

GENERAL SPECIFICATION

mC-Label3

REV. NO. 1.40



- ◆ Refer to the [online manual](#) for detail the product setup or uses.



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- 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 disassemble, 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.

Installation in the following locations 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, sand paper 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 "2.3. 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 using label paper, make sure that the environmental specifications set for both the printer and the label paper are met.
- If you are using drivers provided by Star Micronics, limit the maximum number of LAN interface printers that are connected to a single host device to 10.
- When disposing of this product, be sure to follow local ordinances and regulations.

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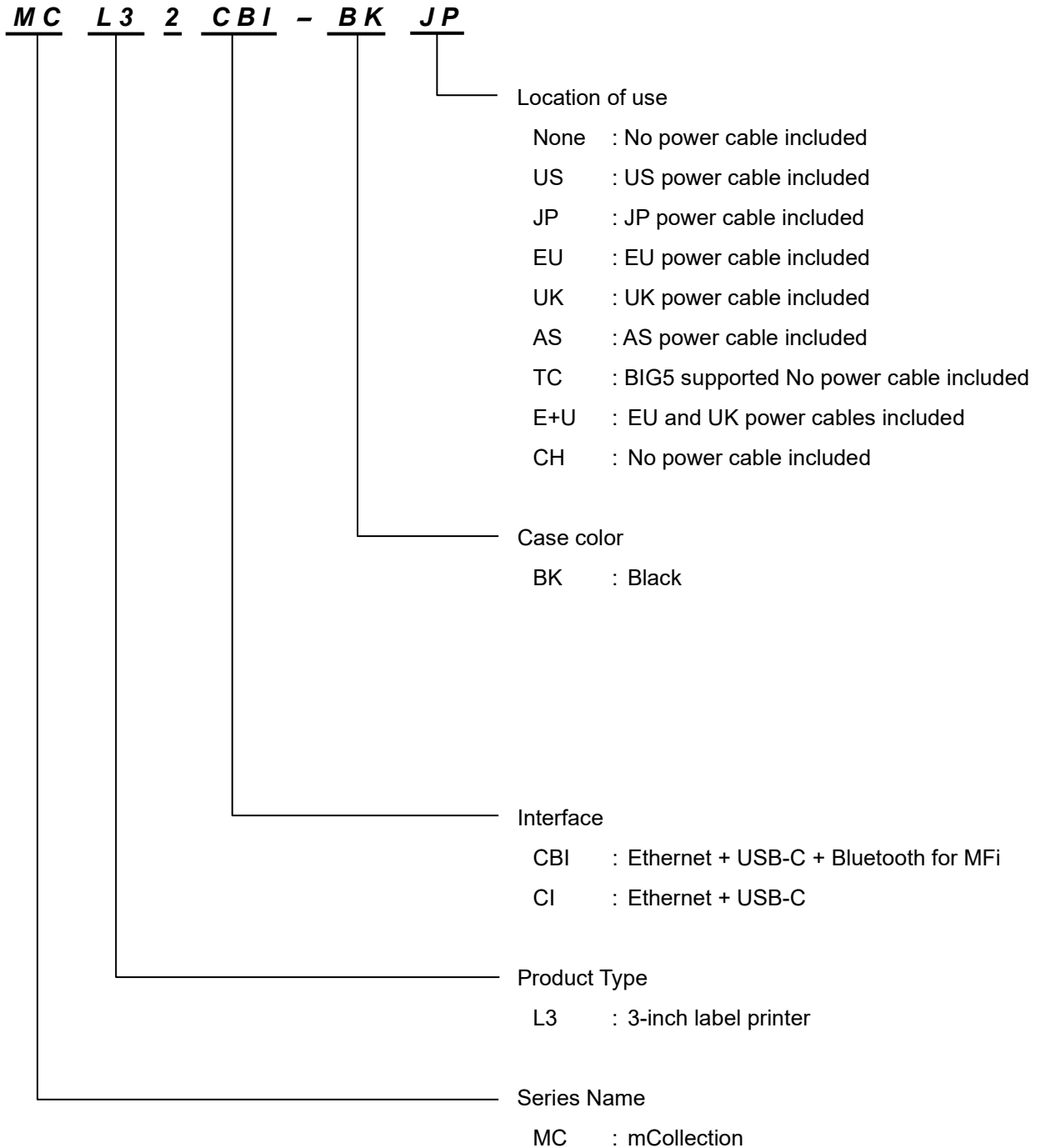
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1. Product Overview

mC-Label3 is a direct line thermal printer in mCollection series.

1.1. Model name



1.2. Product contents (accessories, options)

[Accessories]

- AC adapter
- Power cable 1.8 m
- USB Cable (C-C) 1.0 m
- USB Cable (C-A) 1.8 m
- LAN cable 1.0 m
- Safety Instructions
- Setup sheet

<Notes>

***Accessories vary depending on the region where the printer was purchased.**

[Options]

- Buzzer unit Model : BU01 -24 - A (*1)
Connection : External device drive connector
- Barcode reader Model : BCR-POP1
Connection : USB-A port
Supported barcode : 1D
- Customer display Model : SCD 222 U
Connection : USB-A port
- Wireless LAN unit Model : MCW 10
Connection : LAN port, USB-A port
- Melody speaker Model : MCS10 (*2)
Connection : External device drive connector
- Cutter unit : Replacement parts
- Platen unit : Replacement parts
- Cutter unit and platen unit set : Replacement parts

*1) This is no longer available in Japan.

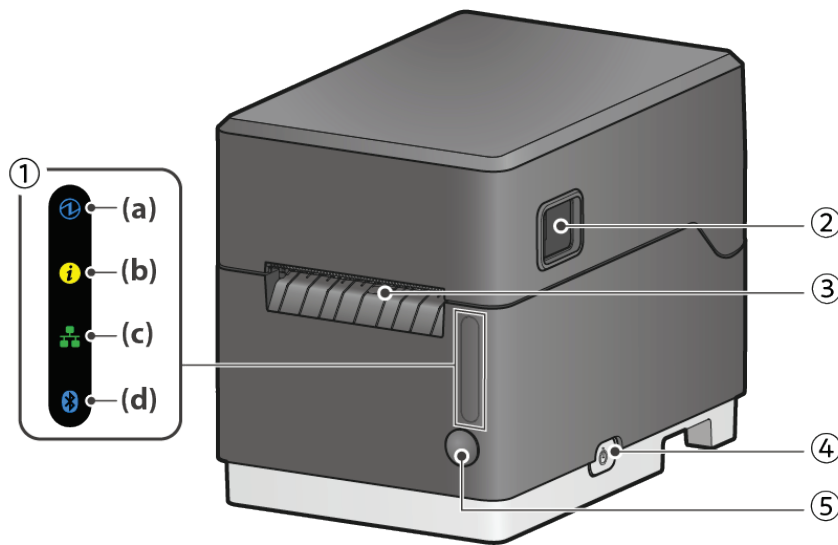
*2) Supports the external device drive commands. Commands related to the melody speaker are not supported.

For details, refer to [Command Specifications](#) from the link below.

<https://www.star-m.jp/printersdks-wsw.html>

1.3. Part names and functions

[Front/side of the printer]



① LED lamp

Indicates the printer status.

(a) Power LED : Lights up and flashes according to the printer status when the power is turned on.

(b) Information LED : Lights up and flashes while cleaning, replacing parts, or print job is stuck.

(c) Network LED : Lights up green according to the network connection status.

(d) Bluetooth LED : Lights up blue according to the Bluetooth connection status. (Models which support Bluetooth only)

For details, refer to “4. Operating Portion and Function”.

② Cover opening lever

Pull this lever to open the printer cover when setting the paper roll.

③ Paper exit/tearbar

The printed paper is ejected from here.

When the cutter is not available, you can use the tear bar to cut the paper manually.

④ Power button

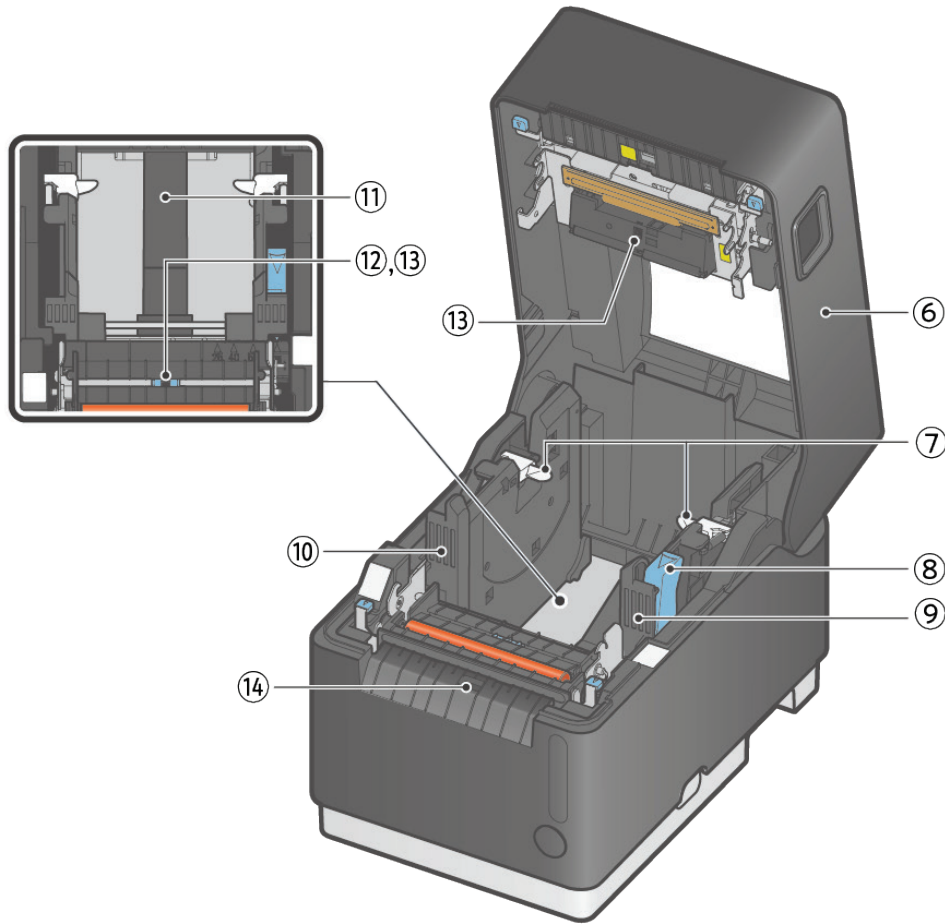
Use this button to turn the power ON or OFF, or to restart the printer.

⑤ Multi-function button

Press this button to feed paper. Also, use this button for One Touch Label and test printing.

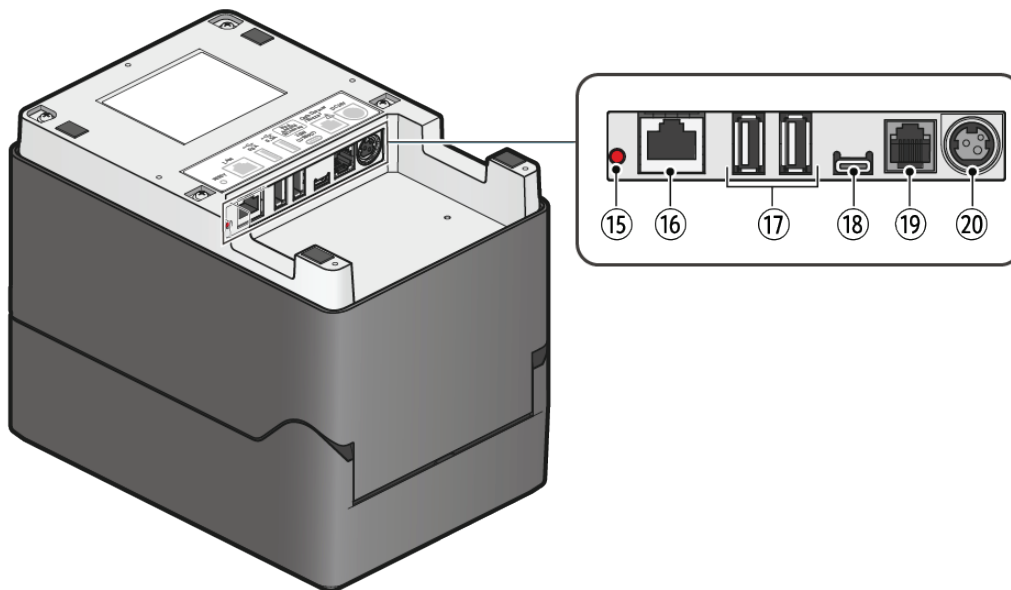
For details, refer to “4. Operating Portion and Function”.

[Inside of the printer]



- ⑥ Printer cover
Opens/Closes when setting the paper roll.
- ⑦ Paper guiding rods
Place the paper roll onto the rods.
- ⑧ Paper guiding lever
When adjusting the width of the paper guide, pinch and pull it towards you and move the paper guide left and right.
- ⑨ Paper guide (R)
- ⑩ Paper guide (L)
- ⑪ Paper position lever
This component detects if a loaded paper roll falls off the paper guiding rods.
- ⑫ PE/BM sensor
This sensor detects the trailing edge of the paper or black marks on the back of the paper.
- ⑬ GAP sensor
This sensor detects the boundary of die cut label paper.
- ⑭ Hold print sensor
This sensor detects when the paper has been removed from the printer.

[Back of the printer]



- ⑮ RESET switch
Initializes the communication settings of the printer.
- ⑯ LAN port
Connects the printer to the network by using the LAN cable that comes with the printer.
- ⑰ USB-A port
Connects and communicates with a USB-compatible product (customer display barcode reader) specified by our company.
- ⑱ USB-C port
Connects Android, or Windows device by using the USB cable that comes with the printer.
- ⑲ External device drive connector
Connects the buzzer, cash drawer and melody speaker.
- ⑳ Power connector
Connects the cable of power adapter that comes with the printer.

2. Product Specifications

2.1. General specifications

Item		Specification	
Printing specifications*1	Print method	Direct thermal (Thermosensitive type)	
	Dot configuration	576 dots/line	
	Print speed	Maximum 180 mm/sec (default)	
	Resolution	8 dots/mm (203 dpi)	
	Print width	15.0 to 72.0 mm (configurable in 1.0 mm unit)	
	Paper width	24.5 to 79.5±0.5mm	
	Roll diameter	Maximum 102 mm	
	Top margin	3 mm (default), 11 mm	
	Paper feed method	Friction feeding method	
Barcode*2	1D	UPC-A, UPC-E, JAN/EAN8, JAN/EAN13, ITF, CODE39, CODE93, CODE128, CODABAR (NW-7) GS1-128, GS1 Omnidirectional, GS1 Truncated, GS1 Limited, GS1 Expanded	
	2D	PDF417, GS1 Stacked, GS1 Stacked Omnidirectional, GS1 Expanded Stacked, QR Code	
	Composite	GS1 Composite Symbols	
Font*3	Specification	European and US letter code	Code Page : Supported
		Chinese character code	Japanese: Supported Traditional Chinese (Big5): Supported, Simplified Chinese (GB18030) : Supported
		Unicode	UTF-8 : Supported (specific font only)
	Type	ANK:Font-A	12 x 24 dots/1.50 x 3.00 mm IBM Block: 12 x 32 dot /1.50 x 4.00 mm
		ANK:Font-B	9 x 24 dots/1.125 x 3.00 mm IBM Block: 9 x 32 dot /1.125 x 4.00 mm
		Japanese kanji characters: 96 alphanumeric characters	24 x 24 dots/3.00 x 3.00 mm
		Japanese kanji characters: 128 characters for extended graphics	
		Japanese Kanji characters: 3489 characters for JIS Level 1	
		Japanese Kanji characters: 3390 characters for JIS Level 2	
		Japanese kanji characters: 83 special characters	
		Japanese kanji characters: 374 characters for NEC selected IBM extended characters	
		Japanese kanji characters: 388 characters for IBM extended characters	12 x 24 dots/1.50 x 3.00 mm
		Japanese kanji characters: 282 characters for single-byte kanji	
		Chinese characters (compliant with GB18030): 96 alphanumeric characters	
		Chinese characters (compliant with GB18030): 28574 Chinese characters	
Font*3	Type	Traditional Chinese BIG5(F): 96 alphanumeric characters	24 x 24 dots/3.00 x 3.00 mm
		Traditional Chinese BIG5(F): 13877 Taiwanese characters	
Emulation		StarPRNT	

Item		Specification
Interface		USB-A x 2 Standard : USB2.0 High-speed, USB BC1.2 SDP Power supply specifications: USB BC 1.2 SDP (maximum 2.5 W)
		USB-C x 1 Standard : USB2.0 High-speed, USB BC1.2 CDP Power supply specifications: USB PD (maximum 20 W), USB Type-C Current (maximum 15 W), USB BC 1.2 CDP (maximum 7.5 W)
		Ethernet x 1 10Base-T/100Base-TX (IEEE 802.3/IEEE 802.3u)
		DK-Port x 1 External device drive connector
Sensor	Head temperature	If the temperature of the thermal head becomes high, printing stops temporarily to lower the temperature of the head. Printing stop: 70°C/Printing resume: 65°C If the temperature is 65°C or more and less than 70°C, a two-second interval is taken before printing operation.
	Temperature of the printed circuit board	If the temperature of the printed circuit board becomes high, printing stops temporarily to lower the temperature of the board.
	PE	Detects the trailing edge of paper.
	BM	Detects black marks on the back of paper.
	GAP	Detects gap between the labels of die cut label paper.
	Paper position	Detects if the loaded paper roll falls off the paper guiding rods.
	Hold print control*4	Detects if the ejected paper is removed. This function can be enabled and disabled using Star Configuration or by panel operations.
	Cover open	Detects the opening/closing of the printer cover.
Cutter home Position	Detects the home position of the cutter.	
Auto cutter*5	Type	Guillotine type
	Cutting method	Partial cut (leaving one uncut portion at center), full cut
	Cut duty	3 sec/Cut
	Thickness	53 μm~154 μm
Printer orientation*6		Laid on flat surface *The allowable angle range of the placement orientation is within ± 5° in the horizontal direction.
External view	External Dimensions	<ul style="list-style-type: none"> ● When the cover is closed 143 (W) x 212 (D) x 169 (H) mm ● When the cover is opened 143 (W) x 259 (D) x 307 (H) mm
	Weight	Approx. 2.0 kg (without paper roll)
		<p>(Reference figure)</p>
Reliability	Dust and drip proofing	Equivalent to IP22
	Insect proofing	Design incorporates consideration for insect proofing.

[Notes about the general specifications]

Note*1) Printing specifications

< Print speed >

Print mode	Maximum speed
During high speed mode	Maximum 180 mm/sec
During medium speed mode	Maximum 140 mm/sec
During slow speed mode	Maximum 100 mm/sec

- 1) The print speed listed above are achieved under the conditions of the power supply voltage at 24 V, the ambient temperature at 25°C, and the print density setting at default.
- 2) The print speed will automatically change depending on conditions, such as power supply voltage fluctuations, the ambient temperature of 25°C, printing density, and printing pattern.
- 3) The print speed may slow down depending on conditions such as the data transfer speed and printing pattern.
- 4) If the printing speed is high, uneven printing may occur. To prevent this, reduce the printing speed.
- 5) If the print at the leading edge of the paper is jammed, feed approximately 1 mm (8 dot line) of paper at the beginning of the print.

< Print width >

- 1) The print width can be changed by using a utility or Star Configuration.
- 2) If the print area is set wider than the paper width, the actual life of the thermal head may become shorter than specified.
- 3) The print width of test printing (self-printing) automatically changes according to the width of the loaded paper. For details of paper width detection, refer to "4.4 Paper width detection".

< Paper width, roll diameter >

The paper widths and roll diameters that can be used vary depending on the paper specifications which are used.

For details, refer to "2.2 Paper specifications"

< Length of printing paper >

The minimum length of printing paper is 25.4 mm.

When sending print data with the length of printing paper to be cut is less than 25.4 mm, perform unloaded feed before cutting the printing paper into the length of 25.4 mm or more.

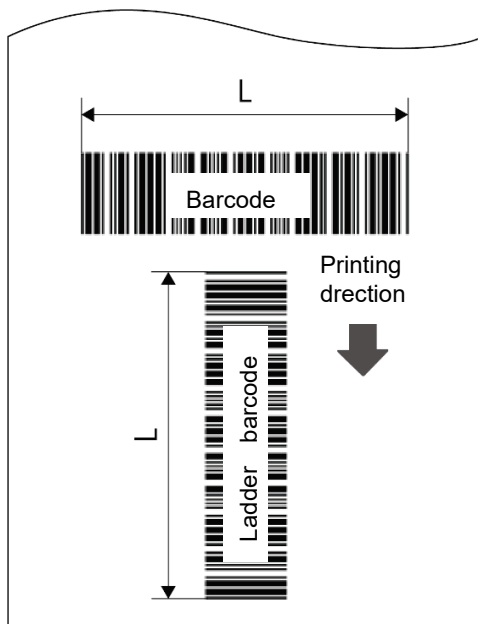
< Top margin >

- 1) The default is 3 mm. Refer to "2.4 Media setting" for behaviors of each media type.
- 2) When the printer power is ON and if the paper is left loaded, the top margin of the first sheet to be printed next may be longer than the set value due to the paper sticking prevention operation inside the printer. If this behavior interferes with operation, unlock the printer cover and leave it slightly open when not in use for a certain period.

Note*2) Barcode

- 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.
Also, be sure to secure sufficient space (quiet zone) in the periphery when printing a barcode so that the reading is not affected.
- 3) When using GS1 Composite Symbols, we recommend using the scanner to make size adjustments to improve readability and evaluating the quality of the scan in advance. Increasing the distance from the scanner in order to increase the scan area may make it difficult to acquire the desired scanning quality.
- 4) If you print 2D barcodes, synthetic barcodes, or ladder barcodes by using a command, print speed will be forcibly changed to medium speed.

Barcode type		Barcode			Ladder barcode		
		Module size	Print speed	L	Module size	Print speed	L
1D		15 mil or more	No limitation	Approx. 72 mm or less	20 mil or more	Medium speed or less	Approx. 72 mm or less
2D	PDF, GS1	15 mil or more	Medium speed or less	Approx. 72 mm or less	15 mil or more	Medium speed or less	Approx. 72 mm or less
	QR	15 mil or more	Medium speed or less	Approx. 72 mm or less	15 mil or more	Medium speed or less	Approx. 72 mm or less
Composite		15 mil or more	Medium speed or less	Approx. 72 mm or less	15 mil or more	Medium speed or less	Approx. 72 mm or less



- Barcode: Barcode in which the direction of the bars is arranged parallel to the printing direction
- Ladder barcode : Barcode in which the direction of the bars is arranged vertically to the printing direction
- L : Barcode length

Note *3) Fonts

< Chinese characters >

- 1) Font settings can be changed through a utility or Star Configuration.

For Japanese Kanji characters, the JIS level-1 kanji characters and the JIS level-2 kanji characters are compliant with JIS x0208-1990/1997.

Level-1 and level-2 JIS2004 sample character style and SHIFT-JIS code are supported.

- 2) Chinese characters (compliant with GB18030) support 2 byte and 4 byte codes.

<UTF-8 supported>

- 1) Chinese characters and Latin-script alphabet with UTF-8 code are supported.

- 2) Characters printable in UTF -8 code are Latin-script alphabet, including the code page owned by the printer, and the following types of Chinese characters.

- Japanese kanji characters
- Chinese characters (comply with GB18030) 2 byte codes
- Traditional Chinese BIG5
- Hangul characters

- 3) UTF-8 does not support 4-byte code Chinese characters conforming to GB18030. The non-supported code is printed with "□".

- 4) A command, Star Configuration can switch between the conventional Kanji code and the UTF-8 code.

Note*4) Hold print sensor

- 1) The hold print sensor is installed in order to prevent the problem of the linerless label paper sticking to the printer or mounting surface when performing continuous printing using linerless label paper.
- 2) The setting can be switched between enabled and disabled. (The factory setting is enabled.) If the media settings were changed, this sensor will automatically change to the recommended settings for that media. For details, refer to "6 Star Configuration Format" and "2.4.1 Non-recommended settings".
- 3) When the hold print sensor is enabled and the paper has not been removed from the printer, printing will not start even when the next printing is selected. In this case, remove the paper. Printing will start.
- 4) When the hold print sensor is enabled, it is recommended to make settings to check the hold print status from the application and to stop the print command if the printer is in the hold print status.
- 5) This can be used in combination with the hold print time setting and buzzer.

Note *5) Auto cutter

- 1) If an error occurs, open the printer cover, remove the cause of the error, then turn the printer back on to restore normal operation.
- 2) Remove the sheet after the cutting process is completed.
Removing the paper while it is being cut may cause failures, such as paper debris and paper jam.
Note) Opening the printer cover while cutting may damage the cutter.
- 3) Cutting position
The length from the cutting position to the print start position is approximately 11 mm.
The length from the print end position to the cutting position is approximately 2 mm.
- 4) The mechanical sensor detects errors in home position.
- 5) Switching between full cut and partial cut may not be performed properly depending on the type of paper used, the length of printing, the usage environment, etc.

Note *6) Installation position

- 1) Do not place the printer in an unstable location where the printer might be shaken.
The loaded paper may fall, resulting in an error in paper position.

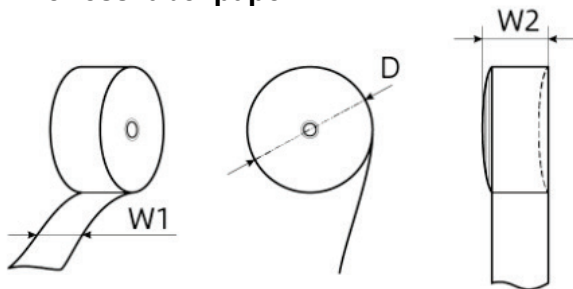
2.2. Paper specifications

- Supported paper types : Linerless label paper/Full-surface label paper/Die cut label paper/Receipt paper

For the specifications of various types of paper, refer to the following.

