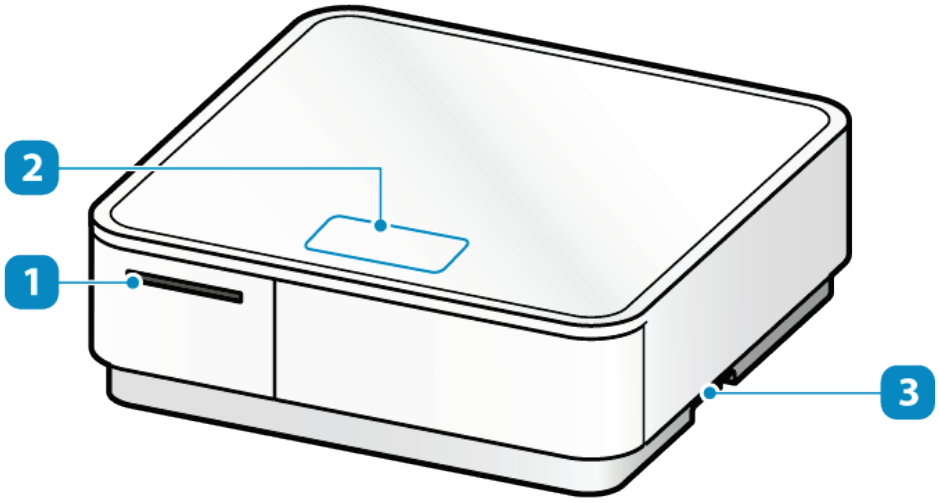


<Notes>

For details of the counter mounting kit, please refer to "8.3.3. Secure using the counter mounting kit CM-POP1 (optional)"

1.8. Part names and functions

1.8.1. Front of mPOP



1 Paper exit

The paper, when printed, is ejected from here

2 LED

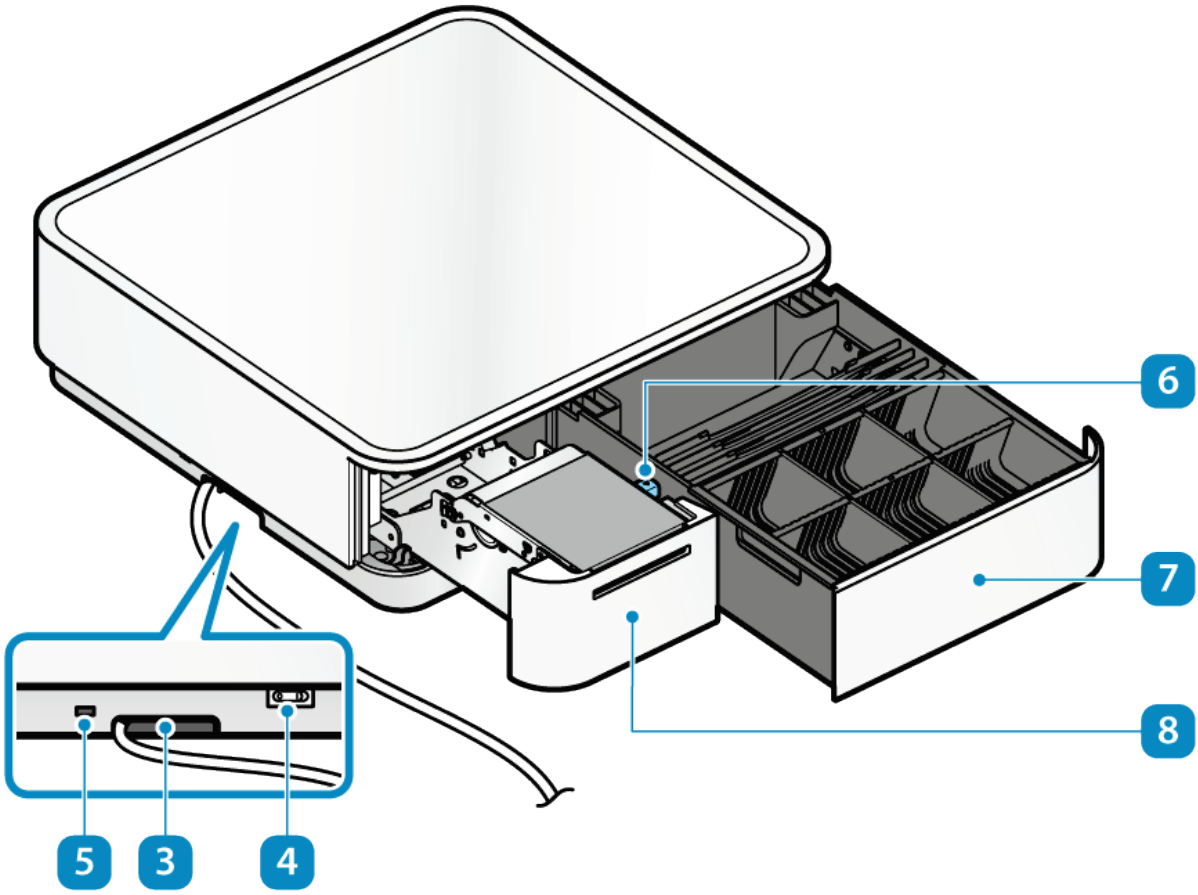
The status of mPOP is indicated through the Power LED or Error LED being lit

3 Cable outlet

The cable connected to mPOP is wired along the bottom and comes out here

Cable outlets are located to the right and left

1.8.2. Inside of mPOP



4 Power switch

Turns the power on/off. | : Power ON ○ : Power OFF

5 Security slot

Attach a commercially available security cable to prevent theft

6 Cover opening lever

Pull this lever towards the front when setting the paper roll

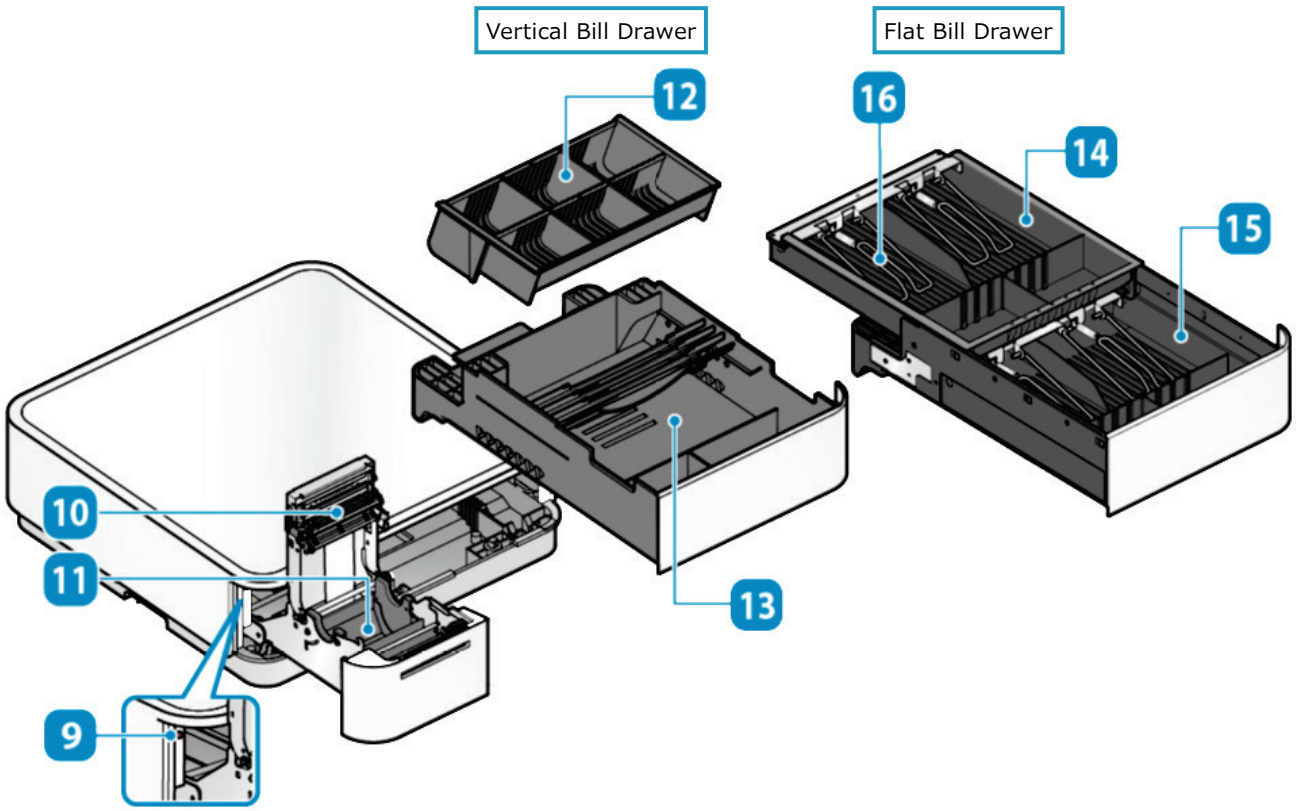
7 Cash drawer

Place bills and/or coins

8 Printer

Prints receipts. Push the front face of the printer to unlock and pull out the printer

1.8.3. Inside of cash drawer/printer



9 **Multi-function button (Refer to "**6. Multi-function button specifications**")**
Use this button when you want to open the cash drawer or test print

10 **Printer cover**
Open when setting thermal paper roll

11 **Paper roll holder**
Sets thermal paper roll

12 **Coin tray (Vertical Bill Drawer)**
Stores coins
The divider for the coin storage space can be installed in the desired position

13 **Drawer tray (Vertical Bill Drawer)**
Can be removed with the bills and coins still in storage

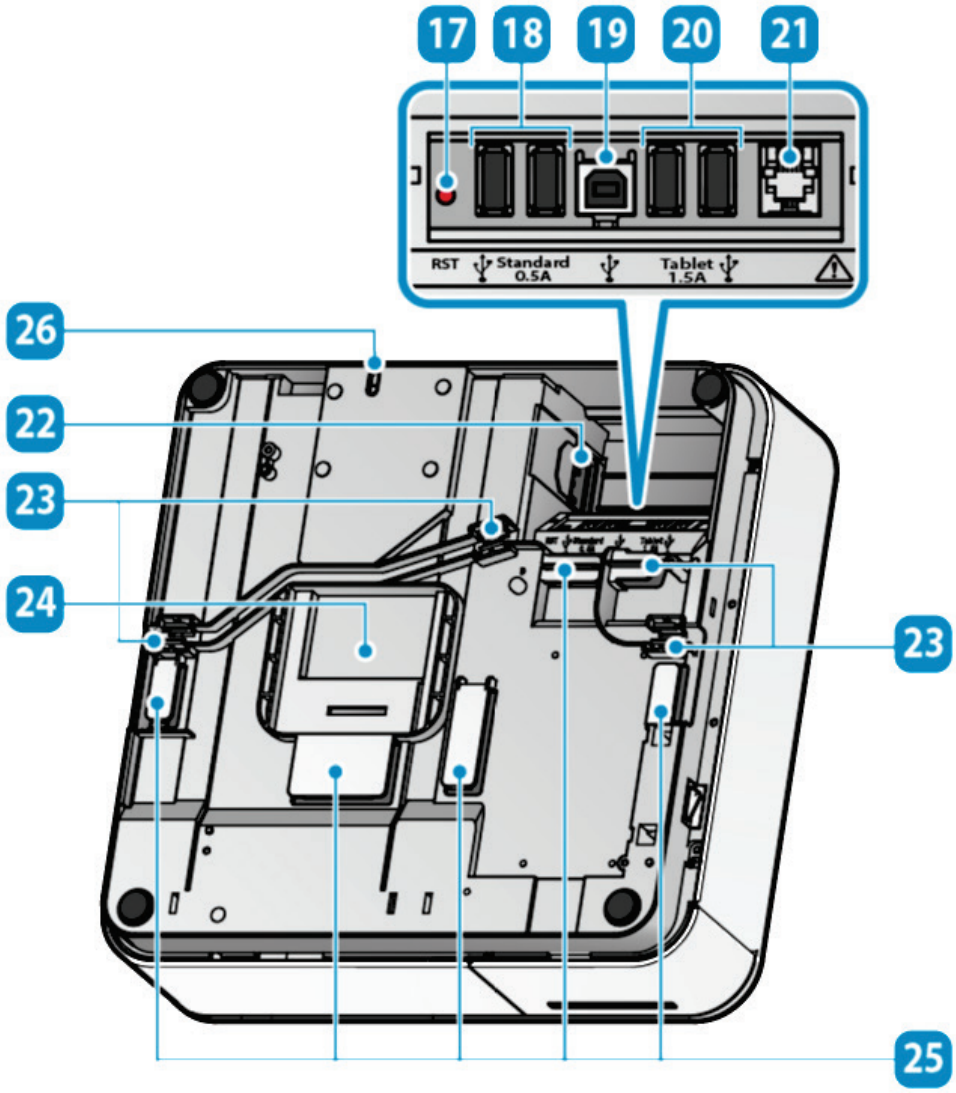
14 **Upper drawer tray (Flat Bill Drawer)**
Combined with the lower drawer tray and can be removed with the bills and coins still in storage
Sliding the upper drawer tray to the back allows the lower drawer tray to be used
The divider for the coin storage space can be installed in the desired position

15 **Lower drawer tray (Flat Bill Drawer)**
Combined with the upper drawer tray and can be removed with the bills and coins still in storage
Sliding the upper drawer tray to the back allows the lower drawer tray to be used
The divider for the coin storage space can be installed in the desired position

16 **Bill retainer (4 locations)**
Retains stored bills

1.8.4. Bottom of mPOP

<POP10>



17 **Bluetooth reset button [RST]**

Initializes Bluetooth settings to factory settings

18 **USB port 0.5A [Standard]**

Connects a barcode reader specified by Star Micronics

In addition, it can recharge USB peripherals

19 **USB port**

It can connect a host computer with a included USB cable

When connecting using Bluetooth, do not connect to a USB port

20 **USB port 1.5A [Tablet]**

Can recharge USB peripherals

It is possible to recharge devices that require high power such as tablets

21 **Drawer kick connector**

Connects to peripheral devices such as a commercially available cash drawers.

22 **Power socket**

Connects the power cable that comes with mPOP

23 **Power cable hook**

Wires cables can be wired to the cable outlet on the right and left

24 **Bracket attachment slot**

Attach to the mounting bracket to prevent mPOP from falling over

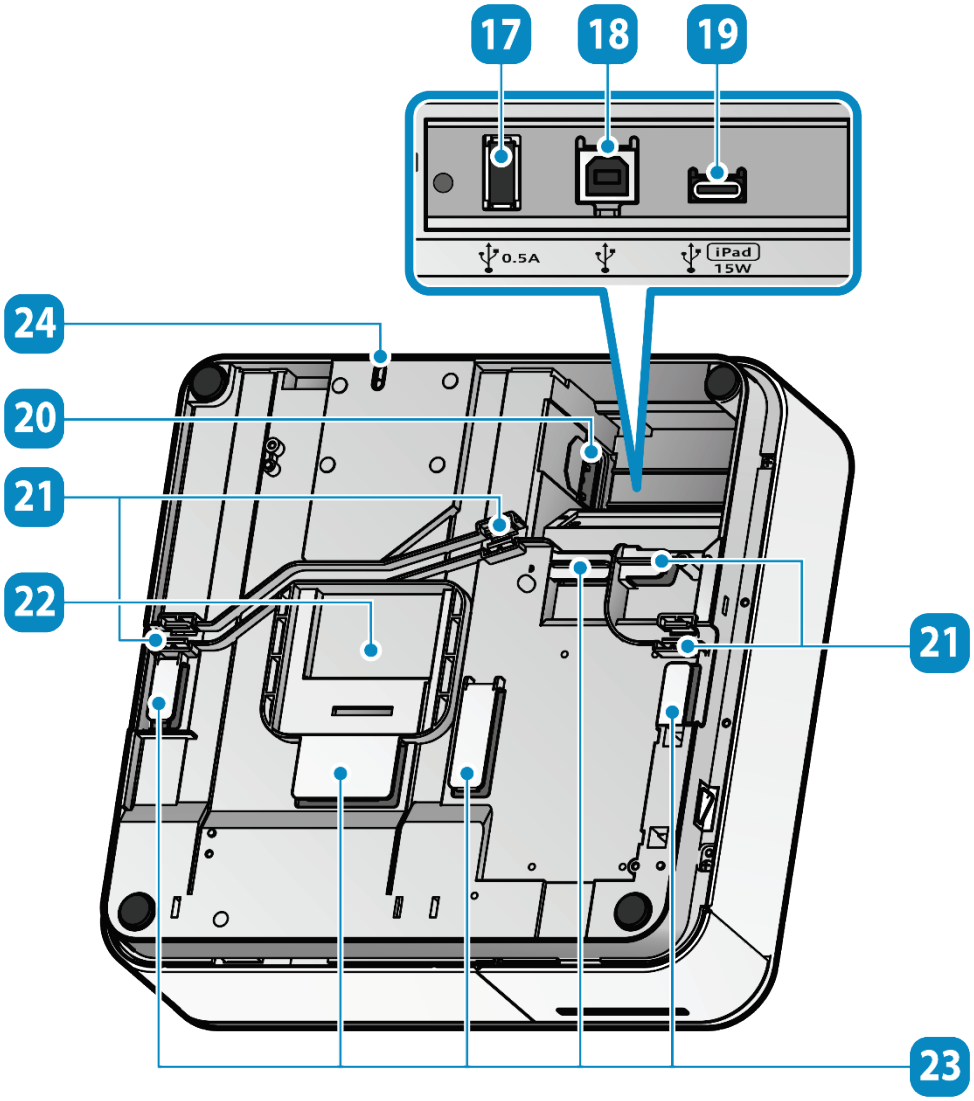
25 **USB cable hook**

Wires cables for the USB peripherals to the cable outlet on the right and left

26 **Lock release lever**

Used to open the cash drawer

<POP10CI>



17 **USB-A port 0.5A[Standard]**

Connects to and communicates with a barcode reader specified by Star Micronics.

Can also recharge other USB peripherals.

18 **USB-B port [Windows]**

Connects to a PC using the USB cable that comes with mPOP.

F/W Ver4.0 or later: Only connects to an Android device via a commercially available USB conversion adapter.

When connecting using Bluetooth, do not connect to this USB port.

19 **USB-C port 15W [iPad / Android]**

Connects to USB peripherals. In addition, it can connect to and recharge an iOS device (maximum 15 W).

F/W Ver5.0 or later: Connects to and recharges an Android device (maximum 15 W).

It is possible to recharge devices that require high power such as tablets.

20 **Power socket**

Connects the power cable that comes with mPOP.

21 **Power cable routing hooks**

The power cable can be routed to the cable outlet on the right or left side.

22 **Bracket mounting slot**

Attach to the mounting bracket to prevent mPOP from falling over.

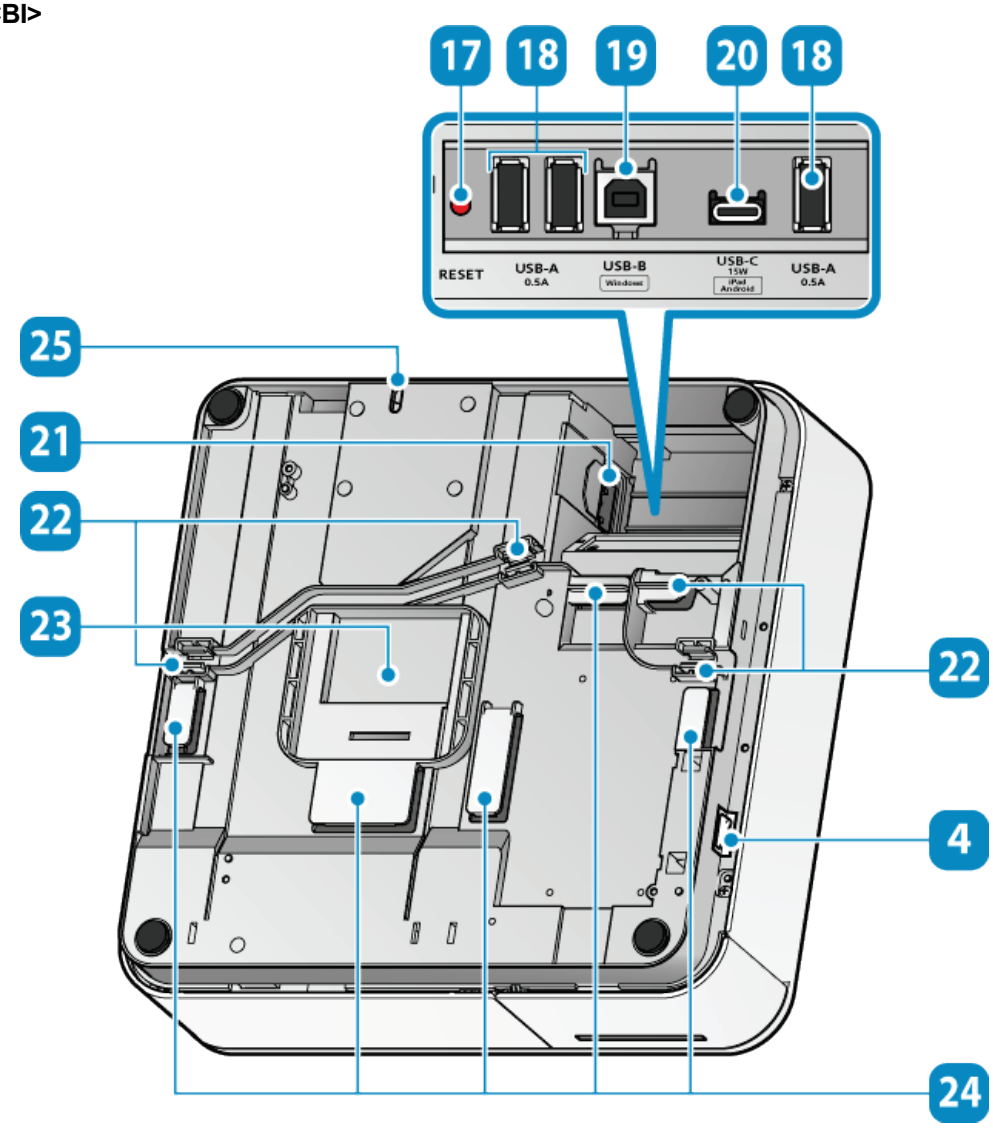
23 **USB cable routing hooks**

Cables for connected USB peripherals can be routed to the cable outlet on the right or left side.

24 **Lock release lever**

Used to open the cash drawer.

<POP10CBI>



Bluetooth reset button [RESET]

Initializes Bluetooth settings to factory settings.

USB-A port 0.5 A

Connects to a barcode reader specified by Star Micronics.

In addition, it can recharge USB peripherals.

USB-B port [Windows]

Connects to a PC with the included USB cable.

When connecting via Bluetooth, do not use this USB port.

USB-C port 15 W[iPad / Android]

Connects to USB peripherals.In addition, it can connect to and recharge an iOS device or Android device (maximum 15 W).

It is possible to recharge devices that require high power such as tablets.

21 **Power socket**

Connect the included power cable.

22 **Power cable hook**

Wires the power cable to the cable outlet on the right and left.

23 **Bracket attachment slot**

Attach to the mounting bracket to prevent mPOP from falling over.

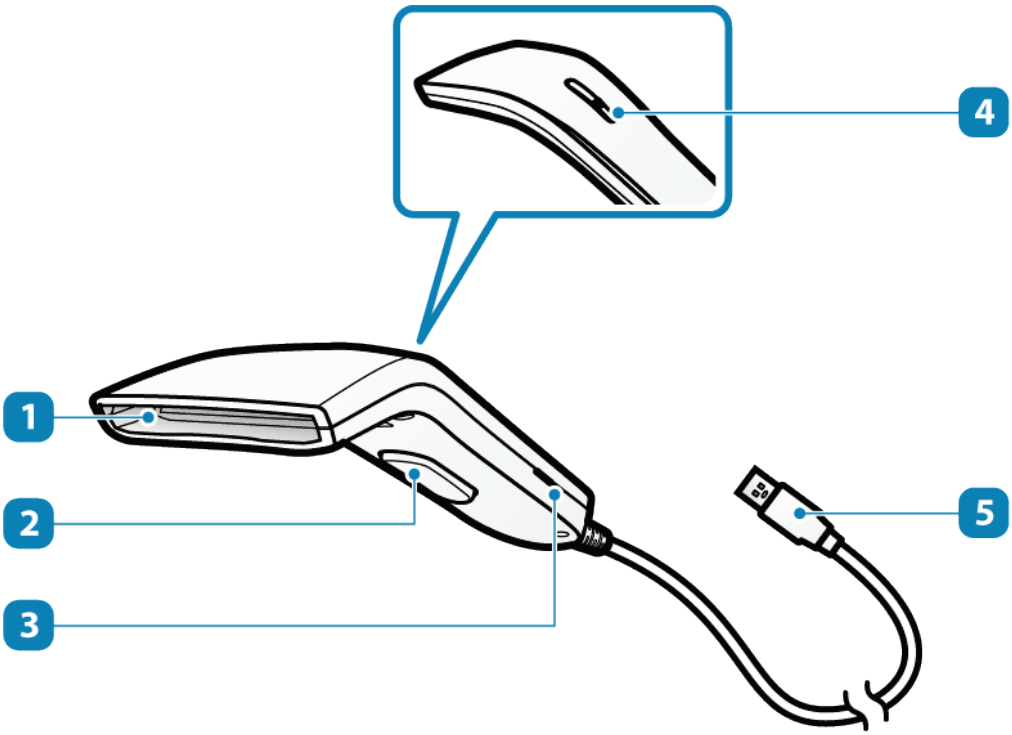
24 **USB cable hook**

Wires cables for the USB peripherals to the cable outlet on the right and left.

25 **Lock release lever**

Used to open the cash drawer.

1.8.5. Barcode reader



1 Scanner window

Scan with the red light to read the barcode

2 Trigger switch

Press the switch to enter standby mode for barcode reading

3 Buzzer hole

Will beep when the barcode reader is started or when it successfully reads a barcode

The beep sound ON/OFF can be changed from Star Quick Setup Utility.