- Note 1)** If the paper width is changed from a narrow setting to a wide setting during use, paper feeding and cutting may not be performed correctly. In this case, replace the cutter and platen. If printing does not work properly even after replacement, contact your local distributor.
- 2) If you change the type of paper during use, clean the head, cutter, platen, and feed path, because paper feeding, printing, and cutting may not be performed properly.
 - 3) Depending on the type of paper and the usage environment, perform a thorough evaluation and change the print density as necessary.
 - 4) Change the print density by using the print density setting command < ESC > < RS > ' d ' n or Star Configuration.
 - 5) Adequate reading results of bar codes or characters may not be attained because of factors such as the scanner, paper type, or print density. Be sure to evaluate your scanner with the printer in advance.
 - 6) For some printing contents, pitch deviation may occur at the start of printing depending on the type of paper.
Change the top margin to 11 mm or perform empty feed before cutting.
 - 7) Color streaks and wrinkles may occur depending on the type of paper or usage environment.
 - 8) Glue should not be used to secure the paper roll and the core. For linerless label paper, make sure that the label paper can be easily removed from the core.
Also, do not fold the trailing edge of the paper.
If the trailing edge of the paper is glued to the core or folded, replace the paper roll before using it up.

2.2.1. Linerless label paper



- (1) Paper width [W1] : 39.5 ± 0.5 mm to 79.5 ± 0.5 mm
- (2) External dimensions : Winding diameter (Maximum roll diameter) [D] ... φ 102 mm
Roll Width (Wrap-up dimensions) [W2] ... Paper width [W1] +1, -0.5 mm
- (3) Paper thickness : 68 μm to 93 μm
- (4) Core inner diameter : φ 25.4 mm to 40 mm
- (5) Paper media : Use paper handled by your local distributor. For details of the paper that meets the specifications in this document, contact your local distributor below.
<https://www.star-m.jp/mclabel3-sup.html?#a4>

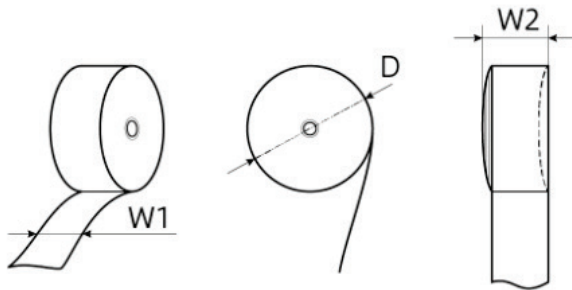
2.2.2. Die cut label paper

- (1) Mount width: 24.5 ± 0.5 mm to 79.5 ± 0.5 mm
- (2) External dimensions: Winding diameter (Maximum roll diameter) ... ϕ 102 mm
- (3) Paper thickness: 154 μ m or less (total thickness)
- (4) Core inner diameter: ϕ 25.4 mm to 40 mm

2.2.3. Full-surface label paper

- (1) Paper width: 24.5 ± 0.5 mm to 79.5 ± 0.5 mm
- (2) External dimensions: Winding diameter (Maximum roll diameter) ... ϕ 102 mm
- (3) Paper thickness: 154 μ m or less (total thickness)
- (4) Core inner diameter: ϕ 25.4 mm to 40 mm

2.2.4. Receipt paper



- (1) Paper width [W1] : 57.5 ± 0.5 mm to 79.5 ± 0.5 mm
External dimensions : Winding diameter (Maximum roll diameter) [D] ... ϕ 102 mm * When the core inner diameter is ϕ 18 ~ 40 mm.
(Maximum roll diameter) [D] ... ϕ 96 mm * When the core inner diameter is ϕ 12 ~ 17 mm
Roll Width (Wrap-up dimensions) [W2] ... Paper width [W1] +1, -0.5 mm
- (2) Paper thickness : 53 μ m to 150 μ m
- (3) Core inner diameter : ϕ 12 mm to 40 mm * When the paper thickness is less than 85 μ m
 ϕ 25.4 mm to 40 mm * When the paper thickness is 85 μ m or more

2.3. Environmental specifications

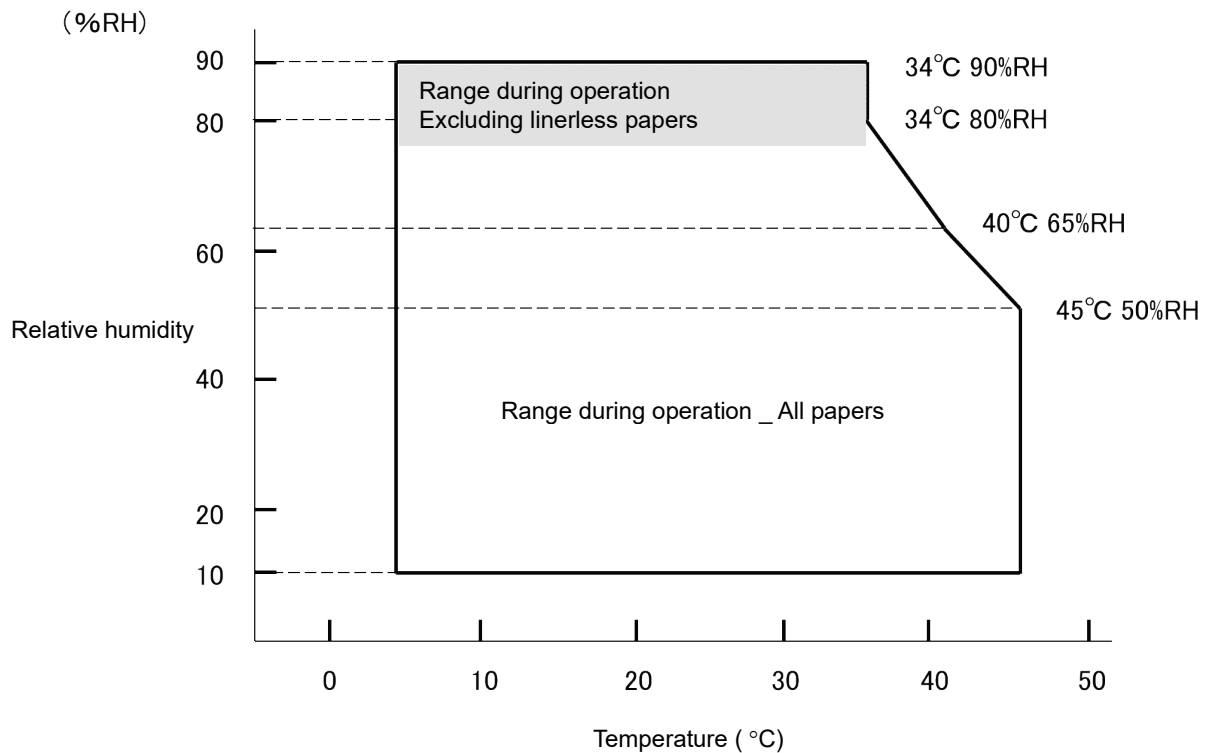
2.3.1. Printer operating environment

Temperature : 5°C to 45°C

Humidity : 10% RH to 90% RH (No condensation) *Die cut label paper, full-surface label paper, receipt paper

: 10% RH to 80% RH (No condensation) * Linerless label paper

(See figure below)



Relationship between temperature and humidity during operation

Note 1) The operating environment must be compliant with the specifications of the paper used.

2.3.2. Printer storage environment

Temperature : -20°C to 60°C

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

Note 1) The worst combination of high temperature and humidity is 40°C and 90% RH (no condensation).

2) The storage environment is recommended to be 30°C 60% or less because the performance of the platen roller varies depending on the humidity environment.

2.4. Media setting

When the media type is selected using a utility or other means, the printer settings are automatically changed to the recommended settings for that media.

		Printer settings linked with the media settings						
Media type	Cutter	Mark detection	Mark detection Sensor	Hold print control	Print density	Top margin	Parts cleaning Parts replacement	
Factory defaults	Linerless label paper	Partial cut	Disabled	N/A	Enabled	Standard	3mm	Notification exists
	Die cut label paper	Command priority	Enabled	GAP	Disabled	Standard	3mm	No notification
	Full-surface label paper	Command priority	Disabled	N/A	Disabled	Standard	3mm	Notification exists
	Receipt paper	Command priority	Disabled	N/A	Disabled	-2	11mm	No notification

Note 1) You can change individual settings after changing the media settings. However, depending on the combination of media settings, there is the possibility of interference with printer operation. For details, refer to “2.4.1 Non-recommended settings”.

2) Media setting: Linerless label paper

It is recommended for the linerless label paper to be taken one sheet at a time using the hold print control.

When the hold print control is disabled and the paper is left on the hold print sensor, the top margin is changed to 11 mm without conducting paper backfeed even if the setting is 3 mm. (This prevents paper jams and the undercut portion at the center from being cut due to paper backfeed.)

3) Media setting: Die cut label paper or full-surface label paper

It is recommended that the top margin setting be changed to 11 mm if paper jams or folded label paper occurs.

4) Media setting: Receipt paper

A top margin setting of 3 mm and a cutting method setting of partial cut are not recommended as there is the possibility of paper jams occurring.

For details, refer to “2.4.1 Non-recommended settings”.

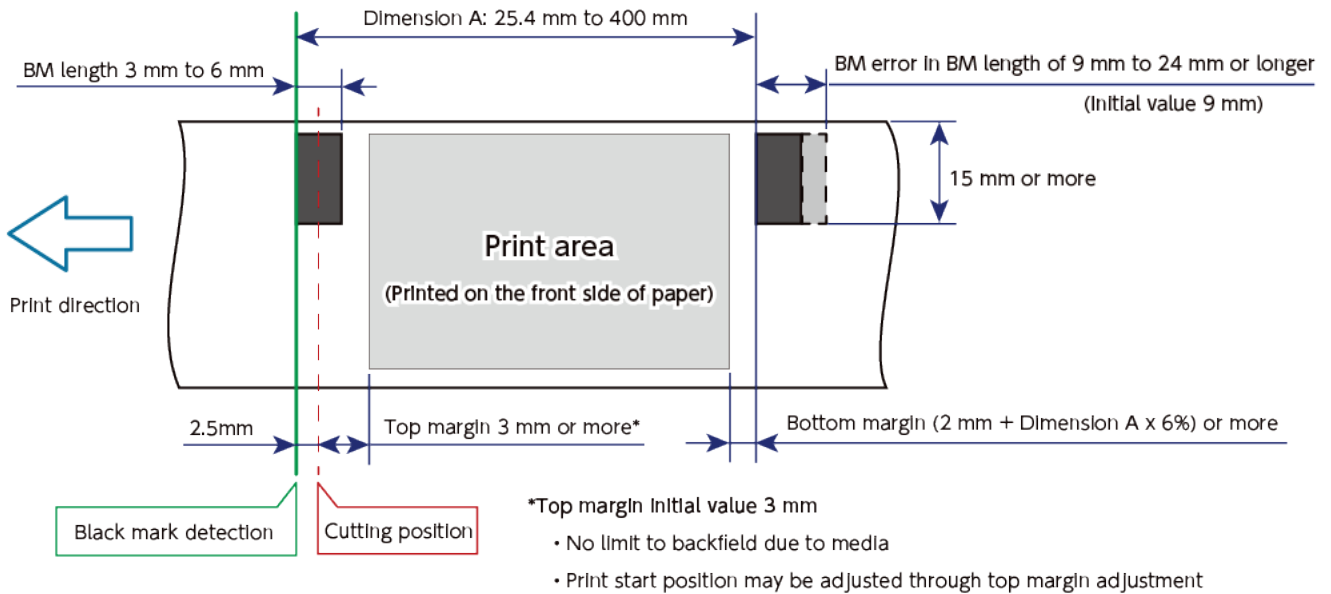
2.4.1. Non-recommended settings

Depending on the combination of media and printer settings, there is the possibility of interference with printer operation as described below.

Please be sure not to use the following settings.

Media type	Cut control	Hold print	Top margin	Reason why not recommended
Linerless label paper	Partial cut	Invalid	-	Label paper may stick near the printer exit, causing paper jams.
	Full cut	-	-	The cut label paper is not held. Label paper may stick to any objects nearby or the printer exit, causing paper jams.
Receipt paper	Partial cut	Invalid	3 mm	The cut receipt paper may contact the printer, resulting in paper bends, cutting of the undercut portion at the center, or paper jams.

2.5. Paper BM specification



- Note 1)** The cutting position shown in the figure above is obtained when the default offset value is set for cut position adjustment value.
- 2) If you use black marks, do not perform pre-printing within the black mark area on the back side of the paper.
If you use pre-printed paper, carefully check the printer operation before starting printing.
- 3) It is possible to adjust the position of the black mark sensor in the paper width direction. There are no restrictions on the black mark position in the paper width direction. Refer to “2.5.1 Adjustment of BM sensor position” for how to adjust the position of the black mark sensor.

(1) Pitch between black marks (Dimension A)

The pitch between black marks may be set within a range of 25.4 to 400 mm.

Note 1) Set the print layout by considering the variation in print positions.

(2) Black mark dimensions

The dimensions of the black marks should be set, with reference to the recommended BM paper specifications shown in figure above.

(3) PCS value

Set the PCS value of the black marks to be printed to 0.90 or more.

Note 1) When measuring the OCS value, use the reflectance for a wavelength near the center of the sensor light wavelength range (940 nm) because the light source wavelength of our black mark sensor is 940 nm.

- 2) If the PCS value of the black mark does not meet the above specifications, pages may be skipped or page length detection failure may occur. Ensure that the PCS value meets the specifications and carry out test printing before use.

(4) Top margin

Set the print area with sufficient margin between the cutting position and the print start position.

Note 1) Please ensure that the set value of print area does not exceed the pitch between black marks.

(5) Bottom margin

Set the print area to ensure there is sufficient margin between the end of the print area and the next black mark.

You need to set the bottom margin while considering the print accuracy for the pitch between black marks, the TOF accuracy (within ± 2 mm of the reference print position), the ambient temperature of the printer installation location, the wear of printer parts, and other conditions. Therefore, we recommend that you make sure to provide the bottom margin shown in the figure to set the print area.

Note 1) If the bottom margin is not large enough, black mark may not be detected and the page may be skipped.

2) Please ensure that the set value of print area does not exceed the pitch between black marks.

(6) Print area setting examples

When the pitch between black marks (Dimension A) is 100 mm and the top margin is 3 mm

- Top margin : 3 mm
- Bottom margin : $100 \text{ mm} \times 6\% = 6 \text{ mm}$

Therefore, you need to set the print area to 91 mm or less ($100 \text{ mm} - 3 \text{ mm} - 6 \text{ mm} = 89 \text{ mm}$).

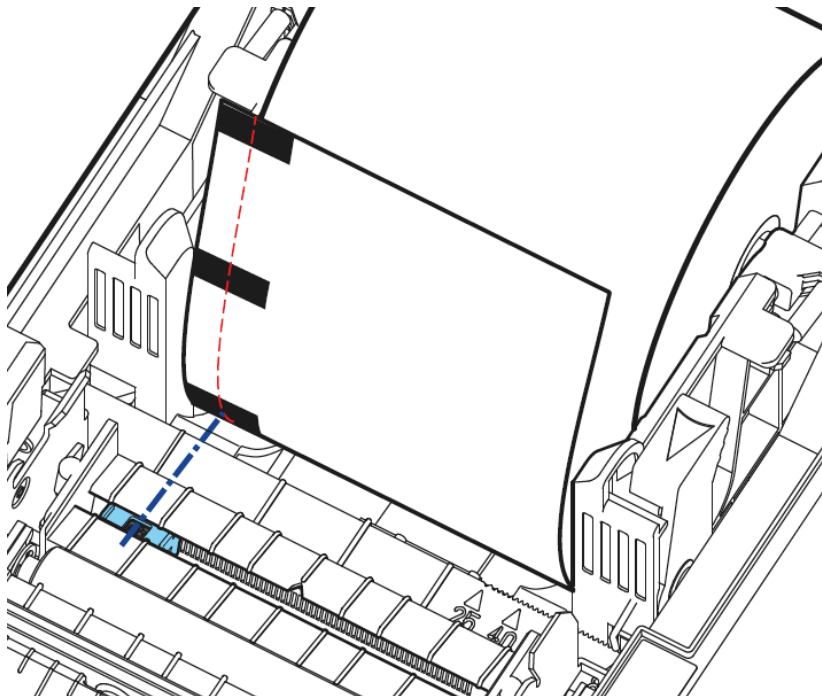
(7) Sensor adjustment

Refer to "4.2 Multi-Function button" for how to adjust the sensitivity of the BM sensor.

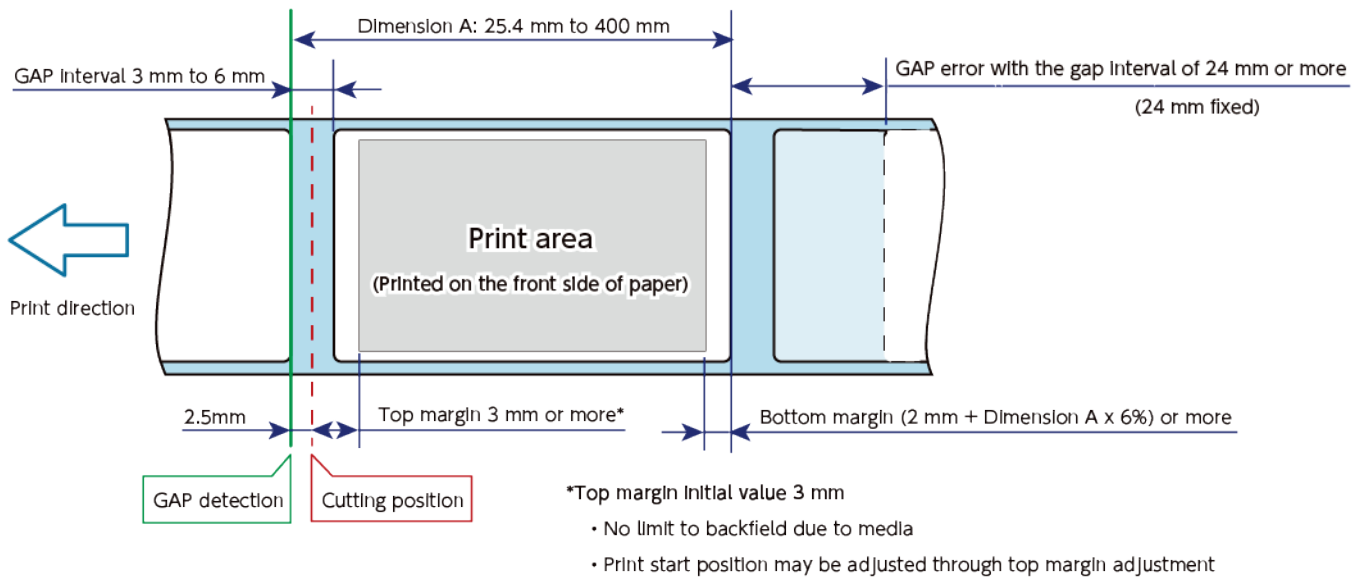
2.5.1. Adjustment of BM sensor position

Adjust the position of the BM sensor according to the black mark position on the paper used.

1. Pull up the loaded paper, and check the black mark position on the back of the paper.
2. Move and align the sensor with the center of the black mark.



2.6. Paper GAP specifications

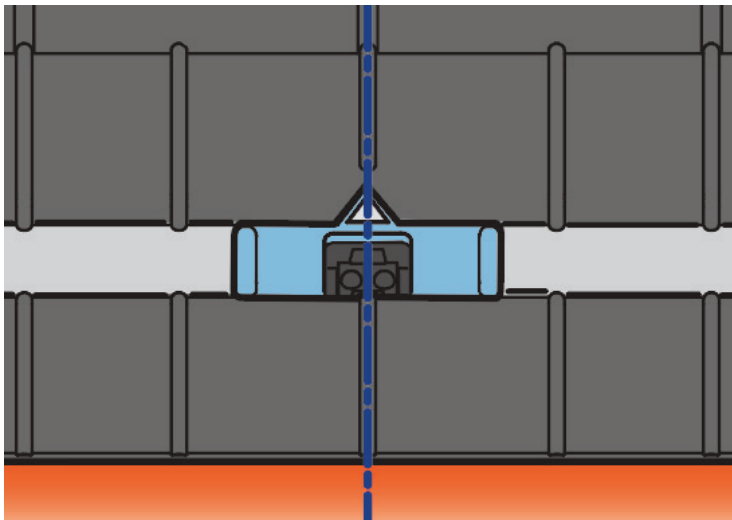


Note 1) The pitch between labels, dimensions of the gap between labels, top and bottom margins, and example settings of the print area are the same as those of the BM specifications. For details, refer to “2.5 Paper BM specification”.

2) Refer to “4.2 Multi-Function button” for how to adjust the sensitivity of the GAP sensor.

2.6.1. Adjustment of GAP sensor position

Be sure to position the GAP sensor as shown in the figure below (factory default) to detect the gap between the labels of die cut paper.



2.7. Precautions for using special shape die cut label paper

The following is examples of labels that this printer can detect with its structure in the case of the label with a special shape other than other than squares and the die cut label with the shape of the liner (hereinafter referred to as “special shape die cut label paper”). The printer may not operate correctly depending on shapes of labels and liners. When selecting the die cut label paper, carefully check the operation in advance in consideration to the following precautions. Conform to “2.5 Paper BM specification” and “2.6 Paper GAP specifications” for the paper specifications of the black mark and GAP.

Adjust the position of the sensor according to the black mark and GAP positions on the paper used. For details, refer to “2.5.1 Adjustment of BM sensor position” and “2.6.1 Adjustment of GAP sensor position.”

Note 1) Label paper may be removed from the liner while the paper is being conveyed, causing paper jams, depending on the shape of label paper and liner. Be sure to fully check operation before beginning actual use.

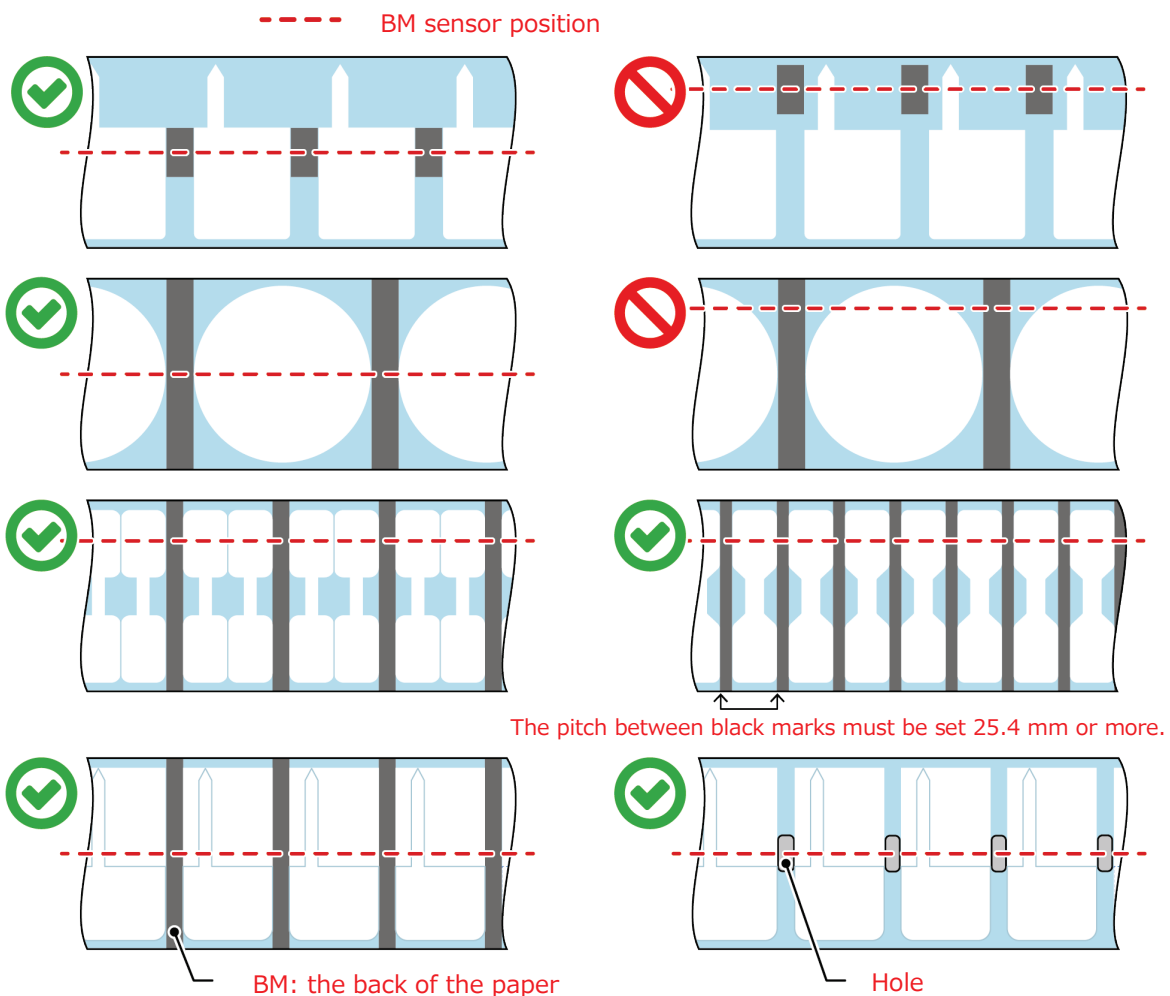
2) Adjust the sensor when the black mark or GAP is not detected correctly.
For details, refer to “4.2 Multi-Function button.”

2.7.1. Example of usage of special shape die cut label

<When using BM sensor>

Use the black mark paper with no gap between the label paper and black mark (no part of the liner is visible). If the area with only the liner passes the BM sensor when BM detection is enabled, the sensor misjudges that there is no paper and may stop printing or not cut the paper at the correct position.