4 LED

Lights up when barcode reading is successful

5 USB connector

Connects to the USB port 0.5A of mPOP

2. Product Specifications

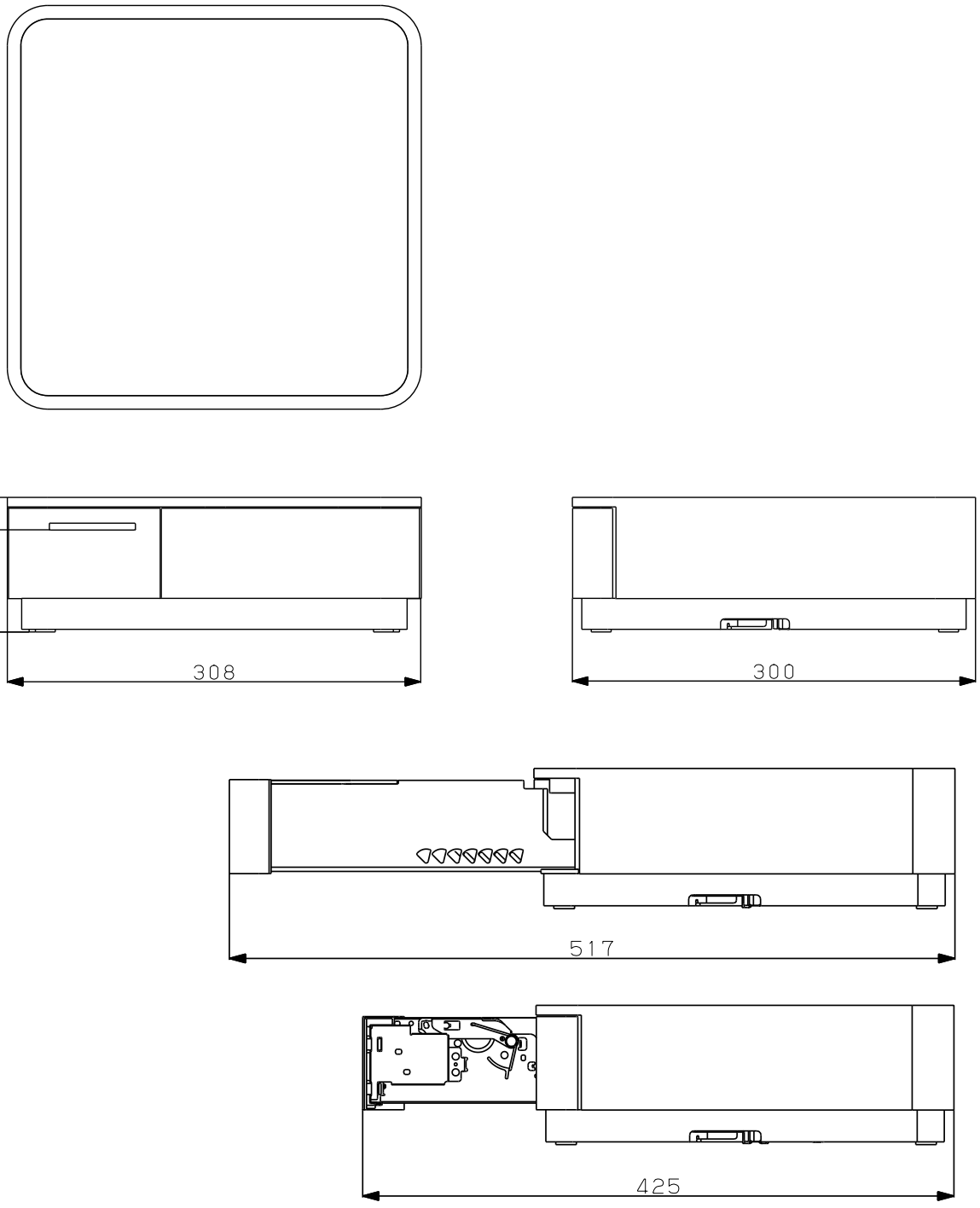
2.1. General specifications

(1) mPOP size

1)	Basic size	:	Approximately [W] 308 mm x [D] 300 mm x [H] 100 mm
2)	When cash drawer is opened	:	Approximately [W] 308 mm x [D] 517 mm x [H] 100 mm
3)	When printer pulled out	:	Approximately [W] 308 mm x [D] 425 mm x [H] 100 mm
4)	Receipt discharge position	:	76 mm from the bottom surface of the product

<Notes>

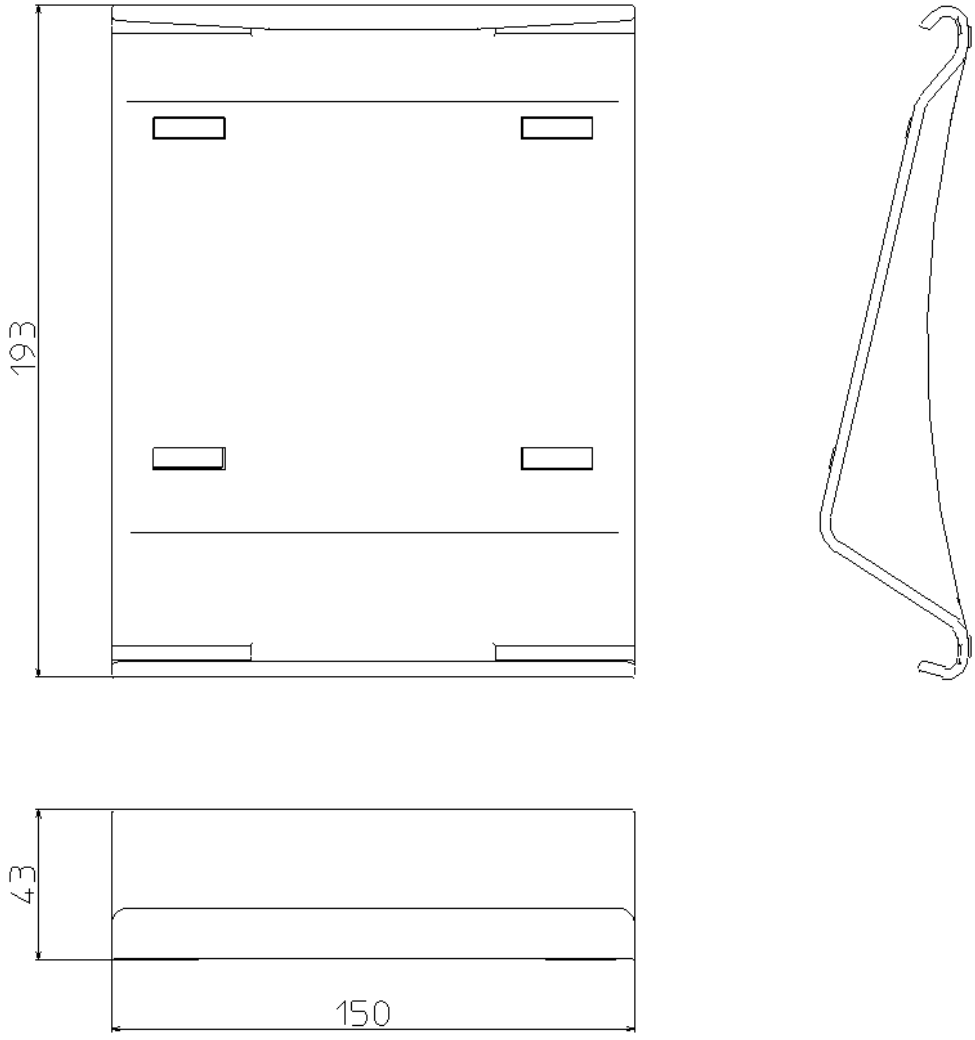
The height dimensions include the height of the rubber legs



(2) Tablet stand size : Approximately [W] 150mm x [D] 193 mm x [H] 43 mm

<Notes>

The height dimensions include the height of the rubber legs



(3) mPOP weight :Approximately 3.9 kg

<Notes>

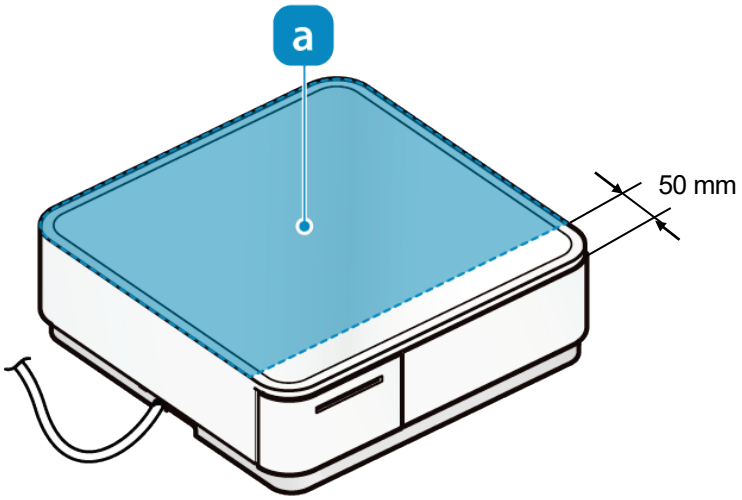
The above value does not include the thermal paper roll, power cable, tablet stand and any other attachments (including options)

(4) mPOP body color

- White model : Snow white
- Black model : Piano black

2.2. Withstanding load of the top surface of the body

(1) Withstanding load of the top surface of the body : 8 kg



<Notes>

1) Do not place anything on the top surface that is in excess of the withstanding load. It may prevent the cash drawer from opening/closing or the printer from being pulled out/in
2) If a device is to be set on the top surface of mPOP, always confirm in advance that mPOP is operating normally
3) Do not place any objects to the front side of the surface of mPOP (within a 50 mm distance from the mPOP front surface)
   It may prevent the cash drawer from opening/closing or the printer from being pulled out/in

2.3. Noise level

(1) A-weighted sound pressure level : 49 dB

<Notes>

1) The above noise level is based on Star Micronics evaluation conditions that comply with the JIS X7779 Standard
   The microphone position should be in bystander position
2) The noise levels will vary depending on the thermal paper that you use, the contents that you are printing, and the printer settings (print speed and print density)

2.4. Printer orientation

(1) Select a flat location (acceptable range of device: ±3°) to install mPOP

<Notes>

1) 3° is the state where mPOP is raised approximately 5 mm from the horizontal state
2) This machine is designed to be installed horizontally, and when it is tilted more than the allowable range, the opening and closing of the cash drawer, printing operation, the sheet conveying operation of the printer may not operate normally
3) This installation attitude of ±3° should be adhered to when using the optional mounting bracket

2.5. Environmental specifications

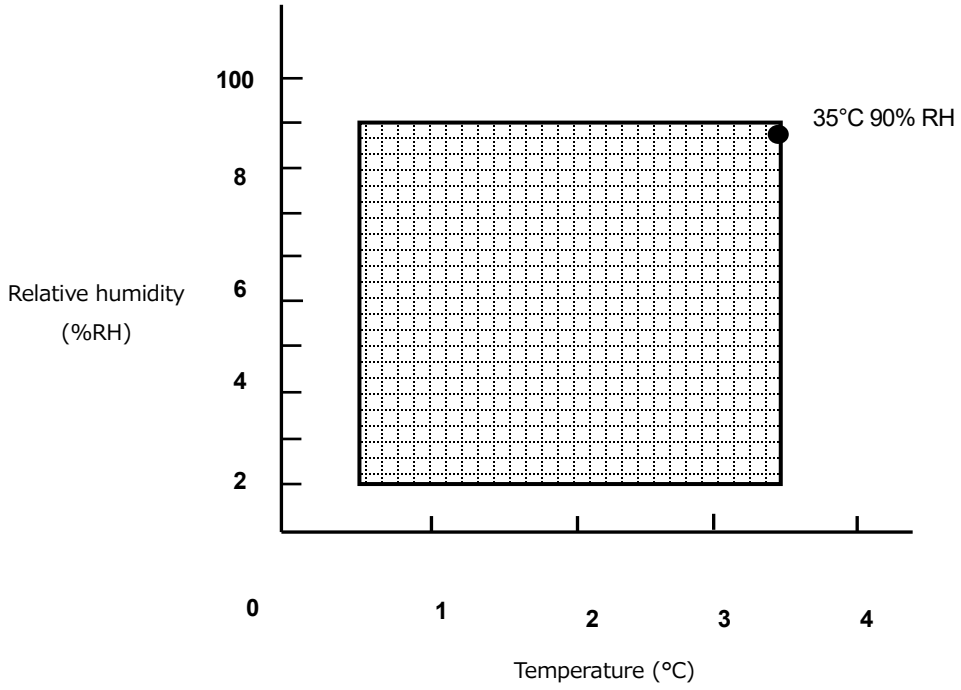
2.5.1. Temperature/Humidity

(1) During operation

1) Temperature : 5°C to 35°C

2) Humidity : 10%RH to 90%RH (No condensation)

3) Range of operational temperature/humidity : Refer to the following diagrams



(2) Storage environment (excluding thermal roll paper)

1) Temperature : -20°C to 60°C

2) Humidity : 10 to 90%RH (No condensation)

<Notes>

The combination of 35°C and 90% RH (no condensation) is considered the worst value regarding high temperatures and humidity

2.5.2. Dust

(1) Acceptable level : That it should not affect operation in a normal office environment.

2.5.3. Altitude

(1) Less than 2000 m above sea level

2.6. Reliability

2.6.1. Cash drawer

(1) Opening and closing life of the cash drawer : 300 thousand times

<Notes>

The above life value is according to our company evaluation condition

2.6.2. Printer

(1) Machine service life : 20 million lines of printing

(2) Thermal print head life : 100 km

(3) MCBF : 60 million lines

(4) MTBF : 360 thousand hours

<Notes>

1) The above life value is based on Star Micronics evaluation conditions
2) Life expectancy is defined as the point at which the part enters its wear-out failure period
3) The conditions below are for satisfying the reliability specifications above
   - Average printing rate : 12.5%
   - Recommended thermal paper : Described in "4.7 Recommended thermal paper roll"
4) When two or more adjacent dots are damaged, the head is defined to have reached the end of its service life. However, it excludes destruction by adhesion of foreign matter (scratch), or artificial destruction
5) When printing operations are repeated at extremely high printing rates, the life of the thermal print head will be notably reduced. Carefully consider your print format before printing
6) The above values provide reliability specifications assuming that all printing operations use the recommended thermal paper. Reliability cannot be guaranteed if a different paper is used
7) The MCBF is defined as a general interval of failures, including random failures and wear-out failures, that occurs before a machine body service life of 20 million lines is reached
   <Note> Mechanical life is 20 million lines. MCBF 60 million lines does not refer to durability life
8) MTBF is defined as the general failure interval during the random-failure period and includes circuitry systems.
   <Note> MTBF is an indicator of reliability. It is not an assurance of 360,000 hours of operability.

2.6.3. Auto cutter life

(1) Partial cut mode : 1 million cuts

(2) Full cut mode : 500 thousand cuts

(3) Mixture of partial cut mode and full cut mode : 300 thousand cuts

<Notes>

1) The above values provide reliability specifications assuming that all printing operations use the recommended thermal paper. Reliability cannot be guaranteed if a different paper is used.
2) When partial cut mode and full cut mode is mixed, the reliability life is the reliability specifications when each cut mode is performed alternately

2.7. Detection functions

(1) Cash drawer unit

1) Drawer open detection : Detects open drawer condition of the cash drawer

(2) Printer

1) Paper end detection : Detects the end of the thermal paper roll
2) Cover open detection : Detects the open/close condition of the printer cover
3) Cutter error detection : Detects whether the cutter blade is in the specified position
4) Printer unlock detection : Detects whether the printer is pulled out or not

The mPOP operation limit when the above 1) to 4) are detected is as shown in the table below

Function	Operation restriction
Cash drawer	None
Printer	Cannot print

<Notes>

For LED display specifications and error specification at the time of detection, refer to "10. LED Display" and "11. Error specifications"

5) Thermal print head temperature detection : The temperature is detected by the thermistor that is installed in the substrate of the thermal print head. The following operation restriction is performed according to the detected temperature

① Printing length within 300 mm

Temperature	Operation restriction
to 70°C	None
75°C or more	Stop the printing until the thermal head temperature is lower than 70°C

② Printing length more than 300 mm

The operation will be as follows, depending on the amount of change in the thermistor detected temperature when the printing starts

[Operation restriction a] Operation restriction in the case the thermistor detects temperature lower than 65°C

Temperature	Operation
When printing starts Temperature to +10°C	Normal printing
+10°C to +20°C	Throughput restriction
+20°C or greater	Stop printing until the temperature is less than +15°C from the temperature when the printing started

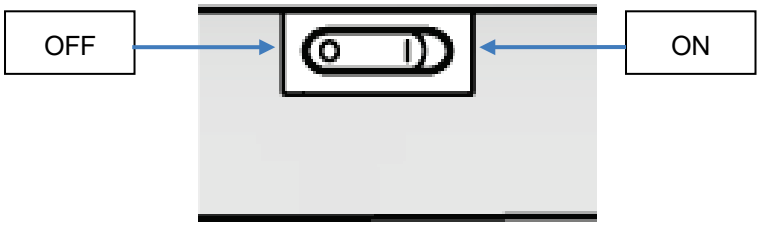
At the time when the thermistor detects 75°C [Operation restriction b] will be applied

[Operation restriction b] Operation restriction in the case the thermistor detects temperature higher than 75°C

Temperature	Operation restriction
to 70°C	None
75°C or greater	Printing stopped until the thermistor detects 70°C

2.8. Power specifications

(1) Power switch : Seesaw switch



(2) Power supply type and rating

1) Power type : Interal AC adapter

2) Input rating : AC100V - AC240V, 1.4A, 50/60Hz

(3) Power consumption (Includes internal adapter)

1) Power switch OFF : Approx. 0.09 W

2) When idling with the power ON

(POP10 when maximum power is provided by all the USB ports) : Approx. 29 W

(POP10CI when maximum power is provided by all the USB ports) : Approx. 25 W

(POP10CBI when maximum power is provided by all the USB ports) : Approx. 30 W

When idling with the power ON (When no power is provided by USB) : Approx. 3.0 W

3) ASCII characters

(POP10 when maximum power is provided by all the USB ports) : Approx. 46 W

(POP10CI when maximum power is provided by all the USB ports) : Approx. 42 W

(POP10CBI when maximum power is provided by all the USB ports) : Approx. 47 W

ASCII characters (When no power is provided by USB) : Approx. 20 W

<Notes>

1) The above power consumption is based on our company evaluation conditions

2.9. Power cable specifications

(1) Cable length : 1,800 mm

(2) Cable color

1) White model : White

2) Black model : Black

<Notes>

Do not use anything other than our specified power cable because it may cause failure or malfunction

3. Cash Drawer Specifications

3.1. Drawer tray layout

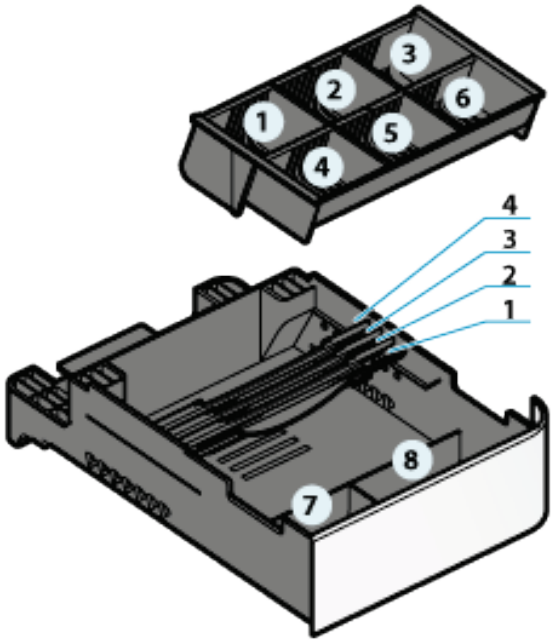
3.1.1. Layout of Vertical Bill Drawer

(1) Drawer tray layout specifications

Destination	Banknotes	Coins
US model	4 types	6 types
JP model	4 types	6 types
E+U model	4 types	8 types
Other models	4 types	8 types

<Notes>

1) The layout specifications above distinguish the factory default settings
2) Using the attached divider allows customization of the layout. Up to 4 types of bills and 8 types of coins can be stored. Refer to “9.4. Change the layout of the coin storage space” for details on moving the divider
3) The layout for four types of banknotes and eight types of coins uses the utility space underneath the coin tray
4) The utility space can be used for storage of banknotes and coins that do not fit the size



3.1.2. Layout of Flat Bill Drawer

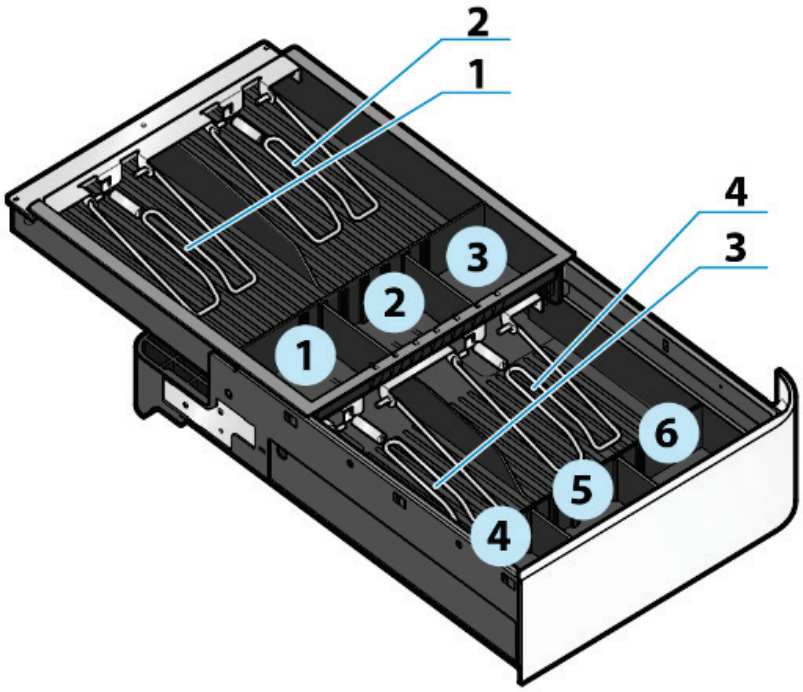
(1) Drawer tray layout specifications

Destination	Banknotes	Coins
US model	4 types	4 types

<Notes>

1) The layout specifications above distinguish the factory default settings
2) Using the attached divider allows customization of the layout. Up to 4 types of bills and 8 types of coins can be stored. Refer to “9.4. Change the layout of the coin storage space” for details on moving the divider

   The layout for four types of banknotes and eight types of coins uses the utility space underneath the coin tray



3.2. Cash drawer opening mechanism specifications

(1) Dynamic opening mechanism : DC motor

3.3. Drawer open error

If something prevents the cash drawer from opening, mPOP will repeat the retry operation three times. If the retry operation will not change the condition of the cash drawer, it will be deemed that the opening operation has failed, and be treated as drawer opening error.

3.4. Notes on usage

(1) Smooth out any bends and folds the bill may have before storing. It may prevent the cash drawer from opening
(2) When storing bills and coins, make sure they are not piled higher than the sides of the coin tray or drawer tray. It may prevent the cash drawer from opening
(3) When storing anything other than banknotes and coins in the cash drawer, depending on the weight of the storage material, the opening and closing operation may not perform correctly. In these circumstances, remove the stored items
(4) Do not apply excessive strength to the cash drawer when it is open. It may cause the parts to be broken
(5) When removing the coin tray from the drawer tray, do not hold it by the divider. It may cause the parts to be broken
(6) Do not store too many items in the utility space underneath the coin tray section. The coin tray may be elevated and the cash drawer may not open
(7) If the mounting position of mPOP exceeds the acceptable range, the cash drawer may not open sufficiently. For more information on the installation position, refer to "2.5. Printer orientation "
(8) Forcefully operating the cash drawer may cause the forceful ejection of coins.
(9) The upper and lower drawer trays are used as a set.
The lower draw tray cannot be used by itself.