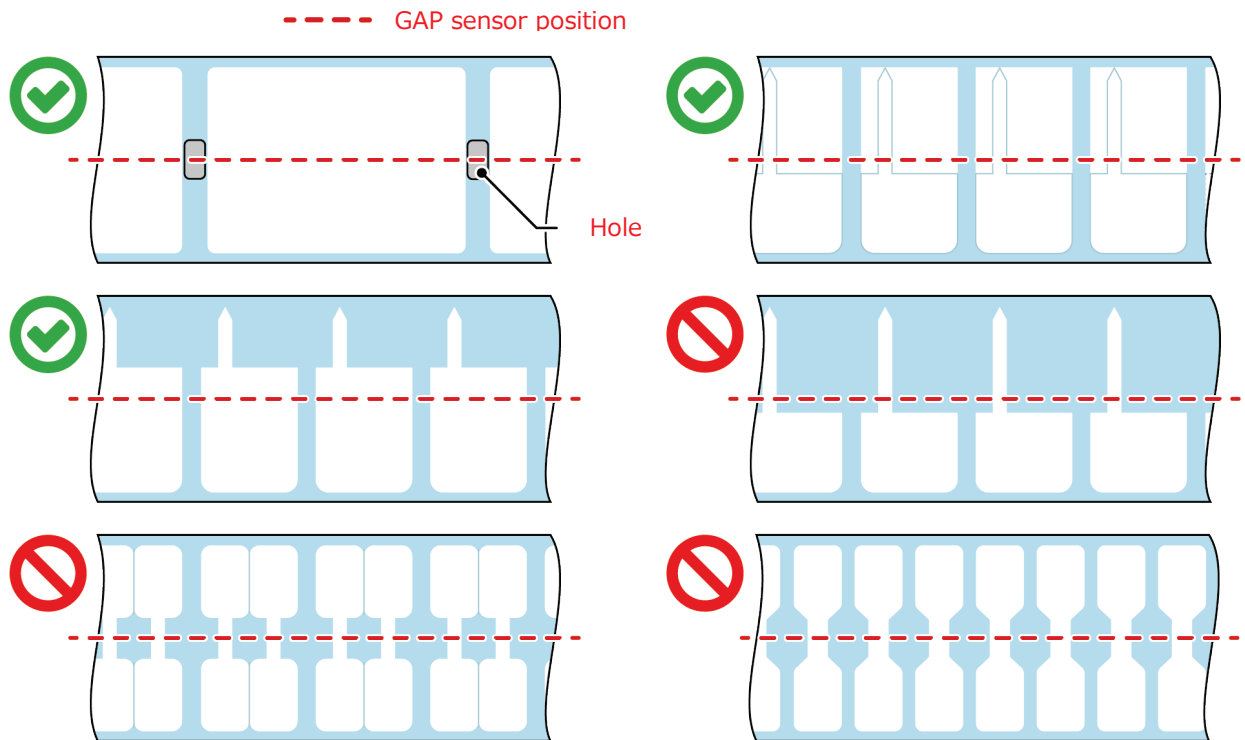
Adjust the position of the BM sensor as needed.



<When using GAP sensor>

Use the paper of which center where the GAP sensor passes conforms to the specifications described in “2.6 Paper GAP specifications.” When a gap at the center of the paper does not conform to the specifications or there is a gap in an area other than the cutting position, the paper may not be cut at the correct position.

If the area with only the liner passes the BM sensor when BM detection is enabled, the sensor misjudges that there is no paper and may stop printing or not cut the paper at the correct position.



2.8. Power specifications

(1) Printer input specifications

- Operating voltage : 24 VDC \pm 10%
- Rated power (Safety certification nameplate) : 24 Vdc. 2.7 A

(2) Current consumption

at 24 VDC, room temperature, without USB power supply

- During power ON idling : Approx. 0.08 A (average)
- During ASCII printing : Approx. 2.1 A (average)

Note) Use the provided PS65AT-24A power adapter.

When performing continuous high-duty printing, limit it to a maximum of 3 seconds and perform sufficient operation testing.

(3) Power connector

Power connector pin arrangement

Pin No.	Function
1	+24 V
2	GND
3	N.C
Shell	Frame GND

- Model number : TCS7960 (HOSHIDEN) or equivalent
- Other party : TCP8927 (HOSHIDEN) or equivalent

(4) Specifications of the power adapter packaged with the printer PS65AT-24A

- Input rating : 100 - 240 VAC \pm 10%, 1.4 A, 50 - 60 Hz
- Output rating : 24.0 VDC \pm 5%, 2.71 A

(5) Recovery from power failure

The printer can store the power ON/OFF status prior to power failure.

If a power failure occurs while the printer is ON, the printer will resume operation after power has been restored. (If a power failure occurs while the power is OFF, the power will remain OFF.)

(6) Notes

<Preparing Power on the User Side>

The following must be considered to prepare a power supply on the user side.

- Use a power supply that is 24 VDC \pm 10% and 2.7 A or more.
- Select a power supply with current capacity that is appropriate for the actual printing ratio.
- Use a power supply that is SELV output and conforms to either LPS (Limited Power Source) or Class 2.
- Use the power supply that meets the EMC standards for the country or region in which you are setting up the printer.

2.9. Reliability specification

- (1) Printer service life: 20 million lines

<Notes>

The service life of the printer does not apply to the parts, such as the cutter, platen and thermal head.

- (2) Thermal head service life :

30 km (30 million pulses) ... Linerless label paper (Adhesive type: Strong adhesive)

75 km (75 million pulses) ...Linerless label paper (Adhesive type: Weak adhesive)

*Printing conditions: Average printing ratio: 12.5%, Head average resistance value change rate \pm 15% or less

<Notes>

- 1) **The service life is based on the results of our company's own evaluation under normal temperature and humidity.**
- 2) **The service life is representative value.**
- 3) **The end of the head's life is defined as the point when two or more adjacent dots are damaged. However, this does not include scratches caused by external materials being affixed to the head or accidental damage caused by the user.**
- 4) **When printing is repeatedly performed at an extremely high printing rate, the life of the thermal head may decrease drastically. Therefore, you must carefully plan the print formats that will be used.**

- (3) Cutter service life : 200,000 cuts...Linerless label paper (Adhesive type: Strong adhesive)

One million cuts...Linerless label paper (Adhesive type: Weak adhesive)

<Notes>

- 1) **The service life is based on the results of our company's own evaluation under normal temperature and humidity.**
- 2) **The service life is a representative value.**

- (4) Platen roller service life : 10 km...Linerless label paper (Adhesive type: Strong adhesive)

50 km...Linerless label paper (Adhesive type: Weak adhesive)

<Notes>

- 1) **The service life is based on the results of our company's own evaluation under normal temperature and humidity.**
- 2) **Depending on the usage environment, you may need to replace the platen roller if label clogging occurs frequently, even if the platen roller has not reached the specified service life.**
- 3) **Performance varies depending on the humidity environment; therefore, the actual service life may become shorter than specified.**
- 4) **The service life above is a representative value.**
- 5) **Since the performance of the platen roller changes over time, it is recommended to replace the parts every one to two years.**

- (5) MCBF: 36 million lines

MCBF is defined as a general interval of failures, including random failures and wear-out failures, that occurs before the printer service life of 20 million lines is reached (* The service life of this printer is 20 million lines, and the MCBF of 36 million lines does not refer to durability life).

- (6) MTBF: 360,000 hours

MTBF is defined as the average time between the failures of the systems, including the circuit system, while random failures occur.

(* MTBF is a reliability index, and the operation of 360,000 hours is not guaranteed.)

2.9.1. Shocks from vibration and falling

(1) Vibration (when packaged)

- Direction of Vibration : X, Y, and Z
- Vibration frequency : 7 Hz to 100 Hz
- Sweep time : Logarithmic frequency sweep rate, 15 minutes for reciprocation
- Vibration acceleration : 1.5G, constant
- Application time : One hour (Total 3 hours)
- Packaging : Minimum packaging
- Criterion : Destruction of the device, with no parts missing
Cracking and deformation of packaging and cushioning material will be unquestioned

(2) Drop shock (when packaged)

- Drop height : 60 cm
- Direction of drop : 1 angle, 3 corners, 6 surfaces
- Number of drops : One each time (Total of 10 drops)
- Packaging : Minimum packaging
- Criterion : Destruction of the device, with no parts missing
Cracking, detachments, deformation of packaging and cushioning material will be unquestioned

(3) Shock tests (when not packaged)

- Drop height : 5 cm
- Direction of drop : 4 sides and side supports
- Number of drops : One time each
- Criterion : Destruction of the device, with no parts missing

2.9.2. Noise

- Measurement standard : JIS X 7779 (ISO 7779)
- During operation : A-weighted sound pressure level approx. 54 dB

The above noise level is based on Star Micronics evaluation conditions that comply with JIS X7779.

The noise levels will vary depending on the paper being used, the contents that are being printed, and the settings (print speed and print density) that have been made.

2.9.3. Dust-proof and drip-proof

Dust-proof/Drop-proof performance Equivalent to IP22

<Notes>

- 1) Based on JIS C 0920 (IEC 60529), this is the result of evaluation by a third-party evaluation organization, and does not guarantee the conformity to the standard, no damage, and no failure.
- 2) The drip-proof performance is not applicable to the cover opening lever.

3. Communication Specifications

3.1. Ethernet interface

(1) Communication specifications : 10Base-T/100Base-TX

(2) Connector : RJ-45 (8P8C)

Use the accessory cable or Category 5 or higher cables.

(3) Supported protocol : TCP/IP v4

TCP/IP specifications

Layer	Protocol	Reception port	Usage
Network layer	ARP, IP, ICMP		
	Link Local		Temporary IP address setting
Transport layer	TCP, UDP		
Application layer	DHCP		Dynamic IP address setting
	Raw Socket Print	9100/TCP	Printing/printer status acquisition
	Check Alive	9101/TCP	Monitor printer status Update date/time log information
	SDP (Star Discovery Protocol)	22222/UDP	Search for printers on network
	HTTP	80/TCP	Network settings Star CloudPRNT
	HTTPS	443/TCP	Network settings Star Micronics Cloud Service (*1) Star CloudPRNT
	AMQPS	5671/TCP	Star Micronics Cloud Service (*1)

***1) Communication with Star Micronics Cloud Service is performed when the power is turned on, the status changes, or after a certain period of time has elapsed.**

(4) Network settings

Network settings can be checked by self-print. For details about self-print, refer to "4.2.3 Test print mode (Self-print mode)."

When changing the network, use Web Configuration or Star Quick Setup Utility.

Setting item	Input range	Initial value	Remark
IP Address	0.0.0.0 ~ 255.255.255.254	0.0.0.0	
Subnet Mask	0.0.0.0 ~ 255.255.255.255	0.0.0.0	
Default Gateway	0.0.0.0 ~ 255.255.255.255	0.0.0.0	
DHCP	ENABLE / DISABLE	ENABLE	
DHCP Timeout	ENABLE / DISABLE	ENABLE	
DNS 1	0.0.0.0 ~ 255.255.255.254	8.8.8.8	
DNS 2	0.0.0.0 ~ 255.255.255.254	8.8.4.4	
"root" Login Password	- 1 to 31 characters - ASCII character - Case sensitive	"public"	Always hidden by asterisks (*****).
Web Refresh Time (Sec.)	1 ~ 300	5	
9100 Multi Session	ENABLE / DISABLE	DISABLE	
9100 Data Timeout (Sec.)	0, 30, 40, 60, 120, 180, 360	0	
Certificate	Self-Signed/CA Signed	Self-Signed	
Create Self-Signed Certificate		Not exist	
Import CA-Signed Certificate		Not exist	
Star CloudPRNT Cloud Service	ENABLE / DISABLE	DISABLE	
Star CloudPRNT Service URL	1 to 511 characters	Blank	
Star CloudPRNT Polling time (Sec.)	1 to 7200 seconds	5	
Star CloudPRNT UserName	1 to 63 characters	Blank	
Star CloudPRNT Password	1 to 63 characters	Blank	
Star CloudPRNT HTTPS trust level	Use trusted CA-Certificate list / Use custom CA-Certificate / Accept all	Use trusted CA-Certificate list	
Star CloudPRNT NTP Server	Use Star NTP service Use custom NTP server	Use Star NTP service	0.pool.ntp.org
Star CloudPRNT TLS1.2 Cipher Suites Encryption Level	HIGH + MEDIUM / MEDIUM	HIGH + MEDIUM	
Star CloudPRNT TLS1.3	ENABLE / DISABLE	ENABLE	

Basic function

3.1.1. Raw Socket Print

This product supports Raw Socket Print communication for printing under a TCP/IP environment.

Raw Socket Print regards all data flowing between TCP sessions as the data handled between the printer and host device, and performs bidirectional data distribution.

The TCP communication port specifications are shown in the table below.

Item	Specification	Description
Communication port number	TCP #9100	
Number of concurrent sessions	1 or 8	-The factory default setting is 1.
Data reception timeout	0 (disabled) / 30s / 40s / 60s / 120 s / 180s / 300s	-The factory default setting is 0 (disabled). -Connection is shutdown forcedly at timeout.

- The reception buffer for printing data is 64 Kbytes.
- The maximum number of reception sessions for port 9100 may be configured by HTTP (Web Configuration). When "9100 Multi Session : Enable" is set, the maximum number of reception sessions is 8. When "9100 Multi Session : Disable" is set, the maximum number of reception sessions is 1. If the number of connections exceeds these values, a rejection packet (TCP Reset) is generated on the host device after it is connected.
- When multi-session is enabled and print data is received from multiple sessions (host devices) at the same time, the order in which the sessions are received and the order in which the print data is printed may not always match.
- The data in the direction from the printer to host device is status information obtained from the printer.
<Note> For the details of status information, refer to the Commands Specifications.
- The TCP session disconnection (TCP FIN, RST) is considered to be the end of one document. If special control, such as suspending a print job, is required, the host device performs processing. If a RST packet is received when a TCP session is disconnected from the host device, part of the printing data may be deleted.
- Data reception data timeout "9100 Data Timeout" may be configured by Star Configuration and HTTP (Web Configuration).
This configuration automatically releases the sessions that remain connected.

3.1.2. Status acquisition function

This printer supports the printer status acquisition function through TCP communication port 9101.

The TCP communication port specifications are as shown in the table below.

Item	Specification	Description
Communication port number	TCP #9101	
Number of concurrent sessions	4	
Data reception timeout	30 seconds	Connection is shutdown forcedly at timeout.

When the following command and parameter are received from the host device, printer status information (ASB) is sent back. When the command out of range is received, connection is shutdown.

Command	16 hex	Parameter
'2'	32 H	Optional 50 bytes (time information)

3.1.3. Discovery

This product has STAR original NIC searching protocol SDP (Star Discovery Protocol).

SDP uses UDP communication port 22222.

SDP is used to search this product on the LAN through applications such as the setting utility.

3.1.4. IP address setting specifications

3.1.4.1. General description

The IP address of the printer is determined by the "fixed address (Static)" or "dynamic acquisition from the network with DHCP and Link Local." The fixed address (static) is not registered and the DHCP is enabled as factory defaults. Link Local is enabled when an address cannot be obtained for Static or DHCP. The acquired IP address information can be confirmed in the test print (self-print) display below.

```

*****
      Current IP Parameters Status
*****
IP Address       : xxx.xxx.xxx.xxx
                  (*Protocol)
Subnet Mask      : xxx.xxx.xxx.xxx
Default Gateway  : xxx.xxx.xxx.xxx
    
```

- * *Protocol* : The following address acquisition protocols are displayed in the parentheses for the IP address field.
- (Static) : Static (fixed address)
- (DHCP) : Retrieved from the DHCP server
- (Link Local) : Retrieved using Link Local
- (Didn't obtain) : Unable to retrieve the IP address

3.1.4.2. Fixed address (Static)

If the static IP address, subnet mask, and default gateway are registered, the printer always starts in a fixed condition when the power is turned on. DHCP and Link Local are disabled. Since the fixed address is not registered in the factory settings, the registration for a fixed address using HTTP (Web Configuration) or Star Configuration should be done after a dynamic address is obtained with DHCP or Link Local. (Refer to "3.1.5 Web Configuration.")

3.1.4.3. DHCP

If the DHCP (Dynamic Host Configuration Protocol) is enabled, the IP address, subnet mask, and default gateway are obtained from the network. Check whether the DHCP server is installed in the LAN. DHCP is enabled in the factory settings. To return the setting from fixed address to DHCP, initialize the network settings or change them using HTTP (Web Configuration) or Star Configuration. (Refer to "3.1.5 Web Configuration.")

- The DHCP Request differs according to the DHCP Timeout setting. (Refer to "4.2.7 Special function setting mode.")
 - DHCP Timeout = ON : A DHCP Request is generated three times within 20 seconds of starting TCP/IP.
 - DHCP Timeout = OFF : DHCP Requests are generated continuously until address information is acquired.
- The address obtained using DHCP is erased when the power is turned OFF.

3.1.4.4. Link Local

The Link Local address is a special IP address that is used in a network where there is no DHCP server (server which has the function of allocating private IP addresses).

The printer can automatically set its own temporary IP address.

When a fixed IP address is not specified and an IP address has not been acquired from DHCP, the temporary IP address setting made using Link Local is randomly generated and assigned by the printer within the range of 169.254.0.0 to 169.254.255.255. The set address does not duplicate another address in the same network.

3.1.5. Web Configuration

This product is equipped with an HTTP (Hyper Text Transfer Protocol) server which allows you to change network settings, display network information, monitor the printer status, etc. by accessing a web browser.

The HTTP server uses TCP/UDP communication port 80.

- The HTTP version is HTTP 1.1.
- The maximum number of simultaneous connection devices is 2.
If more than 2 devices need to access the site, connect (reload) 5 seconds after the page loading of the previous 2 devices is completed.
- Enable Java Script in the web browser settings.
- Checking user home page [Login unnecessary]: http://IP Address/index.htm
(Example) http://192.168.10.1/index.htm
- Administrator's home page [Login necessary]: http://IP Address/html/main.htm
(Example) http://192.168.10.1/html/main.htm
- Checking and changing network settings and password [Login necessary]
By specifying to execute the print settings when writing the settings, you can verify whether the settings were correctly written to the non-volatile memory. In addition, if the writing is successful, a printer reset is automatically performed.
- Displaying network information [Login unnecessary]
- Displaying printer information [Login unnecessary]
The printer status display is updated automatically at the set refresh time.

The following accounts (username and password) can be accessed from a web browser.

Items that can be checked and set differ depending on the account.

Account	Username	Password	Target
User	Login unnecessary		General user (Information display only)
Root user	"root"	"public" ASCII characters between 1 to 31 characters (changeable)	System administrator (Information display and writing)

The following web browser versions have been checked and are supported.

- Windows 11 : 22H2 : Chrome 107, Microsoft Edge 106
- macOS 12.6 Monterey / 13 Ventura : Safari
- iOS 16.1 : Safari
- Android 13 : Chrome
- Linux Ubuntu 22.04 : Firefox 106

For supported cipher suites when HTTPS is used, refer to "9.2.1 Web Configuration."

3.1.6. SSL/TLS communication

General description

This printer can encrypt HTTPS and AMQPS communication using SSL (Socket Security Layer) or TLS (Transport Layer Security).

3.1.6.1. Specifications for during server operation

The services in which the printer operates as a SSL/TLS server are the following.

- Web Configuration

Specification

<Communication specifications>

SSL/TLS version	: TLS1.2, TLS1.3
Application protocol	: HTTPS (Server Authentication) (*1)
TCP communication port number	: 443
Certificate	: Self-signed certificate or CA-signed certificate
Encryption algorithm	: AES 128/256, RC4, 3DES
Hash algorithm	: SHA-256, SHA-1, MD5

(*1) Refer to "9.2.1. Web Configuration" for the supported cipher suite.

Regarding the certificate required to authenticate with the client's device, it is necessary to register either a self-signed certificate or a CA-signed certificate.

The basic settings (Certificate selection, with/without certificate registration) may be checked by self-printing.

3.1.6.1.1. Self-signed certificates

Creates and signs a server certificate on the web settings screen of the printer unit.

The input items on the "Self-Signed Certificate" screen of the web settings are shown in the following table.

Input items when creating a certificate

Variable name	Max length of string	[Example]	Default value
Country Name (2 letter code)	2	<i>JP</i>	(Blank)
State or Province Name	128	<i>Shizuoka city</i>	(Blank)
Locally Name (e.g. city)	128	<i>Suruga-ku, Nakayoshida</i>	(Blank)
Organization Name (e.g. company)	128	<i>Star Micronics Co., ltd.</i>	(Blank)
Domain (IP Address)	128	<i>192.168.1.175</i>	(Blank)
Expiration Date (e.g. YYYY/MM/DD)	01.01.2018 to 12.31.2049	<i>2020/12/31</i>	(Blank)

- To register a certificate in the web browser, click [Create Self-Signed Certificate] and then click [Download].
- Once the certificate has been registered, it cannot be deleted by initializing the network settings.
To delete a certificate file, click [Delete] after clicking [Create Self-Signed Certificate].
- Enter the expiration date of the certificate in the "Expiration Date" field.
Expiration date may be specified up to "2064.12.31". However, the web browser will misinterpret the expiration date as 1950 or later and cause an error when specifying a date from 2050 or later. Consequently the maximum date is fixed at "2049.12.31".
Also the effective date is fixed at "2018.01.01.", and the time is fixed at 00:00:00 (GMT) for both the start date and the end date.
- The minimum required items for creating a certificate are the "Domain" and "Expiration", but inputting information for all items is recommended.
- For Domain, enter the IP address of the printer. Subject Alt Name (SAN) item is also generated based on the input value. Refer to in the appendix "9.1 Example procedures for registration of SSL/TLS certificates" for procedure for creating and signing a self-signed certificate.

3.1.6.1.2. CA-signed certificates

You can import a server certificate created externally and signed by CA (Certification Authority) and a private key to the printer NIC.

<Server certificate specification>

- Encoding type : Base64 (file extension = PEM)
- Types of the certification file : PKCS #1
- Key length : RSA 2048 bit or 1024 bit
- Register the CA above as a "Trusted Root Certification Authorities" in the web browser.
- To delete the certificate registered to the NIC, click [Delete] after selecting [Import CA-Signed Certificate]. However, the [Delete] button is disabled unless a CA-signed certificate and a CA-signed private key are registered.
- Once the certificate has been registered, it cannot be deleted by initializing the network. To delete a certificate file, click [Import CA-Signed Certificate] and then click [Delete] on the SSL/TLS settings screen.
An example procedure for importing a CA-signed certificate to NIC is indicated in "9.1 Example procedures for registration of SSL/TLS certificates" in appendix.

3.1.6.2. Specifications for client

The services in which the printer operates as an SSL/TLS client are the following.

- Star CloudPRNT
- Star Micronics Cloud Service

[Specifications]

<Communication specifications>

SSL/TLS version	: TLS1.2 (SSL3.3), TLS1.3
Application protocol	: HTTPS, AMQPS (*1)
TCP communication port number	: 443, 5671
Certificate	: Preinstalled CA certificate or custom CA certificate
Encryption algorithm	: AES 128/256 (GCM, CBC), ChaCha20 (Poly1305), RC4, 3DES
Hash algorithm	: SHA-384, SHA-256, SHA-1, MD5

*1) For supported cipher suites, refer to "9.2.2 Star CloudPRNT".

Convenient function

3.1.7. Star Micronics Cloud Service

[General description]

If you connect the printer to Star Micronics Cloud Services, helpful cloud services for operating your store are available for free.

<Services for stores>

- You can check the printer status and the number of receipts in the graph.
- You can check the digitized receipt data in the cloud at any time.
- You can configure the setting for issuing paper coupons and manage the schedule in the cloud.

<Services for developers>

- Printer status and receipt printing data can be acquired by webAPI.
- Printer settings can be remotely configured using webAPI.
- The Start Quick Setup Utility display items can be customized.

A wide range of other services will be also available. For details, please access the following website.
Star Micronics Cloud Services (www.starmicronicscloud.com)

3.1.8. Star CloudPRNT function

[General description]

The Star CloudPRNT function enables print control (printing, etc.) by polling via a network between a remote server(*1) and this product.

The response to the polling of printer information (status, printer identifier, etc.) from this product to the remote server notifies the product that data has been prepared on the remote server. In this case, it is possible for this product to acquire the print data from the remote server and print the data.

***1) Communication with the product must be installed on the remote server based on the Star CloudPRNT specifications.**

[Specifications]

<Communication specifications>

TCP/IP version : TCP/IP v4

Communication protocol : HTTP/HTTPS

Communication data format : Compatible with REST/JSON format

Communication session start : Started from the product side.

[When not printing (*1)]Printer information is sent to the server by POST request.

[When printing] Printer data is acquired from the server by GET request.

Communication session end : Ended from the server side.

[When not printing (*1)]When there is data on the server, print job notification, non-printing control commands, and other information is sent to the printer.

[When printing] The print data on the server is sent to the printer.

***1) Control other than status notification and printing**

This communication session performs continual polling at the specified polling cycle.

<Request/response specifications between server and printer>

[Contents of request sent from printer to server (JSON format)]

```
"status"           : "< ASB Hex format >",
"printerMAC"      : "< Ethernet MAC address >",
"uniqueID"        : "< server assigned ID >",
"statusCode"      : "< description >",
"jobToken"        : "< token string >",
"printingInProgress" : bool,
"clientAction"    : [{
"request"         : "< request type >",
"result"          : "< request result >"
}],
"barcodeReader"  : [{
"name"           : "< device logical name >",
"status"         : {"connected": bool, "claimed": bool},
"scan"           : [{"data" : "< scanned barcode character sequence >"}]
}],
"display"        : [{
"name"           : "< device logical name >",
"status"         : {"connected": bool}
}]
```

[Contents of response sent from server to printer (JSON format)]

```
"jobReady"        : true | false,
"mediaTypes"      : ["< content media type >"],
"jobToken"        : "< string token >",
"deleteMethod"    : "DELETE" | "GET",
"clientAction"    : [{"request" : "< request type >" , "options" : "< request parameters >"}],
"claimBarcodeReader" : ["< device name >"],
"display"         : [{"name" : "< device name >" , "message" : "< message markup >"}]
"jobGetUrl"       : "< alternative URL for job GET >",
"jobConfirmationUrl" : "< alternative URL for job confirmation >"
```

<Web Configuration UI setting specifications>

The screenshot displays the Web Configuration UI. On the left is a navigation menu with categories: Home, Network Configuration (with sub-items: IP Parameters, System Configuration, Change Password, Star Micronics Cloud, CloudPRNT, SSL/TLS, Miscellaneous, Save, Set Default), Display Status (with sub-item: Device Status), System Access (with sub-item: Logout), and Manual (with sub-item: Online Manual). The 'CloudPRNT' item is highlighted with a red circle. The main content area is divided into two sections: 'CloudPRNT' and 'HTTPS Client Settings'. The 'CloudPRNT' section includes a 'CloudPRNT Service' dropdown menu set to 'DISABLE', a 'Server URL' text input field, a 'Polling time (Sec.)' text input field set to '5', 'User Name' and 'Password' text input fields, and 'submit' and 'cancel' buttons. The 'HTTPS Client Settings' section includes 'HTTPS trust level' radio buttons (selected: 'Use trusted CA-Certificate list'), 'NTP Server' radio buttons (selected: 'Use Star NTP service'), 'TLS1.2 Cipher Suites Encryption Level' dropdown menu set to 'HIGH + MEDIUM', and 'TLS1.3' dropdown menu set to 'ENABLE'. It also features 'submit' and 'cancel' buttons.