3.5. Storage capacity

3.5.1. Storage capacity of Vertical Bill Drawer

(1) Banknotes : Maximum 30 banknotes for each partition

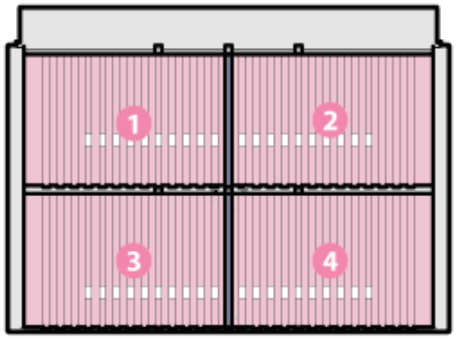
<Notes>

The number above is for cases when storing new banknotes

(2) Coins : The following shows the number for major currencies stored when all the partition are divided evenly. The following number is for reference only and does not guarantee that this will be the case

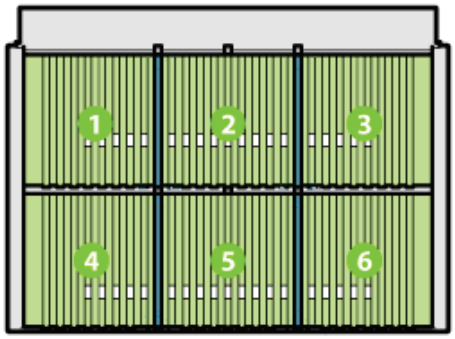
➢ USD ($) : 4 coins

Types of coins	Stored number of coins	
	①②	③④
1 ¢	170	130
5 ¢	130	90
10 ¢	200	160
25 ¢	110	80



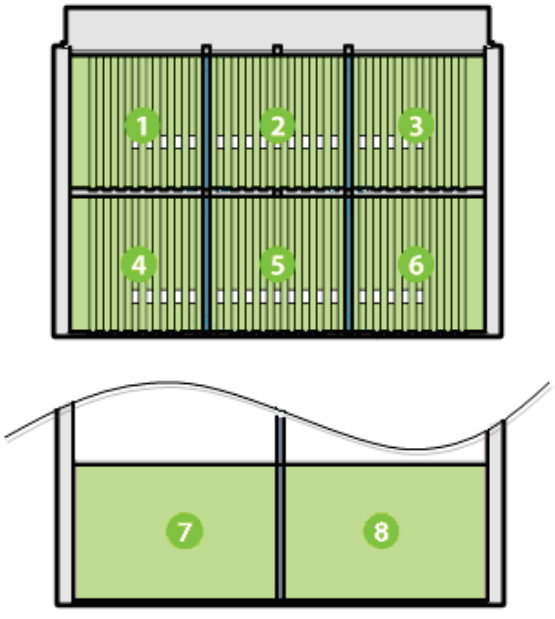
➢ YEN (¥) : 6 coins

Types of coins	Stored number of coins	
	①②③	④⑤⑥
1 YEN	90	75
5 YEN	70	55
10 YEN	70	55
50 YEN	70	55
100 YEN	70	55
500 YEN	55	45



➢ EUR (€) : 8 coins * When the utility space beneath the coin tray is used

Types of coins	Stored number of coins		
	①②③	④⑤⑥	⑦⑧
1 ¢	90	75	60
2 ¢	90	70	60
5 ¢	90	70	60
10 ¢	90	70	60
20 ¢	65	55	50
50 ¢	65	50	50
€1	65	50	40
€1	55	40	30



3.5.2. Storage capacity of Flat Bill Drawer

(1) Banknotes : Maximum 100 banknotes for each partition

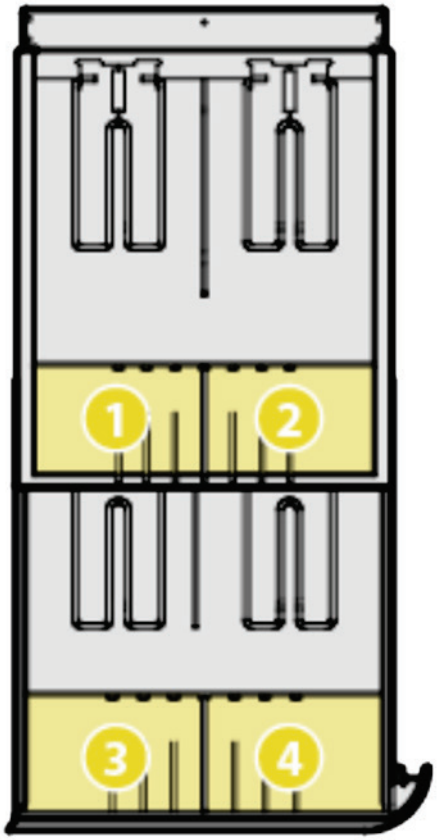
<Notes>

The number above is for cases when storing new banknotes

(2) Coins : The following shows the number for major currencies stored when all the partition are divided evenly. The following number is for reference only and does not guarantee that this will be the case

➢ USD ($) : 4 coins

Types of coins	Stored number of coins
	①②③④ common
1 ¢	80
5 ¢	50
10 ¢	100
25 ¢	40



4. Printer Specifications

4.1. Introduction

(1) When using the barcode reader and scanners to read the barcode and letters, depending on the used device and thermal paper roll, reading may not be obtained in a satisfactory manner. Therefore it is strongly recommended that sufficient verification be performed beforehand.

(2) When printing material using graphics, depending on the graphic, sufficient printing quality may not be obtained . For this reason, implement a proper printing test, and at the same time adjust the quality and size of the graphics as necessary

(3) When you print barcodes, their reading accuracy depends on the scanner's performance. If adequate reading results cannot be attained when you scan barcodes that have been printed from this printer, make adjustments such as changing the print density. In addition, changing the printing speed, or enlarging the module size of barcodes and such are effective methods for adjustment

4.2. General specifications

(1)	Printing method	: Direct line thermal printing
(2)	Print head	: Line thermal print head
(3)	Dot configuration	: 432 dots/line
(4)	Dot density	: 203 dpi x 203 dpi 8 dots/mm
(5)	Printing mode	: Black and white printing
(6)	Paper feed	: Friction feed method
(7)	Paper feeding pitch	: 0.125 mm
(8)	Emulation	: StarPRNT
(9)	Character spacing	: Programmable
(10)	Line width	: Programmable
(11)	Top margin	: 11 mm
(12)	Minimum receipt length	: 35 mm

<Notes>
If the receipt length is less than 35 mm, there may instances where the receipt cannot be obtained

4.3. Decal function

In order to fix the curl in the thermal paper roll, mPOP is equipped with a de-curling function. This feature is built into the paper transportation path in the printer, and the de-curling mechanism is always operating when the paper is being conveyed

<Notes>

1) This feature is to correct the curl only, and does not completely rid the paper of the curl
2) Depending on the standing time after the receipt is printed (interval to the next printing), a slight bend on the top part of the receipt may occur
3) Depending on the environment where mPOP is used, and the type of thermal paper roll that is used, the extent of the curl correction differs
4) Depending on the thermal paper roll type and the remaining amount of thermal paper on the roll, the receipt may be warped in a direction opposite to the normal direction because of the curl correcting function

4.4. Horizontal reduced printing function

If the horizontal direction reduced printing function is enabled, the print area data of 72 mm can be printed at the following reduction ratio according to the printing area setting.

Printing area setting	Reduction ratio of the print area data of 72 mm
48.0 mm	67%
50.8 mm	67%
54.0 mm	75%

<Notes>

1) The enable/disable setting for the horizontal reduced printing function can be changed from the memory switch setting
   For information on changing the memory switch, refer to "12.8. MSW8 "
2) If the horizontal direction reduced printing function is enabled, the barcode is also the target for reduction

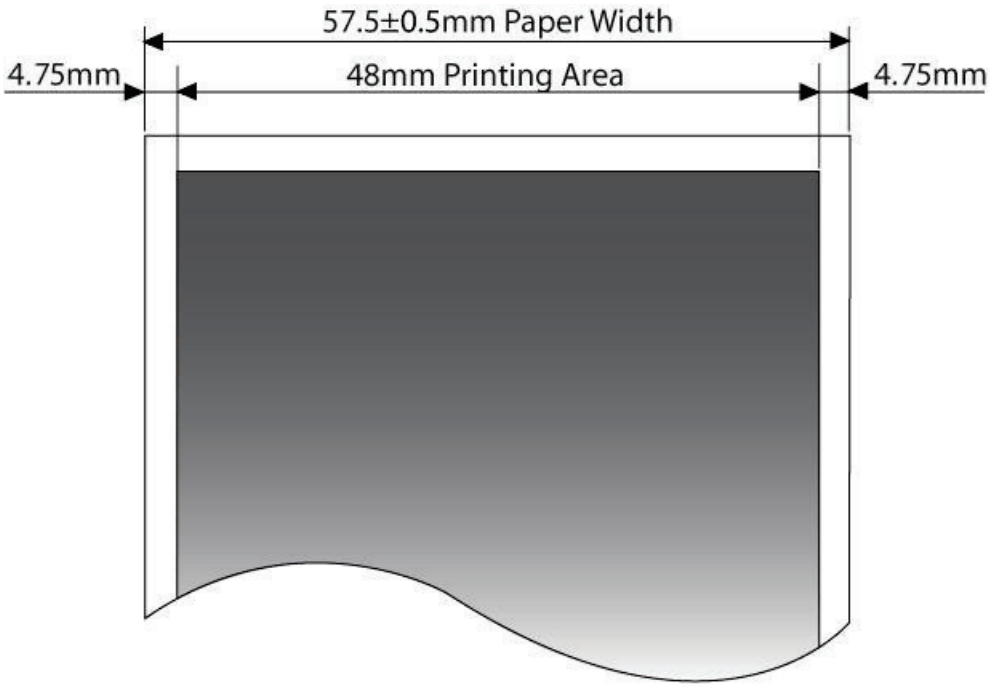
4.5. Effective printing width

Effective printing The width can be selected from 48.0 mm (384 dot), 50.8 mm (406 dot), 54.0 mm (432 dot)
The effective print width setting can be changed from Star Quick Setup Utility or the memory switch settings
For information on changing the memory switch, refer to "12.5. MSW4 "

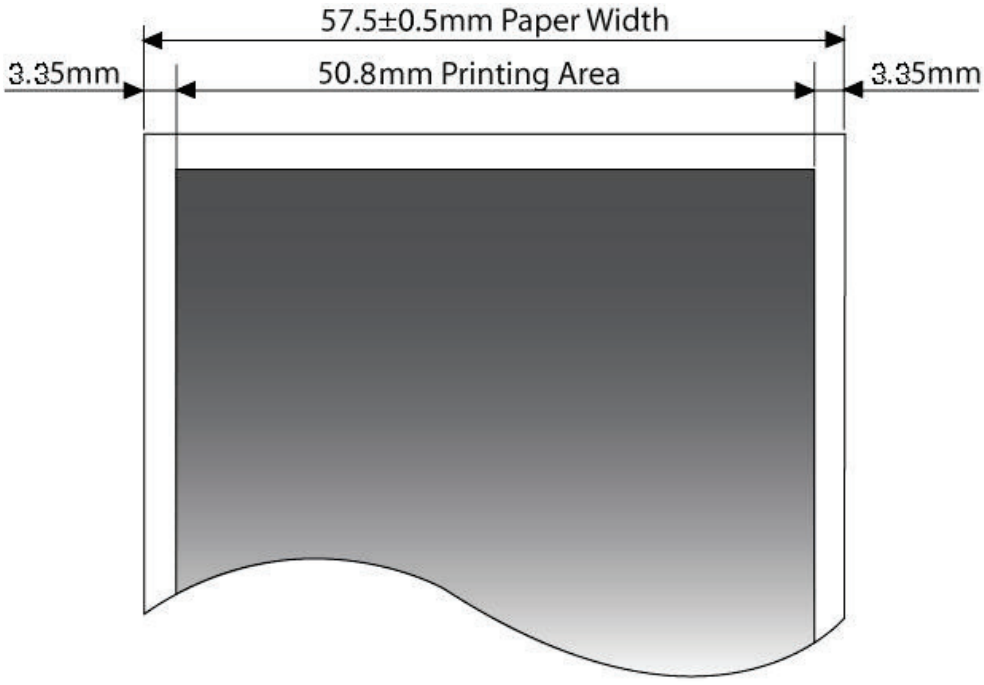
<Notes>

For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications"

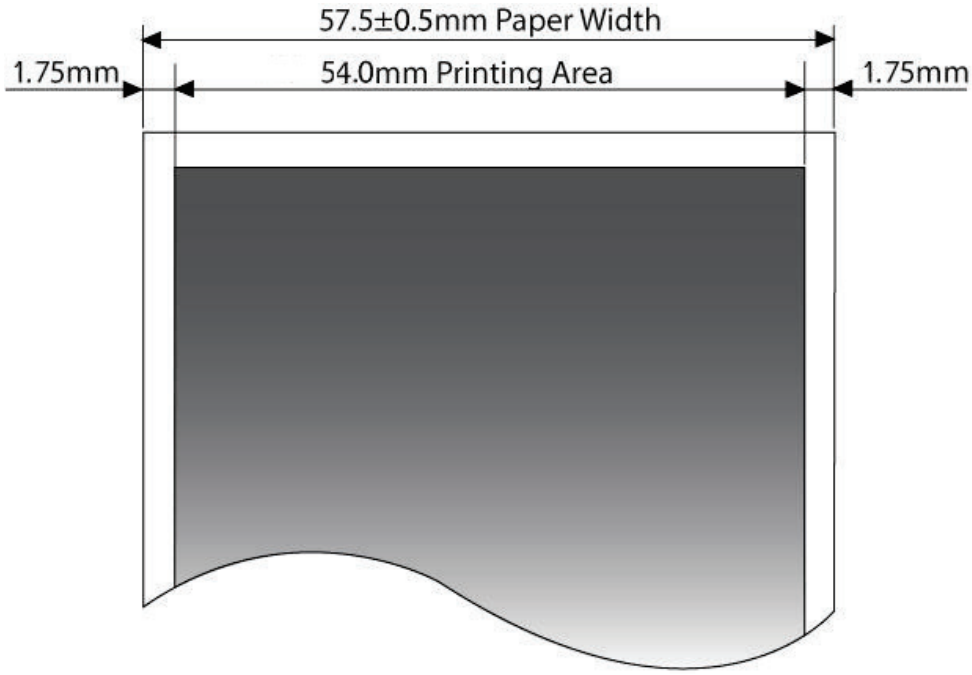
(1) Printing region : 48.0 mm (Factory defaults)



(2) Printing region : 50.8 mm



(3) Printing region : 54.0 mm



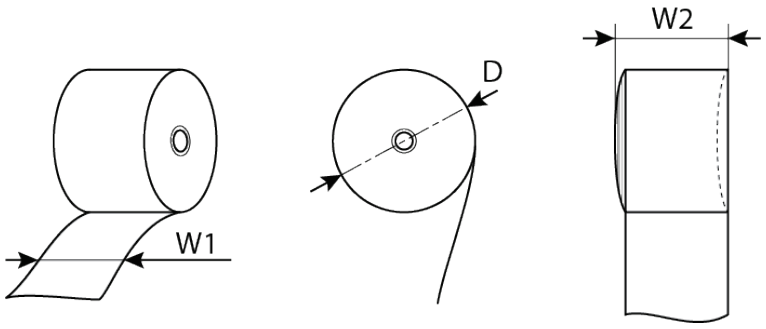
4.6. Thermal roll specifications

4.6.1. Thermal roll specifications

(1) Paper width (W1) : 57.5±0.5 mm

(2) Maximum roll diameter (D) : Φ50 mm

(3) Curling dimension (W2) : 58.0 +0.5, -1 mm



<Notes>

When an out of specification thermal paper roll is used, there are cases where the sheet conveyance may malfunction, so do not use this at all

(4) Paper thickness : 53 to 75μm

(5) Inside/outside axis dimension : Inside Φ12±1 mm/Outside Φ18±1 mm

(6) Paper roll finished state

1) Color surface : External surface of thermal paper roll
2) Termination : Do not fix the end of the thermal paper roll to the axis by glue or tape
3) Termination : The trailing edge should not be folded
4) Winding state
   a) The ends of the thermal paper roll should not be broken or deformed stemming from an uneven state
   b) That there are no protrusions from the edge of the thermal paper roll edge surface
   c) That the thermal paper roll is not loosely rolled
   d) That the thermal paper roll external shape and axis is not deformed

<Notes>

The specifications of the paper thickness are indicated in "4.7 Recommended thermal paper roll" and is not intended to guarantee support for all thermal paper rolls within the specification range

4.6.2. Notes on pre-printed paper use

Thermal paper rolls that have been pre-printed may not convey properly due to color or density, or printing may stop due to mistakenly detected paper edges. Therefore when using pre-printed thermal paper rolls, always confirm beforehand that proper sheet conveyance can be performed.

(1) PCS value (black) : PCS value of the pre-printed (black) should be at 0.75 or less

(2) Pre-printed density : Thin printing is recommended for pre-printing

(3) Pre-printed continuous length : Recommended range is less than 8 mm if continuous dark printing is to be continued. If the pre-printed dark printing is continued for 8mm or more, paper may not be detected

4.7. Recommended thermal paper roll

Manufacturer	Product Name	Quality Characteristics and Use	Paper thickness (μm)
Mitsubishi Paper Mills Limited	P220AG	Normal type	65
	HP220A	Long-storage type	65
Nippon Paper Industries	TF50KS-E2D	Normal type	59
	TF60KS-E	Normal type	75
Oji Paper Company	PD150R	Normal type	75
	PD160R	Long-storage type	75
Domtar (Appvion)	Domtar POS 48S-2.1 (Alpha 400-2.1)	Normal type	53
	Domtar POS 55S-2.3 (Alpha 400-2.3)	Normal type	58
Koehler	KT48F20 (Discontinued by the manufacturer)	Normal type	53
	KT48FA	Normal type	53
Mitsubishi Hitec	F5041(55) (Discontinued by the manufacturer)	Normal type	60
	F5047(55)	Normal type	60

<Notes>

1) The recommended paper product name may change or production of it may stop without any notice, due to reasons on the manufacturer side
2) For specifications and details of the recommended paper, please contact the manufacturer

4.8. Print speed

Speed setting	Print speed	Factory defaults
High speed	100 mm/sec	✓
Low speed	50 mm/sec	

<Notes>

1) Change in the power supply voltage, temperature conditions of the thermal print head and printing patterns may automatically change the printing speed.
2) The data transfer rate may become slow in these circumstances
3) The effective print width setting can be changed from Star Quick Setup Utility or memory switch settings
   For information on changing the memory switch, refer to "12.3. MSW2 "
   For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications"

4.9. Recommended print density setting

As coloring characteristics are different for each thermal paper, and the thermal print head have individual differences in its heating properties, it is necessary to perform the optimum printing density setting to match the thermal paper roll being used

Manufacturer	Product Name	Density setting
Mitsubishi Paper Mills Limited	P220AG	Standard
	HP220A	Standard
Nippon Paper Industries	TF50KS-E2D	Standard
	TF60KS-E	Standard
Oji Paper Company	PD150R	+1
	PD160R	+2
Domtar (Appvion)	Domtar POS 48S-2.1 (Alpha 400-2.1)	+2
	Domtar POS 55S-2.3 (Alpha 400-2.3)	+2
Koehler	KT48F20	+1
	KT48FA	+1
Mitsubishi Hitec	F5041(55)	Standard
	F5047(55)	Standard

<Notes>

1) Print density settings can be changed from Star Quick Setup Utility or memory switch settings.
   If you change the memory switch, refer to "12.3. MSW2"
   For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "
2) The above values, is a case in which printing is performed at the default print density setting, with the power supply voltage at 24V, and the ambient temperature at 25°C

4.10. Auto cutter specifications

4.10.1. General specifications

(1)	Cutting method	:	Guillotine type
(2)	Cutting mode	:	Supports partial cut and full cut
(3)	Cutting mode switching method	:	Switch by command
(4)	Partial cut position	:	Center one point with 2 mm remaining
(5)	Cutting duty	:	3 seconds/cut
(6)	Cutting time	:	Approximately 0.4 seconds
(7)	Paper thickness	:	53 to 75μm
(8)	Cutting position	:	The distance from the printing to the cutting position is 11 mm
(9)	Minimum cutting length	:	35 mm
(10)	Home position detection	:	Home position of cutter blade detected

4.10.2. Cutter error

If, after two retries, it is detected that the cutter blade has not returned to the home position, it will be deemed a cutter error

4.10.3. Notes when designing receipt image

(1) When printing after cutting the paper, it is recommended that you feed at least 0.5 mm (4-dot line) of paper

* If you continue to print without feeding the paper as explained above, a paper jam may occur.

(2) It is recommended that the blank margin from the final printing position to the cutting position be set to at least 5 mm.

4.10.4. Notes on usage

Remove the receipt after the cutting operation has completely finished. If you try to remove the receipt before the cutting operation has completely finished, the receipt could rip or a small piece of paper may be formed, and if this small piece of paper gets stuck inside the cutter, it may cause the cutter not to operate normally

4.11. Printing positions

Effective printing width (mm)	Font (Width x Height)		Digits
48.0	Font-A	12 x 24 dots	Up to 32 digits
	Font-B	9 x 24 dots	Up to 42 digits
50.8	Font-A	12 x 24 dots	Up to 33 digits
	Font-B	9 x 24 dots	Up to 45 digits
54.0	Font-A	12 x 24 dots	Up to 36 digits
	Font-B	9 x 24 dots	Up to 48 digits

<Notes>

The printing count setting can be changed using Star Quick Setup Utility or through the memory switch settings

If you change the memory switch, refer to "12.4. MSW3 "

For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications"

4.12. Font specifications

(1) Font specifications

1) European and US letter code

- Code Page : Supported
- UTF-8 : Supported (specific font only)

2) Chinese/Japanese fonts

- Japanese : Supported
- Traditional Chinese (GB2312) : Supported
- Traditional Chinese (Big5) : * F/W ver.1.2 or later
- Simplified Chinese (GB18030) : * F/W ver.1.2 or later

(2) Font Type

1) ANK

Font Type	Size (W x H)	
	Dots	mm
Font-A	12 x 24 dots * IBM Block: 12 x 32 dots	1.50 mm x 3.00 mm * IBM Block: 1.50 mm x 4.00 mm
Font-B	9 x 24 dots * IBM Block: 9 x 32 dots	1.125 mm x 3.00 mm * IBM Block: 1.125 mm x 4.00 mm

2) Chinese/Japanese/Korean

Font Type		Character count	Size (W x H)	
			Dots	mm
Japanese characters (Note 2)	Alphanumerics	96 characters	24 x 24	3.00 x 3.00
	Extended graphics	128 characters		
	JIS level-1 Japanese characters set	3489 characters		
	JIS level-2 Japanese characters set	3390 characters		
	Special characters	83 characters		
	NEC selected IBM extended characters	374 characters		
	IBM extended characters	388 characters		
	Single-byte kanji characters	282 characters	12 x 24	1.50 x 3.00
Chinese characters Conforms to GB2312	Alphanumerics	96 characters	24 x 24	3.00 x 3.00
	Chinese characters	7189 characters		
Chinese characters Conforms to GB18030	Alphanumerics	96 characters	24 x 24	3.00 x 3.00
	Chinese characters	28574 characters		
Traditional Chinese BIG5(F)	Alphanumerics	96 characters	24 x 24	3.00 x 3.00
	Taiwanese characters	13877 characters		

<Notes>

1) Font settings can be changed from Star Quick Setup Utility or the memory switch settings
   If you change the memory switch, refer to "12.1. MSW0 "
   For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "
2) For Japanese characters, the JIS level-1 kanji characters and the JIS level-2 kanji characters are compliant with JIS x0208-1990/1997. * JIS 2004 sample character style, level-1 and level-2 character sets are supported. Supported by SHIFT-JIS code

(3) UTF-8 is supported

Support for Kanji and alphanumeric input with UTF-8 code. Characters which can be printed with the UTF-8 code are alphanumeric characters including code pages equipped in the printer and Kanji characters selected by the memory switch (MSW0-8,9,A, multi-byte characters).

- Chinese characters Conforms to GB2312
- Japanese characters
- Chinese characters conforms to GB18030 2-bytes codes(F/W Ver.1.2 or later)
- Traditional Chinese BIG5(F) (F/W Ver.1.2 or later)

<Notes>

1) For 4-byte code Chinese Kanji conforming to GB18030, UTF-8 is not supported. "□" mark is printed for the unsupported code.
2) The selection between the conventional Kanji code and the UTF-8 code can be switched by a command or the memory switch setting.

4.13. Barcode Specifications

4.13.1. Supported barcodes

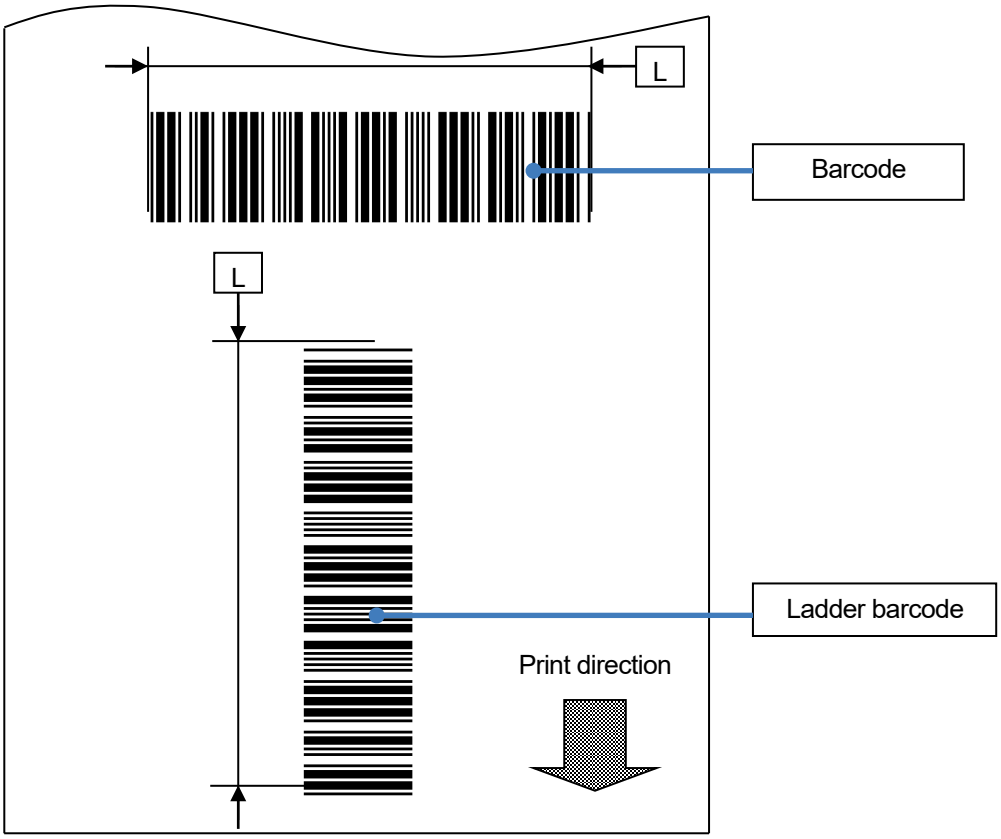
Barcode type	Barcode model		
1D barcode	UPC-A, JAN/EAN13, CODE93, GS1-128, GS1 Limited,	UPC-E ITF, CODE128, GS1 Omnidirectional, GS1 Expanded	JAN/EAN8 CODE39 CODABAR(NW-7) GS1 Truncated,
2D barcode	PDF417, GS1 Stacked Omnidirectional, GS1 Composite Symbols	QR Code,	GS1 Stacked GS1 Expanded Stacked,

4.13.2. Barcode printing specifications

The following are the recommended barcode print settings.

(1) Barcode : Barcode in which the direction of the bars are arranged parallel to the printing direction

(2) Ladder Barcode : Barcode in which the direction of the bars are arranged vertically to the printing direction



Barcode type	Barcode			Ladder barcode		
	Module size	Printing Speed	L	Module size	Printing Speed	L
1D barcode	15 mil or greater	No restrictions	Approx. 54 mm or less	20 mil or greater	No restrictions	Approx. 72 mm or less
PDF417 GS1 Stacked GS1 Stacked Omnidirectional GS1 Expanded Stacked				15 mil or greater		
QR	20 mil or greater			20 mil or greater		
GS1 Composite Symbols	15 mil or greater			15 mil or greater		

<Notes>

1) The barcode print quality largely depends on the color characteristics of the thermal paper, the environment (such as temperature and humidity) of the printer location, and the print density and print speed settings

   When you read the printed barcodes using a scanner or other type of device, we strongly recommend that you evaluate the data scanning quality beforehand

2) If you cannot obtain the desired scanning quality, try to reduce the print speed, increase the size of the minimum module, or change the barcode length. These adjustments may improve the barcode scanning quality

5. Peripheral Device Specifications (USB Host Connection)

5.1. Barcode reader specifications (Options, settings by model)

External Dimensions	[Full-length] 159.2 mm x [width] 59.9 mm x [height] 30.8 mm * Does not include communication cable
Weight	60 g * Does not include cable
Cable length	1.0m
Width of reading window	60 mm
Input voltage	DC 5V ±5%
Power consumption	90mA
Interface	USB
Body color	Black/White
Supported 1D barcodes	UPC-A, UPC-E EAN-13, EAN-8 Codabar/NW7 Code-128, Code-93 Code-39, Interleaved 2 of 5 (ITF), Industrial 2 of 5 MSI/Plessey Telepen RSS, RSS Limit RSS Stack, RSS Expansion Limit RSS Expansion Stack
Resolution	0.1 mm (4 mil)
PCS value	0.3 or greater
Reading distance	0 to 70 mm (PCS=0.9, 15.6 mil)
Receiving	CCD linear imaging sensor
Light source	630nm red LED
Scanning speed	100 scans/sec
Indicator	Blue LED, buzzer (volume adjustable)
Drop resistance	Free fall from a height of 1 m to a concrete surface without any affect on the operation
Applicable standards and regulations	FCC / CE / VCCI & Class B

<Notes>

1) The only barcode readers that can be connected to the main unit are those that have been tested by our company. When using another commercially available barcode reader, always used it by connecting it directly to a tablet or POS device.
2) Barcode reader settings can be changed using Star Quick Setup Utility
   Only one barcode reader can be connected.
3) The beep sound ON/OFF of the built-in buzzer can be changed from Star Quick Setup Utility
4) For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications"
5) Reading distance is greatly influenced by the print quality of the barcode itself

5.2. Customer display Specification

The customer displays connectable to the USB host of mPOP are as follows.

Model : Star SCD222U

- Display Type : Graphic LCD (FSTN) *Blue Backlight
- Display Spec : Max. 20 digits × 2 lines
- Interface : USB (HID Class)

<Notes>

1) Only one customer display can be connected
2) F/W Ver2.0 or later:supported

5.3. Commercially available devices that can be used

The following is a commercially available USB device that has been tested and can be connected to the USB host of mPOP.

Barcode reader

Handling models of Star Micronics distributors : BSH-20U, BSH-20B, BSD-40U, BSH-32U, BSH-32B (POP10CI/CBI only)

<Notes>

1) Only one barcode reader can be connected (either the barcode reader listed above or the optional dedicated barcode reader (BCR-POP1).
2) F/W Ver2.0 or later:supported

HID device

Target : HID device with a USB keyboard interface

<Notes>

1) Simultaneous use with optional barcode reader (BCR-POP1) is not possible.

USB memory device

The specifications of USB memory devices that can be connected to the printer USB host are the following. (F/W Ver. 3.0 and later)

<Specification>

File system	:	FAT12/16/32
Device class	:	Mass Storage
Device sub-class	:	SCSI transparent command set
Device protocol	:	Bulk-Only Transport

<Application>

Execute F/W rewrite by saving the Star Configuration Format and F/W data in the USB memory device.

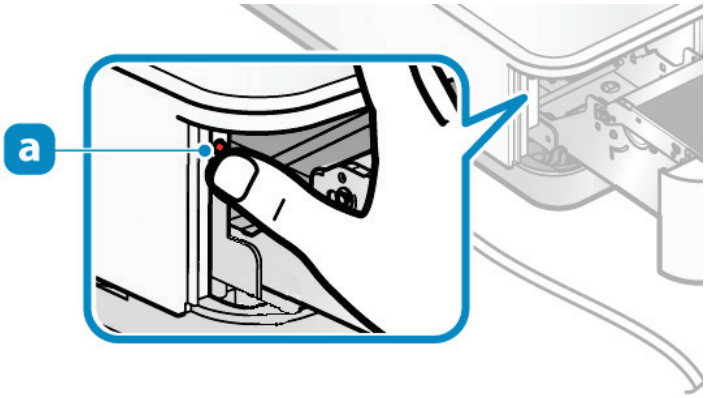
<Notes>

1) Even when the USB memory device satisfies the above specifications, it may not be possible to use the device when an extension cable is used, or for other reason such as compatibility with the printer USB host. If this occurs, use a different USB device.
2) For details of the Star Configuration Format and the F/W rewrite procedure, refer to Procedure for Firmware Rewriting Using USB Flash Drive.

6. Multi-function Button Specifications

The following functions can be called from the multi-function button

- Cash drawer open function
- Cash drawer open function disabling function
- Self-printing function
- Hexadecimal dump printing function
- Paper end sensor adjustment mode



6.1. Calling the cash drawer open function

(1) If the cash drawer open function is enabled for mPOP, the cash drawer can be opened by pressing the switch for more than 1 second

<Notes>

1) Factory default settings of the cash drawer open function varies depending on the destination
2) The setting to enable/disable the cash drawer open function can be changed using Star Quick Setup Utility or from the memory switch setting. For information on changing the memory switch, refer to "12.6. MSW5"
   For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "
3) The cash drawer open function can be disabled using the multi-function button
   For details, refer to "6.2. Disabling the cash drawer open function"

6.2. Disabling the cash drawer open function

The cash drawer open function can be disabled using the multi-function button by following the steps below

<F/W Ver4.0 or earlier>

(1) Turn the printer power ON.
(2) Pull out the printer from mPOP.
(3) Press the multi-function button 3 times. Press the 1st and 2nd times short, and the 3rd time for over 5 seconds.
(4) After confirming that the blue LED and red LED flash, release your hand from the button.
(5) The printer will perform reset operations and the cash drawer function will become disabled through the multi-function button.

<F/W Ver5.0 or later>

Perform the steps below with paper set in the printer.

(1) Turn the printer power ON.
(2) Pull out the printer from mPOP.
(3) Press and hold the multi-function button for 1 second or more and open the cash drawer.
(4) Press the multi-function button 3 times. Press the 1st and 2nd times short, and the 3rd time for over 5 seconds.
(5) After confirming that the Power LED and Error LED flash, release your hand from the button.
(6) After the message "Invalid multi-function button" is printed, a partial cut is carried out.
(7) The printer will perform reset operations and the cash drawer function will become disabled through the multi-function button.

<Notes>

The setting to enable/disable the cash drawer open function can be changed using Star Quick Setup Utility or from the memory switch setting.. For information on changing the memory switch, refer to "12.6. MSW5 "
For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "

6.3. Calling the test print function

(1) Pull out the printer from mPOP. Keep the printer cover closed

(2) If you press and hold the multi-function button while turning the power of the main unit ON, test printing will be initiated and the F/W version, memory switch, interface information, and such will be printed. (If the memory switch setting is different from the factory default setting, the bit will be black-and-white, reversed and printed)

(3) For a model that supports Bluetooth, the Bluetooth information will be printed.
For POP10, after the Power LED and Error LED flash for about 10 seconds (after reception of Bluetooth information has been completed), it will print the Bluetooth information.

(4) If logos have been registered, all the logs will be printed

6.4. Calling the hexadecimal dump printing function

(1) Pull out the printer from mPOP

(2) Keep the printer cover open

(3) Press and hold the multi-function button while turning the power of mPOP ON, and when the Power LED button flashes, release the button
<Notes>
Release the button while the Power LED is blinking
If the Power LED turns on with the button pressed, turn off the power and start over from the beginning

(4) Close the printer cover, and return the printer to mPOP

(5) The “Hex Dump Mode” title will be printed, and it will enter the hexadecimal dump printing function
Data subsequently received will be printed in hexadecimal

(6) To finish the hexadecimal dump printing function, turn OFF the power to mPOP

6.5. Paper end sensor adjustment mode

(1) Pull out the printer from mPOP

(2) Keep the printer cover open

(3) While pressing the multi-function button, turn the power on of mPOP

(4) If the button is pressed for more than 5 seconds after the Power LED starts flashing, the Power LED will stop flashing and stay lit

(5) Release the button when the Power LED stays lit

(6) Remove the paper and close the printer cover

(7) F/W ver.2.0 or earlier: Perform adjustment
F/W ver.2.1: Adjustment is executed by pressing multifunction button three times

7. Interface Specifications

This product supports the following interfaces.

<POP10>

- USB device interface (USB-B) : 1 port
- USB host interface : 4 ports
  - (1) 5V/1.5A supply port (USB-A) : 2 ports
  - (2) 5V/0.5A supply port (USB-A) : 2 ports
- Bluetooth interface
- External Device Drive Circuits : 1 ports

<POP10CI>

- USB device interface (USB-B) : 1 port
- USB host interface : 2 ports
  - （1） 5V/3.0A supply port (USB-C) : 1 port
  - （2） 5V/0.5A supply port (USB-A) : 1 port

<POP10CBI >

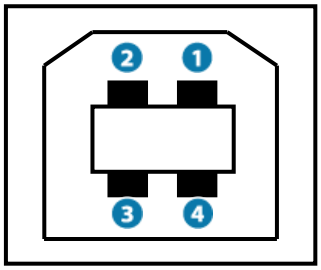
- USB device interface (USB-B) : 1 port
- USB host interface : 4 ports
  - (1) 5 V/3.0 A supply port (USB-C) : 1 port
  - (2) 5 V/0.5 A supply port (USB-A) : 3 ports
- Bluetooth interface

7.1. USB device interface

mPOP supports USB device interface (1 port) of the following specifications.

(1) Communication standard : USB2.0 FULL-SPEED
(2) Connector type : USB-B
(3) Mode : Corresponding to printer class
(4) Pin assignment : see below

Top surface of mPOP



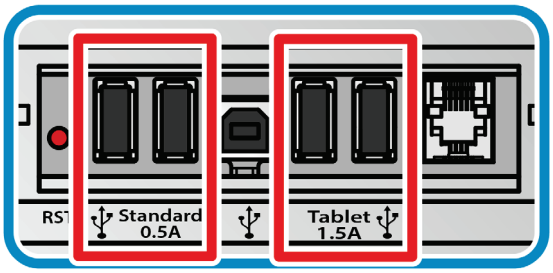
Bottom surface of mPOP

Pin No.	Signal Name	Direction
1	VBUS	Input
2	D-	Input/Output
3	D+	Input/Output
4	GND	-
SHELL	Frame ground (FG)	-

7.2. USB host Interface

<POP10>

mPOP supports USB device interface (4 ports) of the following specifications



(1) Communication standard : USB2.0 FULL-SPEED

(2) Connector type : USB-A

(3) Mode : See table below

Port name	Port descriptions and applications	Supply capacity	Number of ports
Standard 0.5A	Connection port for products supporting USB connections	5V/0.5A	2
Tablet 1.5A	Connection port for products supporting USB connections Tablet charging cable connector port ・USB BC1.2 compliant	5V/1.5A	2

- When a tablet that does not support USB BC1.2 CDP is connected to the Tablet 1.5A port, the device may not be sufficiently charged. In this case, use the tablet dedicated charger, and charge it from an ordinary power supply and not from mPOP.
- mPOP prohibits the connection of an external USB hub at all ports because mPOP does not support an external USB hub.

(4) Pin assignment : see below

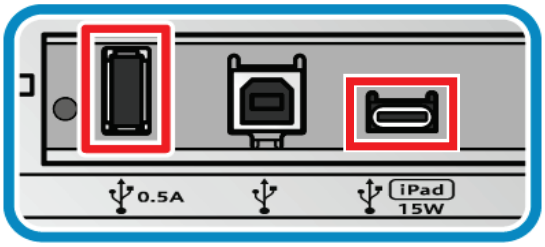
Top surface of mPOP

Bottom surface of mPOP

Pin No.	Signal Name
1	VBUS
2	D-
3	D+
4	GND
Shell	Frame ground (FG)

<POP10CI>

mPOP supports USB host interface (2 ports) of the following specifications.



(1) Communication standard : USB2.0 FULL-SPEED

(2) Connector type : USB-A, USB-C

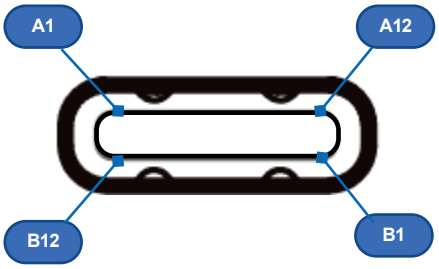
(3) Mode : See table below

Port name	Port descriptions and applications	Supply capacity	Number of ports
USB-A 0.5A	USB-A connector Connection port for products supporting USB connections	5V / 0.5A	1
USB-C 15W [iPad / Android]	USB-C connector Connection port for products supporting USB connections Tablet charging cable connector port ・iAP2 5V 3A compliant ・USB TYPE-C Current 3A compliant ・USB BC1.2 CDP compliant ・AOA compliant (F/W Ver5.0 or later)	5V / 3.0A	1

- When an iOS device that supports the iAP2 protocol is connected to the USB-C 15W port, it is possible to communicate with and control mPOP while recharging the iOS device.
- F/W Ver5.0 or later: When an Android device that supports the AOA protocol is connected to the USB-C 15 W port, the device can be communicated with mPOP for control while being charged.
  Android OS version 9 and later are supported.
  To connect an Android device to the USB-C 15 W port for communication, start the Android device first and then turn on the printer with the device connected to the printer with the USB cable. If communication or power supply does not operate, operation may become possible if you disconnect and reconnect the cable.
- When a tablet that does not support the standard listed in the table above is connected to the USB-C 15 W port, the device may not be sufficiently charged.
  In this case, use the tablet dedicated charger, and charge it from an ordinary power supply and not from mPOP.
- mPOP prohibits the connection of an external USB hub at all ports because mPOP does not support an external USB hub.
- Use a USB-C to Lightning cable that is an Apple genuine product or MFi certified product, and has a length not exceeding 2 m.
- Use a USB-C to C cable that conforms to the USB2.0 standard, supports 3.0A or more, and has a length not exceeding 2 m.

(4) Pin assignment : USB-A pin assignment is the same as POP10.
See below for the USB-C pin assignment.

Top surface of mPOP

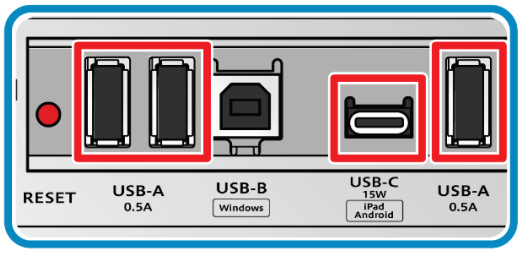


Bottom surface of mPOP

Pin number	Signal name
A4,B4,A9,B9	VBUS
A1,B1,A12,B12	GND
A6,B6	D+
A7,B7	D-
CC1	A5
CC2	B5
SHELL	Frame ground (FG)

< POP10CBI >

mPOP supports USB host interfaces (4 ports) of the following specifications.



(1) Communication standard : USB2.0 FULL-SPEED

(2) Connector type : USB-A, USB-C

(3) Mode : See table below

Port name	Port descriptions and applications	Supply capacity	Number of ports
USB-A 0.5A	USB-A connector Connection port for products supporting USB connections	5V / 0.5A	3
USB-C 15W [iPad / Android]	USB-C connector Connection port for products supporting USB connections Tablet charging cable connector port ・iAP2 5V 3A compliant ・USB TYPE-C Current 3A compliant ・USB BC1.2 CDP compliant ・AOA compliant	5V / 3.0A	1

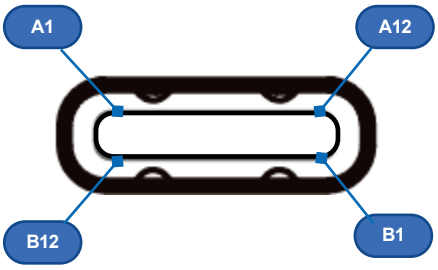
・When an iOS device that supports the iAP2 protocol is connected to the USB-C 15 W port, the device can be communicated with mPOP for control while being charged.

・When an Android device that supports the AOA protocol is connected to the USB-C 15 W port, the device can be communicated with mPOP for control while being charged.
Android OS version 9 and later are supported.
To connect an Android device to the USB-C 15 W port for communication, start the Android device first and then turn on the printer with the device connected to the printer with the USB cable. If communication or power supply does not operate, operation may become possible if you disconnect and reconnect the cable.

・When a tablet that does not support the standard listed in the table above is connected to the USB-C 15 W port, the device may not be sufficiently charged.
In this case, use the tablet dedicated charger, and charge it from a common power supply and not from mPOP.
・mPOP prohibits the connection of an external USB hub at all ports because mPOP does not support an external USB hub.
・Use a USB-C to Lightning cable that is an Apple genuine product or MFi-certified product, and has a length not exceeding 2 m.
・Use a USB-C to C cable that conforms to the USB2.0 standard, supports 3.0 A or more, and has a length not exceeding 2 m.

(4) Pin assignment : USB-A pin assignment is the same as POP10.
See below for the USB-C pin assignment.

Top surface of mPOP



Bottom surface of mPOP

Pin number	Signal name
A4,B4,A9,B9	VBUS
A1,B1,A12,B12	GND
A6,B6	D+
A7,B7	D-
CC1	A5
CC2	B5
SHELL	Frame ground (FG)

7.3. Bluetooth Interface (Only models which support Bluetooth)

mPOP is equipped the following specifications for TELEC, FCC, R & TTE corresponding Bluetooth modules

< POP10 >

(1) Bluetooth specifications : Bluetooth V2.1 + EDR, class 1
(2) Frequency bandwidth : 2.4GHz ISM band
(3) Modulation method : FH-SS
(4) Supported profiles : SPP, iAP, iAP2
(5) Security : SSP
(6) Device name : Refer to "7.3.1. Device name and BD address"
(7) iOS accessory protocol : iAP1, iAP2

< POP10CBI >

(1) Bluetooth specifications : Bluetooth V5.0 (BR/EDR-supported), class 2
(2) Frequency bandwidth : 2.4 GHz ISM band
(3) Modulation method : FH-SS
(4) Supported profiles : SPP
(5) Security : SSP
(6) Device name : Refer to "7.3.1. Device name and BD address"
(7) iOS accessory protocol : iAP2

<Notes>

1) If the Bluetooth module of the device being used is V2.0 or earlier, a PIN Code is required to connect via Bluetooth to this unit. The PIN Code for this is "1234"
2) The device name can be changed freely using 、Star Quick Setup Utility
   For information on how to get 、Star Quick Setup Utility, refer to "1.5. Related applications"
3) Low Energy (BLE) is not supported.

7.3.1. Device name and BD address

(1) Device name

The Bluetooth module installed in this unit holds a Bluetooth device name consisting of 16 digits as a unique identification code specifically (POP10: STAR mPOP-"unique 5-digit identification number", POP10CBI: mPOP-"unique 5-digit identification number") on the inside of the module

<Notes>

1) The device name can be changed freely using Star Quick Setup Utility
   For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "
2) MAC address of the Bluetooth modules may be confirmed from the self-printing result
   For operating procedures for self-printing, refer to "6.3. Calling the test print function"

(2) BD address : Fixed value

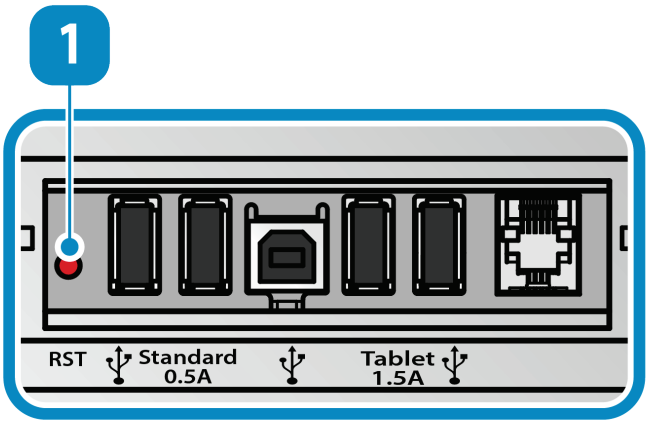
<Notes>

BD address of the Bluetooth modules may be confirmed from the self-printing result
For operating procedures for self-printing, refer to "6.3. Calling the test print function"

7.3.2. Initialize Bluetooth settings

It is possible to return the Bluetooth settings to the factory default settings by operating the Bluetooth reset button [1] which is installed on the bottom of mPOP

< POP10 >



(1) Turn OFF the power to mPOP, and delete the connection information of the machine from the device that had the Bluetooth connection

(2) While pressing the Bluetooth reset button, turn the power ON for mPOP

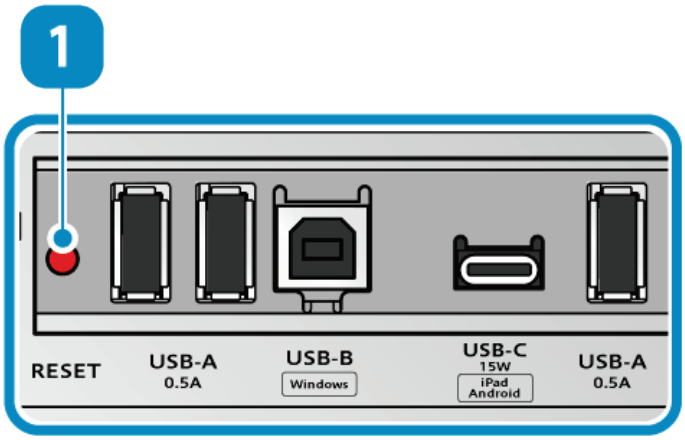
(3) After confirming that the LED for mPOP flashes, release the button

(4) When initialization is complete, mPOP is reset, and the LED stays lit

(5) Restart the paired device or terminate the application

(6) Connect Bluetooth again with mPOP

< POP10 CBI >



(1) Turn OFF the power to mPOP, and delete the connection information of the machine from the device that had Bluetooth connection.

(2) While pressing the Bluetooth reset button, turn the power ON for mPOP.

(3) Immediately after the power is turned ON, mPOP is reset.
If you keep pressing down the Bluetooth reset button, mPOP is reset again (initialization is completed).

(4) Release the Bluetooth reset button, and then restart the paired device or terminate the application.

(5) Connect Bluetooth again with mPOP.

7.3.3. Confirm Bluetooth settings

By using the self-printing function of this machine, it is possible to confirm the following Bluetooth configuration information. For operating procedures for self-printing, refer to "6.3. Calling the test print function"

The following can be confirmed from the self-print

- Dev Name
- iOS Name
- Address
- Auto Connection (Current Setting)
- Auto Connection (Factory Setting)
- New Pairing Permission
- QR code (F/W Ver4.0 or later :supported)

It is possible to perform pairing and select the printer that is connected by reading the QR code with Star Quick Setup Utility.

7.3.4. Function to prevent unauthorized Bluetooth connections

This unit, as a function to prevent unauthorized access from a tablet or PC that is not connected,has a function to prohibit Bluetooth connections from devices other than those where a Bluetooth connection has already been established. For security purposes, after a Bluetooth connection has been established for the devices to be used, it is recommended that you open Star Quick Setup Utility and disable the setting for "New Pairing Permission". The factory default setting, is set to "Valid"

- If the "New Pairing Permission" setting is "Valid" : No limit with the Bluetooth connection
- If the "New Pairing Permission" setting is "Invalid" : No new Bluetooth connection is allowed

"New Pairing Permission" : Notes when "Invalid "is chosen

When the following cases occur when "New Pairing Permission : Invalid" is set, initialization of Bluetooth must be performed. After initialization is carried out for mPOP, and Bluetooth connection performed, it is recommended that you disable "New Pairing Permission" again for enhanced security

- If changing the tablet or PC with the Bluetooth connection because of loss or malfunction
- If a Bluetooth connection information to the unit is deleted from the Bluetooth settings of the tablet or PC

For operation initialization procedures, refer to "7.3.2. Initialize Bluetooth settings "

7.3.5. Auto Connection function (iOS only)

If you are using an iOS device as an upper level terminal (device) that communicates with this unit, for the Bluetooth communication between the unit and the iOS device, there is a need to re-establish the connection by selecting the name of this machine from the Bluetooth setting screen each time the wireless connection is disconnected. The Auto Connection function is a function that requests to automatically connect to an iOS device that was last connected. Using this feature can save the trouble of reconnecting every time.