- Items set from the CloudPRNT menu of the product Web Configuration UI.
 - CloudPRNT Service : Set whether the service is enabled or disabled. Factory default setting = Disabled
 - Server URL : Enter the server URL such as "http://...."
 - Polling time : Enter the polling interval (seconds). Factory default setting = 5 sec
 - User Name/Password : When necessary, register cloud server security information. (option)
 - HTTPS Client Settings : Set the certificate (PEM format) according to the server-side specifications when conducting secure communication with the server.
 - NTP Server : Set the NTP server used for time information inquiries. The StarNTP service (0.pool.ntp.org) is selected as the factory default setting. As necessary, enter the URL of the user's own NTP server.
 - TLS1.2 Cipher Suites Encryption Level :
 - Set the encryption level of TLS 1.2 cipher suite. For details, refer to "9.2.2 Star CloudPRNT." Factory default setting = HIGH + MEDIUM.
 - TLS1.3 : Set whether TLS1.3 is enabled or disabled. For cipher suites supported when TLS1.3 is enabled, refer to "9.2.2 Star CloudPRNT." Factory default setting = Enabled

For details of the server-side specifications, refer to the separate [Developer Guide](#).

3.2. USB interface

Basic Function

[USB-C port]

- (1) Communication standard : USB 2.0 High-speed Device/Host
- (2) Power supply : USB PD (maximum 20 W), USB Type-C Current (maximum 15 W), USB BC 1.2 CDP (maximum 7.5 W)
- (3) Device classes : printer classes, RNDIS
- (4) Supported protocol : AOA / SteadyLAN / TetherLAN
- (5) Connector : USB Type C

To connect a device, use the USB cable that was provided with the printer or a USB-certified cable.

Also be sure to fully verify operation with the actual device before beginning actual use.

3.2.1. Using an Android device

With an Android device, it is possible to perform charging of the device while communicating.

Android OS version 9 and later are supported.

When connecting an Android device to the USB-C port for the purpose of communication, start the Android device first, connect the USB cable to the printer, and then turn ON the printer power.

If communication or power supply does not operate, operation may become possible if you disconnect and reconnect the cable.

3.2.2. Using a Windows device

- Using a device equipped with a USB-A port

Prepare the USB cable (C-A). Communication with the Windows device is possible.

- Using a device equipped only with a USB-C port

Prepare the USB cable (C-C).

If the USB-C port supports charging by USB PD, it is possible to perform charging of the Windows device while communicating.

If communication is not possible, communication with the Windows device can be made possible by changing the USB-C function setting to "Data only".

For details, refer to "3.2.5 USB-C function setting".

3.2.3. Using an iOS device

With an iOS device, the port is for power supply only.

Charging of the iOS device is possible when using LAN communication.

When using Bluetooth communication while charging with the USB-C port, set the USB-C function to power supply only mode.

The USB-C function can be switched using Star Quick Setup Utility or Star Configuration.

Because power supply only mode is not supported with Ver. 1.1 and earlier F/W, update to Ver. 1.2 or later before use.

[USB-A port]

- (1) Standard : USB2.0 High-speed Host
- (2) Power supply : USB BC1.2 SDP (maximum 2.5 W)
- (3) Connector : USB Type-A

When one of the following devices was connected, communication is performed as the USB host and 5V/0.5A power is supplied.

- Customer display (SCD222U)
- Barcode reader (BCR-POP1)
- HID device (keyboard interface)
- USB memory device
- USB HUB

Communication is not possible with USB devices other than above, but power of 5 V/0.5 A is supplied.

<Note> If communication with connected devices is impossible, it will be indicated by the LED. Refer to “4.5 LED Indicator and errors”.

3.2.4. Commercially available for use

The following are commercially available USB devices that has been tested and can be connected to the USB-A / USB-C port.

- Barcode reader
BSH-20U, BSH-20B, BSD-40U, BSH-32U, BSH-32B

<Note>

- 1) Contact your regional sales representatives for models available.
- 2) Only one barcode reader can be connected (either the barcode reader listed above or the optional dedicated barcode reader (BCR-POP1)).

- HID device
Target device : HID devices with USB keyboard interface

<Note>

- 1) This cannot be used with a barcode reader.
- 2) The operation of all commercially available HID devices is not guaranteed. Be sure to fully verify operation with the actual device before beginning actual use.

- USB memory device

<Specifications of USB memory devices that can be connected>

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

< Application >

Change printer settings by storing Star Configuration on a USB memory device.

In addition, storing Star Configuration and printer firmware data allows it to perform firmware rewriting and setting changes of the printer simultaneously.

<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. In that case, please use another USB memory device.**
- 2) **For more information about Star Configuration, see the Star Configuration Format specifications and "6 Star Configuration Format". Refer to the download site at "7. Application Development" for firmware rewriting procedure.**

- USB hub

Intended for: USB hub with USB-A plug

<Notes>

- 1) **The operation of all commercially available USB hubs is not guaranteed. Be sure to fully verify operation with the actual device before beginning actual use.**
- 2) **The number of USB hubs that can be connected to a printer is 1.**
- 3) **The devices which can be connected to a USB hub are the following.**
 - 1 optional barcode reader or commercially available HID device
 - Optional customer display SCD222U
 - Commercially available USB memory
- 4) **A host terminal cannot be connected to the USB hub and used.**
- 5) **The performance and quality of the USB hub are determined by the standards of the USB hub manufacturer.**
- 6) **When the USB hub receives power supply from the printer, ensure that the hub power consumption is 5V/0.5A or less (total of the hub and USB devices connected to the hub). If the power consumption deviates from the specification, there may be interference with printer operation.**

Settings

3.2.5. USB-C function setting

The USB-C function setting switches the operation of the USB-C port.
Details are as shown in the following table.

Details of USB-C function setting

USB-C function setting	Description
Power supply + communication (default)	This setting performs both power supply to the device and communication with the device. With this setting, power supply and communication with the following devices are possible. - Android - Windows (USB-C port that supports charging by USB PD) With this setting, communication with the following devices is possible. - Windows (USB-A port)
Communication only	This setting performs communication with some devices. Power supply to the device is not possible. Use this setting when communication with a higher-level device is not possible with the power supply + communication setting. With this setting, communication with the following devices is possible. - Windows (USB-C port that does not support charging by USB PD)
Power supply only (Supported by F/W Ver. 1.2 and later.)	This setting performs only power supply to the device. Communication with the device is not possible. Use this setting when using Bluetooth for communication while supplying power to an iOS device.

To change the setting, use Star Quick Setup Utility, Special function setting mode (normal waiting), Star Configuration.

Whether or not power supply to the device is possible and whether or not communication with the device is possible according to the combination of device information, cable used, and printer USB-C function setting (power supply + communication mode, communication only mode) are as shown below.

Be sure to fully verify operation with the actual device before beginning actual use.

Operation availability according to combination

Device information		Cable	Printer information		Operation	
Type	Connector		Connector	USB-C function setting	Power supply	Communication
Android	USB-C	USB-C – USB-C	USB-C	Power supply + communication (default)	✓	✓
				Communication only	-	-
	USB Micro-B	USB micro-B – USB-C		Power supply + communication (default)	✓	✓
				Communication only	-	-
Windows / macOS	Charging (USB PD) supported	USB-C – USB-C	Power supply + communication (default)	✓	✓	
			Communication only		✓	
	Charging (USB PD) not supported	USB-C – USB-C	Power supply + communication (default)	-	-	
			Communication only	-	✓	
	USB-A	USB-A – USB-C	Power supply + communication (default)	-	✓	
			Communication only	-	✓	

3.3. Bluetooth interface (Bluetooth-supported models only)

3.3.1. Wireless communication unit

Bluetooth specifications	: Bluetooth V5.0 (BR/EDR-supported), class 2
Carrier frequency bandwidth	: 2,402 MHz to 2,480 MHz
Supported profile	: SPP
Security	: SSP
iOS accessory protocol	: iAP2

Note 1) If the Bluetooth module of the device being used is V2.0 or earlier, an input of a PIN Code is required to connect via Bluetooth to this unit. The PIN Code for this is "1234".

2) The printer has been confirmed to operate under the following conditions.

- Distance from the host device is five meters.

However, there must be no obstacles between the host device and printer and their surrounding areas that interfere with communication.

In addition, since the communication distance varies depending on the surrounding reception environment, obstacles, installation environment, etc., an evaluation should be thoroughly performed at the time of setup.

3) Interference distance 10 m

4) Low Energy (LE) is not supported

3.3.2. Bluetooth settings

Setting item	Initial Value
Device name (*1)	mC-Label3 - "5-digit identification number unique to each product"
iOS port name	mC-Label3
New pairing permission	Valid
Auto Connection	Valid (iOS auto detection)

The above settings can be checked from the test printing results and can be changed by using the Star Quick Setup Utility.

(*1) Device name

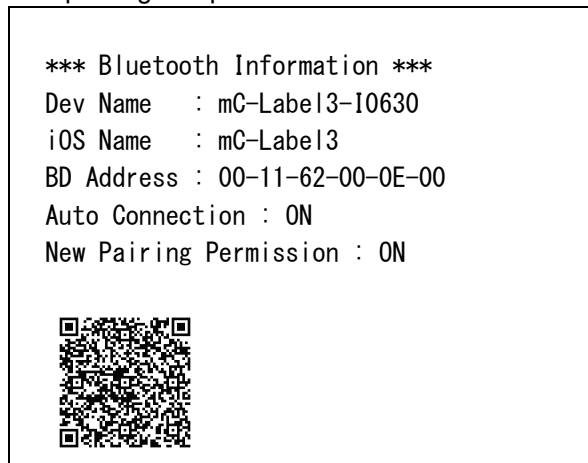
Holds a Bluetooth device ID consisting of maximum 16 digits as a unique identification code specifically (mC-Label3 "unique five-digit identification number") at the inside of the printer.

3.3.3. Confirm Bluetooth settings

The Bluetooth settings can be checked by test printing (self-printing).

For details, refer to “4.2.3 Test print mode (Self-print mode)”.

Test printing sample



You can scan the QR code with Star Quick Setup Utility to pair the printer with a device or select the printer to connect to.

3.3.4. 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 the printer, 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 this unit is deleted from the Bluetooth settings of the tablet or PC

Refer to “4.3.1 Initializing communication settings” for the initialization procedure.

3.3.5. Auto Connection function (iOS only)

This unit is installed with the Auto Connection function because it is always used in a 1-to-1 connection with an iPad or other iOS device. When the Auto Connection function is used because this unit connects automatically to the iOS device that it was most recently connected to when it reconnects after a connection was interrupted, it is not necessary to perform manual connection again.

If the device connected to last time is not iOS, the behavior is the same as that of Auto Connection OFF.

	Auto Connection : ON (Default)	Auto Connection : OFF
Reconnection with upper level terminal (device)	1) After the power is turned ON for the printer, it attempt to automatically connect to the most recently connected iOS device. 2) If step 1) fails, wait for a connection from another device. 3) If not connected in step 2), return to step 1).	Wait for the connection from the upper level terminal (device) after the printer is turned ON. Select the device name of the printer from the Bluetooth settings screen of the upper level terminal (device).
Changes to 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 the printer that needs change in the Bluetooth settings on the screen of the upper level terminal (device).	After the power is turned ON for this unit, select the device name of the printer from the Bluetooth settings screen of the upper level terminal (device).
Application Example	The printer is used on a one-to-one basis with the upper level terminal (device).	The printer is used with multiple upper level terminals (devices).

Auto Connection ON and OFF can be switched through either the printer operation or Star Quick Setup Utility and Star Configuration.

3.3.6. Notes on Bluetooth Interface

Waiting time until the start of the communication : Recommended 100 msec or longer

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 or more should be applied between port open and the start of sending data 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.

Waiting time until reconnection : Recommended 500 msec or longer

After disconnection from the upper level terminal (port close), post-processing is performed in the Bluetooth module. Therefore, it is recommended that a waiting time of 500 msec or longer should be applied before reconnection starts (before the next time the port opens after it is closed) 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.

Disconnection timing

Even if data transfer from the application of upper level terminal (device) is already completed, data may remain in the printer internal buffer. When the port is closed, the data left in the buffer may be discarded. When printing or disconnecting wireless connection, check the status and ensure that the transmitted data has been printed.

Consider retries on upper level terminal

We recommend a retry implementation on the upper level terminal, considering the risk of connection failure due to wireless communications. Perform appropriate operation tests in advance because the waiting time depends on the execution environment (the type of upper level terminal (device) and the usage environment).

Notes when using the Bluetooth USB Adapter

Always check the applicable specifications and verify the printer operation carefully.

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.

Simultaneous use of power supply from the USB-C port and iOS Bluetooth communication

When using printer Bluetooth while supplying power to an iOS device from the printer USB-C port, set the USB-C function to power supply only mode.

3.4. Printing with multiple interfaces

This printer supports printing using multiple interfaces, and the interfaces can be dynamically switched during use without turning the printer power off/on or disconnecting and reconnecting the interface cable.

There is 1 receiving buffer for commands and printing data, and the interface of the data which was received first occupies the receiving buffer. If the receiving buffer is empty for more than a certain period, it becomes possible to release receiving buffer and switch between interfaces. You can change the interface switching wait time by using Star Configuration or the Star Quick Setup Utility.

For details, refer to "6.Star Configuration Format" or Star Quick Setup Utility.

The devices (command and printing data sources) which can connect to and communicate with each interface are as shown in the table below.

	USB Type-C	Wired LAN	Bluetooth
iOS	-	✓	✓
Android	✓	✓	✓
Windows	✓	✓	✓
Linux	✓	✓	✓
Mac	✓	✓	✓

< Restrictions >

When using Bluetooth of this printer from an iOS device, do not use USB Type-C and wired LAN (excluding Star Micronics Cloud Services) at the same time.

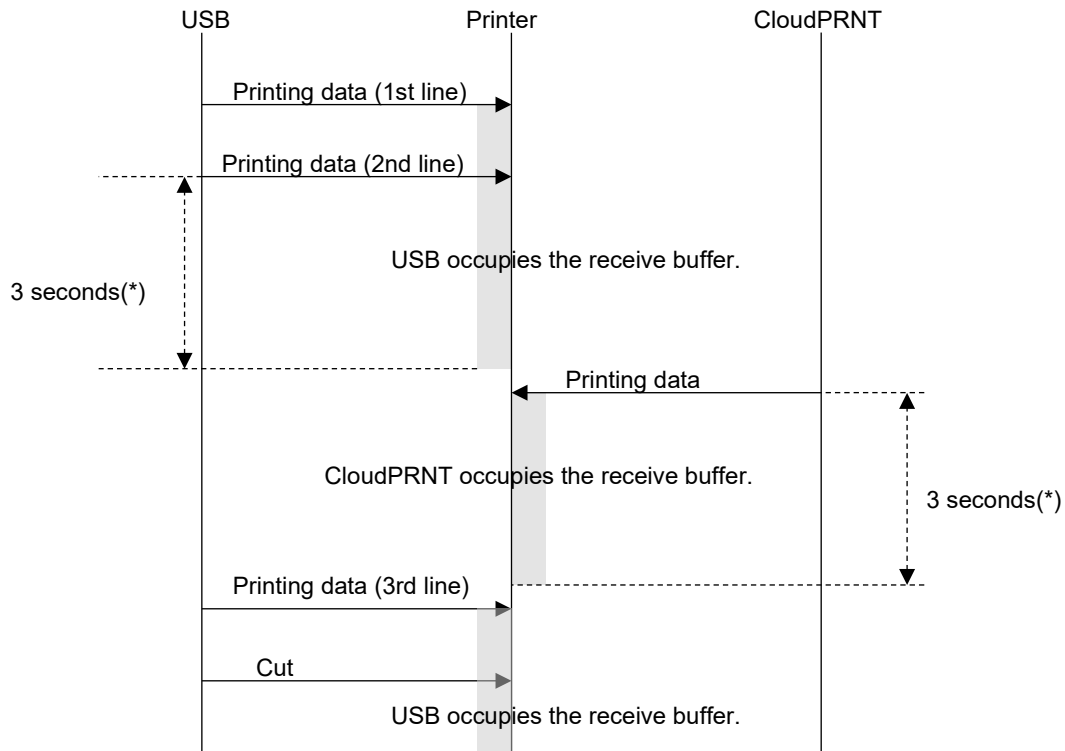
If communicating with another interface occurs while communicating with an iOS device that is connected via Bluetooth, a failure may occur. For example, print data may be erased or the communication may be disconnected.

When communication is disconnected, if the Auto Connection function of the printer is set to ON, turn the printer off once, then turn it on again; Bluetooth connection is recovered. When the Auto Connection function is set to OFF, perform Bluetooth pairing again.

When using multiple interfaces in parallel and the data transmission interval is equal to or longer than the interface switching wait time, then data may become mixed.

For example, when sharing a single printer with USB and CloudPRNT, and as shown in the figure below the transmission interval for USB printing data (2nd line) and printing data (3rd line) is 3 seconds (*) or more, then mixing of the CloudPRNT printing data occurs.

Example) Case where data mixing occurs with USB and CloudPRNT



*) When the interface switching wait time setting is the default (3 seconds)

Data mixing can be prevented by paying attention to the following.

When sending printing data from the application to the printer, send one entire document all at once without a transmission interval within the document.

When the transmission interval within a document is 3 seconds or more, set a longer interface switching wait time.

3.5. Spooler printing

Overview of spooler printing

When spooler printing is used, the printer saves print data (print jobs) in the spooler in the order that they are received, and job information is returned to the sender device.

If an error occurred during printing, the printer will execute reprinting automatically.

An ordinary printing application continues transactions until print completion is confirmed, and performs the reprinting process when an error is detected. However when receiving printing data from multiple devices, the response time diminishes as a result of this wait for print completion.

Using spool printing allows the application to proceed to the next process without waiting for print completion. Because it uses job information, it also allows the job status to be checked at a later time.

- This can be switched between enabled and disabled using Star Quick Setup Utility or Star Configuration. The default status is disabled.
- In order to use the spooler printing function, the spooler printing commands are used to send printing data.
- API related to the spooler are provided by StarXpand SDK. For details, refer to the StarXpand SDK user's manual.
- The maximum volume of jobs that can be saved in the spooler is 8 MB, and the maximum number of jobs is 2,000. The saved job information is saved in the order it is received until the maximum number of jobs is reached. When the maximum number of jobs is exceeded, jobs are deleted starting from the oldest job.

<Note>

When spooler printing is enabled, print jobs from StarPRNT SDK, CloudPRNT, star webPRNT, and PassPRNT will be spooled in sequence. However because the higher-level application API does not support the spooler function, processing waits until printing is completed.

The automatic reprinting process is also not performed.

◇ Reference manual

StarXpand SDK for iOS, Android : <https://www.star-m.jp/starxpandsdk-oml.html>

StarXpand SDK for ReractNative : <https://www.star-m.jp/react-native-stario10-oml.html>

3.6. SteadyLAN

SteadyLAN Overview

By using a USB cable to connect a Windows or Android device (device supporting USB PD only) to the USB-C connector of a printer that is connected to a network, it is possible for the terminal to use the Internet without requiring Wi-Fi communications.

At the same time, the device can communicate with the printer via USB communication or LAN communication and is also charged from the printer.

This not only simplifies the wiring, but because all parts of the solution are wired, more stable network connections are possible.

- You can switch between enabled and disabled through a command, Star Quick Setup Utility and Star Configuration. The default is disabled.
- The terminal Ethernet MAC address is assigned to the printer when the USB-C cable is connected, and can be checked using the printer test print mode.

For details, refer to “4.2.3 Test print mode (Self-print mode)”.

- The operation has been tested with Android 5.0 and later, and Windows10.
- It is necessary to Install the printer driver for use in Windows.

List of devices where operation was tested

Product Model	OS version
Google Pixel 3	Android 9
Google Pixel 4	Android 10
Samsung Galaxy Tab A 8.0	Android 10
Lenovo Tab M10 HD (2nd Gen)	Android 10
Google Pixel 4 XL	Android 11
Google Pixel 6	Android 12
Google Pixel 6a	Android 12
Google Pixel 6	Android 13
Microsoft Surface Go 3	Windows 11

<Notes>

- **It is recommended that the terminal Wi-Fi setting be turned OFF.**
- **When the SteadyLAN setting is changed and a Windows terminal is connected to USB, a new printer queue is created and the printer queue is changed. If not needed, delete the original printer queue.**
- **Depending on the type of device, when using the SteadyLAN function in a closed network environment (environment not connected to the Internet), if the device power was turned OFF and then turned ON while the device was connected to the printer, network communication may not be possible or the device may not start. If this occurs, try disconnecting and reconnecting the USB cable that connects the printer and device.**

3.7. TetherLAN

Overview of TetherLAN

This function allows an Android device that is connected to the printer by USB to connect the printer to the Internet by utilizing mobile data communication.

Even in an environment where wired LAN and wireless LAN are not available, connecting the printer to a terminal that is capable of mobile data communication will allow the printer to connect to a network.

By utilizing this function, it is possible to use CloudPRNT anywhere.

- Prepare a terminal that is connected to a mobile network and is capable of using Internet sharing (USB tethering).
- When the TetherLAN setting is enabled, USB communication with the printer is not possible.
Charging of the terminal is possible.
- This can be switched between enabled and disabled using Star Quick Setup Utility or Star Configuration.
The default is disabled.

List of devices where operation was tested

Product Model	OS version
Google Pixel 3	Android
Google Pixel 4	Android 10
Lenovo Tab M10 HD (2nd Gen)	Android 10
Google Pixel 4 XL	Android 11
Google Pixel 6	Android 12
Google Pixel 6a	Android 12
Google Pixel 6	Android 13

Procedure for use

- 1) Set TetherLAN to enabled using Star Quick Setup Utility or Star Configuration.
- 2) Check that a LAN cable is not connected to the printer, then connect the Android terminal to the USB-C port using a USB cable.
- 3) Enable USB tethering in the terminal settings.

The above procedure will enable TetherLAN, and the printer will connect to the network through the terminal.

To connect the terminal to the printer again, perform steps ② and ③.

<Note>

When using the TetherLAN function, do not connect the LAN cable. Doing so may affect device communications on the network that the LAN cable is connected to.

(If there are effects on device communications, it is necessary to disconnect the LAN cable from the printer that is using the TetherLAN function, take a step such as reconnecting that device to the network or rebooting the device, and then acquire the IP address again.)

3.8. External device drive connector

This printer is equipped with a drive circuit to drive external devices (such as an optional cash drawer or an external buzzer).

The connector for driving an external device (6P modular jack connector) is mounted on the output side of the drive circuit.

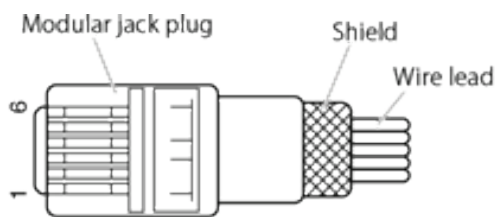
If a drive circuit is used, attach a cable to this connector.

Please prepare a cable by yourself. The specifications of recommended cable are as follows:

[Recommended cables]

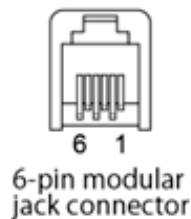
RJ11 plug (6P6C)

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

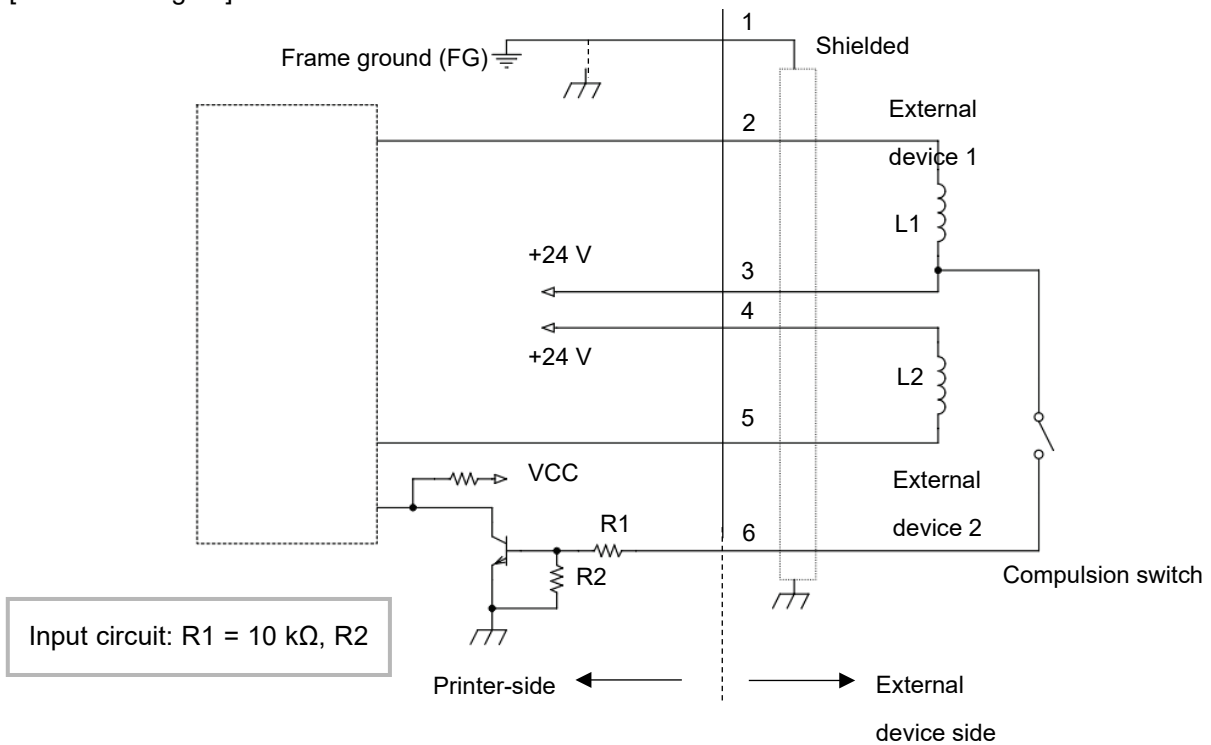


[Pin No.]