	Auto Connection : OFF	Auto Connection : ON
Reconnection with upper level terminals (devices)	After the power is turned ON for the unit, select the device name of mPOP from the Bluetooth settings screen of the upper level terminal (device)	After the power is turned ON for mPOP, it will automatically connect to the most recently connected upper level terminal (device)
Changes to the upper level terminal (device)	After the power is turned ON for the unit, select the device name of mPOP from the Bluetooth settings screen of the upper level terminal (device)	Turn the Bluetooth function of the upper level terminal (device) which has the automatic connection destination set to OFF, and select the device name of mPOP in the Bluetooth settings on the screen of the upper level terminal (device) you want to change it to
Application Example	Use this mPOP with multiple upper level terminals (devices)	The mPOP must always be used on a one-to-one basis with the upper level terminal (device)

<Notes>

If the upper level terminal is not an iOS device, it cannot be used with this function

7.3.6. Auto Connection setting change

(1) Change the settings of the Auto Connection function

If the following Bluetooth reset button operation (1 ~ 6) is performed, the factory setting for Auto Connection turns from ON to OFF, or OFF to ON

< POP10 >

1) Press and hold the Bluetooth reset button for more than 5 seconds
2) Make sure that the interface LED flashes before releasing the button
3) When the setting changes are completed, mPOP will reset automatically
4) Make sure that the interface LED flashes
5) Turn the power of mPOP OFF.
6) Turn ON the power of mPOP again, and confirm the details of the setting by performing the self-print

< POP10CBI >

1) Press and hold the Bluetooth reset button until mPOP is reset (*).
2) Make sure that the interface LED is turned ON.
3) Turn the power of mPOP OFF.
4) Turn ON the power of mPOP again, and confirm the details of the setting by performing the self-print.

<Notes>

For operating procedures for self-printing, refer to "6.3. Calling the test print function"

* When mPOP is reset, an initial operation sound will be heard.

7.3.7. Notes on Bluetooth communication

(1) Waiting time until the start of the communication : Recommended 100 msec

After connection to the upper level terminal (device), as post-processing was performed in the Bluetooth module, it is recommended that a waiting time of 100 msec be applied before starting the communication for the application. Note that the above value changes according to the developmental environment of the application and operating environment (upper level terminal (device) type and usage environment), therefore it is necessary to conduct sufficient operational tests in advance, and determine a waiting time

(2) Waiting time until the start of the communication : Recommended 500 msec

(3) After disconnection from the upper level terminal (device), post-processing was performed in the Bluetooth module, it is therefore recommended that a waiting time of 500 msec be applied before being reconnected to the application Note that the above value changes according to the developmental environment of the application and operating environment (upper level terminal (device) type and usage environment), therefore it is necessary to conduct sufficient operational tests in advance, and determine a waiting time

(4) Notes if you are using a Bluetooth USB Adapter

Always confirm each specification, carry out sufficient operation verification

(5) Notes if you have made changes in Bluetooth settings, or had it reset

To reflect the changed contents to the upper level terminal (device), delete the Bluetooth connection information for the upper level terminal (device) and restart the associated application or system. After restarting, connect via Bluetooth again

7.4. Guidelines regarding printing communication interface usage

<POP10>

The USB-B interface (1 port) and Bluetooth interface which act as the print communication interface for mPOP cannot be used simultaneously. The interface that can be used for printing communication must always be one or the other. When using, keep in mind the following precautions

- When using a Bluetooth interface, always make sure that the USB cable is not connected to the USB-B interface
- When using the USB-B interface, use a USB cable and connect to an upper level terminal (device)
- When switching to the USB-B interface while using the Bluetooth interface, first turn the power of mPOP OFF before connecting the USB cable to an upper level terminal (device)
- When switching to the Bluetooth interface while using the USB-B interface, first turn the power of mPOP OFF before switching, disconnect the USB cable that is connected, and then connect to an upper level terminal (device).

<POP10CI>

When using mPOP, it is not possible to switch between the USB-B interface and the USB-C interface (when an iOS device is connected) that are the printing communication interfaces installed in mPOP. The interface that can be used for printing communication must always be one or the other.

When using, keep in mind the following precautions.

- Communication is possible with the device whose cable was first connected to mPOP at either the USB-C interface or USB-B interface.
- If the cable was connected first to the USB-B interface, then communication is possible from the USB-B interface. Even if an IOS device is subsequently connected to the USB-C interface, communication with that device will not be possible. At this time, mPOP supplies a maximum current of 3.0A to the iOS device.
- If the mPOP power is turned ON when cables are connected to both the USB-C interface and USB-B interface, communication is possible using the USB-B interface. At this time, communication with the iOS device connected to the USB-C interface is not possible, and mPOP supplies a maximum current of 3.0A to the iOS device.

< POP10CBI >

・The USB-B interface, Bluetooth interface, and USB-C interface (when an iOS device or Android device is connected) which act as the print communication interface for mPOP cannot be used simultaneously. The interface that can be used for printing communication must always be one of them. When using, keep in mind the following precautions.

・iOS device

<When using the Bluetooth interface>

- Always make sure that the USB-B cable is not connected to the USB-B interface.
- If you try to connect the iOS device to USB-C of mPOP while it is connected via the Bluetooth interface, Bluetooth connection will be disconnected, but the device will be automatically connected to USB-C. Then, if USB-C is disconnected, Bluetooth connection will be automatically established by the Auto Connection Function, switching the connection to the Bluetooth interface.

<When using the USB-C interface>

- Always make sure that the USB-B cable is not connected to the USB-B interface.

<Restrictions>

- If the following condition is met when an iOS device is connected via the Bluetooth interface, a symptom may occur, for example, print data may be erased or the communication may be disconnected.
  - If 24 KB or more of data is sent from the iOS device via the Bluetooth interface when mPOP is offline (when mPOP is unable to print due to a no-paper error)

    To avoid the above symptoms, make sure that mPOP is online (mPOP is able to print without an error) before sending print data.

・Android device

<When using the Bluetooth interface>

- Always make sure that the USB-B cable is not connected to the USB-B interface.
- Do not use the USB-C interface when supplying power to an upper level terminal via USB-C while communicating via the Bluetooth interface.
- When switching to the USB-B interface or USB-C interface, first turn OFF the mPOP power before connecting to an upper level terminal with the USB cable, and then turn the mPOP power ON.

<When using the USB-C interface>

- Always make sure that the USB cable is not connected to the USB-B interface.
- Do not connect an Android device via the Bluetooth interface.
- When switching from the USB-C interface to the Bluetooth interface, first disconnect the USB-C cable between the Android device and mPOP, and then connect the device via Bluetooth.

・Windows/Linux/macOS

<When using the Bluetooth interface>

- Always make sure that the USB cable is not connected to the USB-B interface.
- When switching from the Bluetooth interface to the USB-B interface, turn OFF the mPOP power and connect the device to Windows/Linux/macOS with the USB cable.

<When using the USB-B interface>

- When switching from the USB-B interface to the Bluetooth interface, turn OFF the mPOP power, disconnect the USB cable, and connect the device to Windows/Linux/macOS via Bluetooth.

7.5. External Device Drive Circuits

<POP10 only (excluding POP10CI and POP10CBI)>

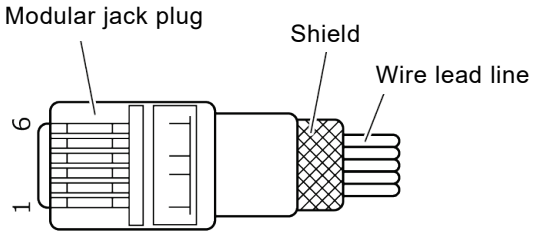
POP10 is equipped with a drive circuit to drive an external device (cash drawer).

The connector for driving an external device (6P modular jack connector) is mounted on the output side of the drive circuit. Connect the cable to this connector when using the drive circuit. Please prepare a cable by yourself. The recommended cable specifications are as follows.

[Recommended cables]

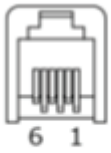
RJ12 plug (6P6C)

Pin No. 1 (frame ground) shall be a shield wire.



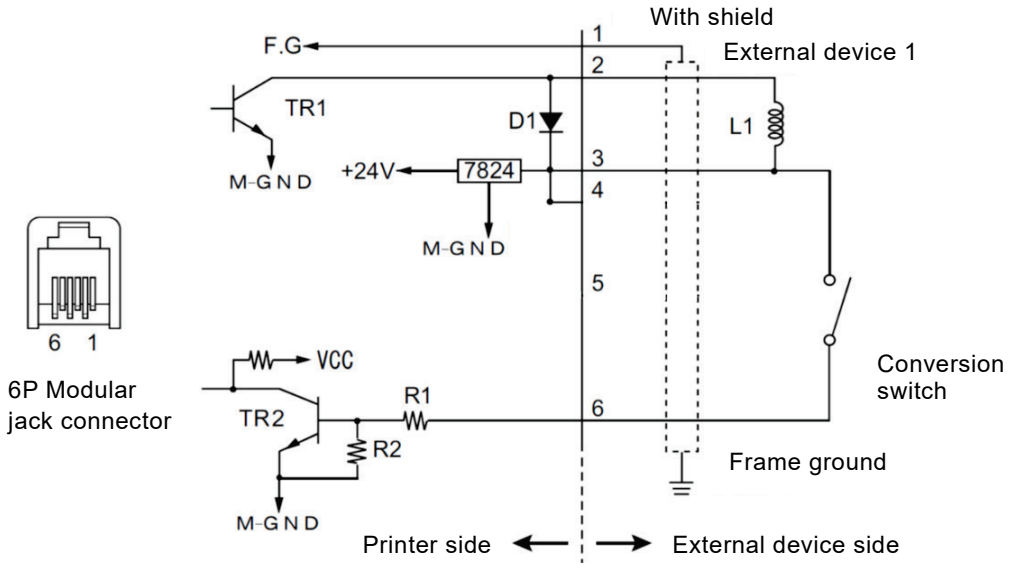
[Pin No.]

Pin number	Signal name	Signal direction
1	Frame ground (FG)	
2	Drive signal	Output
3	+24V	
4	+24V	
5	Not connected	
6	Compulsion switch open/close signal	Input



6P Modular jack connector

[Connection figure]



Drive output:R1=10kΩ, R2=47kΩ

<Notes>

1) When connecting the cash drawer, reduce the duty to 20% or less.
2) The conditions of the external device connection and compulsion switch can be found in the status.
3) L1 must be 24 Ω or more, or the input current must be 1 A or less.

8. Installing mPOP

8.1. Connect the power cable

(1) Turn off the power of mPOP.

(2) Connect the inlet of the power cable to the AC adapter socket built into mPOP The connection must be firmly inserted

<Notes>

1) For the socket position of the AC adapter, refer to "1.8.4. Bottom of mPOP "
2) The power cable is attached according to the sales destination.
3) If the inlet is not adequately inserted, power failure and such failures may be caused, therefore insert it firmly
4) Do not use power cables other than the ones specified by our company. It may not perform normally.

(3) Determine the emission direction of the power cable.

There are 2 cable outlets to the right and left, and it can be wired according to where mPOP is placed

<Notes>

For the position of the cable outlet, refer to "1.8.1. Front of mPOP " and "1.8.2. Inside of mPOP"

(4) Wire the wire cable

The power cable will be pushed through the cable wiring lock on the bottom of mPOP and pulled out from the discharge port

<Notes>

1) For the position of the AC adapter, refer to "1.8.4. Bottom of mPOP"
2) Do not use power cables other than the ones specified by our company. The power cable wiring hook has been designed to meet the specifications of the genuine power cable; therefore if a power cable other than our specification is used, it may break the hook
3) Make sure the power cable is firmly inserted in the cable hook so that mPOP does not tilt when it is set up. When used in a tilted state, properly opening/closing the cash drawer, pulling out the printer, and sending paper through the printer may not be possible

(5) Insert power cable plug into electrical outlet. Furthermore, the ground wire should be connected to the ground terminal

8.2. Connecting the bar code reader/tablet charging cable

(1) Determine the direction the power cable should be discharged from

There are 2 cable outlets to the right and left, and it can be wired according to where mPOP is placed

<Notes>

For the position of the cable outlet, refer to "1.8.1. Front of mPOP " and "1.8.2. Inside of mPOP"

Connect the cable to the USB port on the bottom surface of mPOP

<POP10>

- Bar code reader : Connect to USB port (Standard 0.5A). Connect to one of them from one of the two ports
- Tablet charging cable : t will be connected to the USB port (Tablet 1.5A). Connect to one of them from one of the two ports

<POP10CI>

- Bar code reader : Connect to USB-A port (0.5A).
- Tablet charging cable : Connect to USB-C port (15W [iPad・Android]).

<POP10CBI>

- Bar code reader : Connect to USB port (0.5A).
- Tablet charging cable : Connect to USB-C port (15 W [iPad, Android]).

<Notes>

For the position of the USB cable hook, refer to "1.8.4. Bottom of mPOP "

(2) Wire it so it goes underneath or between the USB cable hook and pull it out through the outlet

<Notes>

1) For the position of the USB cable hook, refer to "1.8.4. Bottom of mPOP "
2) Always connect the cable to the USB port. If the connection is insufficient, the device that is connected may not be working properly, or that the tablet is not normally charged
3) Make sure the cables are properly inserted in the cable hook so that mPOP does not tilt when it is set up. When used in a tilted state, properly opening/closing the cash drawer, moving the printer in/out, and sending paper through the printer may not be possible
4) Since the cable for tablet charging is not included as an attached accessory, use a commercially available (or a cable that comes with the tablet) cable for connection

8.3. Set up mPOP

8.3.1. Basic installation

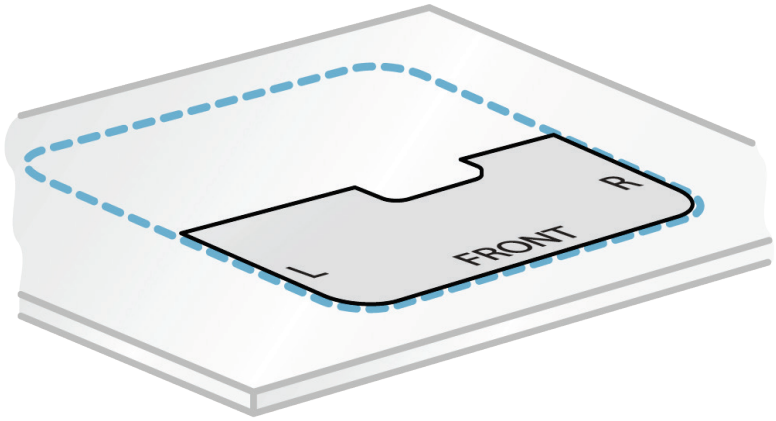
By fixing the body using a fixing bracket, it will prevent mPOP from falling over or being stolen

Moreover, attaching a security cable based on the security policy of the user, it is recommended that the user increases the security

(1) Determine the location for installment

(2) Installing the Mounting Bracket

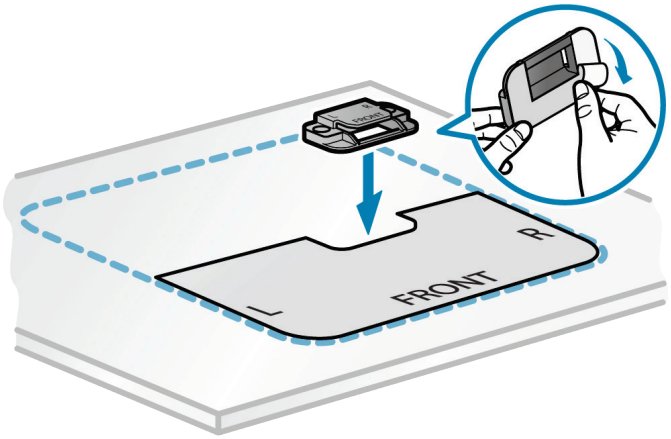
1) Place the template so that the front of the board (side with "FRONT") and the front of where it will be positioned are matched

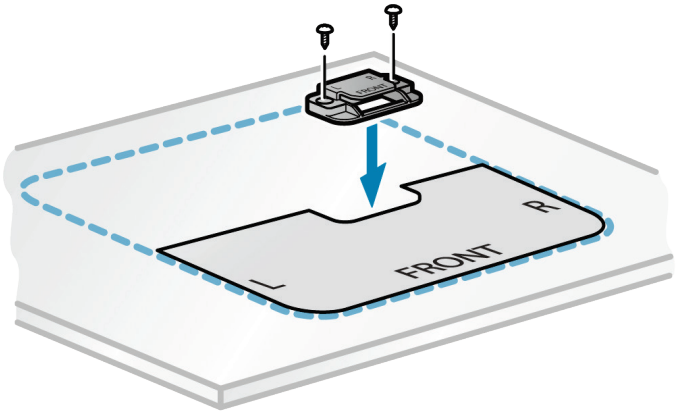


2) Peel off the tape releasing paper on the bottom of the bracket and secure the bracket along the template. Hold the top of the fixing bracket to make sure that the tape firmly affixes the fixing bracket to the surface it is being affixed to, and remove the template. It may also be noted that the fixing bracket can be fixed with screws

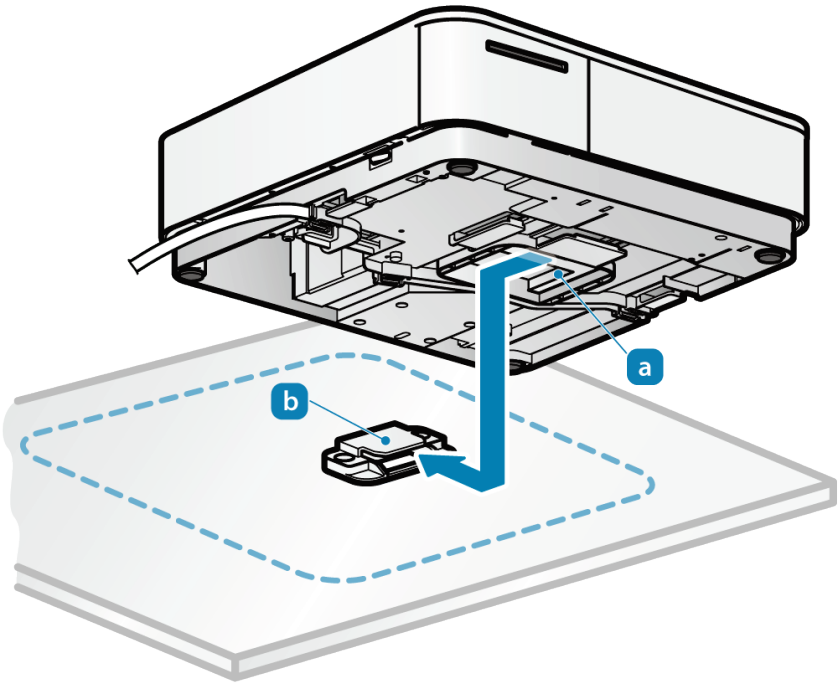
<Notes>

1) Be very careful with this step as the adhesive is very strong
2) Remove debris and lint from the surface the fixing bracket will be mounted to

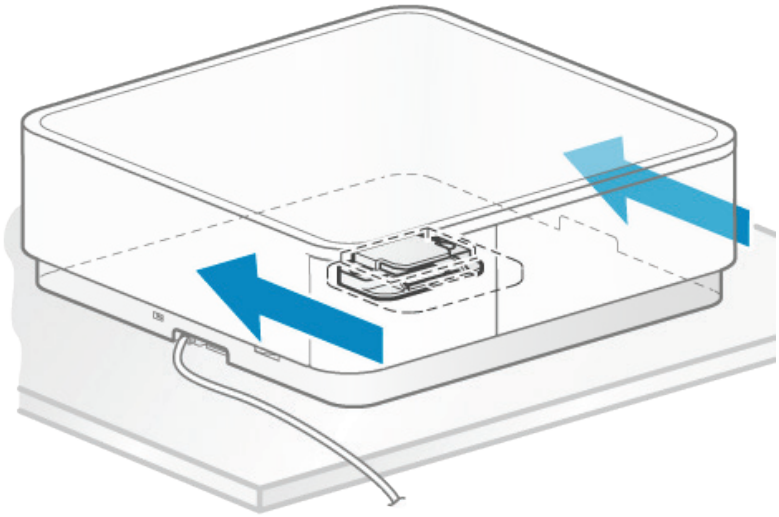




3) Check the position of the fixing bracket mounting slot in the body bottom [a], with respect to the holes in the mounting slot hook portion of the fixing bracket [b], put the body so as to be in front



4) Slide mPOP so that the bracket hook is inserted in the slot and is secured. When removing mPOP from the mounting bracket, it can be removed by reverse procedures



8.3.2. Attach a commercially available security cable

A commercially available security cable can be attached to the unit

<Notes>

This product does not come with a security cable

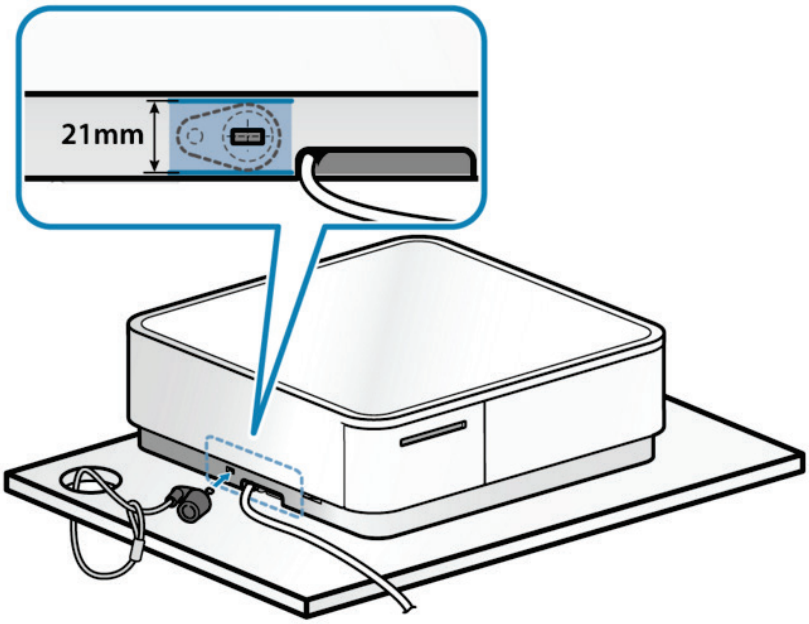
(1) Notes when mounting

1) Security slot size : [W] 3.0 mm x [H] 7.0 mm

<Notes>

Regarding security cable, the shape of the lock portion of the cable must be compatible with the above size

2) Security cable lock portion size : height 25.0 mm or below



<Notes>

If a security cable that exceeds the size limit above is used, it may not be possible to properly open/close the cash drawer, move the printer in/out, or send paper through the printer

(2) Attach a commercially available security cable to the security slot on mPOP

For details on the position of the security slot, refer to "1.8.2. Inside of mPOP"

<Notes>

1) The security cable is not intended to ensure the safety of mPOP
2) To attach the security cable to the security slot on the side of the body, carry it out in accordance with the instruction manual, etc. of security cable. We will not take any responsibility for any accidents and damages arising from improper mounting

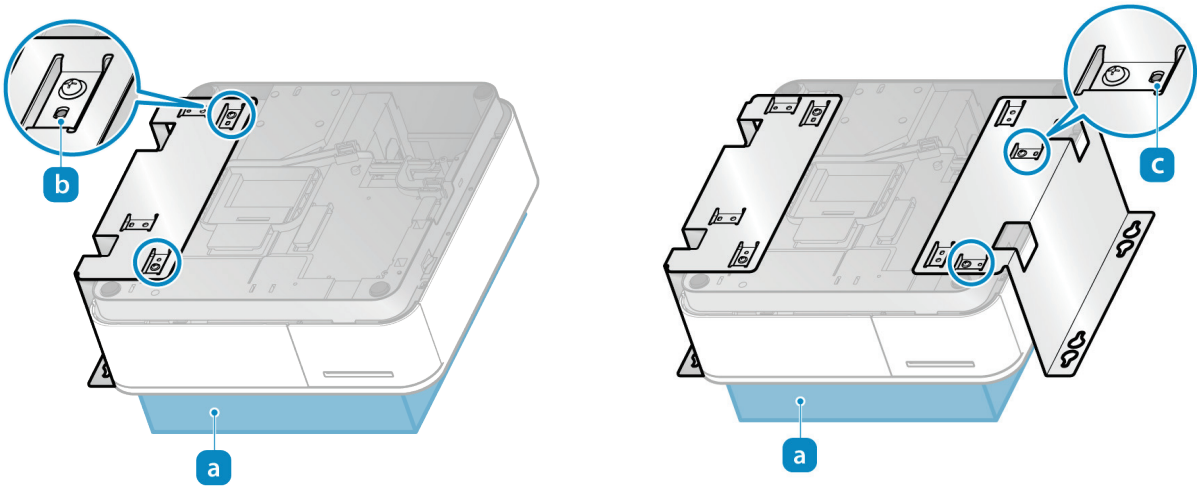
8.3.3. Secure using the counter mounting kit CM-POP1 (optional)

(1) Other precautions before starting operation

1) Depending on the material /thickness of the mounting surface (plate) it may not be possible to secure the unit using the included screws.
2) In such a case, use screws that are right for the material and set measures to prevent dropping as required.
3) The mounting operation will be easier to perform if it is placed on a separate table ([a] 30 mm thickness or more).
4) Wire the power cable, barcode reader and tablet recharging cable before mounting.