Pin No.	Signal Name	Signal direction
1	Frame ground (FG)	
2	Drive signal 1	Output
3	+24 V	
4	+24 V	
5	Drive signal 2	Output
6	Compulsion switch open/close signal	Input



[Connection figure]



- Note**
- 1) External device 1 and external device 2 cannot be driven simultaneously.
 - 2) When connecting a device other than an external buzzer, such as a cash drawer, reduce the duty to 20% or less.
 - 3) If you connect an external device other than the external buzzer or melody speaker, make sure that the external buzzer drive command is not used.
If it is used, the connected device and this circuit may become damaged.
 - 4) The conditions of the external device connection and compulsion switch can be found in the status.
 - 5) L1 and L2 must be 24 ohms or more, or the input current must be 1 A or less.

4. Operating Portion and Function

4.1. Power button

Press Power button to turn on the power for the first time. Release Power button when Power LED lights up red. As shown below, the Power LED indicator changes and the printer starts running.

Red lighting → Blue flashing (twice) → Blue lighting

To turn on the power for the second time or later, press the Power button. When the Power LED starts flashing blue, release the Power button.

To turn off the power, press and hold the power button for 1 to 2 seconds, then release it when it flashes blue. If you unplug the power cable and disconnect the power without using the power button, the power turns on automatically through the reconnection of the power cord.

4.2. Multi-Function button

The multi-function button enables functions such as One Touch Label and paper feed.

To switch or set the function related to this button, use Star Quick Setup Utility or Star Configuration.

The default setting is the paper feed function.

Details of functions are as follows:

4.2.1. One Touch Label

One Touch Label is a function that allows you to print a logo image registered on the printer by simply pressing the multi-function button. Please use this function to print the necessary number of the same label when needed. This function can print 3 types of logo images, which can be selected according to the number of times the multi-function button is pressed.

- Press once : Prints the registered logo image 1
- Press twice in a row : Prints the registered logo image 2
- Press 3 times in a row : Prints the registered logo image 3
- Long press : Prints all the registered logo images 1 to 3

To use this function, configure the following setting with Star Quick Setup Utility or Star Configuration.

- Change the function setting of the multi-function button to One Touch Label.
- Register the logo image that you want to print.
- Assign the registered logo image to the multi-function button.

For details, refer to Star Quick Setup Utility or "6 Star Configuration Format".

4.2.2. Paper feed

Pressing the button in online status feeds and cuts paper.

Cuts at the black mark position when the black mark detection is enabled.

Cuts at the GAP position when the GAP detection is enabled.

In other situations, feeds paper the specified length and cut it.

4.2.3. Test print mode (Self-print mode)

The test print mode prints information, such as firmware version, model name, Star Configuration settings, and network settings.

Only the Star Configuration settings which have been changed from the factory default settings are printed.

< How to enter test print mode >

When the power is turned on while the multi-function button is pressed, it will go into the test print mode.

After the test printing is completed, the printer automatically returns to normal mode.

4.2.4. Hexadecimal dump print mode

With the printer cover open, turn the power ON while pressing the multi-function button.

Release the button after the Power LED flashes blue. (Note: Release the button while the Power LED is flashing blue.)

If the Power LED turns blue while the button is pressed down, turn the power OFF and start over.

When the printer cover is closed, the "Hex Dump Mode" title will be printed, and it will enter the hexadecimal dump print mode.

Data subsequently received will be printed in hexadecimal

To finish the hexadecimal dump printing function, turn OFF the power to the printer

4.2.5. Special function setting mode (when the power is turned on)

- Procedure for special function settings: A → B → C

A: Entering special mode

Cover open + Press the multi-function button + Turn on the power

→ Blue LED flashing (Cycle: 0.25 sec.) for 5 sec.

→ Blue LED lighting

→ Multi-function button Off

→ Press the multi-function button 3 times.

→ Entering special mode

B: Selecting Modes

Press the multi-function button → LED indicator changes: B1 → B2 → B3 → B4 → B5 → B1 → ...

- B1 Blue LED lighting = Cutter drive setting mode → Cover close → C1
- B2 Red LED lighting = DHCP timeout setting mode → Cover close → C2
- B3 Purple LED lighting = USB serial number setting mode → Cover close → C3
- B4 Blue LED flashing (Cycle: 0.5 sec.) = Printer setup initialization mode → Cover close → C4
- B5 Red LED flashing (Cycle: 0.5 sec.) = Cut method setting mode → Cover close → C5

C: Settings selection

When the settings are saved, the Power LED flashes blue for several seconds. When it then returns to standby status, saving of the settings is completed.

- C1 Cutter drive setting mode → Press the multi-function button → LED indicator changes: C1 -1 → C1 -2 → C1 -3 → C1 -1 ...
- C1 -1 Blue flashing (Cycle: 0.25 sec.) = Cutter enabled → Press and hold the multi-function button for one second → Save settings
- C1 -2 Red flashing (Cycle: 0.25 sec.) = Cutter disabled (1) (tear bar position feed) → Press and hold the multi-function button for one second → Save settings
- C1 -3 Purple flashing (Cycle: 0.25 sec.) = Cutter disabled (2) (Cutting position feed) → Press and hold the multi-function button for one second → Save settings
- C2 DHCP timeout setting mode → Press the multi-function button → LED indicator changes: C2 -1 → C2 -2
- C2 -1 Blue flashing (Cycle: 0.25 sec.) = DHCP timeout enabled → Press and hold the multi-function button for 1 second → Save settings
- C2 -2 Red flashing (Cycle: 0.25 sec.) = DHCP timeout disabled → Press and hold the multi-function button for 1 second → Save settings
- C3 USB serial number setting mode → Press the multi-function button → LED indicator changes: C3 -1 → C3 -2
- C3 -1 Blue flashing (Cycle: 0.25 sec.) = USB serial number enabled → Press and hold the multi-function button for 1 second → Save settings
- C3 -2 Red flashing (Cycle: 0.25 sec.) = USB serial number disabled → Press and hold the multi-function button for 1 second → Save settings
- C4 Printer settings initialization mode
Printer settings initialization
- C5 Cut method setting mode → Press and hold the multi-function button → LED indicator changes: C5 -1 → C5 -2 → C5 -3 → C5 -1 ...
- C5 -1 Blue flashing (Cycle: 0.25 sec.) = Partial cut fixed → Press and hold the multi-function button for one second → Save settings
- C5 -2 Red flashing (Cycle: 0.25 sec.) = Full cut fixed → Press and hold the multi-function button for one second → Save settings
- C5 -3 Purple flashing (Cycle: 0.25 sec.) = Command override → Press and hold the multi-function button for one second → Save settings

4.2.6. Special function setting mode (normal waiting)

- Procedure for special function settings: A → B → C

A: Entering special mode

Cover open + Press the multi-function button

- Red LED lighting for 5 seconds
- Red LED flashing (Cycle: 0.5 sec)
- Multi-function button Off
- Entering special mode

B: Selecting Modes

Press the multi-function button → LED indicator changes: B1 → B2 → B3 → B4 → B5 → B1 → ...

- B1 Red LED flashing (Cycle: 0.5 sec) = USB-C function setting mode → Cover close → C1
- B2 Blue LED is ON = Hold print setting mode → Cover close → C2
- B3 Red LED lighting = Paper setting mode → Cover close → C3
- B4 Purple LED lighting = Paper leading edge detection mode → Cover close → C4
- B5 Yellow LED lighting = Sensor adjustment mode (BM) → Cover close → C5
- B6 Green LED lighting = Sensor adjustment mode (GAP) → Cover close → C6

- Note**
- 1) Load the paper with black marks before executing the sensor adjustment mode (BM).
 - 2) Load the die cut paper before executing the sensor adjustment mode (GAP).
 - 3) If sensor adjustment by sensor adjustment mode (BM) or sensor adjustment mode (GAP) fails, approximately 30 cm of paper is ejected and the printer then stops. Check that the paper is installed correctly and that the sensor position is correct, then perform sensor adjustment again.

C: Settings selection

When the settings are saved, the Power LED flashes blue for several seconds. When it then returns to standby status, saving of the settings is completed.

- C1 USB-C function setting mode → Press the multi-function button → LED indicator changes: C1-1 → C1-2 → C1-3 → C1-1 ...
- C1-1 Red flashing (Cycle: 0.5 sec) = Communication only → Press and hold the multi-function button for one second → Save settings
- C1-2 Blue flashing (Cycle: 0.5 sec) = Power supply only → Press and hold the multi-function button for one second → Save settings
- C1-3 Purple flashing (Cycle: 0.5 sec) = Power supply + communication → Press and hold the multi-function button for one second → Save settings

- C2 Hold print setting mode → Press the multi-function button → LED indicator changes: C2-1 ↔ C2-2
- C2 -1 Blue flashing (Cycle: 0.5 sec.) = Hold print enabled → Press and hold the multi-function button for one second → Save settings
- C2 -2 Red flashing (Cycle: 0.5 sec.) = Hold print disabled → Press and hold the multi-function button for one second → Save settings

- C3 Paper setting mode → Press the multi-function button → LED indicator changes: C3 -1 → C3 -2 → C3 -3 → C3 -4 → C3 -1 ...
- C3 -1 Blue flashing (Cycle: 0.25 sec) = Linerless label paper → Press and hold the multi-function button for one second → Save settings
- C3 -2 Red flashing (Cycle: 0.25 sec.) = Die cut label paper → Press and hold the multi-function button for one second → Save settings
- C3 -3 Purple flashing (Cycle: 0.25 sec.) = Full-surface label paper → Press and hold the multi-function button for one second → Save settings
- C3 -4 Green flashing (Cycle: 0.25 sec.) = Receipt paper → Press and hold the multi-function button for one second → Save settings

- C4 Paper leading edge detection mode → Press the multi-function button → LED indicator changes: C4 -1 → C4 -2 → C4 -3 → C4 -1 → ...
- C4 -1 Blue flashing (Cycle: 0.5 sec.) = BM mode → Press and hold the multi-function button for one second → Save settings
- C4 -2 Purple flashing (Cycle: 0.5 sec.) = GAP mode → Press and hold multi-function button for one second → Save settings
- C4 -3 Red flashing (Cycle: 0.5 sec.) = Paper leading edge detection disabled → Press and hold the multi-function button for one second → Save settings

- C5 Sensor adjustment mode (BM)
BM sensor adjustment
- C6 Sensor adjustment mode (GAP)
GAP sensor adjustment

4.2.7. Special function setting mode (no paper)

Cover close + No paper

- Press and hold the multi-function button for 5 seconds
- Cancellation of cleaning notification (If the Information LED is illuminated orange, it turns off)
- Multi-function button Off
- Press and hold the multi-function button for 5 seconds within 2 seconds
- Cancellation of parts replacement notification (If the Information LED is illuminated red, it turns off)

4.3. RESET switch

4.3.1. Initializing communication settings

Initializing the network settings allows you to initialize the **3.1 Ethernet (4)** network settings.

You can initialize **3.3 Bluetooth settings** by initializing Bluetooth settings. If you want communication with a paired connection device after Bluetooth settings are initialized, it is necessary to pair the device again.

- Communication settings initialization procedure A → B → C

A: Entering communication settings initialization mode

Press Reset SW + Turn on the power

→ Network LED flashing

→ Reset SW off

→ Enters communication settings Initialization mode

B: Selecting Modes

Press the multi-function button → LED indicator changes: B1 → B2 → B3 → B1 → ---

B1 Network LED flashing = Network configuration initialization mode

B2 Bluetooth LED flashing = Bluetooth settings initialization mode

B3 Network LED flashing, Bluetooth LED flashing = Network configuration initialization + Bluetooth setting initialization mode

C: Initialization execution

When the multi-function button is pressed and held for one second, the Power LED flashes blue for several seconds.

It then returns to standby status, and initialization is completed.

4.3.2. Auto Connection setting change

You can change the Auto Connection settings according to the following operation: If enabled, the setting will be disabled; if disabled, the setting will be enabled.

Load paper, turn on the power, and bring the printer in the standby status

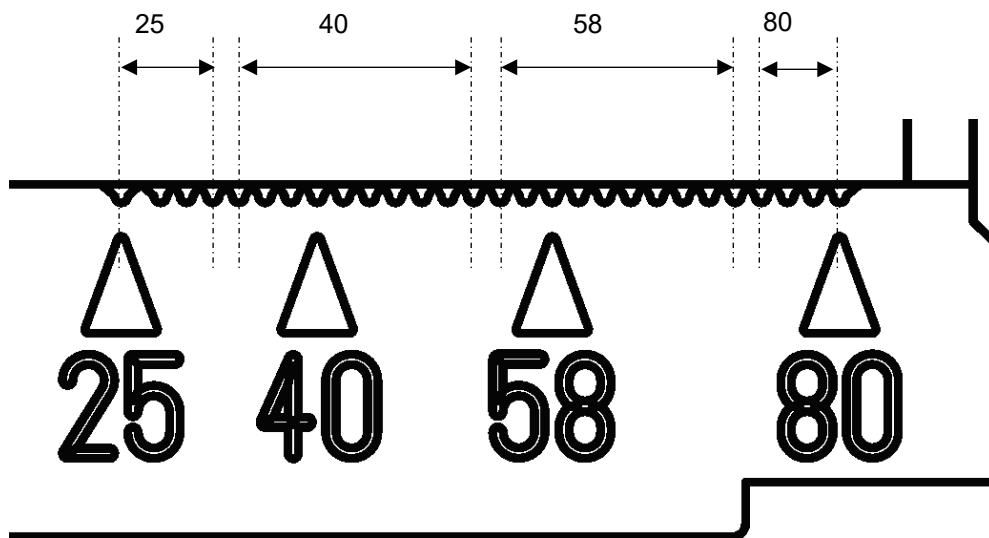
Press and hold the RESET switch on the back of this printer for more than 3 seconds to apply the setting changes. It takes several seconds to complete the settings change. Once the Power LED is off, the settings change is complete.

Perform self-printing to verify that the setting is correct.

4.4. Paper width detection

The sensor can detect the paper guide position, allowing the width of the loaded paper to be detected. The detected paper width can be checked by acquiring the status from the application. In addition, the self-printing area is automatically adjusted according to the width of loaded paper.

Paper guide Set position	Application Detection paper width
75 mm or more	80 mm
55 mm or more to 73 mm or less	58 mm
35 mm or more to 53 mm or less	40 mm
Approx. 33 mm or less	25 mm



- Note**
- 1) For detection method through application, refer to “7.2 Software”.
 - 2) With self-printing or Star Configuration, it is possible to check the current printing area of the printer.
 - 3) The printing area setting of the printer does not automatically change according to the detected paper width.
 - 4) The paper guide setting positions are approximate guidelines. There may be a difference of around several mm depending on the product.

4.5. LED Indicator and errors

4.5.1. Automatic recovery error (online)

Error type	Power LED	Cause	Restoration method
High head temperature detection (Printing stop)	Blue flashing (Once)	The head temperature is high.	Automatically recovered when head temperature drops.
Circuit board high temperature detection (Printing stop)	Blue flashing (2 times)	The circuit board temperature is high.	Automatically recovered when the circuit board temperature drops.

4.5.2. Recoverable error (Offline)

Error type	Power LED	Cause	Restoration method
Cover open error	Lighting up red	The cover is open.	Close the cover.
No paper error	Continuous red flashing (Cycle: 1 sec.)	There is no paper.	Load paper.
BM/GAP sensor detection error	Continuous red flashing (Cycle: 1 sec.)	The black mark/GAP cannot be detected accurately.	Perform sensor adjustment. Check to see if the position of the mark detection sensor is correct. Make sure that the paper in use is correct.
Paper position error	Continuous red flashing (Cycle: 1 sec.)	The roll paper is not set onto the shafts and is not in the correct position	Load paper properly.
Paper jam error	Continuous red flashing (Cycle: 0.25 sec.)	Paper jam occurred.	Remove any jammed paper. If paper jam occurs frequently, clean the parts.

4.5.3. Irrecoverable error (Offline)

Error type	Power LED	Cause	Restoration method
Auto cutter error	Continuous purple flashing (Cycle: 0.25 sec.)	Cutter malfunction.	Turn the power OFF, after confirming that the cutter blade has returned to the home position, turn ON the power. If the error cannot be cleared, the printer must be repaired.
Power voltage error	Purple flashing (Once)	The power supply voltage is abnormal.	The printer must be repaired.
Head thermistor error	Purple flashing (Twice)	Head thermistor resistance is at abnormal value.	The printer must be repaired.
EEPROM error	Purple flashing (5 times)	EEPROM access error.	The printer must be repaired.
Star Configuration error	Continuous purple flashing (Cycle: 1 sec.)	There is a problem with the contents of Star Configuration, or USB memory disconnect was detected.	Turn the power off, and check that the contents of Star Configuration are correct, then turn the power on again.

If you need help with repairs, please contact the seller.

4.5.4. Network link status display

Type	Network LED	Cause	Restoration method
Link up	ON	TCP/IP communication possible	
Link down [Physical disconnection]	OFF	Connection physically cuts off (Ethernet is link down).	Check the connection of the communication cable between the printer and hub router and turn the power on again.
Link down [IP address not obtained]	Flash (Cycle: 0.25 sec.)	<When DHCP is enabled> It is not possible to acquire an IP address from the network, or a Link Local address has been acquired.	After confirming the wiring path and the DHCP server, turn the power on again.
		<When DHCP is disabled> IP address = 0.0.0.0 is specified	After initializing the network settings, set the correct IP address (*1).

4.5.5. Bluetooth status display (Models which support Bluetooth only)

Type	Bluetooth LED
Ready status (pairing/connection possible)*1	OFF
Connected	ON

*1) When the [New Pairing Permission] settings are OFF, pairing is not possible even in the ready state.

4.5.6. Firmware status display

Type	Power LED
Writing Firmware (Printing stop)	Continuous red and blue alternate flashing (Cycle: Irregular)

4.5.7. USB host status display

Type	Power LED
When the device is connected to a charger or an unsupported USB device	Continuous red and blue alternate flashing (5 sec, Cycle: 1 sec.)
when connected to an unsupported USB or HUB (When more than the prescribed number of levels are connected)	Continuous red and blue alternate flashing (5 sec, Cycle: 0.5 sec.)

4.5.8. Information display

Type	Information LED	Notification contents	Notification cancel method
Notification of stuck print job during hold print	Light blue flashing (Cycle: 1 sec.)	The following print data is on hold due to hold print.	Pull out the ejected paper.
Cleaning notification	Lighting up orange	It is time for parts cleaning.	Clean the parts and cancel the cleaning notification * 1.
Parts replacement notification	Lighting up red	It is time for parts replacement.	Replace the part and cancel the part replacement notification * 2.

*1) Refer to "5.1.1 Notification, cancellation".

*2) Refer to "5.3.1 Notification, cancellation".

5. Maintenance

For comfortable and safe use, perform maintenance periodically.

Please read the following precautions carefully before performing maintenance.

Warning

- Be sure to turn off the power before performing maintenance.
Otherwise, it may cause an electric shock or injury if the power is on during maintenance.
- Do not perform maintenance with wet hands.
Otherwise, it may cause an electric shock.
- Periodically maintain the power cable.
If usage of a damaged (e.g. cracked) cable is continued, it may cause fire or electric shock.

Note

- Do not use benzine, thinner, trichlorethylene, and ketone solvents. Do not also dampen or damage the interior of this product during maintenance. Otherwise, it may lead to malfunctions.
- Do not touch any of the other interior sections that are not noted in this product manual. Otherwise, it may cause an injury or burns.
- The thermal head is easily damaged. Be careful not to damage it while cleaning.
- Do not clean the thermal head immediately after printing when it is still hot.
- There is risk that static electricity may damage the head after the thermal head is cleaned so be careful about static electricity.

5.1. Parts cleaning (When using linerless label paper, full-surface label paper)

< Standard for when parts need to be cleaned >

- 1) Information LED: When lighting up orange (This notification is based on the cleaning cycle of strong adhesive linerless.)
- 2) Accidental occurrence of defects, such as paper jam, defective cutting or false detection by the hold print sensor
- 3) If the stickiness of parts due to label papers is bothering during paper roll replacement

5.1.1. Notification, cancellation

The LED indicator notifies when it is time for parts cleaning. For details, refer to “4.5.8 Information display”. In addition, when the cover is opened and closed while the LED indicator is on, labels are printed, notifying that it is time for parts cleaning.

You can cancel the cleaning notification using special mode or command.

To cancel the notification using special mode, refer to “4.2.9. Special function setting mode (no paper)”.

To cancel the notification using a command, refer to the Commands Specifications.

LED indicator and printing notification may be disabled by using Star Configuration.

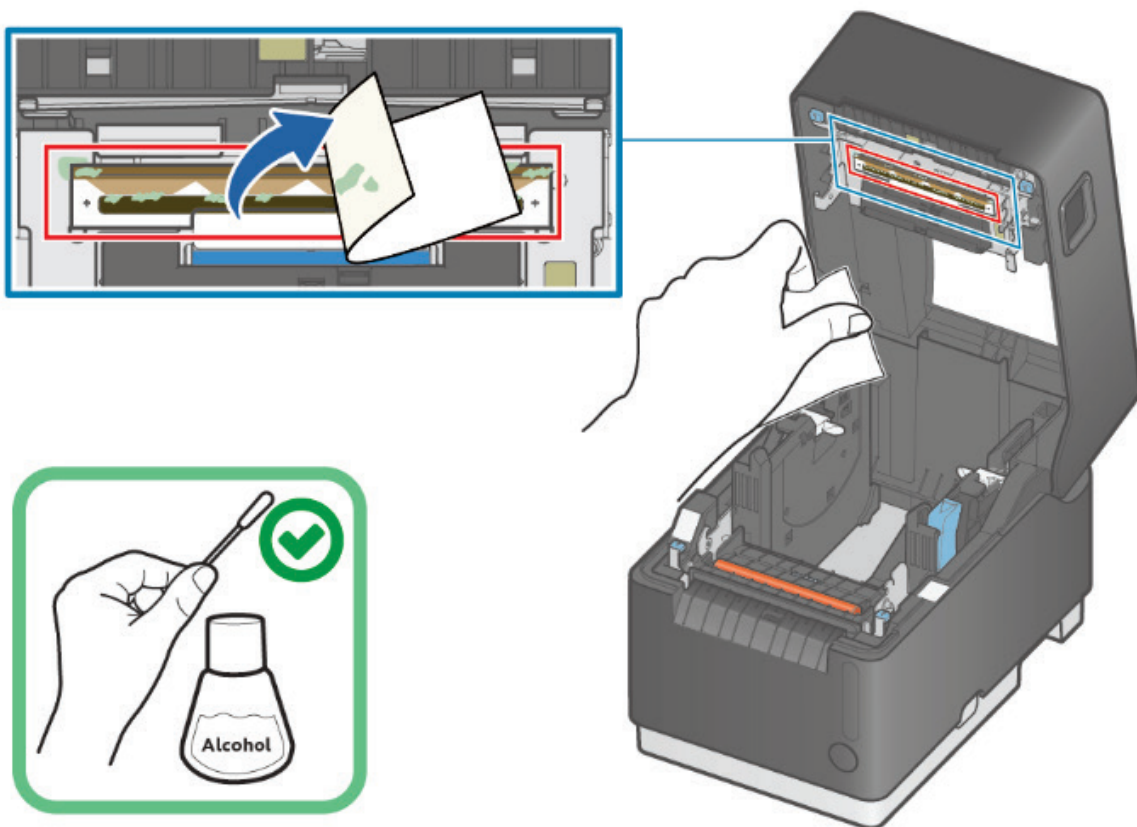
5.1.2. Thermal head

Press the label paper against the thermal head several times to remove dirt and glue from the heating element of the thermal head.

If the thermal head is extremely dirty, apply alcohol solvent (ethanol, methanol, isopropyl alcohol) on a cotton swab and remove dirt from the heating element of the thermal head.

Note 1) If the label paper used for cleaning is torn and stuck to the thermal head, remove it by hand.

2) Commercially available adhesive tape (cellophane tape, etc.) may be used instead of the label paper.

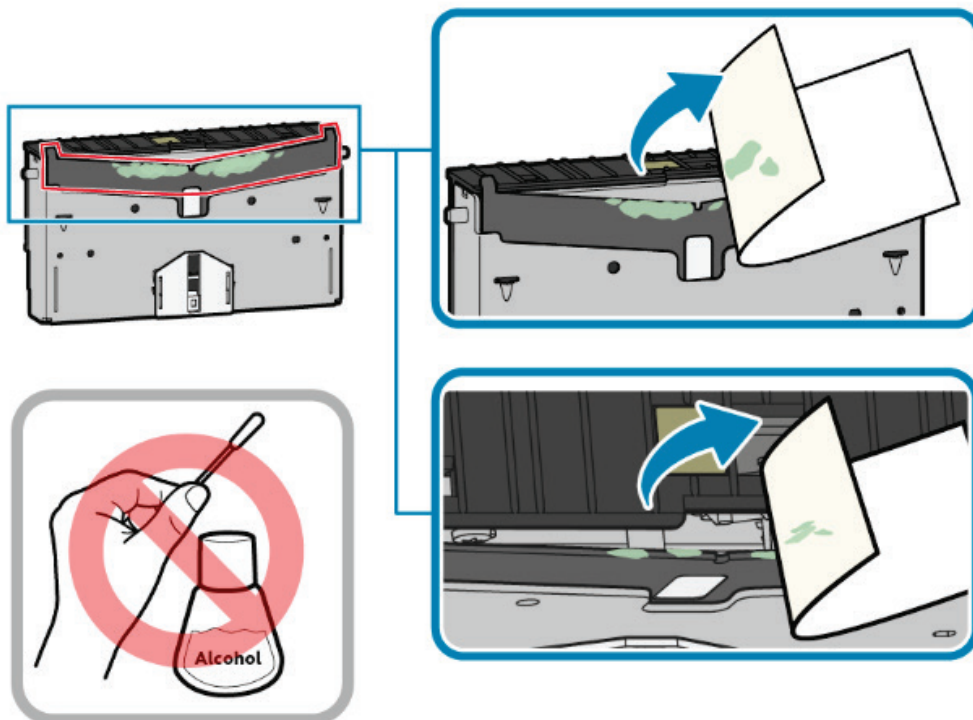


5.1.3. Cutter

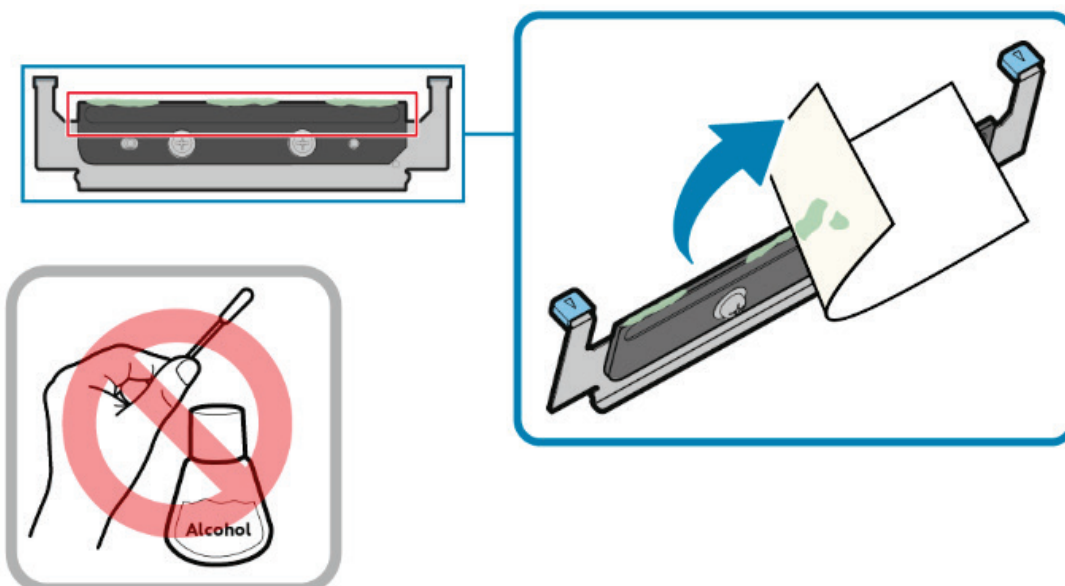
Press the adhesive surface of the label against the cutter several times to remove the glue stuck to the area in the red frame shown below until the stickiness is removed.