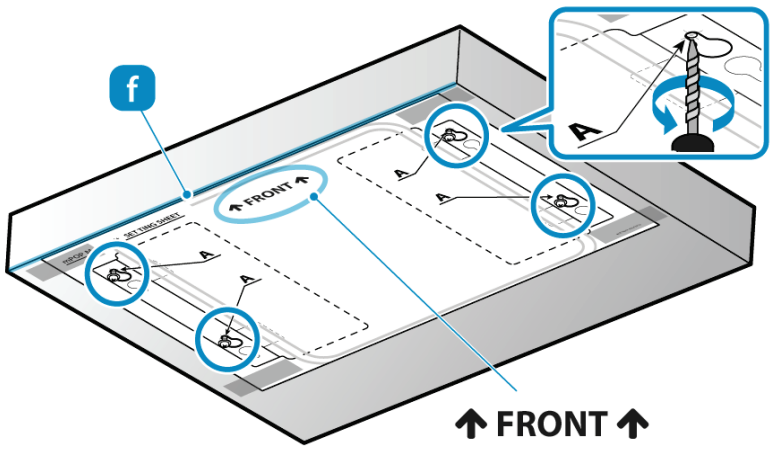
(2) Attach the counter mounting kit to the mPOP

1) While paying attention to the direction of mPOP, align the hole of the mounting frame with the holes of the boss [b] x 2, boss [c] x 2, and secure with small screws (M3-8) x 4. While doing so, pull out the power cable and USB cable from the opening between mPOP or the hole on the mounting frame

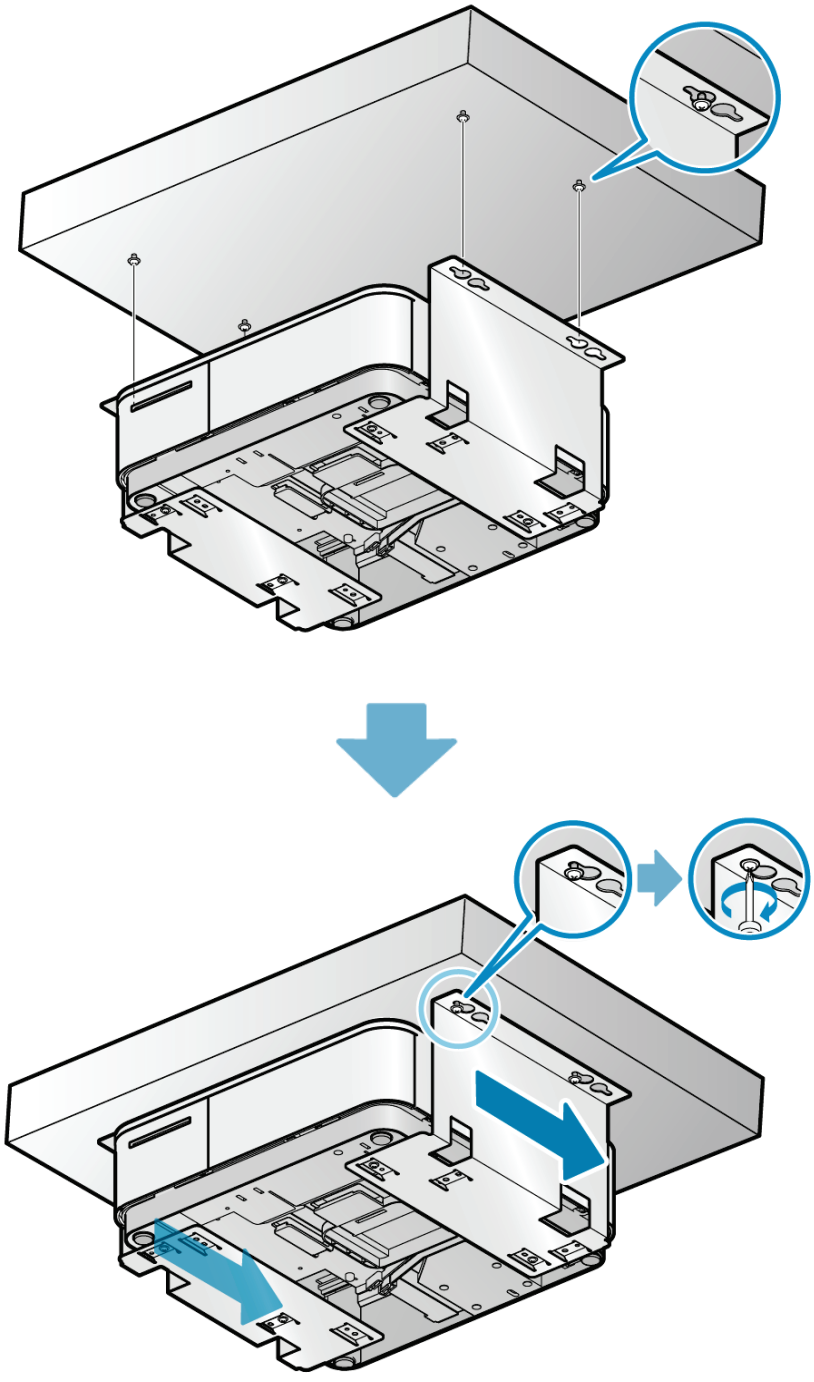


(3) Attach the counter mounting kit to the plate

1) To the counter mounting kit, temporarily secure the setting template that comes with the kit with the edge of the arrow pointing to FRONT aligned with the edge of the mounting surface (plate), and drill a temporarily hole in the 4 locations of [A] indicated on the template (temporarily hole diameter: φ3～3.2mm). After removing the setting template, use the large screws (M4-12) x 4 to secure the counter mounting kit to temporarily secure the mounting kit.



2) Confirm the front and back of mPOP and and pull the larger 4 holes of the counter mounting frame through the temporarily secured 4 screws and slide backwards. Afterwards tighten the 4 temporarily secured screws used for mounting and secure



8.4. Set up tablet/PC

(1) Use the included tablet stand

Place a tablet/PC on the top surface of mPOP. Use the attached tablet stand if using a tablet. Also the attached tablet stand can be adjusted at 3 angles depending on how it is being used and preference, or can be used in combination with a tablet and mini tablet

<Notes>

1) Adhere to the loading provisions of the top surface of mPOP. For more information, refer to "2.3. Withstanding load of the top surface of the body "
2) Depending on the shape of the tablet used, it may not be possible to set it on the tablet stand
   Confirm that the tablet can be installed on the tablet stand before using the tablet stand

(2) Use a commercially available tablet stand

Be careful about the following points when using a commercially available tablet stand, etc.

1) When using a commercially available tablet stand install the stand using the handling instructions
2) When using a commercially available tablet stand, make sure the loading provisions for the top surface of mPOP is adhered to. For more information, refer to "2.3. Withstanding load of the top surface of the body"
3) When using a commercially available tablet stand, make sure that the cash drawer opens and closes, that the printer can be taken out and stored smoothly in advance
4) When using a commercially available tablet stand, if necessary, affix the stand to the mPOP using a double-sided adhesive tape and such
5) When a commercially available tablet and tablet stand is used, Star Micronics shall not be liable for any damages to mPOP as well as the tablet

9. Basic Operations of mPOP

9.1. Turn on/off power

(1) Turn power on
Press the power switch (|) on the side of mPOP and confirm that the Power LED has been lit

(2) Turn power off
Press the power switch (○) on the side of mPOP and confirm that the Power LED has turned off

9.2. Open cash drawer

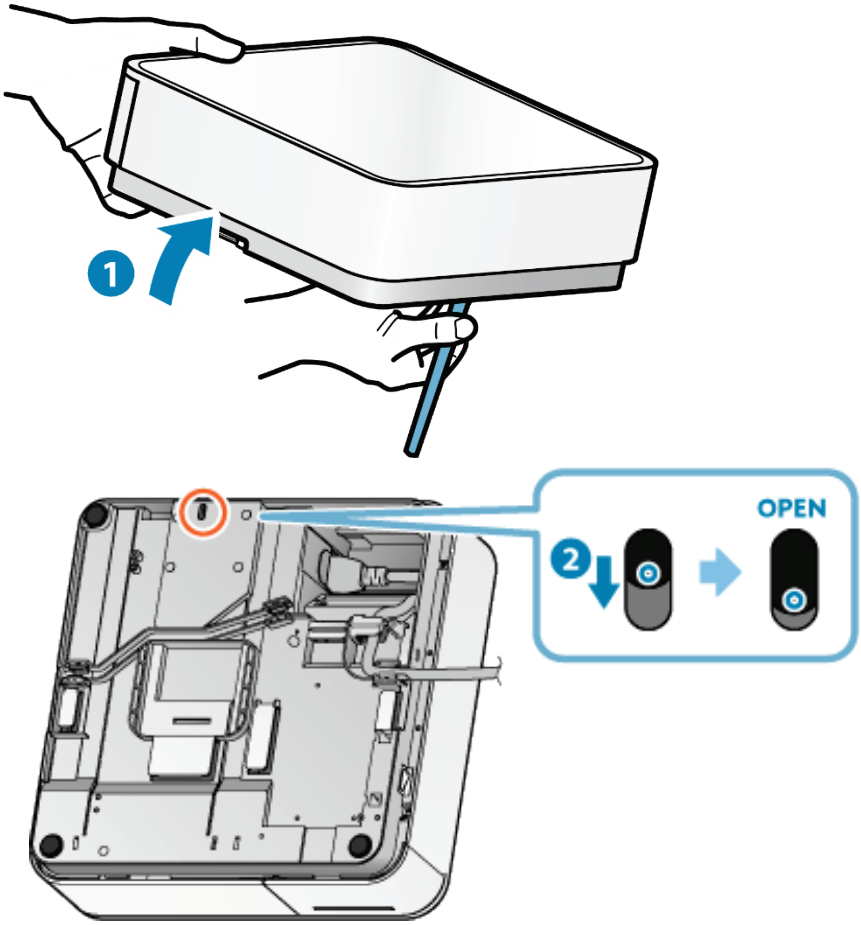
The cash drawer can be opened by using the functions of the upper level terminal (device) but it can also be opened by the method described below. As it may lead to damage, do not push down hard on the front side of the drawer tray when the cash drawer is opened

When closing the drawer tray, push the center of the front of the drawer tray to close

(1) How to open the cash drawer using the lock release lever

1) If using a fixing bracket and mounting kit, remove mPOP

2) With the left side or right side of mPOP at the bottom, lift [1] and operate the lock release lever located towards the back on the bottom surface [2]. Insert something slim and tapered in the hole of the lock release lever (like a pen) and by sliding this to the front side, the cash drawer will open.



<Notes>

As tilting mPOP too much will cause the contents of the cash drawer to spill out when the drawer is opened, do not tilt more than necessary when lifting mPOP

(2) How to open the cash drawer using the multi-function button

If the drawer open switch function is enabled for the multi-function button, the cash drawer can be opened using the multi-function button. For operating procedures, refer to "6.1. Calling the cash drawer open function "

<Notes>

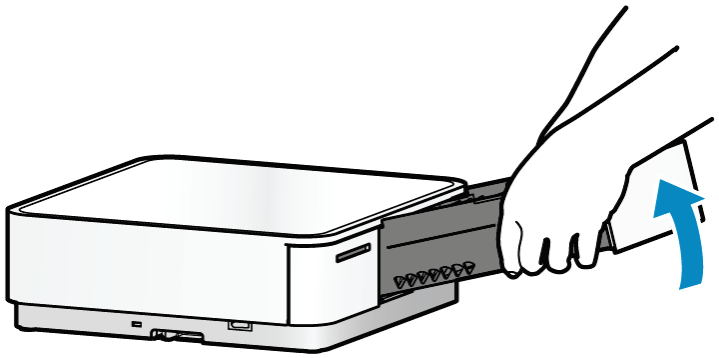
If the drawer open switch is disabled for the multi-function button, it is necessary to enable the drawer open switch from "12.6. MSW5".

9.3. Remove the drawer tray

(1) Open cash drawer

Use Star Quick Setup Utility, or refer to "9.2. Open cash drawer" and open

(2) Lift up the front side of the drawer tray and then the back side to remove. Do the opposite to place the drawer tray in the original position



<Notes>

1) Always remove the banknotes and coins before taking out the drawer tray
2) For information on how to obtain Star Quick Setup Utility, refer to "1.5. Related applications "

9.4. Change the layout of the coin storage space

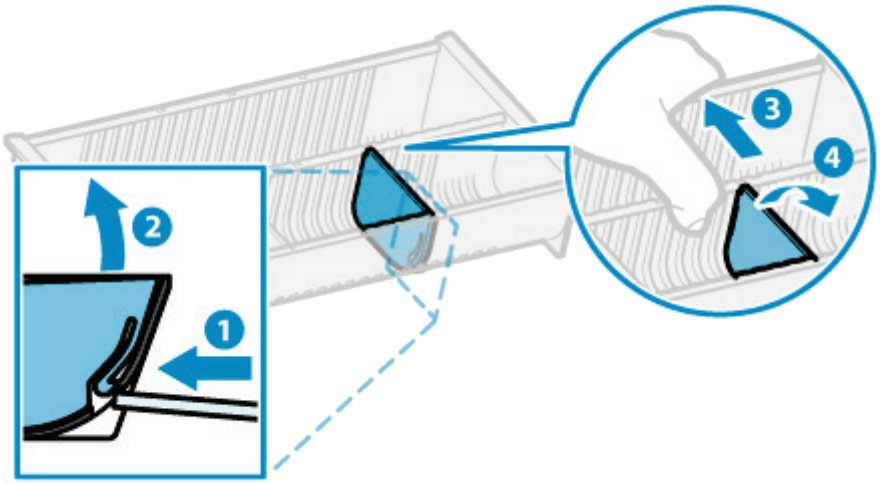
9.4.1. Change the layout of the coin storage space in the Vertical Bill Drawer

(1) Open the cash drawer and take out the coin tray

Use Star Quick Setup Utility, or refer to "9.2. Open cash drawer " and open

(2) Remove the divider

Push the hook that is in front of the divider with something that is tapered and [1] lift [2], and while widening the coin tray towards the back [3], remove the divider [4].



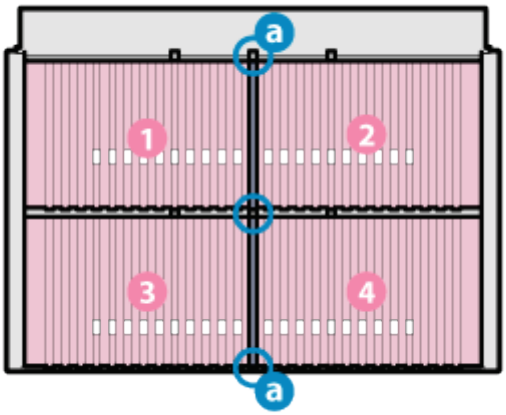
<Notes>

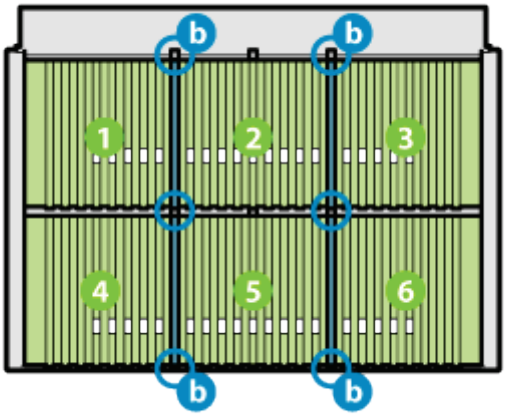
1) When removing the divider, do not use force. It may cause damage to the coin tray and divider
2) For information on how to obtain Star Quick Setup Utility, refer to "1.5. Related applications "

(3) Install the divider

Push the divider along the groove of the coin tray, and secure the hook of the divider on the front side and the back side of the hole in the coin tray

When the divider is set at the central spot, it will divide into 4 spaces, and when it is set to the right and left spots, it will divide into 6 spaces





9.4.2. Change the layout of the coin storage space in the Flat Bill Drawer

(1) Open the cash drawer.

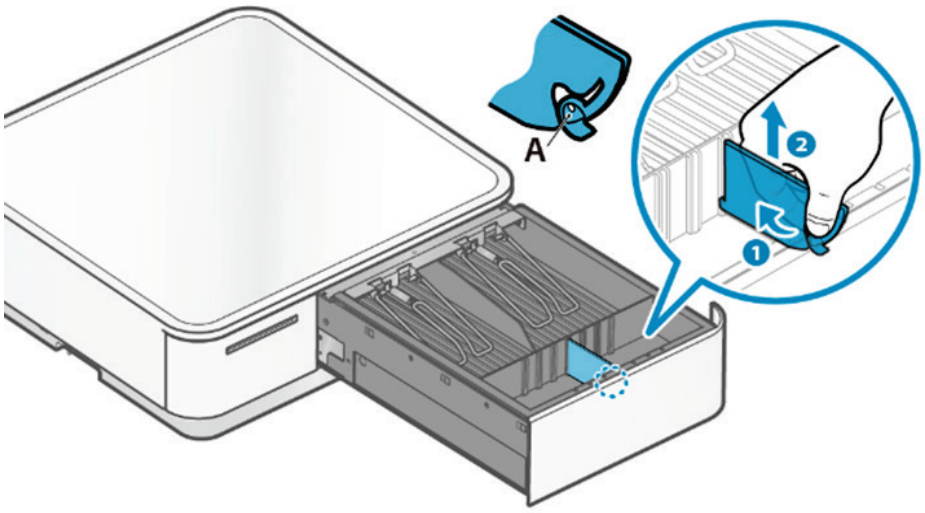
Use the mPOP Utility or open while referring to “9.2 Open cash drawer”.

(2) Remove the divider.

Disengage hook A of the divider and lift upwards.

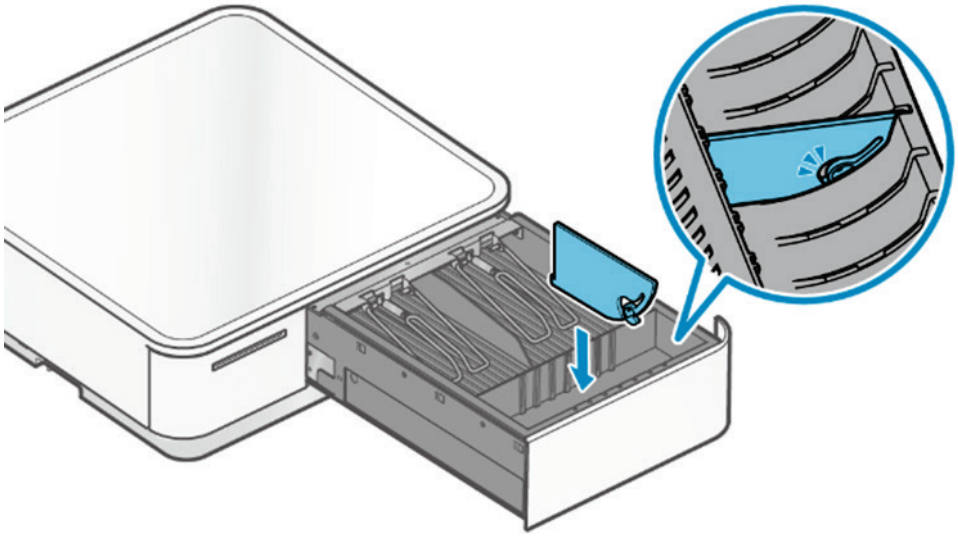
<Notes>

1) When removing the divider, do not use force. Doing so may break the divider
2) For information on how to obtain mPOP Utility, refer to "1.5. Related applications "



(3) Install the divider

Push the divider along the groove of the coin tray, and secure the hook of the divider on the front side of the hole in the coin tray.

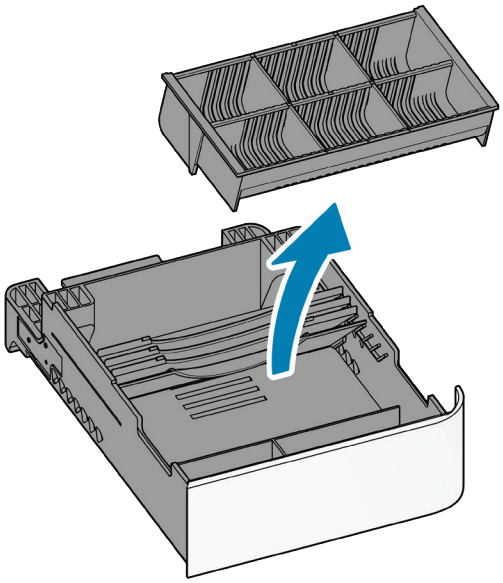


9.5. Change paper tray layout

By decreasing the type of bills (banknotes) that are stored, you can increase the number of bills that can be stored in a section separated with a divider. (supported Vertical Bill Drawer only)

(1) Open the cash drawer and take out the drawer tray.
Use Star Quick Setup Utility, or refer to "9.2. Open cash drawer " and open.

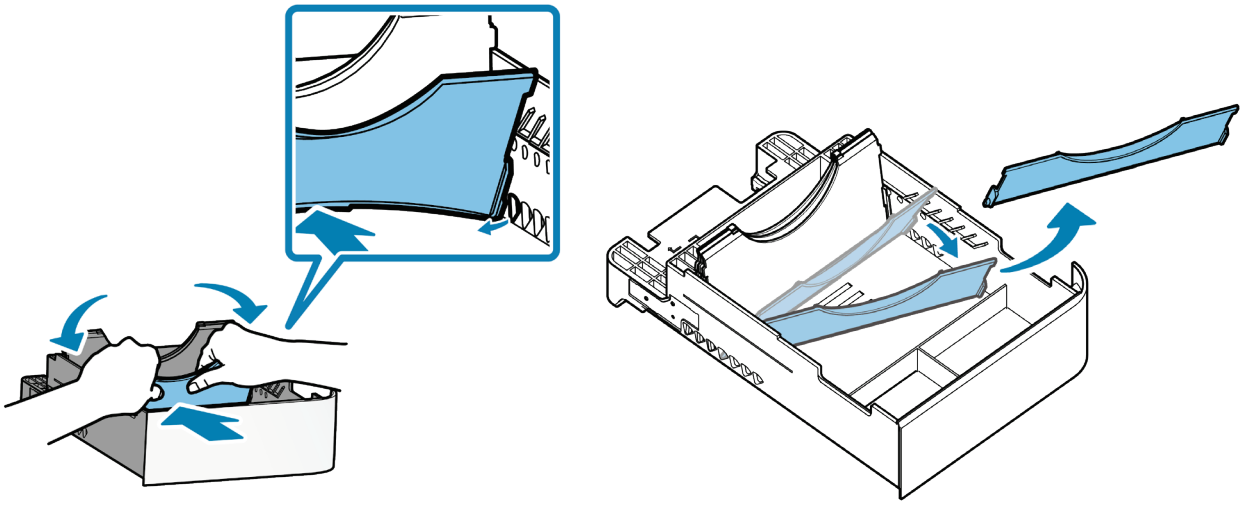
(2) Remove the coin tray.



(3) Remove divider A which is the closet from the front

1) Press the center of divider A to loosen the bottom of it, and then remove the left or right rib from the triangle hole of the drawer tray

2) After one of the ribs is removed, divider A can be removed from the drawer tray by pulling it forward

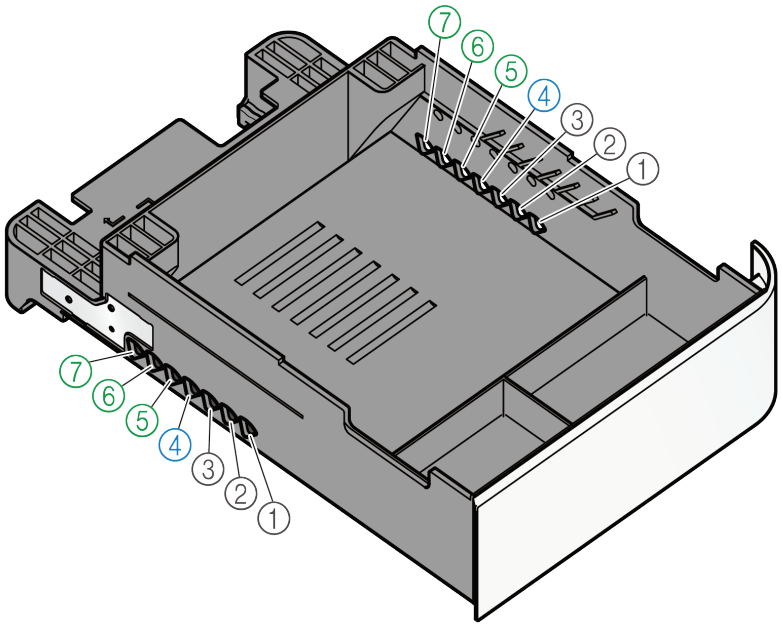


(4) Remove divider B
Remove divider B according to the layout of your choice
For instructions on how to remove divider B, refer to "(3) Remove divider A which is the closet from the front"

(5) Install divider B

1) Note the front/back of divider B, and insert one of the ribs into the triangle hole (⑤ to ⑦)

2) Press the center of divider B to loosen the bottom of it, and insert the other rib into the triangle hole (⑤ to ⑦) of the drawer tray



<Notes>

1) Make sure to insert into the triangle hole with the same left/right position

2) If the coin tray is used, triangle holes ① to ③ of the drawer tray cannot be used

(6) Install divider A

1) Note the front/back of divider A, and insert one of the ribs into triangle hole ④

2) Press the center of divider A to loosen the bottom of it, and insert the other rib into triangle hole ④ of the drawer tray

<Notes>

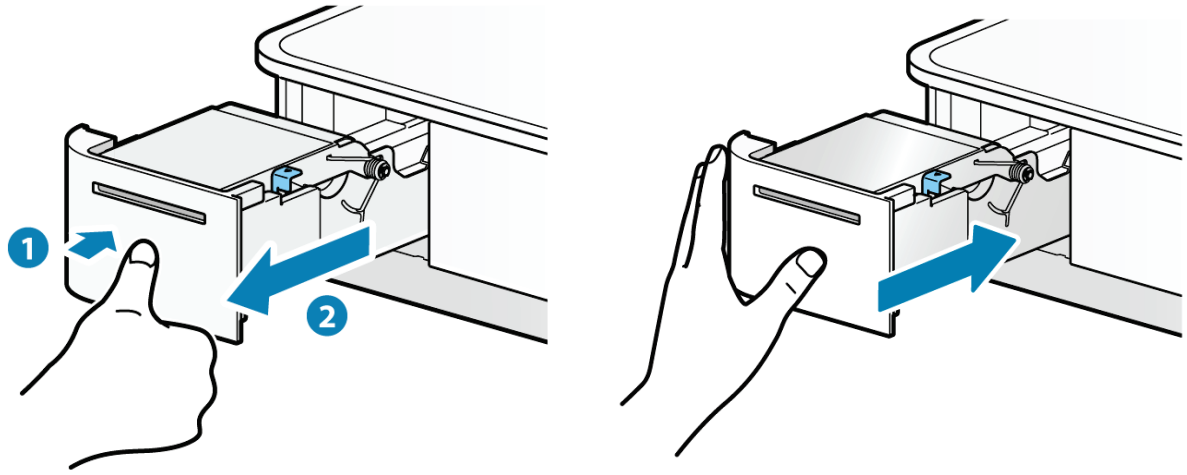
If the coin tray is used, triangle holes besides ④ of the drawer tray cannot be used

(7) Place the coin tray and drawer tray back

Do the opposite to place everything back in its original position

9.6. Pull out/return the printer

(1) Push the front face of the printer to unlock [1] and pull out the printer [2].
When returning the printer, push until you hear a clicking sound



<Notes>

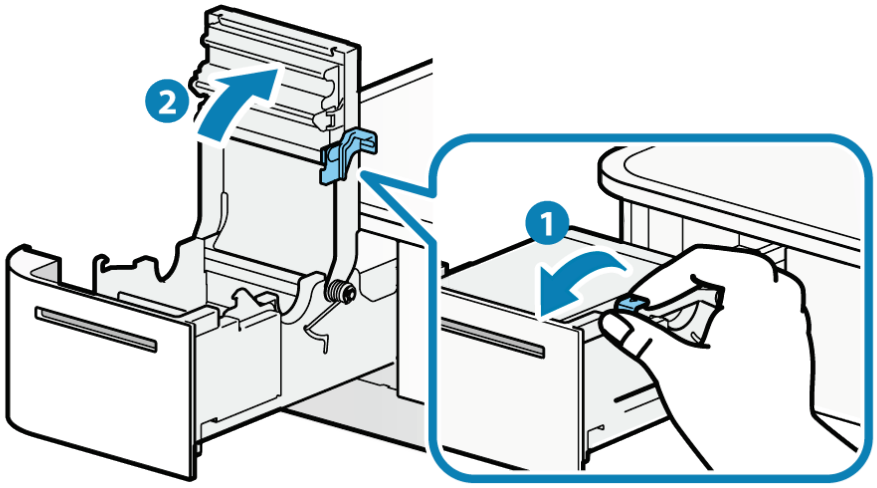
If the push-back of the printer is insufficient, cover open error is detected

9.7. Set thermal paper roll

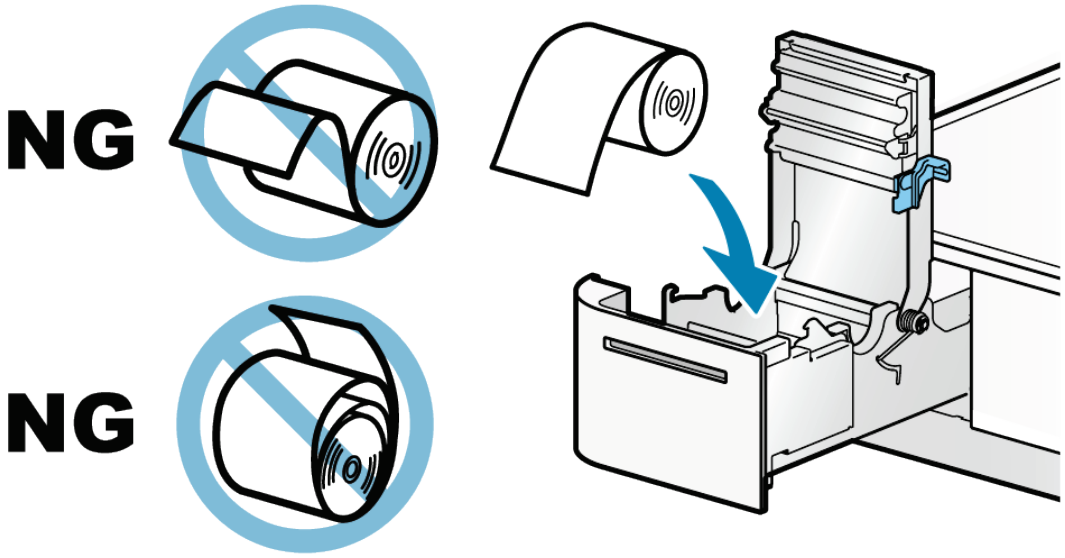
(1) Turn power on.

(2) Push the front face of the printer to unlock and pull out the printer.

(3) Pull the cover opening lever forward [1] to open the printer cover [2].



(4) Set the thermal paper roll with caution regarding the direction of the thermal paper roll.



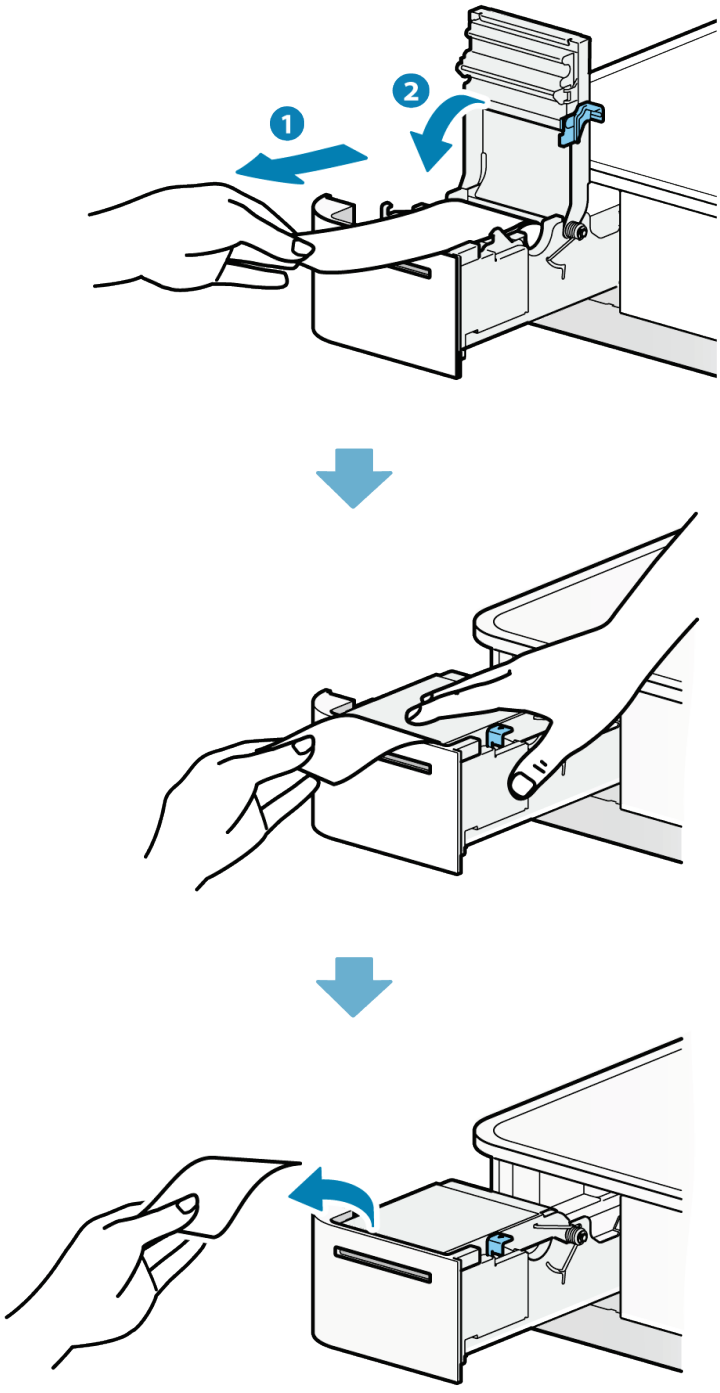
<Notes>

1) If the direction of the thermal paper roll is mistaken, it will not print.
2) If the drawer of the printer is insufficient, the printer cover may not open to the angle it is set to open to, and the thermal paper roll may not be able to be set.
3) If the thermal paper roll is set with slack in the paper, the thermal paper roll may not be able to be printed or conveyed.
4) When replacing paper, remove the paper core remaining in the paper roll holder.

(5) Pull the end of the paper straight out, sandwich the paper and close the printer cover.

(6) After closing the printer cover and automatically removing the piece of paper that has been cut, push back the printer.

(7) When the operation is completed successfully, the status of the LED display will become On-Line.



<Notes>

1) The cut paper ends must be removed before the printer is returned. It may cause a paper jam

2) Always close the printer cover. If the cover is not closed properly, it will detect a cover open error

9.8. Recovery from a paper jam

If a paper jam occurs, remove the jammed paper in the following manner

(1) Pull out the printer.

(2) Pull the cover opening lever forward to open the printer cover

(3) Remove all, making sure paper fragments do not remain. Not removing all may cause paper jam
Confirm that there are no paper remaining in the paper roll holder or the paper exit. If you try to forcibly rid the paper, there is a possibility of damage to the product, so be very careful when removing the paper

(4) Set the thermal paper roll according to the steps in "9.7 Set thermal paper roll"

9.9. Use barcode reader (Options, settings by model)

(1) Connect the barcode reader to mPOP

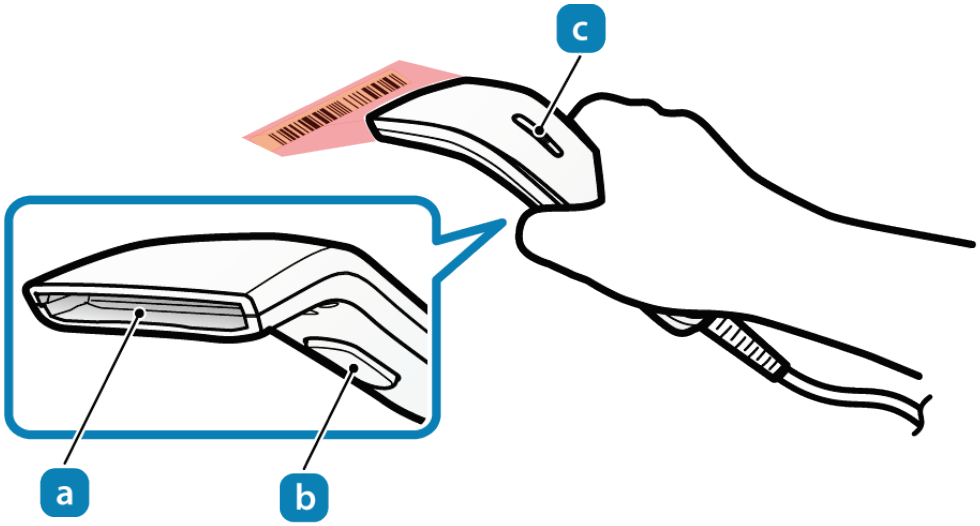
1) Connect the barcode reader to mPOP. When connection is performed while the main unit is turned on, the power to the barcode reader will also turn on, and the setup will finish automatically

2) When the barcode reader turns on, a melody is played

(2) Read a barcode

1) Press the trigger switch [a] while the scanner window [b] is facing the barcode

2) When it has been properly read, the LED [c] will light up blue once, and a beep will be heard



<Notes>

1) Do not touch the reading window. It takes time to read the barcode reader if dirt, oil and etc. is on the barcode and it may cause the barcode reader to fail

2) Only a specified barcode reader can be used in combination with mPOP

3) Only one barcode reader can be connected at the same time

4) Be careful during the reading of a barcode to not look into the scanner window or not have it facing somebody's eyes.

5) Barcode reader settings can be changed using Star Quick Setup Utility
For information on how to get Star Quick Setup Utility, refer to "1.5. Related applications "

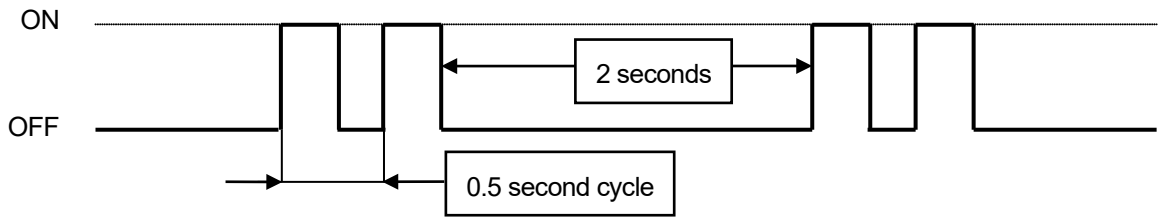
10. LED Display

mPOP condition			Power LED (Blue or green *1)	Error LED (Red)
While initialization of Bluetooth, or while it is being read			Flash (2 times) *2	Flash (2 times) *2
USB host status display		When the device is connected to a charging device or when an unsupported USB device is connected	Flash continuously (5 seconds)	Flash continuously (5 seconds)
		When connected to an unsupported USB or HUB	Flash continuously (alternate for 5 seconds)	Flash continuously (alternate for 5 seconds)
		No response when USB device is connected	Flash continuously (5 seconds) Flashing interval (0.25 seconds)	Flash continuously (5 seconds) Flashing interval (0.25 seconds)
On-Line			On	Off
Error	Auto-recovery error	Stops printing due to detected high temperature for the head	Flash (1 time)	Off
	Recovery possible error	Cover open error	On	On
		Printer unlock error	On	On
		Paper end error	On	Flash continuously
		Drawer open error	On	Flash (1 time)
	Unrecoverable error	Cutter error	Off	Flash continuously
		Power voltage error	Off	Flash (1 time)
		Head thermistor error	Off	Flash (2 times)
		Bluetooth communication error	Off	Flash (3 times)
		Flash error	Off	Flash (4 times)
		EEPROM error	Off	Flash (5 times)
		FW rewrite error	Off	Flash (7 times)
		FW malfunction error	Flash (1 time)	Flash (1 time)

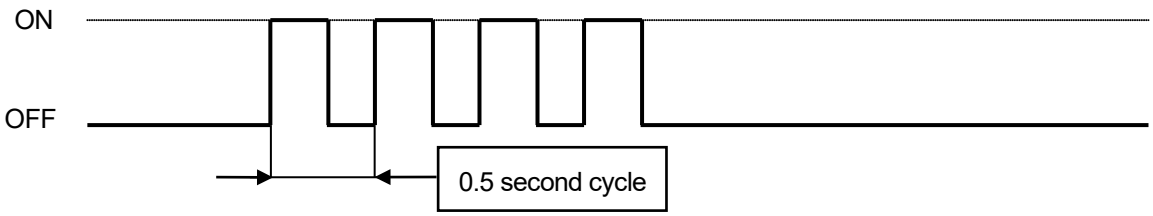
*1 POP10, POP10CI: Power LED (blue)
POP10CBI: Power LED (blue) when Bluetooth is connected, Power LED (green) when Bluetooth is not connected

*2 POP10 only

<LED display example: Flash (2 times)>



<LED display example: Flash continuously>



11. Error Specifications

11.1. Auto-recovery error

This error is cleared automatically when the internal status of the printer changes.

When the error is cleared, the data is not cleared

Error	LED		Error cause	Error release method	Status Transmit
	Power	Error			
Stops printing due to detected high temperature for the head	Flashing (Once)	Off	High head temperature detection. (75°C)	Automatically recovered when head temperature drops. (70°)	✓ (ASB/NSB)

11.2. Recoverable error

The operator can clear this error while maintaining the printer status by following the specified error recovery procedure

Error	LED		Error cause	Error release method	Status Transmit
	Power	Error			
Cover open error	On	On	Cover open detection	Close the cover.	✓ (ASB/NSB)
Printer unlock error	On	On	Detects a state in which the printer is pulled out	Push back the printer to (put away)	✓ (ASB/NSB)
PE error	On	Flash continuously	Paper Out Detection	Replace the paper.	✓ (ASB/NSB)
Cash drawer open error	On	Flashing (Once)	Cash drawer does not open	1) Remove obstacles 2) 1) If it doesn't open, then use the open switch to force it open	✓ (ASB/NSB)

11.3. Unrecoverable error

Since this error is a fatal error, it is necessary to turn off the power of the printer once and then turn it on again.
If the error recurs after turning on the power again, repair the printer.

Error	LED		Error cause	Error release method	Status Transmit
	Power	Error			
Cutter error	Off	Continuous Flashing	Cutter failure	Power OFF → paper jam confirmation → paper exclusion → power is turned on again → same error → repair (*1)	✓ (ASB/NSB)
Power voltage error	Off	Flashing (Once)	Abnormal power voltage detection	Power OFF → power is turned on again → same error → repair	✓ (ASB/NSB)
Head thermistor Error	Off	Flashing (Twice)	Head thermistor abnormality detection	Power OFF → power is turned on again → same error → repair	✓ (ASB/NSB)
Bluetooth communication Error	Off	Flashing (3 times)	Bluetooth module abnormality	Power OFF → power is turned on again → same error → repair	N/A
Flash error	Off	Flashing (4 times)	Flash access error detected	Power OFF → power is turned on again → same error → repair	N/A
EEPROM error	Off	Flashing (5 times)	EEPROM access error detected	Power OFF → power is turned on again → same error → repair	N/A
FW rewrite error	Off	Flashing (7 times)	Anomaly detection of received F/W data Verify error detection after F / W rewrite.	Power OFF → power is turned on again → same error → repair	N/A
FW malfunction error	Flashing (Once)	Flashing (Once)	F/W malfunction anomaly detection	Power OFF → power is turned on again → same error → repair	N/A

< Note>

If an error is displayed other than the above, try turning the power off and turning it on again.
If the same error is displayed after the power is turned on again, contact the dealer.

12. Memory Switch Specifications

By changing the setting of the memory switch it is possible to configure settings for the functions of mPOP

(1) How to change the memory switch setting

It is possible to change the memory switch setting from Star Quick Setup Utility. If the memory switch setting has been changed, always confirm that it has definitely been changed. To confirm the memory switch setting, refer to "(2) How to confirm the memory switch setting"

<Notes>

For information on how to obtain Star Quick Setup Utility, refer to "1.5. Related applications "

(2) How to confirm the memory switch setting

The memory switch setting can be confirmed from the contents of self-printing

For operating procedures of the self-printing function, refer to "6.3. Calling the test print function"

12.1. MSW0

Bit	Function	OFF/"0"	ON/"1"	Note
F				
E	Special location of use	(See table below.)	(See table below.)	*3
D	Special location of use	(See table below.)	(See table below.)	*3
C	Special location of use	(See table below.)	(See table below.)	*3
B				
A	Multi-byte character	(See table below.)	(See table below.)	*1
9	Multi-byte character	(See table below.)	(See table below.)	*1
8	Multi-byte character	(See table below.)	(See table below.)	*1
7				
6				
5	SHIFT-JIS Kanji Character Mode	Valid	Invalid	*2
4	Destination Specifications	SBCS (Single-byte character countries)	MBCS (Multi-byte character countries)	
3				
2				
1				
0				

*1) Multi- byte characters: This function is valid only when set to MBCS setting

N	MSW0-A	MSW0-9	MSW0-8	Multi-byte character	
"0"	0	0	0	Chinese characters (GB2312)	
"1"	0	0	1	Japanese characters	
"2"	0	1	0	Taiwanese characters (BIG5)	F/W Ver.1.2 or later
"3"	0	1	1	Chinese characters (GB18030)	F/W Ver.1.2 or later
"4"	1	0	0	(Reserved)	
"5"	1	0	1	(Reserved)	
"6"	1	1	0	(Reserved)	
"7"	1	1	1	(Reserved)	

*2) SHIFT-JIS Kanji Character Mode

This setting is valid only when Japanese kanji characters are selected and the MBCS setting is enabled.

Refer to the table below for details on JIS Kanji Character Mode or SHIFT-JIS Kanji Character Mode that is valid when the printer is selected with Japanese kanji characters

(The JIS Kanji Character Mode is invalid when the power is turned on.)

< When Japanese kanji characters are selected SHIFT-JIS/JIS Specifications>

SHIFT-JIS Kanji Character Mode	JIS Kanji Character Mode	Print Mode
Invalid	Invalid	Japanese Kanji Character ANK Mode (when MSW0-5= "1")
Valid	Invalid	SHIFT-JIS Kanji mode (when MSW0-5 = "0")
Invalid	Valid	JIS Kanji Character Mode
Valid	Valid	JIS Kanji Character Mode

*3) Special location of use (F/W Ver1.2 or later)

Select the destination which requires specialized specifications such as character types and a baseline.

N	MSW0-E	MSW0-D	MSW0-C	location of use	Specification	Note
“0”	0	0	0	Standard		
“1”	0	0	1	Thai	Thai precomposed characters are supported. ANK fonts specialized for Thai are selected. The baseline for Thai is adopted.	F/W Ver1.2 or later The below settings are invalid Page mode, International characters, slash 0 and large font
“2”	0	1	0	(Reserved)		
“3”	0	1	1	(Reserved)		
“4”	1	0	0	(Reserved)		
“5”	1	0	1	(Reserved)		
“6”	1	1	0	(Reserved)		
“7”	1	1	1	(Reserved)		

*4) Initial value of ambiguous character setting of UTF-8 code according to location of use

MSW0-4	Specification according to location of use	Initial value of ambiguous character setting of UTF-8 code	
		F/W ver.2.0 or older	F/W ver.2.1 or later
0	SBCS(1byte)	1 byte priority	1 byte priority
1	MBCS(multi byte)		2 byte priority

12.2. MSW1

Bit	Function	OFF/"0"	ON/"1"	Note
F				
E				
D				
C				
B				
A				
9				
8				
7				
6	Font type (Font-A、Font-B)	Standard Fonts	Large Fonts	*2
5				
4	Zero Style	Normal Zero	Slashed Zero	
3	International Characters	(See table below.)		*1
2	International Characters	(See table below.)		*1
1	International Characters	(See table below.)		*1
0	International Characters	(See table below.)		*1

*1) International Characters

n	MSW1-3	MSW1-2	MSW1-1	MSW1-0	International Characters
"0"	0	0	0	0	USA
"1"	0	0	0	1	France
"2"	0	0	1	0	Germany
"3"	0	0	1	1	UK
"4"	0	1	0	0	Denmark 1
"5"	0	1	0	1	Sweden
"6"	0	1	1	0	Italy
"7"	0	1	1	1	Spain 1
"8"	1	0	0	0	Japan
"9"	1	0	0	1	Norway
"A"	1	0	1	0	Denmark 2
"B"	1	0	1	1	Spain 2
"C"	1	1	0	0	Latin America
"D"	1	1	0	1	Korea
"E"	1	1	1	0	Ireland
"F"	1	1	1	1	Legal

<Notes>

1) This setting is invalid if the printer is selected with Japanese kanji characters and is set to MBCS mode. International character setting is fixed to "Japan (n=8)"

*2) Font type (Font-A、Font-B)

Large font is not compatible with all of the code page types, even if the large font has been selected by the MSW, there may be code pages that cannot be switched to a large font

Shown in the table below is the switching propriety of large font for each code page

The code page where switching to large font cannot be done as shown in the table below, will print in standard font even when the large font has been selected by the MSW

(✓: Large font switchable - : Large font cannot be switched)

PAGE	Code Page	Large Fonts supported
0	Normal	✓
1	Code Page437 (USA,Std. Europe)	✓
2	Katakana	-
3	Code Page437 (USA,Std. Europe)	✓
4	Code Page 858 (Multilingual)	✓
5	Code Page 852 (Latin-2)	✓
6	Code Page 860 (Portuguese)	✓
7	Code Page 861 (Icelandic)	✓
8	Code Page 863 (Canadian French)	✓
9	Code Page 865 (Nordic)	✓
10	Code Page 866 (Cyrillic Russian)	✓
11	Code Page 855 (Cyrillic Bulgarian)	✓
12	Code Page 857 (Turkey)	✓
13	Code Page 862 (Israel (Hebrew))	-
14	Code Page 864 (Arabic)	-
15	Code Page 737 (Greek)	✓
16	Code Page 851 (Greek)	✓
17	Code Page 869 (Greek)	✓
18	Code Page 928 (Greek)	✓
19	Code Page 772 (Lithuanian)	✓
20	Code Page 774 (Lithuanian)	✓
21	Code Page 874 (Thai)	-
32	Code Page 1252 (Windows Latin-1)	✓
33	Code Page 1250 (Windows Latin-2)	✓
34	Code Page 1251 (Windows Cyrillic)	✓
64	Code Page 3840 (IBM-Russian)	✓
65	Code Page 3841 (Gost)	✓
66	Code Page 3843 (Polish)	✓
67	Code Page 3844 (CS2)	✓
68	Code Page 3845 (Hungarian)	✓
69	Code Page 3846 (Turkish)	✓
70	Code Page 3847 (Brazil-ABNT)	✓
71	Code Page 3848 (Brazil-ABICOMP)	✓
72	Code Page 1001 (Arabic)	-
73	Code Page 2001 (Lithuanian-KBL)	✓
74	Code Page 3001 (Estonian-1)	✓
75	Code Page 3002 (Estonian-2)	✓
76	Code Page 3011 (Latvian-1)	✓
77	Code Page 3012 (Latvian-2)	✓
78	Code Page 3021 (Bulgarian)	✓
79	Code Page 3041 (Maltese)	✓
96	Thai Character Code 42 (Thai)	-
97	Thai Character Code 11 (Thai)	-
98	Thai Character Code 13 (Thai)	-
102	Thai Character Code 18 (Thai)	-

12.3. MSW2

Bit	Function	OFF/"0"	ON/"1"	Note
F				
E	(Reserved)			
D	(Reserved)			
C	(Reserved)			
B				
A				
9				
8	Print startup control	Page units	Line units	*3
7				
6				
5	Print speed	(See table below.)		*1
4	Print speed	(See table below.)		*1
3				
2	Print Density	(See table below.)		*2
1	Print Density	(See table below.)		*2
0	Print Density	(See table below.)		*2

*1) Print speed

n	MSW2-5	MSW2-4	Single-color Mode
"0"	0	0	High Speed (Max. 100 mm/sec)
"1"	0	1	(Reserved)
"2"	1	0	Low Speed (Max. 50 mm/sec)
"3"	1	1	(Reserved)

*2) Print density

n	MSW2-2	MSW2-1	MSW2-0	Print Density
"0"	0	0	0	Standard
"1"	0	0	1	+1
"2"	0	1	0	+2
"3"	0	1	1	+3
"4"	1	0	0	Standard
"5"	1	0	1	(Reserved)
"6"	1	1	0	(Reserved)
"7"	1	1	1	(Reserved)