- Notes**
- 1) If the label paper used for cleaning is torn and stuck to the cutter, remove it by hand.
 - 2) The cutter blade has a non-adhesive coating, therefore never use alcohol solvent. If alcohol solvent is used, the coating of the cutter blade may be removed, resulting in cutting failure.
 - 3) Commercially available adhesive tape (cellophane tape, etc.) can be used instead of the label paper.

[Cutter unit]



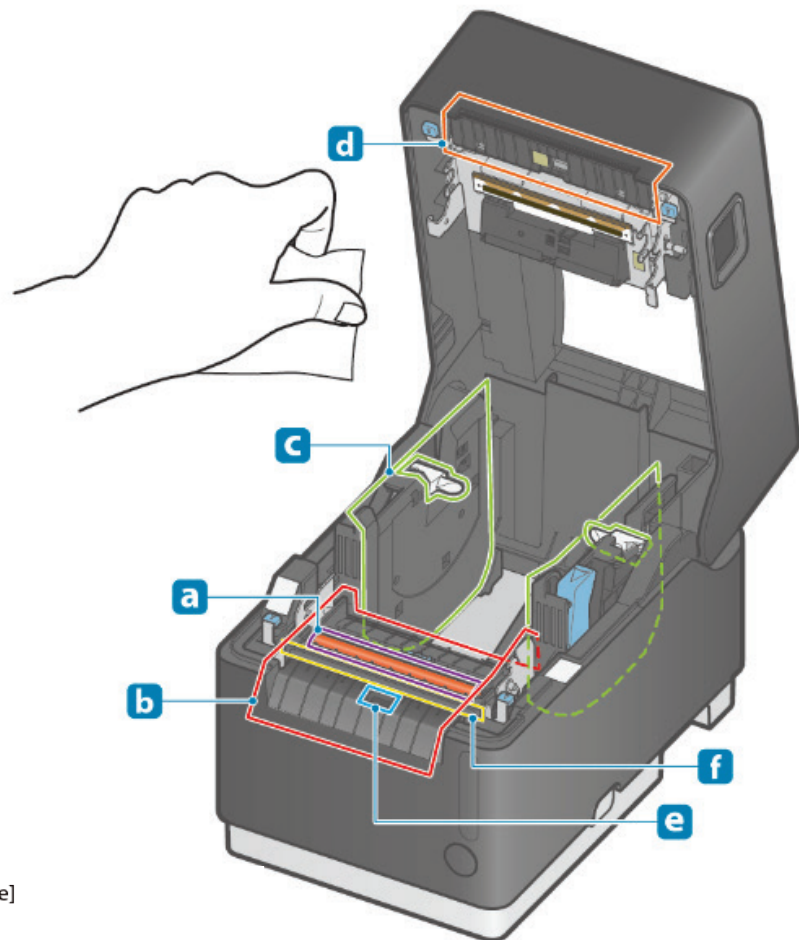
[Stationary knife]



5.1.4. Platen roller and paper feed path

Press the adhesive surface of the label against the glue adhered to the areas a to f in the figure below several times until the stickiness is removed.

- Notes**
- 1) If the label paper used for cleaning is torn and stuck to the paper feed path, remove it by hand.
 - 2) The platen roller (a in the figure below) has been specially treated, therefore never use alcohol solvent.
 - 3) Commercially available adhesive tape (cellophane tape, etc.) can be used instead of the label paper.
 - 4) Also remove glue stuck to the paper guiding shafts (white-colored part of section c in the figure shown below).
Accumulated glue may reduce the sliding property of the paper guiding shafts and might affect how easily paper is loaded.
 - 5) When using die cut label paper, it is not necessary to clean the platen roller.
 - 6) If false detection by the hold print sensor (e in the figure below) occurs, remove any adhering glue from around the hold print sensor.



- a** Platen roller [Purple frame]
- b** Paper feed path (including side wall) [Red frame]
- c** Paper guide shaft and paper guide [Green frame]
- d** Cutter cover/Top cover (Tear bar) [Orange frame]
- e** Hold print sensor [Blue frame]
- f** Stationary knife [Yellow frame]

5.1.5. External view

- Wipe off the dirt on the plastic section using a soft, dry and clean cloth.
- If it is very dirty, soak a soft cloth in water with a very small amount of neutral detergent, completely squeeze the cloth, and gently wipe the dirt, and wipe off the moisture with a dry, soft cloth.

5.2. Parts cleaning (When using die cut label paper, receipt paper)

< Standard for when parts need to be cleaned >

- 1) Every six months, or every one million printed lines

5.2.1. Thermal head

- Put an alcohol solvent (ethanol, methanol, isopropyl alcohol) on a cotton swab and wipe the thermal area of the thermal head.
- Remove the blackened paper powder from the surface of the thermal head.

5.2.2. Platen roller

- Use a soft, dry cloth to wipe off the dirt from the platen roller.
- Rotate the rubber roller while cleaning to make sure that the whole roller is cleaned.
- Because a special treatment has been applied to the platen roller, never use alcohol solvents.

5.2.3. Paper feed path

- Remove any debris, dust and paper particles from the paper holder as well as any other objects that may have accumulated.

5.2.4. External view

- Wipe off the dirt on the plastic section using a soft, dry and clean cloth.
- If it is very dirty, soak a soft cloth in water with a very small amount of neutral detergent, completely squeeze the cloth, and gently wipe the dirt, and wipe off the moisture with a dry, soft cloth.

5.3. Parts replacement

When it is time for parts replacement, replace the platen roller and cutter together.

To purchase a platen roller or cutter, contact your local distributor.

<https://www.star-m.jp/mclabel3-sup.html?=#a4>

< Standard for when parts need to be replaced >

- 1) Information LED: When lighting up red (when the media setting is linerless label paper or continuous label paper)
- 2) If defects, such as paper jam or defective cutting, occur immediately after cleaning parts.
- 3) If there is obvious damage to the part

5.3.1. Notification, cancellation

The LED indicator notifies when it is time for parts replacement. For details, refer to “4.5.8 Information display”.

In addition, when the cover is opened and closed while the LED indicator is on, printing is performed for notification that it is time for parts replacement.

After performing parts replacement, cancel the notification regardless of whether or not there is a notification by the LED indicator. Canceling the parts replacement notification updates the next parts replacement notification timing.

You can cancel the parts replacement notification using special mode or command.

To cancel the notification using special mode, refer to “4.2.9. Special function setting mode (no paper)”.

To cancel the notification using a command, refer to the Commands Specifications.

LED indicator and printing notification may be disabled by using Star Configuration.

5.3.2. Cutter

- Be sure to replace the cutter unit and the stationary knife together.

If only one side is replaced, defects, such as defective cutting, may occur.

5.3.3. Platen roller

- If the platen roller is dirty or has dust during replacement, clean it before use.

6. Star Configuration Format

Star Configuration defines how to update the printer firmware and settings change.

For more information about Star Configuration, refer to the Star Configuration Format specifications.

This chapter describes the combination of Star Configuration Key and Value that can be set with mC-Label.

"default" in the table below means the factory default setting.

Because the following keys support setting only, acquisition of the Star Configuration setting values is not supported.

- print_when_completed_type
- print_when_completed
- firmwares
- configurations->print_type
- configurations->print_before_writing
- configurations->reset_settings_to_default
- configurations->selftest_after_writing
- configurations->password_protected_settings->current_password
- configurations->password_protected_settings->new_password
- configurations->password_protected_settings->cloudprnt->https_trust_level_path_type
- configurations->password_protected_settings->cloudprnt->https_trust_level_path
- configurations->printer_server_tls->import_ca_signed_cert

key	value	Remark
title	"star_configuration"	-
version	Star Configuration Version	-
print_when_completed_type	"none"	-
	"ascii"	-
print_when_completed	Notification print contents when firmware update and settings change are completed	-
firmwares		
action	"upgrade"	-
	"force"	-
device_name	Model name subject to firmware update	-
path_type	"url"	-
	"path"	-
	"cloud"	-
path	Details on the acquisition method specified in "path_type"	-
print_type	"none"	-
	"ascii"	-
print_before_writing	Notification print contents before performing firmware update	-
selftest_after_writing	"none"	-
	"all"	-
	"bluetooth"	-
	"network"	-
	"printer"	-
	"printer_diff"	-
	"version"	-

key	value	Remark
configurations		
device_name	"all"	-
	"<device_name>"	-
print_type	"none"	-
	"ascii"	-
print_before_writing	Notification print contents before performing settings change	-
reset_settings_to_default	"none"	-
	"all"	-
selftest_after_writing	"none"	-
	"all"	-
	"bluetooth"	-
	"network"	-
	"printer"	-
	"printer_diff"	-
	"version"	-
password_protected_settings		
current_password	Login password for Web Configuration	-
new_password	New login password for Web Configuration	-
cloudprnt		
service	"default"	-
	"disabled"	-
	"enabled"	-
server_url	"default"	-
	Other Specified URL	-
polling_time	"-1"	-
	"1 to 7200"	-
user_name	"default"	-
	Other Specified user name	-
password	"default"	-
	Other Specified password	-
https_trust_level	"default"	-
	"list"	-
	"custom"	-
	"all"	-
https_trust_level_path_type	"url"	-
	"path"	-
https_trust_level_path	Details on the acquisition method specified in "https_trust_level_path_type"	-
ntp_server	"default"	-
	"star"	-
	"custom"	-
ntp_server_option	"default"	-
	Other Specified URL	-
cipher_suites_encryption_level	"default"	-
	"high+medium"	-
use_tls_13	"default"	-
	"disabled"	-
	"enabled"	-

key	value	Remark
interface_protected		
network_protected		
target_device	"eth0"	-
dns		
dns1	"default"	-
	"0.0.0.0" to "255.255.255.255"	-
dns2	"default"	-
	"0.0.0.0" to "255.255.255.255"	-
printer_control		
media_type	"default"	-
	"linerless_label"	-
	"die_cut_label"	-
	"continuous_label"	-
	"receipt"	-
print_width	"default"	-
	"120" to "576" (set in 1-dot unit)	-
	"276"	-
	"406"	-
	"420"	-
	"15 mm" to "72 mm" (set in 1 mm unit)	-
	"34.5 mm"	-
	"50.8 mm"	-
reverse_printing	"default"	-
	"disabled"	-
	"enabled"	-
print_startup_control	"default"	-
	"page"	-
	"line"	-
print_speed	"default"	-
	"high"	-
	"medium"	-
	"low"	-
print_density	"default"	-
	"standard"	-
	"0"	-
	"+1"	-
	"+2"	-
	"+3"	-
	"-1"	-
	"-2"	-
"-3"	-	
line_feed_amount	"default"	-
	"4 mm"	-
	"3 mm"	-
processing_after_error_recovery	"default"	-
	"discard"	-
	"reprint"	-

key	value	Remark
cutter_operation	"default"	-
	"enabled"	-
	"no_cut_with_feed_to_cutter"	-
cut_type	"default"	-
	"follow_command"	-
	"partial_cut"	-
	"full_cut"	-
top_margin	"default"	-
	"3 mm"	-
	"11 mm"	-
spooler	"default"	-
	"disabled"	-
	"enabled"	-
printer_status		
asb		
ethernet	"default"	-
	"disabled"	-
	"enabled"	-
bluetooth	"default"	-
	"disabled"	-
	"enabled"	-
usb_b_c	"default"	-
	"disabled"	-
	"enabled"	-
nsb		
ethernet	"default"	-
	"disabled"	-
	"enabled"	-
usb_b_c	"default"	-
	"disabled"	-
	"enabled"	-
printer_button		
multi_function_button	"default"	-
	"none"	-
	"feed_button"	-
	"one_touch_label"	-
feed_button	"default"	-
	"disabled"	-
	"enabled"	-
one_touch_label		
number	1	-
	2	-
	3	-
logo_keycode	"default"	-
	"none"	-
	"XX"	-
cut_type	"default"	-
	"none"	-
	"partial_cut"	-
	"full_cut"	-

key	value	Remark
power_button	"default"	-
	"disabled"	-
	"enabled"	-
printer_sensor		
top_search		
control	"default"	-
	"disabled"	-
	"enabled"	-
sensor	"default"	-
	"black_mark"	-
	"gap"	-
power_on	"default"	-
	"keep"	-
	"feed"	-
	"feed_cut"	-
cover_close	"default"	-
	"feed"	-
	"feed_cut"	-
black_mark		
mark_length_adjust	"default"	-
	"0 mm"	-
	"1 mm" to "15 mm"	-
stop_position_adjust	"default"	-
	"0 mm"	-
	"-10.0 mm" to "-0.5 mm"	-
	"0.5 mm" to "1023.5 mm"	-
paper_taken		
control	"default"	-
	"disabled"	-
	"enabled"	-
timeout	"default"	-
	"none"	-
	"5 min"	-
	"10 min"	-
alarm	"default"	-
	"disabled"	-
	"enabled"	-
status	"default"	-
	"disabled"	-
	"enabled"	-
led	"default"	-
	"disabled"	-
	"enabled"	-
reduced_printing		
horizontal_reduced_printing	"default"	-
	"disabled"	-
	"67%"	-
barcode_reduced_printing	"default"	-
	"disabled"	-
	"enabled"	-

key	value	Remark	
horizontal_paper_saving	"default"	-	
	"disabled"	-	
	"enabled"	-	
	vertical_paper_saving	"default"	-
		"disabled"	-
		"enabled"	-
	vertical_paper_saving_level	"default"	-
		"level1"	-
		"level2"	-
interface			
general			
interface_lock_timeout	"default"	-	
	"1" to "10"	-	
	communication_detection	"default"	-
"disabled"		-	
"enabled"		-	
bluetooth			
device_name	"default"	-	
	Other Specified device name	-	
ios_port_name	"default"	-	
	Other Specified port name	-	
new_pairing	"default"	-	
	"disabled"	-	
	"enabled"	-	
auto_connection	"default"	-	
	"disabled"	-	
	"enabled"	-	
network			
target_device	"eth0"	-	
dynamic			
dhcp	"default"	-	
	"disabled"	-	
	"enabled"	-	
dhcp_timeout	"default"	-	
	"disabled"	-	
	"enabled"	-	
static			
ip_address	"default"	-	
	"0.0.0.0" to "255.255.255.255"	-	
subnet_mask	"default"	-	
	"0.0.0.0" to "255.255.255.255"	-	
default_gateway	"default"	-	
	"0.0.0.0" to "255.255.255.255"	-	
system_configurations			
port9100	"default"	-	
	"disabled"	-	
	"enabled"	-	
port9100_multi_session	"default"	-	
	"disabled"	-	
	"enabled"	-	

key		value	Remark
	port9100_data_timeout	"default"	-
		"0"	-
		"30"	-
		"40"	-
		"60"	-
		"120"	-
		"180"	-
		"300"	-
	port9101	"default"	-
		"disabled"	-
		"enabled"	-
	udp22222	"default"	-
		"disabled"	-
		"enabled"	-
	usb		
usb_c_function	"default"	F/W Ver1.1~	
	"power_communication"	F/W Ver1.1~	
	"power"	F/W Ver1.2~	
	"communication"	F/W Ver1.1~	
serial_number	"default"	-	
	"disabled"	-	
	"enabled"	-	
serial_number_data	"default"	-	
	8 or 16 digit half width upper-case alphanumeric characters: Specified serial number	-	
character			
character_code	"default"	-	
	"none"	-	
	"gb18030"	-	
	"big5"	-	
	"shift_jis"	-	
special_region	"default"	-	
	"standard"	-	
	"thai"	-	
international_character	"default"	-	
	"<international character>"	-	
large_font	"default"	-	
	"disabled"	-	
	"enabled"	-	
code_page	"default"	-	
	"<code page>"	-	
zero_style	"default"	-	
	"normal"	-	
	"slashed"	-	
kanji_character_pitch	"default"	-	
	"standard"	-	
	"wide"	-	

key	value	Remark	
ank_character_pitch	"default"	-	
	"standard"	-	
	"wide"	-	
logo			
keycode	"XX" (X is arbitrary character)	-	
path_type	"url"	-	
	"path"	-	
path	Details on the acquisition method specified in path _ type	-	
file_type	"mono_png"	-	
	"raster"	-	
printer_server_tls			
certificate	"default"	-	
	"self_signed"	-	
	"ca_signed"	-	
import_ca_signed_cert			
certificate	path_type	"url"	-
		"path"	-
	path	Details on the acquisition method specified in path _ type	-
private_key	path_type	"url"	-
		"path"	-
	path	Details on the acquisition method specified in path _ type	-
steadylan			
control	"default"	-	
	"disabled"	-	
	"enabled"	-	
tetherlan			
control	"default"	-	
	"disabled"	-	
	"enabled"	-	
maintenance			
cleaning_notification_led	"default"	-	
	"disabled"	-	
	"enabled"	-	
cleaning_notification_print	"default"	-	
	"disabled"	-	
	"enabled"	-	
cleaning_notification_status	"default"	-	
	"disabled"	-	
	"enabled"	-	
replacement_notification_led	"default"	-	
	"disabled"	-	
	"enabled"	-	
replacement_notification_print	"default"	-	
	"disabled"	-	
	"enabled"	-	

key		value	Remark
	replacement_notification_status	"default"	-
		"disabled"	-
		"enabled"	-

◇Reference Specifications

Star Configuration Format Specifications : <https://www.star-m.jp/printersdks-wsw.html>

7. Application Development

Information regarding the development of the application that controls this printer is as follows.

7.1. Supported emulation

StarPRNT emulation

7.2. Software

I Development kit I

Name	General description
StarXpand SDK for iOS, Android	This is a development kit to control the printer from a native application. This is a new SDK that updated the StarPRNT SDK. Manual : https://www.star-m.jp/starxpandsdk-oml.html
StarXpand SDK for ReactNative	This is a development kit to control the printer from a native application using ReactNative. Manual : https://www.star-m.jp/react-native-stario10-oml.html
StarPRNT SDK	This is a development kit to control the printer from a native application. Manual : https://www.star-m.jp/starprntsdk-oml-android.html
Star Micronics Cloud Services	This service allows access to printer data by connecting Star Micronics printers to the Star Micronics Cloud. Manual : https://www.starmicronicscloud.com
starwebPRNT SDK	This is a development kit to print from a variety of devices, such as PCs and tablets, through a web browser. Manual : https://www.star-m.jp/starwebprnt-oml.html
Star PassPRNT SDK	This is a development kit to call print from another application by using URL scheme. You can receive print data and print it on Star Micronics printer. Manual : https://www.star-m.jp/starpassprntsdk-oml-android.html
Star CloudPRNT SDK	Star CloudPRNT is a protocol that can print from a remote server. Manual : https://www.star-m.jp/starcloudprntsdk-oml.html

I Driver I

Name	General description	Operating environment
Star Windows Driver	This is required when using the Star Micronics Printer with the Windows printer driver. The Windows printer driver is used when printing from a Windows application. Included in Star Windows Software.	Windows
Star OPOS Driver	This is required when using the Star Micronics printer and peripheral devices with the OPOS driver. Included in Star Windows Software.	Windows
Star JavaPOS Driver	This is required when using Star Micronics printers and peripherals with the JavaPOS driver.	Windows, Linux and macOS
Star CUPS Driver	This is required when using Star Micronics printers and peripherals with the CUPS driver.	Linux, macOS

I Utility I

Name	General description	Operating environment
Star Quick Setup Utility	This allows you to perform communication settings and initial settings, check printer operation, and change printer settings.	iOS, Android
Star Windows Software	Windows printer drivers and OPOS Provides drivers and printer utilities. The printer utility performs various settings on the printer. Printer Driver Installation, OPOS Driver Configuration, Configuration Utility, SteadyLAN Configuration Utility The USB serial number setting utility is available.	Windows

I Download I

You can download various software and manuals from the following website.

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

I Authentication Process of Applications for MFi-supported Printers I

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/000174.html>

8. Related Regulations

8.1. Electrical safety, EMC

Country	Electrical safety	EMC
International	CB	-
EU	CE (EMI Class A)	
UK	UKCA (EMI Class A)	
The United States	UL	FCC (EMI Class A)
Canada	c-UL	ISED (EMI Class A)
Japan	-	VCCI (EMI Class A)
China	CCC (EMI Class A)	
Taiwan	RPC ... MCL32CI only	
Australia/New Zealand	RCM (EMI Class A)	

8.2. Radio Law ... MCL32CBI only

Country	Radio wave
The United States	FCC
Canada	ISED
EU	CE
UK	UKCA
China	SRRC
Australia/New Zealand	RCM
Japan	Technical standards conformity certification

8.3. Environment

Country	Environment
EU / UK	CE, UKCA (RoHS Directive) WEEE Directive Packaging and package waste material directive REACH Regulation
China	China RoHS
Taiwan	Taiwan RoHS

9. Appendix

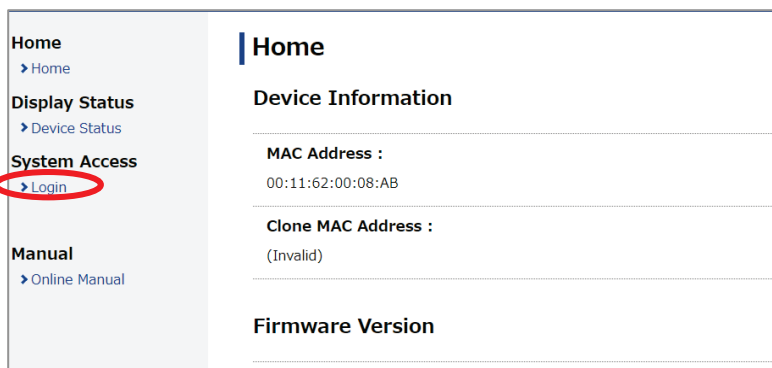
9.1. Example procedures for registration of SSL/TLS certificates

To use SSL/TLS communications (HTTPS), you must configure settings for the use of either a self-signed certificate or CA-signed certificate beforehand. The following shows each procedure.

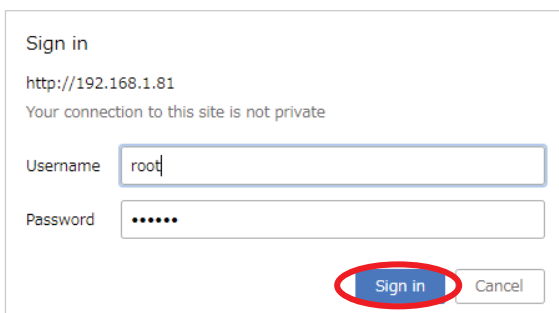
9.1.1. Using a self-signed certificate

1. Create a certificate on the printer.

Access the printer's IP address (in this procedure: <http://192.168.1.81>), and then log in with root privilege.

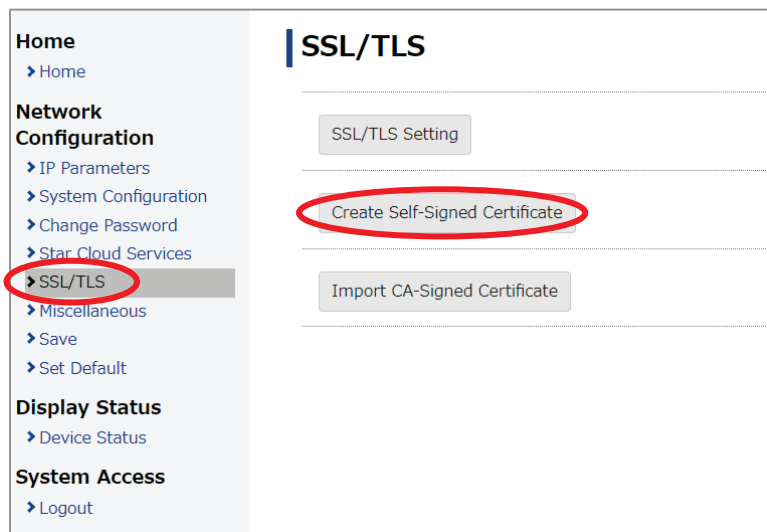


Enter the following username and password, and then click [Sign in]. Username: "root", Password: "public" (factory default setting)



Click [SSL/TLS].

Click [Create Self-Signed Certificate].



After entering each item in the "Self-Signed Certificate" fields and clicking [Create], a certificate is created in the printer.

For "Domain," enter the printer's IP address (the static value). * The following screen is an example.

Home
▶ Home

Network Configuration
▶ IP Parameters
▶ System Configuration
▶ Change Password
▶ Star Cloud Services
▶ **SSL/TLS**
▶ Miscellaneous
▶ Save
▶ Set Default

Display Status
▶ Device Status

System Access
▶ Logout

Manual
▶ Online Manual

Self-Signed Certificate

Country Name (2 letter code)
JP

State or Province Name
Shizuoka

Locally Name (eg, city)
Shizuoka

Organization Name (eg, company)
Star Micronics

Organization Unit Name (eg, section)
Software Dev.

Domain
192.168.1.81

Expiration Date (eg, YYYY/MM/DD)
2020 / 12 / 1

create download delete

The following screen appears when you successfully create a certificate.

Home
▶ Home

Network Configuration
▶ IP Parameters
▶ System Configuration
▶ Change Password
▶ Star Cloud Services
▶ **SSL/TLS**
▶ Miscellaneous
▶ Set Default

Create Self-Signed Certificate OK.

Please execute "Save" menu if these settings are correct.

Return to [Previous page <SSL/TLS Setting>](#)
(Don't use "Back" button of browser to return.)

2. Enable the printer self-signed certificate setting.

Click [SSL/TLS]. Click [SSL/TLS Setting].

Home
▶ Home

Network Configuration
▶ IP Parameters
▶ System Configuration
▶ Change Password
▶ Star Cloud Services
▶ **SSL/TLS**
▶ Miscellaneous
▶ Save
▶ Set Default

Display Status
▶ Device Status

System Access
▶ Logout

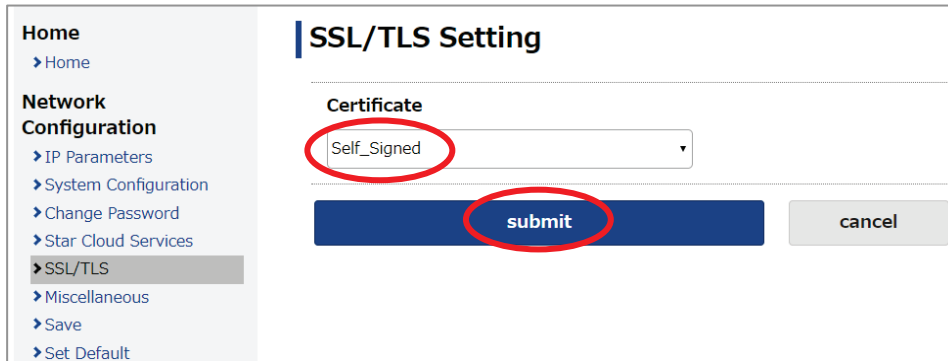
SSL/TLS

SSL/TLS Setting

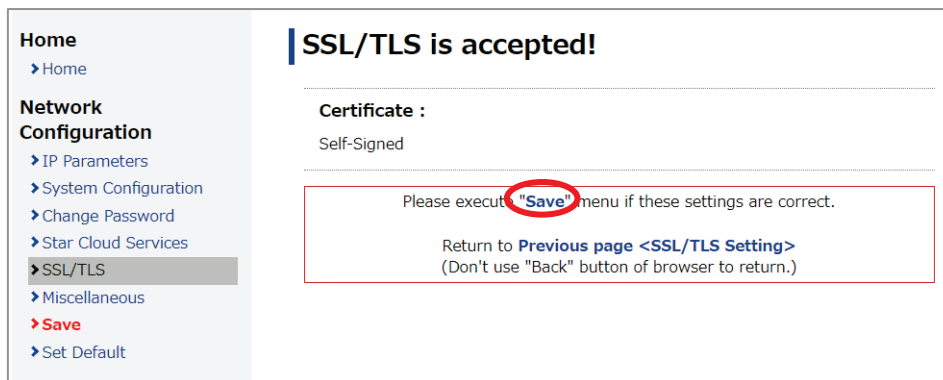
Create Self-Signed Certificate

Import CA-Signed Certificate

Select "Self-Signed" in the "Certificate" drop-down list, and then click [Submit].



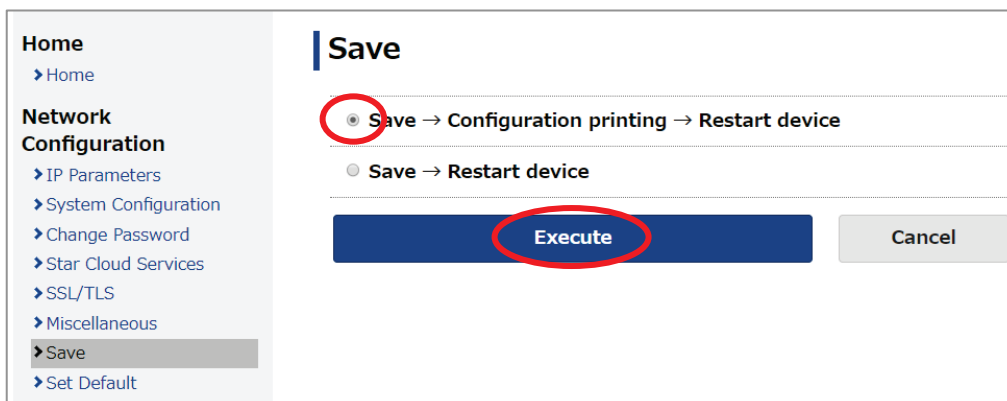
The following will be displayed. Confirm that Certificate: Self-Signed.



Click "Save" and, on the Save screen, select "Save → Configuration printing → Restart device," and then click [Execute].

The printer prints the settings. Check that the settings are the same as below.

- Self-signed Certificate Exist
- Certificate: Self-Signed

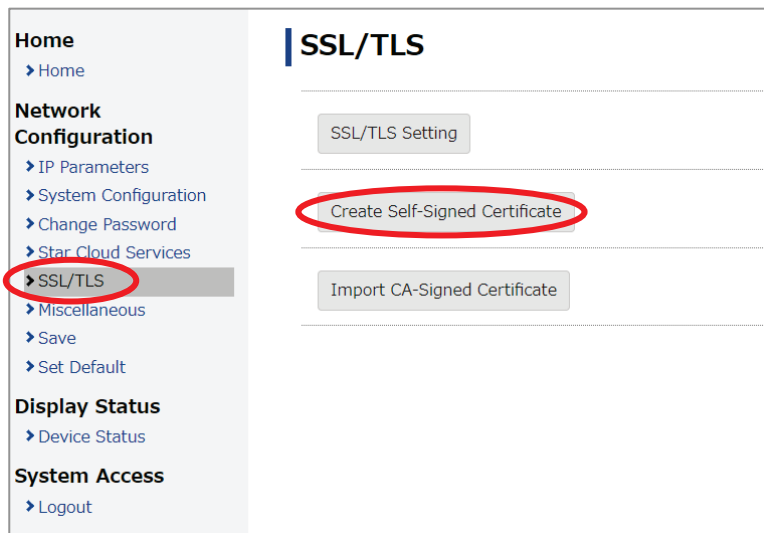


The procedures for creating the printer self-signed certificate are completed.

3. Import the certificate to the web browser.
Import the created certificate in the NIC to the web browser of the client device.

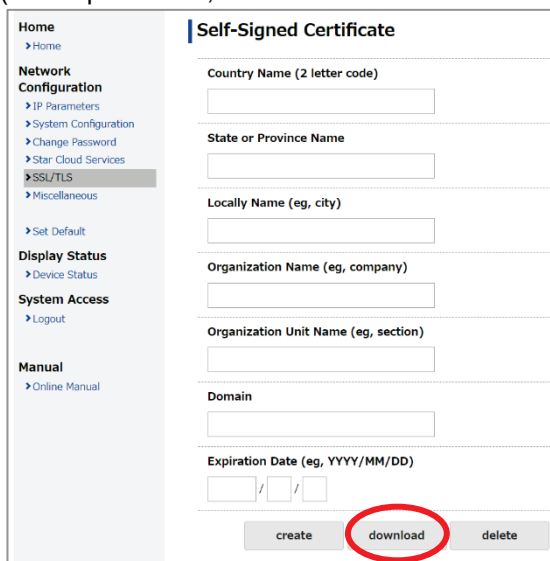
■ For Windows devices (Windows 7 example)

Click [SSL/TLS]. Click [Create Self-Signed Certificate].

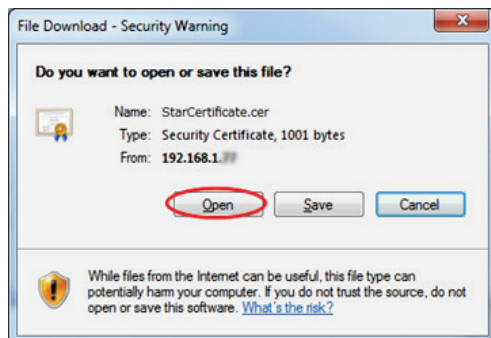


Click [Download] and save a certificate file (name is optional) to any place in Windows.

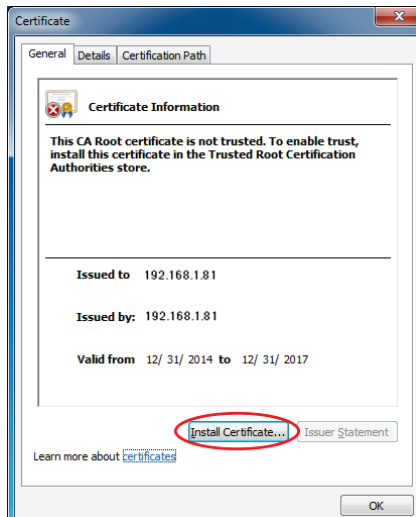
(In this procedure, save this file as "StarCertificate.cer.")



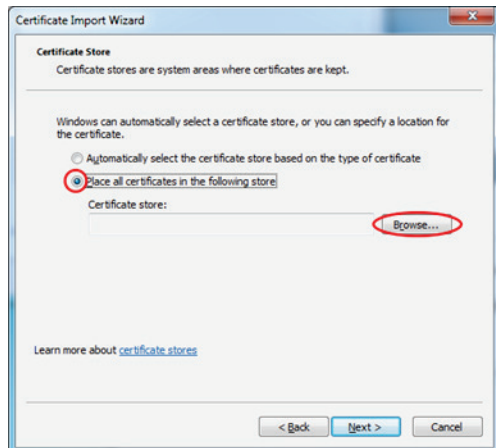
On the client device, double-click the saved certificate file and click [Open].



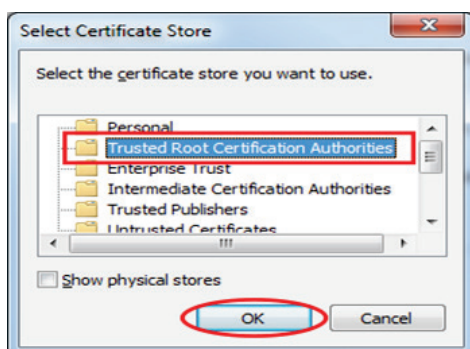
Click [Install Certificate...].



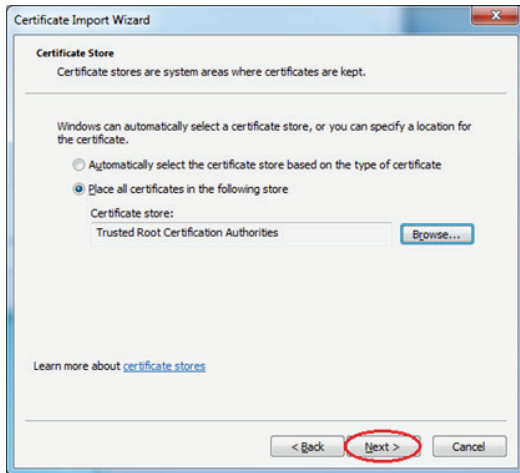
Select "Place all certificates in the following store" and then click [Browse...].



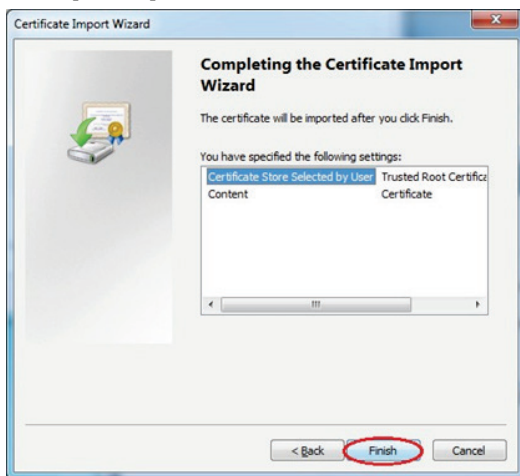
Select "Trusted Root Certification Authorities" and then click [OK].



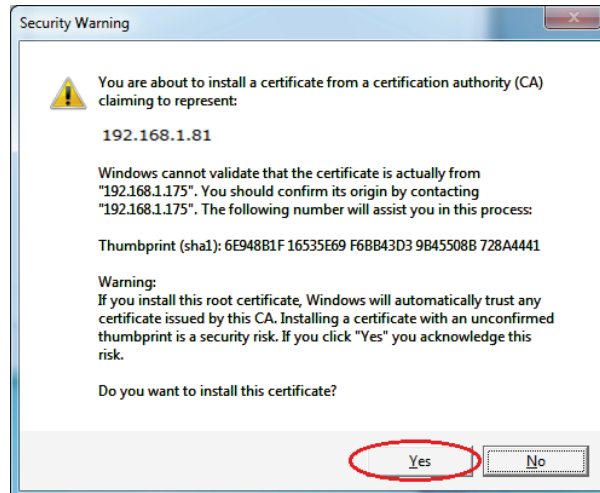
Click [Next].



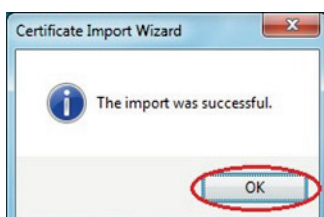
Click [Finish].



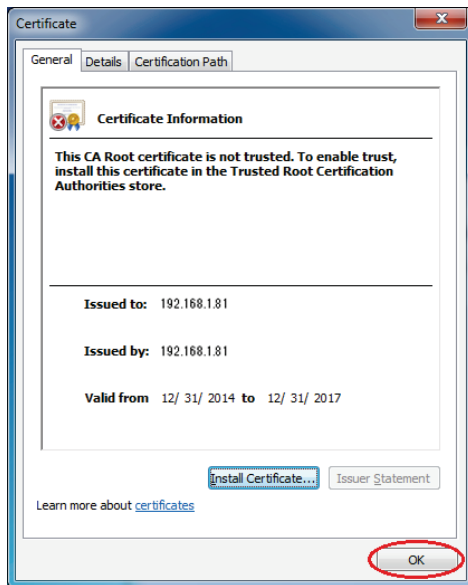
Click [Yes] when the following message appears.



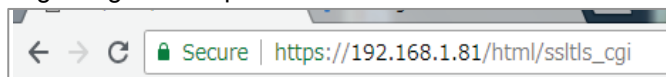
Click [OK].



Click [OK] and close. The procedure is complete.



Turn on the printer power again. It becomes possible to access the printer web screen with an address beginning with "https://."



However, depending on the client device environment, you may need to add the address as a "Trusted sites." (For example, combination of Windows 10 + Microsoft Edge.) Refer to "9.1.3 Supplementary Information."

[References]

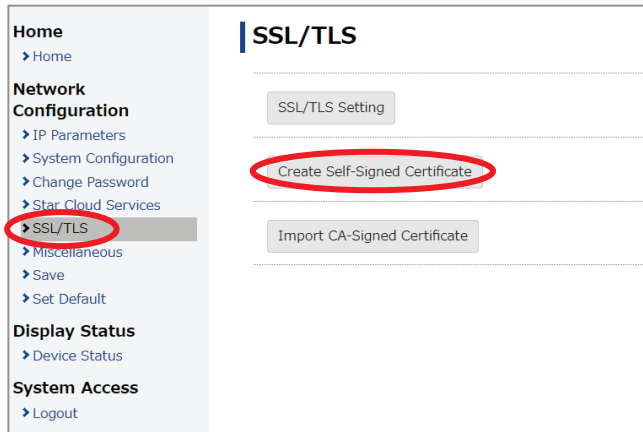
When importing a certificate file to the web browser on Windows 8/8.1/10, you must activate certificate manager, "certmgr.msc" in Windows administrative tools, and then perform the following procedure.

1. Select "Trusted Root Certification Authorities" and then [Certificate].
2. Select [All tasks] and then [Import] from the [Action] menu.
3. Import a self-signed certificate in accordance with the import wizard.
 - Make sure you import the certificate by referring to "Trusted Root Certification Authorities" and then [Certificate].

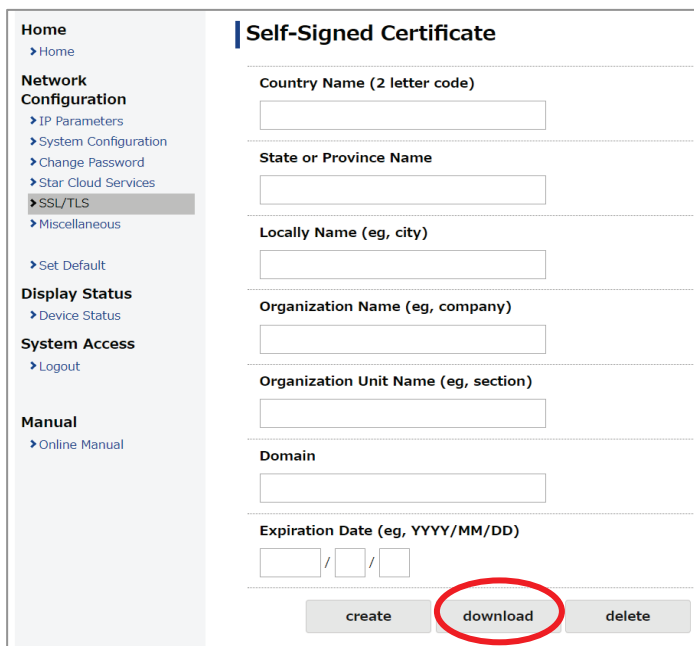
■ For iOS devices

Access the printer's IP address (in this procedure: http://192.168.192.63) on Safari, and log in as root privilege. Select "SSL/TLS," and then select [Create Self-Signed Certificate].

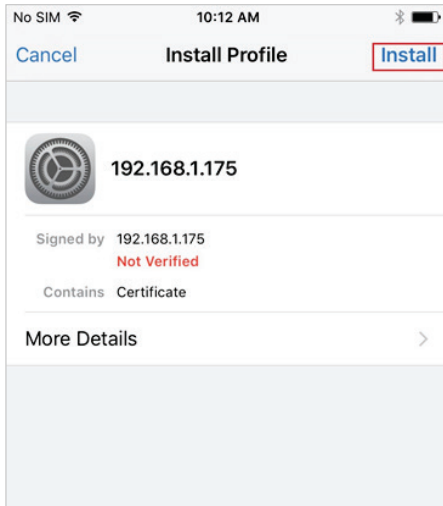
<Note> For iOS devices, you need to use Safari because the certificate download is not permitted in browsers other than Safari.



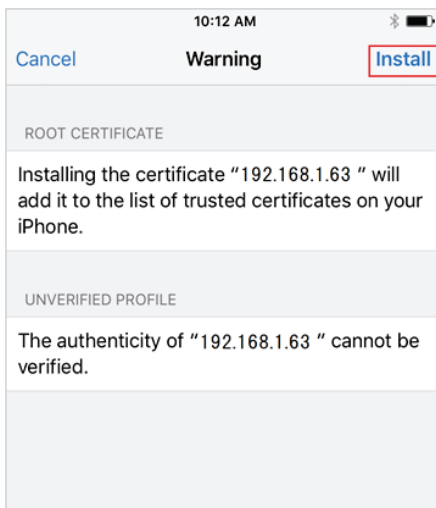
Select [Download].



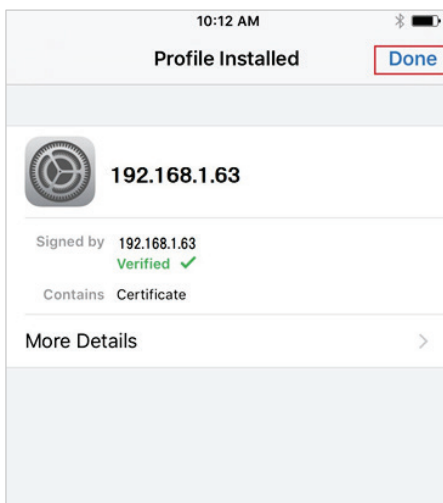
Select [Install] when the following screen appears.



Select [Install] when the following screen appears.



Installation is complete when the following screen appears. Click [Finish].

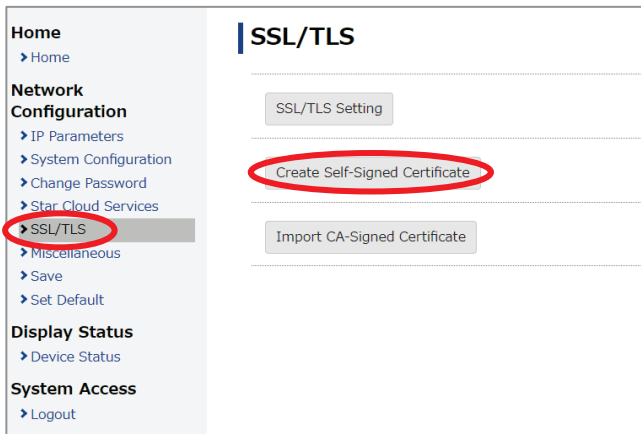


Turn on the printer power again. It becomes possible to access the printer web screen with an address beginning with "https://."

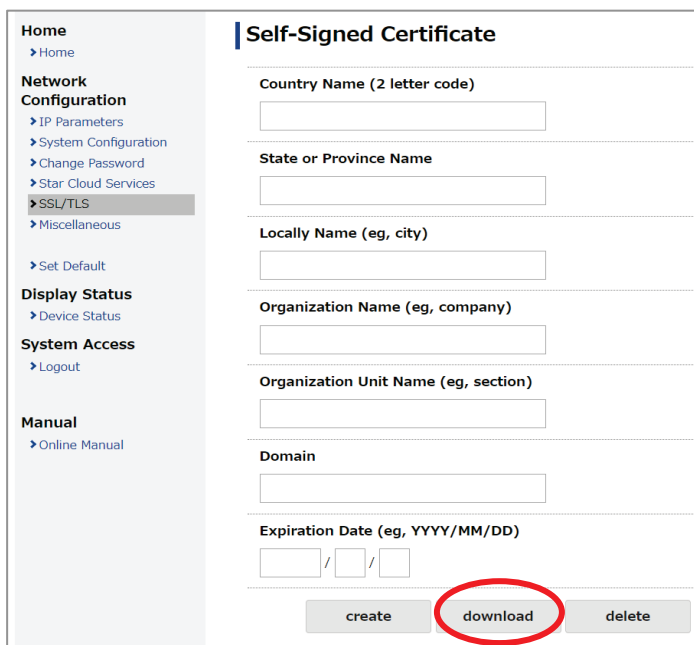
If you use iOS 10.3 or later, additional settings are necessary on the iOS side. Therefore, refer to "9.1.4 Settings required for certificate registration on iOS 10.3 or later."

■ For Android devices

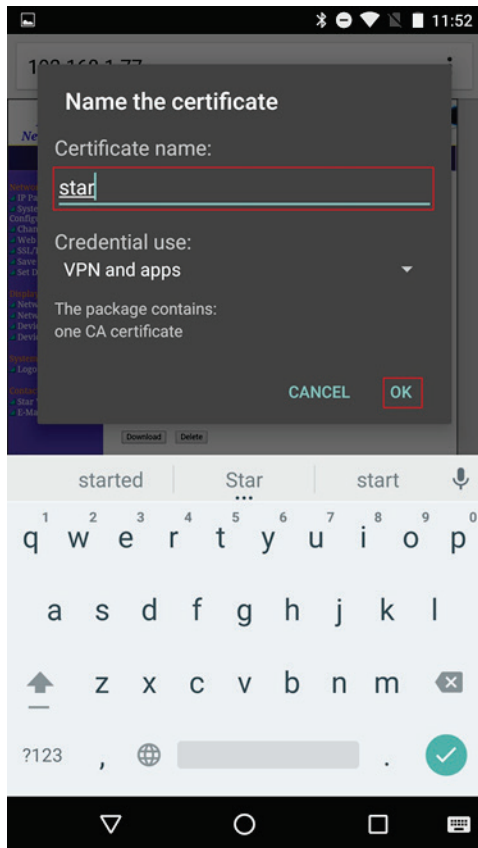
Go to the printer's IP address (in this procedure: http://192.168.192.63) on Chrome, and log in as root privilege. Select "SSL/TLS," and then select [Create Self-Signed Certificate].



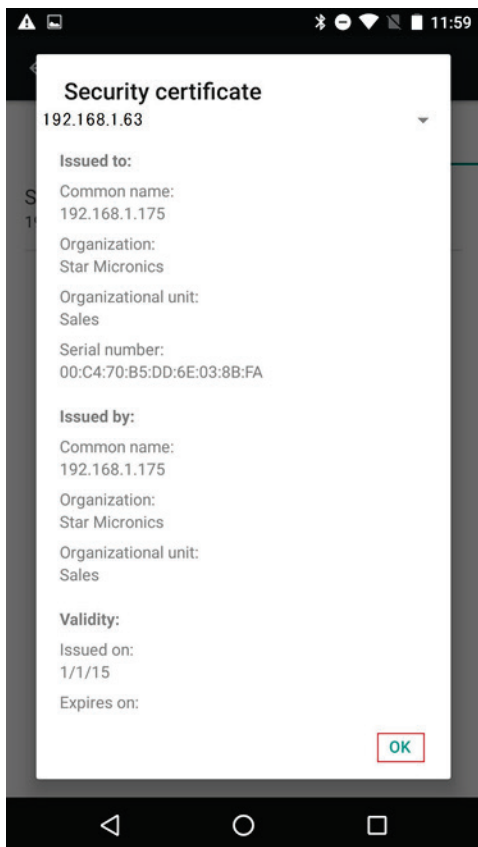
Select [Download].



When the name of the certificate is required, enter any name (in this procedure: "star") and tap [OK].



Installation is complete when the contents of the certificate appear. Tap [OK] to finish.



Turn on the printer power again. It becomes possible to access the printer web screen with an address beginning with "https://."

9.1.2. Using CA-signed certificates

Import a server certificate created externally and signed by CA and a private key to the printer.

For the browser, you must register the CA (Certificate Authority) as a "Trusted Root Certification Authorities."

1. Prepare the server certificate and private key.

Prepare a server certificate file signed by an external Certificate Authority (CA) and a private key file.