*3) Print startup control

1) This function selects the printing start-up control (page or line units)
2) When line units are selected, printing starts immediately. However, printing can sometimes be intermittent.
3) Compared to when page units are selected, the print quality may degrade (white lines appearing and such) or the printer noise may become louder
4) When the page unit is selected, intermittent printing will not occur until the image buffer length of 300 mm However, when compared with the row unit selection, start of the printing may be delayed

12.4. MSW3

Bit	Function	OFF/ “0”	ON/“1”	Note
F	Code Page	(See table below.)		*2
E	Code Page	(See table below.)		*2
D	Code Page	(See table below.)		*2
C	Code Page	(See table below.)		*2
B	Code Page	(See table below.)		*2
A	Code Page	(See table below.)		*2
9	Code Page	(See table below.)		*2
8	Code Page	(See table below.)		*2
7				
6				
5	Chinese Character Printing Positions	(See table below.)		*1
4	Printing Positions	(See table below.)		*1
3				
2				
1				
0	Amount of Line Feed	4 mm	3 mm	

*1) Chinese Character Printing Position Count/ANK Printing Position Count

<For SBCS>

MSW3-4	Character Types	Character Sizes (Font + Right Space)	Printing Region (MSW4-0)	Font-A Printing positions
0	ANK	12 (12+0) dots	48.0 mm (384 dots)	32 positions
			54.0 mm (432 dots)	36 positions
			50.8 mm (406 dots)	33 positions
1	ANK	15 (12+3) dots	48.0 mm (384 dots)	25 positions
			54.0 mm (432 dots)	28 positions
			50.8 mm (406 dots)	27 positions

<When set to Japanese kanji characters (when selected with Japanese kanji characters and set to MBCS)>

MSW3-5	Character Types	Character Sizes (Left Space + Font + Right Space)	Printing Region (MSW4-0 to MSW4-2)	Font-A Printing positions
0	Two-byte kanji characters	26 (1+24+1) dots	48.0 mm (384 dots)	14 positions
			54.0 mm (432 dots)	16 positions
			50.8 mm (406 dots)	15 positions
	Single-byte kanji characters	13 (0+12+1) dots	48.0 mm (384 dots)	29 positions
			54.0 mm (432 dots)	33 positions
			50.8 mm (406 dots)	31 positions
1	Two-byte kanji characters	30 (3+24+3) dots	48.0 mm (384 dots)	12 positions
			54.0 mm (432 dots)	14 positions
			50.8 mm (406 dots)	13 positions
	Single-byte kanji characters	15 (1+12+2) dots	48.0 mm (384 dots)	25 positions
			54.0 mm (432 dots)	28 positions
			50.8 mm (406 dots)	27 positions

MSW3-4	Character Types	Character Sizes (Font + Right Space)	Printing Region (MSW4-0 to MSW4-2)	Font-A Printing positions
0	ANK	12 (12+0) dots	48.0 mm (384 dots)	32 positions
			54.0 mm (432 dots)	36 positions
			50.8 mm (406 dots)	33 positions
1	ANK	15 (12+3) dots	48.0 mm (384 dots)	25 positions
			54.0 mm (432 dots)	28 positions
			50.8 mm (406 dots)	27 positions

<When set to Japanese kanji characters (when selected with other than Japanese kanji characters and set to MBCS)>

MSW3-5	Character Types	Character Sizes (Left Space + Font + Right Space)	Printing Region (MSW4-0 to MSW4-2)	Font-A Printing positions
0	Kanji characters	26 (1+24+1) dots	48.0 mm (384 dots)	14 positions
			54.0 mm (432 dots)	16 positions
			50.8 mm (406 dots)	15 positions
1	Kanji characters	30 (3+24+3) dots	48.0 mm (384 dots)	12 positions
			54.0 mm (432 dots)	14 positions
			50.8 mm (406 dots)	13 positions

MSW3-4	Character Types	Character Sizes (Font + Right Space)	Printing Region (MSW4-0 to MSW4-2)	Font-A Printing positions
0	ANK	13 (12+1) dots	48.0 mm (384 dots)	29 positions
			54.0 mm (432 dots)	33 positions
			50.8 mm (406 dots)	31 positions
1	ANK	15 (12+3) dots	48.0 mm (384 dots)	25 positions
			54.0 mm (432 dots)	28 positions
			50.8 mm (406 dots)	27 positions

*2) Code Pages

When SBCS is set

n	MSW3-F	MSW3-E	MSW3-D	MSW3-C	MSW3-B	MSW3-A	MSW3-9	MSW3-8	Character Table
“00”	0	0	0	0	0	0	0	0	Normal*
“01”	0	0	0	0	0	0	0	1	Code Page437 (USA,Std. Europe)
“02”	0	0	0	0	0	0	1	0	Katakana
“03”	0	0	0	0	0	0	1	1	Code Page437 (USA,Std. Europe)
“04”	0	0	0	0	0	1	0	0	Code Page 858 (Multilingual)
“05”	0	0	0	0	0	1	0	1	Code Page 852 (Latin-2)
“06”	0	0	0	0	0	1	1	0	Code Page 860 (Portuguese)
“07”	0	0	0	0	0	1	1	1	Code Page 861 (Icelandic)
“08”	0	0	0	0	1	0	0	0	Code Page 863 (Canadian French)
“09”	0	0	0	0	1	0	0	1	Code Page 865 (Nordic)
“0A”	0	0	0	0	1	0	1	0	Code Page 866 (Cyrillic Russian)
“0B”	0	0	0	0	1	0	1	1	Code Page 855 (Cyrillic Bulgarian)
“0C”	0	0	0	0	1	1	0	0	Code Page 857 (Turkey)
“0D”	0	0	0	0	1	1	0	1	Code Page 862 (Israel (Hebrew))
“0E”	0	0	0	0	1	1	1	0	Code Page 864 (Arabic)
“0F”	0	0	0	0	1	1	1	1	Code Page 737 (Greek)
“10”	0	0	0	1	0	0	0	0	Code Page 851 (Greek)
“11”	0	0	0	1	0	0	0	1	Code Page 869 (Greek)
“12”	0	0	0	1	0	0	1	0	Code Page 928 (Greek)
“13”	0	0	0	1	0	0	1	1	Code Page 772 (Lithuanian)
“14”	0	0	0	1	0	1	0	0	Code Page 774 (Lithuanian)
“15”	0	0	0	1	0	1	0	1	Code Page 874 (Thai)
“20”	0	0	1	0	0	0	0	0	Code Page 1252 (Windows Latin-1)
“21”	0	0	1	0	0	0	0	1	Code Page 1250 (Windows Latin-2)
“22”	0	0	1	0	0	0	1	0	Code Page 1251 (Windows Cyrillic)
“40”	0	1	0	0	0	0	0	0	Code Page 3840 (IBM-Russian)
“41”	0	1	0	0	0	0	0	1	Code Page 3841 (Gost)
“42”	0	1	0	0	0	0	1	0	Code Page 3843 (Polish)
“43”	0	1	0	0	0	0	1	1	Code Page 3844 (CS2)
“44”	0	1	0	0	0	1	0	0	Code Page 3845 (Hungarian)
“45”	0	1	0	0	0	1	0	1	Code Page 3846 (Turkish)
“46”	0	1	0	0	0	1	1	0	Code Page 3847 (Brazil-ABNT)
“47”	0	1	0	0	0	1	1	1	Code Page 3848 (Brazil-ABICOMP)
“48”	0	1	0	0	1	0	0	0	Code Page 1001 (Arabic)
“49”	0	1	0	0	1	0	0	1	Code Page 2001 (Lithuanian-KBL)
“4A”	0	1	0	0	1	0	1	0	Code Page 3001 (Estonian-1)
“4B”	0	1	0	0	1	0	1	1	Code Page 3002 (Estonian-2)
“4C”	0	1	0	0	1	1	0	0	Code Page 3011 (Latvian-1)
“4D”	0	1	0	0	1	1	0	1	Code Page 3012 (Latvian-2)
“4E”	0	1	0	0	1	1	1	0	Code Page 3021 (Bulgarian)
“4F”	0	1	0	0	1	1	1	1	Code Page 3041 (Maltese)
“60”	0	1	1	0	0	0	0	0	Thai Character Code 42 (Thai)
“61”	0	1	1	0	0	0	0	1	Thai Character Code 11 (Thai)
“62”	0	1	1	0	0	0	1	0	Thai Character Code 13 (Thai)
“66”	0	1	1	0	0	1	1	0	Thai Character Code 18 (Thai)
“80”	1	0	0	0	0	0	0	0	UTF-8
“FF”	1	1	1	1	1	1	1	1	User Setting (Blank Code Page)

When MBCS is set (UTF-8 settings)

n	MSW3-F	MSW3-E	MSW3-D	MSW3-C	MSW3-B	MSW3-A	MSW3-9	MSW3-8	UTF-8 setting
Other than "80"	*	*	*	*	*	*	*	*	UTF-8 invalid (*1)
"80"	1	0	0	0	0	0	0	0	UTF-8 valid (*2)

* 1) When the UTF-8 code is invalid, the Chinese character code is specified by JIS Shift JIS/GB/BIG5/KS code

* 2) When the UTF-8 code is valid, the Chinese character code is specified in UTF-8
Chinese characters that can be printed in UTF-8 code are those Chinese character that are selected in "MSW0: multi-byte character"

12.5. MSW4

Bit	Function	OFF/"0"	ON/"1"	Note
F				
E				
D				
C				
B				
A				
9				
8				
7				
6				
5				
4				
3				
2	Printing Region	(See table below.)		*1
1	Printing Region	(See table below.)		*1
0	Printing Region	(See table below.)		*1

*1) Printing Region

n	MSW4-2	MSW4-1	MSW4-0	Printing Region
"0"	0	0	0	48 mm (384 dots)
"1"	0	0	1	54 mm (432 dots)
"2"	0	1	0	(Reserved)
"3"	0	1	1	50.8 mm (406 dots)
"4"	1	0	0	(Reserved)
"5"	1	0	1	(Reserved)
"6"	1	1	0	(Reserved)
"7"	1	1	1	(Reserved)

12.6. MSW5

Bit	Function	OFF/"0"	ON/"1"	Note
F	Drawer command during error	Valid	Invalid	*2
E	External drawer SW polarity	H: Open	L: Open	*4
D	Built-in drawer drive command	BEL(07H) / FS(1CH)	SUB(1AH) / EM(19H)	*3
C	External drawer drive command	BEL(07H) / FS(1CH)	SUB(1AH) / EM(19H)	*3
B	Drawer open switch	Invalid	Valid	*1
A				
9				
8				
7				
6				
5				
4				
3				
2				
1				
0				

*1) Drawer open switch

This function sets the enable/disable for the cash drawer open function of the multi-function button

For directions on how to operate the multi-function button, refer to "6.1. Calling the cash drawer open function"

*2) Drawer command during error

This function sets the valid/invalid for the drawer open command during data reception in occurrence of an error when data cancel mode is enabled.

When data cancel mode is disabled, the drawer open command is valid (fixed).

MSW5-F	
0	Drawer open enabled
1	Drawer open disabled

*3) Command to control the internal and external drawer

For this setting,F/W Ver2.0 or later compatible

*4) The status of the drawer (Close/Open) can be determined according to the status of pin No. 6 (Low/High) of the external drive (control) connector

For this setting, F/W Ver2.0 or later compatible

12.7. MSW7

Bit	Function	OFF/“0”	ON/“1”	Note
F				
E				
D				
C	ASB function	(See table below.)		*2
B				
A				
9				
8	NSB Function	Valid	Invalid	*1
7				
6				
5				
4				
3				
2				
1				
0				

*1) NSB function

The function to enable/disable NSB can be used only when USB-B I/F is enabled

*2) ASB function

A function to automatically send status notifications every time the status of the printer changes

This function is valid for Bluetooth, USB-B, and USB-C (when an iOS device is connected).

I/F	MSW7-C	ASB function
Bluetooth	0	Invalid
	1	Valid
USB-B	0	Valid
	1	Invalid
USB-C	0	Valid
	1	Invalid

12.8. MSW8

Bit	Function	OFF/"0"	ON/"1"	Note
F	Horizontal Reduced Printing	(See table below.)		*1
E	Horizontal Reduced Printing	(See table below.)		*1
D	Horizontal Reduced Printing	(See table below.)		*1
C	Horizontal Reduced Printing	(See table below.)		*1
B				
A				
9				
8				
7	Reduced Printing and Barcode Processing	Printed in reduced size	Not printed in reduced size	*2
6				
5				
4				
3				
2				
1				
0				

*1) Horizontal direction reduction print

n	MSW8-F	MSW8-E	MSW8-D	MSW8-C	Horizontal Reduced Printing
"0"	0	0	0	0	Invalid
"1"	0	0	0	1	Valid
"2"	0	0	1	0	
...	...	...	...	...	
"F"	1	1	1	1	

When the horizontal reduced printing is enabled, with the current printing area setup (MSW4-0~2), a printing area of 72 mm can be printed out using the following reduction ratio

(1) Print area 48 mm setting : 67%
(2) Print area 54 mm setting : 75%
(3) Print area 50.8 mm setting : 67%

*2) Reduced Printing and Barcode Processing (F/W Ver1.3 or later)

This function is available when reduced printing is enabled.

Restrictions applicable if barcode and reduced printing are disable

・Characters or bit images that run in vertical directions on barcode are not printed in reduced size.

<Note> F/W Ver1.0～1.2 don't support this function,when the horizontal reduced printing function is enabled, the size of barcodes are also reduced when they are printed out

12.9. MSWB

Bit	Function	OFF/"0"	ON/"1"	Note
F	Data timeout	Valid	Invalid	*1
E	Communication connection status detection	Valid	Invalid	*2
D				
C	Print process during error recovery	Destruction of print data	Re-print	*3
B				
A				
9				
8				
7				
6				
5				
4				
3				
2				
1				
0				

* 1) Disconnection detected due to data time-out

When this function is enabled, it will determine that communication has been disconnected when a certain time has elapsed with the printer receiving no data. When disconnection is detected, even if the command is being received, the command analysis will be terminated. If data cancel mode is also enabled when disconnection is detected, data cancellation will be performed until the document end command

* 2) When the communication connection status detection function is enabled, data time out with this function is not immediately determined a disconnection, and in combination with the communication connection status detection function, determine whether to disconnect the communication or not

* 2) Communication connection state detection

This function is effective only when * 1) data timeout is effective.

When this function is enabled, and the interface communication connection is confirmed when a data time out is detected, it will be determined that the connection has been detected while it was in a disconnection state, and * 1) processing performed at the time of the disconnection detection will be performed

*3) Print process during error recovery

This function is only enabled during page mode.

MSWB-C=0 (Print data destruction)	MSWB-C=1 (Re-print)
When an error occurs, discard the continued print data	When the ON-LINE status is recovered, restart printing from the top of the page when the error occurred

12.10. MSWC

Bit	Function	OFF/"0"	ON/"1"	Note
F				
E				
D				
C				
B				
A				
9				
8				
7				
6				
5				
4				
3				
2				
1	USB serial number	Invalid	Valid	*1
0				

*1) USB Serial Number

This function is only valid for the USB interface

12.11. MSWF

Bit	Function	OFF/“0”	ON/“1”	Note
F				
E				
D				
C				
B				
A				
9				
8				
7				
6				
5				
4				
3				
2				
1				
0				

13. Compliant Specifications and Certification

13.1. Electrical safety & EMC

Country	Electrical Safety	EMC
International	CB	–
USA	UL	FCC (EMI : ClassA)
Canada	c-UL	ISED (EMI:ClassA)
EU	CE, UKCA (EMI ClassA)	
Mexico	UL CoC	–
Australia/ New Zealand	-	RCM (EMI ClassA)
Japan	–	–
India	BIS	
Taiwan	RPC	

13.2. Radio act (excluding POP10CI)

Country	Radio art
USA	FCC
Canada	ISED
EU	CE, UKCA
Mexico	IFETEL
Australia/ New Zealand	RCM
Japan	Certification of construction type
Taiwan	NCC

13.3. Environmental laws

Country	Environmental laws
EU	CE, UKCA (RoHS Directive)
	WEEE Directive
	Packaging and package waste material directive
	REACH regulation
India	India RoHS
Taiwan	RPC (Taiwanese RoHS)

13.4. Energy star

Energy Star Program conformance

14. Drop and Vibration Impact

14.1. Vibration tests (when packaged)

(1) Direction of oscillation : XYZ
(2) Vibration frequency : 7Hz ~ 100Hz
(3) Sweep time : Logarithmic frequency sweep rate 15 minutes for reciprocation
(4) Vibration acceleration : 1.5 G (constant)
(5) Application time : One hour (Total 3 hours)
(6) Packaging status : Minimum packaging
(7) Criterion : Destruction of the device, with no parts missing Cracking and deformation of packaging and cushioning material will be unquestioned
The following items should be normal
1) Cash drawer open/close operation
2) Printer pull out/push in operation
3) Printer paper conveyance operation (including printing quality)

14.2. Drop shock tests (when packaged)

(1) Drop height : Our specified value
(2) Direction of drop : 1 angle, 3 corners, 6 surfaces
(3) Number of drops : One each time (Total of 10 drops)
(4) Packaging status : Minimum packaging
(5) Criterion : Destruction of the device, with no parts missing
Cracking, detachments, deformation of packaging and cushioning material will be unquestioned
The following items should be normal
1) Cash drawer open/close operation
2) Printer pull out/push in operation
3) Printer paper conveyance operation (including printing quality)

14.3. Shock tests (when not packaged)

(1) Drop height : Our specified value
(2) Direction of drop : 4 sides, single-side holding
(3) Number of drops : One time each
(4) Criterion : After dropping while the device is not operating, that the device is not destroyed and has no parts missing
The following items should be normal
1) Cash drawer open/close operation
2) Printer pull out/push in operation
3) Printer paper conveyance operation (including printing quality)

15. Packaging Specifications

The following is the packing specification.

(1) Cushioning material : Pulp mold cushioning, divided vertically

(2) Protection member : Polyethylene sheet (body)

(3) Packing box

1) Cardboard : EB flute

2) Cardboard junction : Glue junction

3) Carton size (external dimensions) : [W] 359mm x [D] 351mm x [H] 196mm

4) Print used : Offset printing

5) Surface coating : Water based varnish

6) Care mark : 4 points (horizontal position not allowed, fragile, prevent water and moisture, limit to the number allowed to be stacked)

7) Recycling mark : Two places on the bottom surface

8) Allowable stack : 10 stages

9) Bar code label : Pasted on the side

10) OPP tape stop : Tape only to the top panel

16. Periodic Maintenance

By periodically maintaining this machine, it is possible to prevent trouble for the body exterior as well as preventing trouble for operation

16.1. Maintenance period

- mPOP : Regularly perform maintenance
- Cash drawer : Regularly perform maintenance
- Printer : Every six months or one million lines (4 km) of printing
- Bar code reader : When dust and dirt attaches to the reading window, it will take time to read the bar code reader or reading may fail. Therefore perform maintenance periodically.

16.2. Maintenance of mPOP

Wipe off the dirt of the exterior plastic part with a soft, dry clean cloth

[Special Notes]

- When performing maintenance, turn off the power of mPOP and disconnect the power plug from the outlet
- Do not use tissue paper, paper towel or coarse cloth as it will leave a scratch on the surface of the plastic
- Alcohol, thinner, benzene and solvents, including highly volatile chemicals such as acetone, must not be used for the plastic part as it may discolor or deteriorate
- If it is very dirty, mix a small amount of neutral detergent with water and soak it into a soft cloth, squeeze well and gently wipe off the dirt. Then wipe off the moisture with a dry soft cloth
  Do not use a mild detergent without diluting it. It may be the cause of discoloration and deterioration of the plastic part

16.3. Cash drawer

Wipe off the dirt of the exterior plastic part with a soft, dry clean cloth

[Special Notes]

- When performing maintenance, turn off the power of mPOP and disconnect the power plug from the outlet
- Do not use tissue paper, paper towel or coarse cloth as it will leave a scratch on the surface of the plastic
- Alcohol, thinner, benzene and solvents, including highly volatile chemicals such as acetone, must not be used for the plastic part as it may discolor or deteriorate
- If it is very dirty, mix a small amount of neutral detergent with water and soak it into a soft cloth, squeeze well and gently wipe off the dirt. Then wipe off the moisture with a dry soft cloth
  Do not use a mild detergent without diluting it. It may be the cause of discoloration and deterioration of the plastic part

16.4. Printer

(1) Thermal print head

Dampen a cotton swab with alcohol (ethanol or isopropyl alcohol) and use it to wipe away dirt on the heating elements of the head. You may also use a soft cloth instead of a cotton swab.

(2) Platen

Use a soft, dry cloth to gently wipe the platen to remove any foreign matter that may have adhered to it

(3) Paper housing unit and its periphery

Remove any dirt, dust, or paper particles that may have adhered to the paper storage unit

[Special Notes]

- When performing maintenance, turn off the power of mPOP and disconnect the power plug from the outlet.
- Immediately after printing, the thermal print head is extremely hot. Do not clean the thermal print head
- When you clean the thermal print head, discharge any static electricity in your body as it may damage the thermal print head or cause other problems
- Do not turn the power on until the alcohol has completely dried

16.5. Barcode reader

(1) Barcode reader exterior

Wipe off the dirt of the exterior plastic part which is where the barcode reader is, with a soft dry clean cloth

[Special Notes]

- When performing maintenance, turn off the power of mPOP and disconnect the power plug from the outlet
- Do not use tissue paper, paper towel or coarse cloth as it will leave a scratch on the surface of the plastic
- Alcohol, thinner, benzene and solvents, including highly volatile chemicals such as acetone, must not be used for the plastic part as it may discolor or deteriorate
- If it is very dirty, mix a small amount of neutral detergent with water and soak it into a soft cloth, squeeze well and gently wipe off the dirt. Then wipe off the moisture with a dry soft cloth

  Do not use a mild detergent without diluting it. It may cause discoloration or deterioration of the plastic part

(2) Scanner window

Remove any dirt and dust with a dry soft and clean cloth that does not produce lint The reading window must especially be carefully wiped so that no residue remains

[Special Notes]

- When performing maintenance, turn off the power of mPOP and disconnect the power plug from the outlet
- Gently wipe the reading window as it can be easily scratched
- Do not use tissue paper, paper towel or coarse cloth as it will leave a scratch on the surface of the plastic
- If wiping again because residue remains, do not use a cloth that is moist or wet. When there is debris or dirt on the barcode reader, it may take time to read the barcode or the barcode reading may fail.
- Neutral detergent such as thinner, benzene, solvents, including highly volatile chemicals such as acetone, must not be used for the plastic part as it may cause discoloration or deterioration

17. Other Precautions

17.1. Safety cautions

1) Do not disassemble or modify the main unit
2) If an abnormal operation, smell, noise, fire, or smoke is noticed when it is operating, immediately unplug the power cord and disconnect all connected cables
3) Do not forcibly pull the connected USB cable or power cord. In particular, when disconnecting cables and plugs, grip the connector itself to avoid applying excessive stress to the connectors of the main unit.
4) If water or other liquid enters mPOP or if the bottom of mPOP is flooded, unplug the power cord and interface cable immediately
5) If you operate the printer with wet hands, a personal injury or an accident may result. Be sure your hands are dry when operating the main unit
6) Be careful about the edges of the main unit components (particularly the cutter blade) when handling the product, because these parts may cause injury.
7) Under no circumstances carry the printer by holding the printer cover while it is open

17.2. Cautions on printer handling and quality

1) During operation of mPOP, do not turn OFF the power of the host terminal or put it in hibernation mode
2) While mPOP is operating, do not pull out the power cord
3) Plated steel sheets are used to produce some of the main unit parts, and their sheared edges may rust. However, this will not affect the functions.
4) Do not drop clips, metal such as insect pins or screws inside the product
5) Because the cash drawer is released and opens up, be careful that it does not touch the body
6) Make sure fingers and hands do not get caught when closing the cash drawer

   It may result in injury
7) To prevent a paper jam during printing, take the following precautions
   - Do not touch the paper when the paper is being output or before the paper is cut.
   - Do not press the paper by hand and do not pull the paper while it is being output.
8) If the main unit prints intermittently because it has to wait to receive data or paper feed is temporarily stopped, the printer may not correctly feed the paper for the first one or three dot lines of printing. Be especially careful when printing graphic data.
9) Under no circumstances open the printer cover during printing or cutting
10) Do not pull the paper out when the printer cover is closed
11) The thermal print head heating elements and driver IC can be damaged easily, so do not allow metallic objects or sandpaper to come into contact with these components
12) Touching the thermal print head heating elements with your bare hands can contaminate these elements, degrading the print quality. Never touch the thermal print head heating elements with your bare hands.
13) Only use the recommended paper rolls. Otherwise, the print quality and the thermal print head life may not be guaranteed. The thermal print head life may be shortened greatly if paper containing Na+, K+, or Cl- is used.
14) Do not start printing if any water is on the thermal print head surface due to condensation
15) Do not block the paper outlet slot.
16) For the thermal head, be careful because the driver IC may be damaged due to static electricity

17.3. Handling wireless communication devices

1) Due to the radio law or regulation for each country regarding Bluetooth communications, there may be limitation on usage. Please check the radio law or standard for the country it is being used in, against the radio laws and regulations acquired by this mPOP
2) Regarding the newest information for radio laws and regulations acquired by this product, see the company's official website
3) This product, because it has received certification of construction type as radio stations of low-power data communication system based on the Radio Law, no radio station license is required when using this product. However disassembling/modifying this product may be punishable by law, so please do not do so
4) Please use this at a distance of more than 22cm from where a pacemaker is equipped
5) The use of wireless devices may be restricted or prohibited in medical institutions, and in aircrafts
6) Follow instructions according to each medical institution and aircrafts
7) If using this product causes radio interference in other machines, immediately stop using this product

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