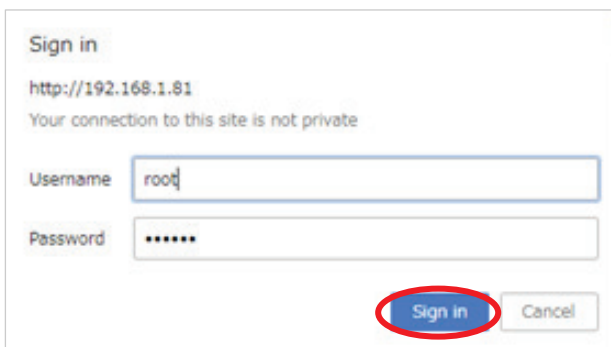
- Encoding type: Base64 (filename extension = PEM)
- Types of the certification file: PKCS #1
- Key length: RSA 1024 bits

2. Import a server certificate and a private key to the NIC.

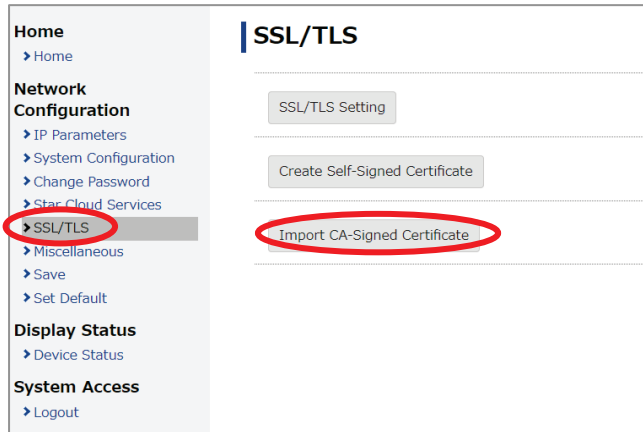
Access the printer's IP address (in this procedure: <http://192.168.1.81>), and then log in with root privilege.



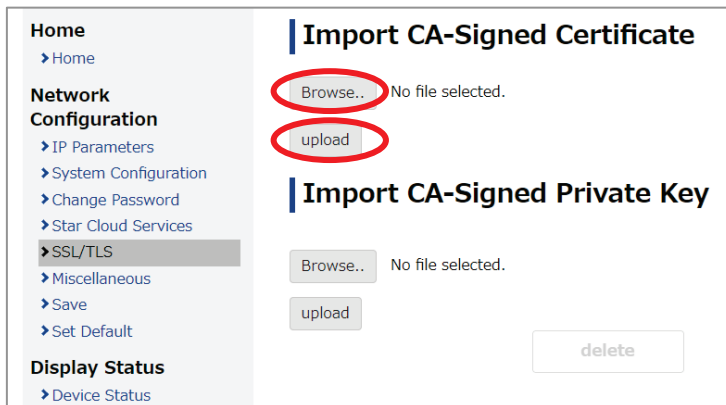
Enter the following username and password, and then click [Login]. Username: "root", Password: "public" (factory default setting)



Click [SSL/TLS]. Click [Import CA-Signed Certificate].

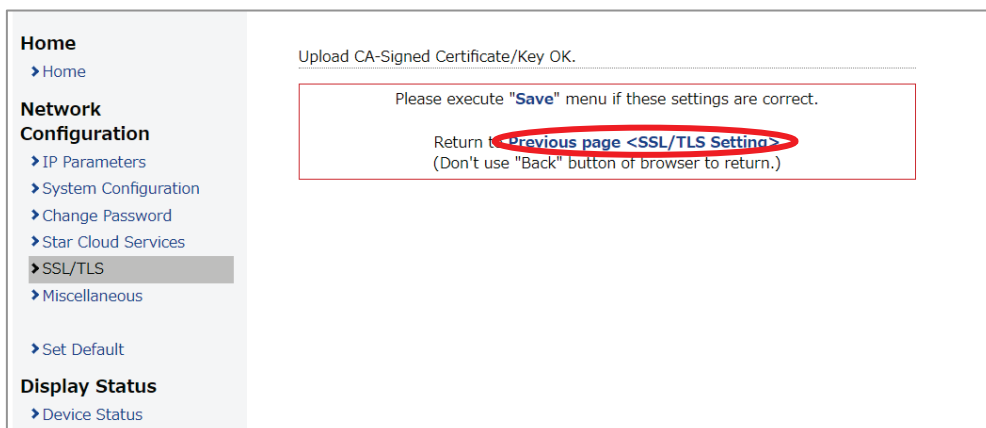


Click [Browse] in the "Import CA-Signed Certificate" column. Select the certificate file to import from the client device's file dialog, and then click [upload].

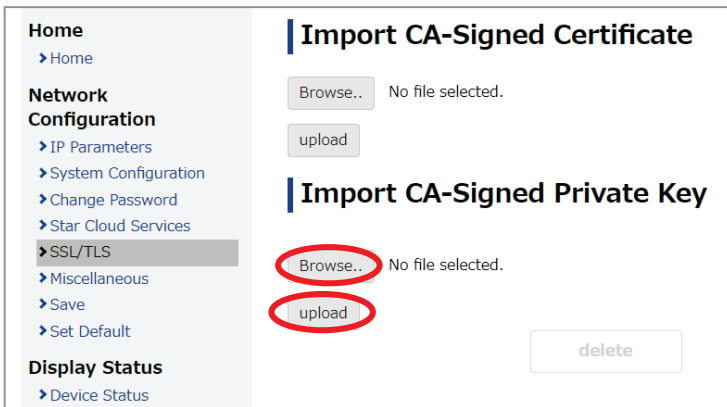


The following screen appears when importing has been successful.

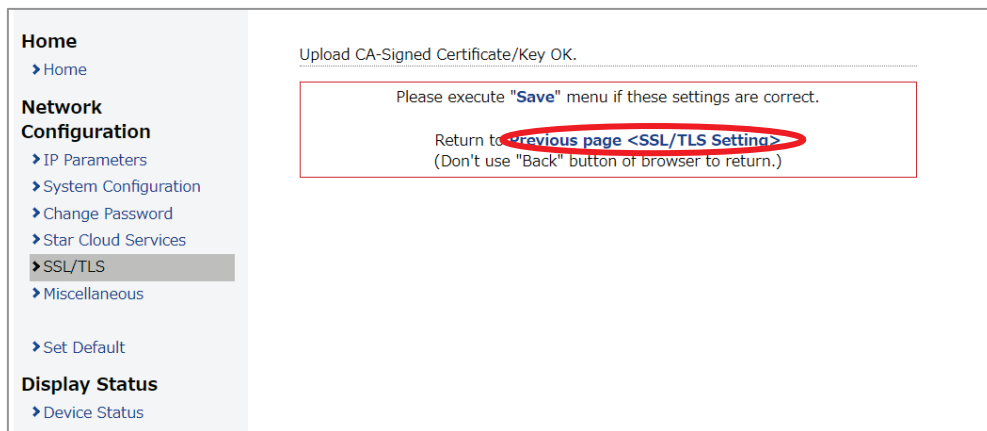
Click "Return to Previous page" to return to the previous page, and continue to register the private key.



Click [Browse] in the "Import CA-Signed Private Key" column. Select the private key file from the client device's file dialog, and then click [upload].



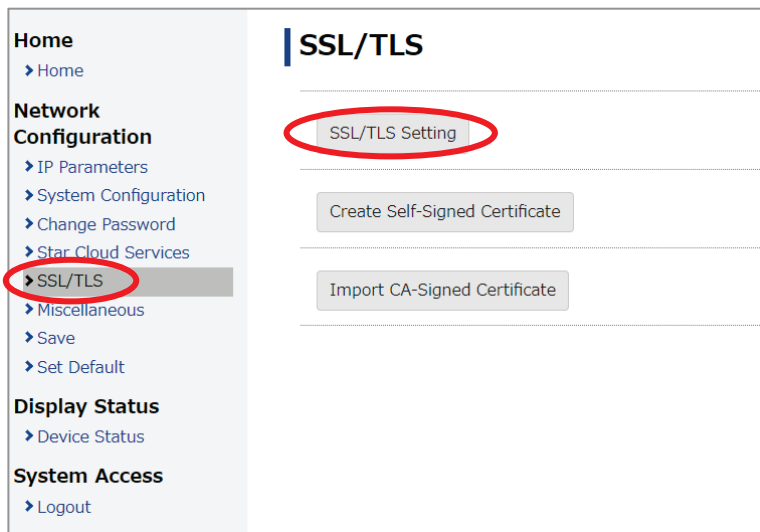
The following screen appears when importing has been successful.



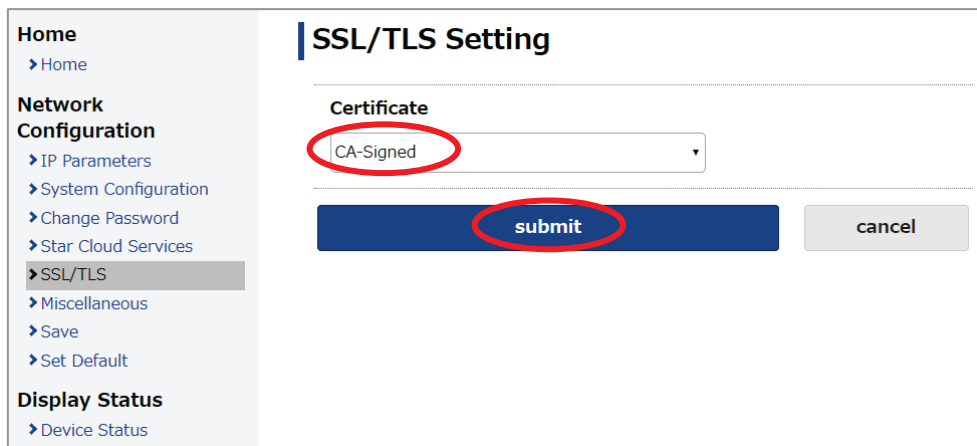
The registration is complete.

3. Enable the CA-signed certificate setting.

Click [SSL/TLS]. Click [SSL/TLS Setting].



Select "CA-Signed" in the "Certificate" drop-down list, and then click [Submit].

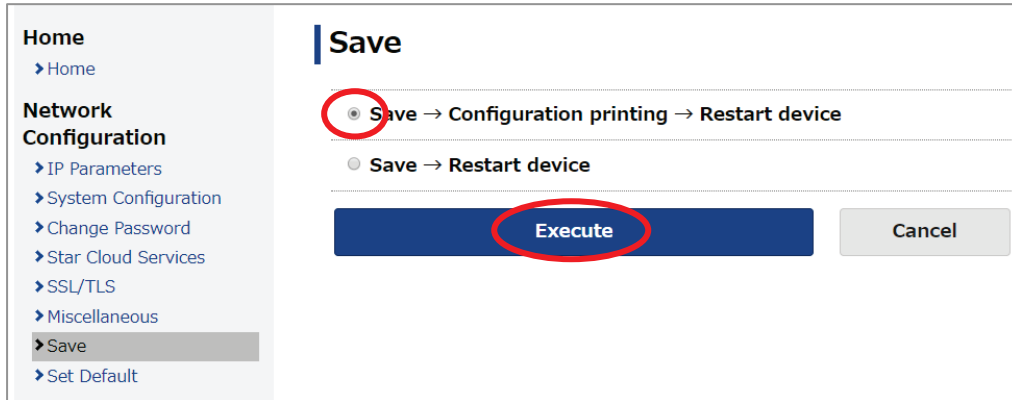


The following will be displayed. Confirm that Certificate: CA-Signed.



Click "Save" and, on the Save screen, select "Save → Configuration printing → Restart device," and then click [Execute]. The printer prints the settings. Check that the settings are the same as below.

- CA-Signed Certificate: Exist
- Certificate: CA-Signed



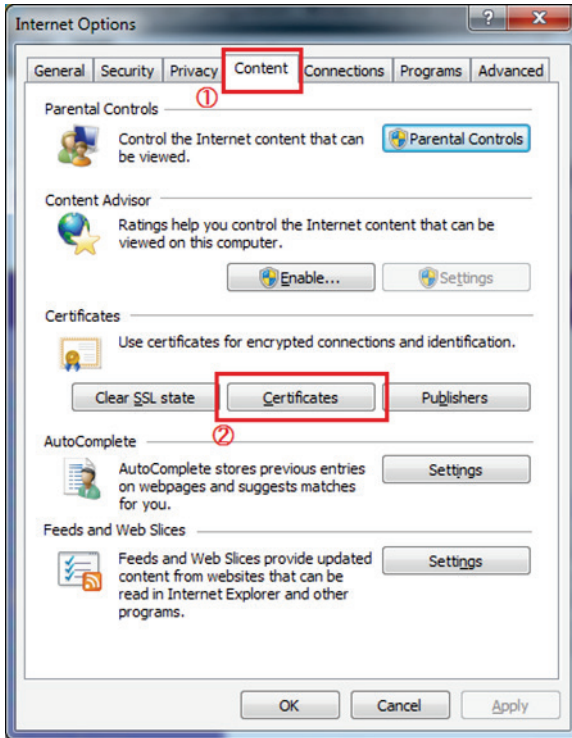
Importing a server certificate and a private key to the printer is complete.

[Registering in the web browser]

Register the server certificate signed by a Certificate Authority (CA) in the web browser of the client device as a "Trusted Root Certification Authorities". (This procedure is not necessary if you have already registered the certificate.)

■ For Windows devices (Windows 7 example)

Open the Internet Options screen on the web browser, select the "Content" tab, and click [Certificates].



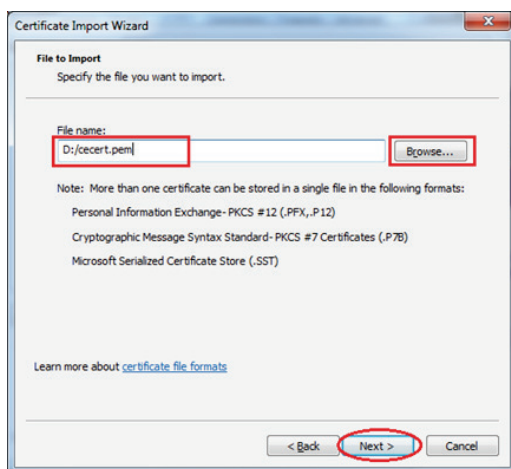
Select the "Trusted Root Certification Authorities" tab, and then click [Import...].



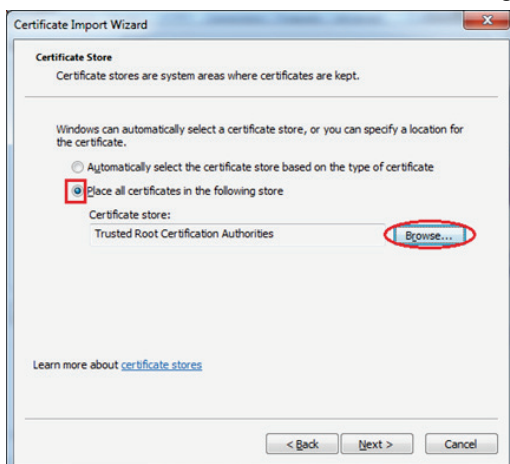
Click [Next].



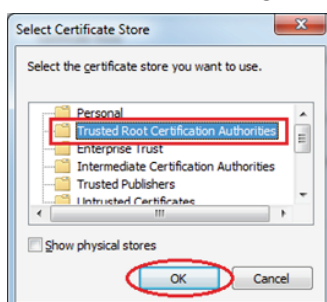
Click [Browse...], specify the Certificate Authority's certificate file signed on the server certificate (in this procedure: "cecert.pem"), and then click [Next].



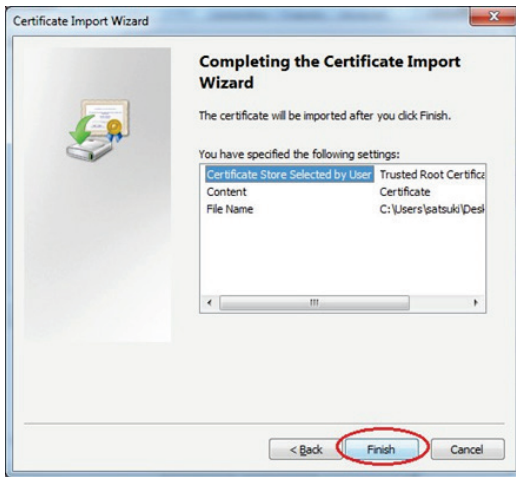
Select "Place all certificates in the following store" and click [Browse...].



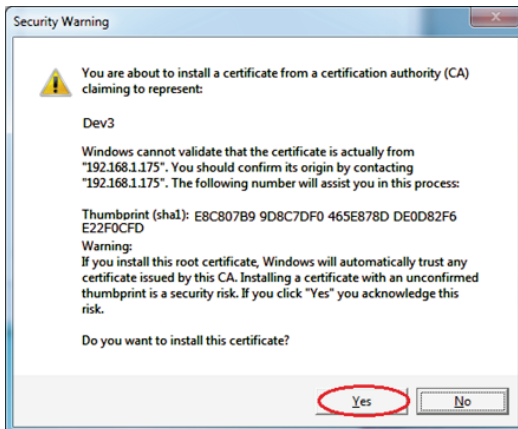
Select "Trusted Root Certification Authorities" and then click [OK].



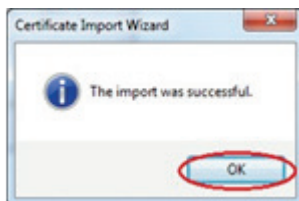
Click [Finish].



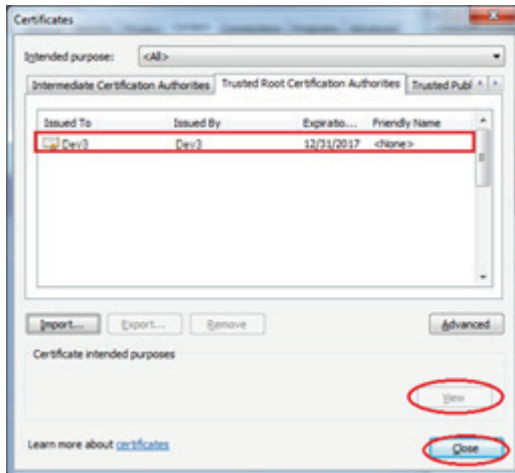
Click [Yes]. (The following example: The Certificate Authority (CA) name "Dev 3" is an example of a certificate authority's name imported to printer.)



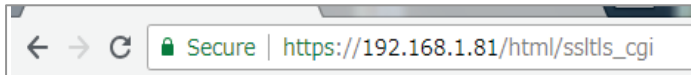
Click [OK].



Check that the Certificate Authority has been registered. Click [View], confirm the details of the certificate, and then click [Close].



Turn on the printer power again. It becomes possible to access the printer web screen with an address beginning with "https://."



However, depending on the client device environment, you may need to add the address as a "Trusted sites."

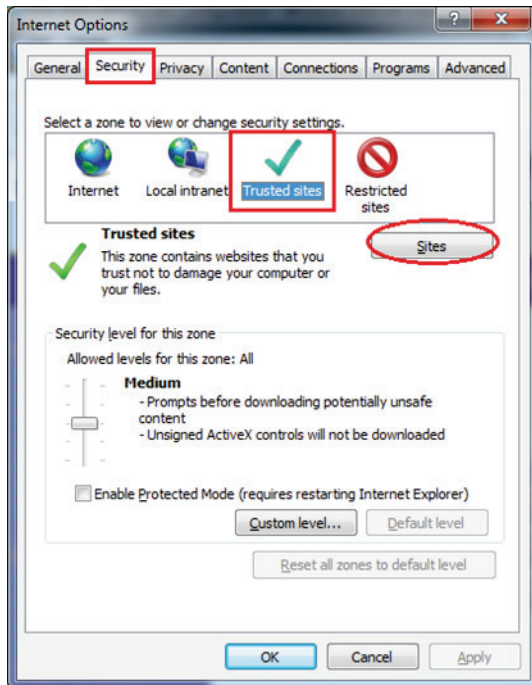
(Refer to "9.1.3 Supplementary Information.")

9.1.3. Supplementary Information

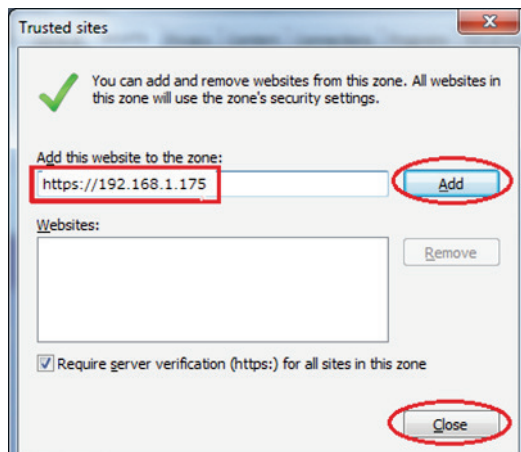
Depending on the client device environment, you may need to add the address as a "Trusted Sites" in the web browser.

The following is an example of settings using Internet Explorer (Windows).

Select "Trusted Sites" from the "Security" tab in Internet Options, and then click [Sites].



Enter the printer's IP address (the domain value of the certificate) beginning with "https://." Click [Add], and then click [Close].



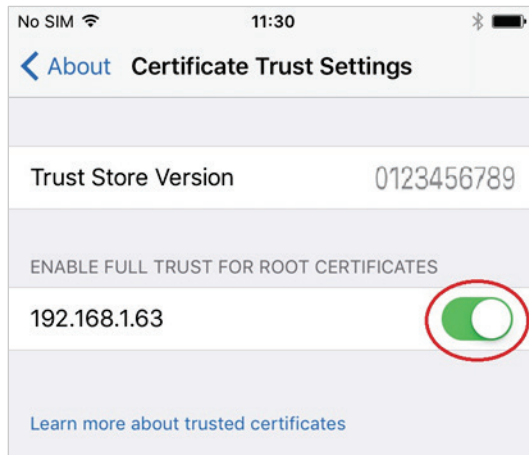
After returning to the Internet Options screen, click [OK] to exit.

9.1.4. Settings required for certificate registration on iOS 10.3 or later

In iOS 10.3 or later, if you manually install a certificate, the certificate is not automatically trusted for SSL communication. Settings on iOS devices are required.

(For details, refer to the Apple's website. <https://support.apple.com/ja-jp/HT204477>)

1. According to the procedure in "3. Import the certificate to the web browser, ■ For iOS devices" in "9.1.1 Using a self-signed certificate," import the certificate.
2. Select "Settings" > "General" > "About" > "Certificate Trust Settings."
3. Enable trust for the certificate by "Enable full trust for root certificates."



9.2. Cypher suite support list

The cypher suites supported by each service that uses SSL/TLS communication are the following.

(✓: Supported, -: Not supported)

9.2.1. Web Configuration

Service name		Web Configuration
Firmware version		1.0~
Cypher suite name	TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 (*)	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 (*)	✓
	TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 (*)	✓
	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA / _SHA256 (*)	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA / _SHA384 (*)	✓
	TLS_ECDHE_ECDSA_WITH_AES_128_CCM_8 / _CCM (*)	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_CCM_8 / _CCM (*)	✓
	TLS_ECDHE_ECDSA_WITH_CAMELLIA_128_CBC_SHA256 (*)	✓
	TLS_ECDHE_ECDSA_WITH_CAMELLIA_256_CBC_SHA384 (*)	✓
	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256	✓
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384	✓
	TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256	✓
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA	✓
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256	✓
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA	✓
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384	✓
	TLS_ECDHE_RSA_WITH_CAMELLIA_128_CBC_SHA256	✓
	TLS_ECDHE_RSA_WITH_CAMELLIA_256_CBC_SHA384	✓
	TLS_RSA_WITH_CAMELLIA_128_CBC_SHA	✓
	TLS_RSA_WITH_CAMELLIA_256_CBC_SHA	✓
	TLS_RSA_WITH_CAMELLIA_128_CBC_SHA256	✓
	TLS_RSA_WITH_AES_128_GCM_SHA256	✓
	TLS_RSA_WITH_AES_256_GCM_SHA384	✓
	TLS_RSA_WITH_AES_128_CBC_SHA	✓
	TLS_RSA_WITH_AES_128_CBC_SHA256	✓
	TLS_RSA_WITH_AES_256_CBC_SHA	✓
	TLS_RSA_WITH_AES_256_CBC_SHA256	✓
	TLS_RSA_WITH_AES_128_CCM_8 / _CCM	✓
TLS_RSA_WITH_AES_256_CCM_8 / _CCM	✓	

(*) Only when a server certificate and private key using externally created elliptic curve cryptography was imported

9.2.2. Star CloudPRNT

Service name		Star CloudPRNT	
Firmware version		1.0~	
TLS1.3		ENABLE(*)	DISABLE
Encryption level setting value of TLS 1.2 cipher suite		HIGH + MEDIUM(*)	HIGH + MEDIUM(*)
Cypher suite name	TLS_AES_128_GCM_SHA256	✓	-
	TLS_AES_256_GCM_SHA384	✓	-
	TLS_CHACHA20_POLY1305_SHA256	✓	-
	TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256	✓	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	✓	✓
	TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256	✓	✓
	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA	✓	✓
	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256	✓	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA	✓	✓
	TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384	✓	✓
	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256	✓	✓
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384	✓	✓
	TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256	✓	✓
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA	✓	✓
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256	✓	✓
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA	✓	✓
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384	✓	✓
	TLS_RSA_WITH_AES_128_GCM_SHA256	✓	✓
	TLS_RSA_WITH_AES_256_GCM_SHA384	✓	✓
	TLS_RSA_WITH_AES_128_CBC_SHA	✓	✓
	TLS_RSA_WITH_AES_128_CBC_SHA256	✓	✓
	TLS_RSA_WITH_AES_256_CBC_SHA	✓	✓
	TLS_RSA_WITH_AES_256_CBC_SHA256	✓	✓
	TLS_RSA_WITH_3DES_EDE_CBC_SHA	-	-
	TLS_RSA_WITH_RC4_128_SHA	-	-
	TLS_RSA_WITH_RC4_128_MD5	-	-
	TLS_DHE_RSA_WITH_AES_128_GCM_SHA256	✓	✓
	TLS_DHE_RSA_WITH_AES_256_GCM_SHA384	✓	✓
	TLS_DHE_RSA_WITH_AES_128_CBC_SHA	✓	✓
	TLS_DHE_RSA_WITH_AES_128_CBC_SHA256	✓	✓
	TLS_DHE_RSA_WITH_AES_256_CBC_SHA	✓	✓
	TLS_DHE_RSA_WITH_AES_256_CBC_SHA256	✓	✓
TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256	✓	✓	

(*) Factory default setting value

STAR MICRONICS CO., LTD.

Special Products Division

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