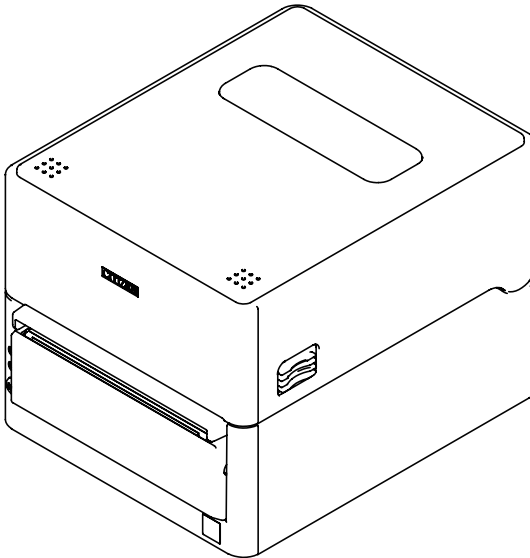


CITIZEN

LINE THERMAL PRINTER

MODEL CT-S4500 **User's Manual**



CITIZEN SYSTEMS JAPAN CO., LTD.

WEEE MARK

En

If you want to dispose of this product, do not mix it with general household waste. There is a separate collection systems for used electronics products in accordance with legislation under the WEEE Directive and is effective only within European Union.

Ge

Wenn Sie dieses Produkt entsorgen wollen, dann tun Sie dies bitte nicht zusammen mit dem Haushaltsmüll. Es gibt im Rahmen der WEEE-Direktive innerhalb der Europäischen Union gesetzliche Bestimmungen für separate Sammelsysteme für gebrauchte elektronische Geräte und Produkte.

Fr

Si vous souhaitez vous débarrasser de cet appareil, ne le mettez pas à la poubelle avec vos ordures ménagères. Il existe un système de récupération distinct pour les vieux appareils électroniques conformément à la législation WEEE sur le recyclage des déchets des équipements électriques et électroniques qui est uniquement valable dans les pays de l'Union européenne. Les appareils et les machines électriques et électroniques contiennent souvent des matières dangereuses pour l'homme et l'environnement si vous les utilisez et vous vous en débarrassez de façon inappropriée.

Sp

Si desea deshacerse de este producto, no lo mezcle con residuos domésticos de carácter general. Existe un sistema de recogida selectiva de aparatos electrónicos usados, según establece la legislación prevista por la sobre residuos de aparatos eléctricos y electrónicos (RAEE), vigente únicamente en la Unión Europea.

It

Se desiderate gettare via questo prodotto, non mescolatelo ai rifiuti generici di casa. Esiste un sistema di raccolta separato per i prodotti elettronici usati in conformità alla legislazione RAEE, valida solo all'interno dell'Unione Europea.

Du

Deponeer dit product niet bij het gewone huishoudelijk afval wanneer u het wilt verwijderen. Er bestaat ingevolge de WEEE-richtlijn een speciaal wettelijk voorgeschreven verzamelsysteem voor gebruikte elektronische producten, welk alleen geldt binnen de Europese Unie.

Da

Hvis du vil skille dig af med dette produkt, må du ikke smide det ud sammen med dit almindelige husholdningsaffald. Der findes et separat indsamlingsssystem for udtjente elektroniske produkter i overensstemmelse med lovgivningen under WEEE-direktivet, som kun er gældende i den Europæiske Union.

Por

Se quiser deitar fora este produto, não o misture com o lixo comum. De acordo com a legislação que decorre da Directiva REEE – Resíduos de Equipamentos Eléctricos e Electrónicos, existe um sistema de recolha separado para os equipamentos electrónicos fora de uso, em vigor apenas na União Europeia.

Pol

Jeżeli zamierzasz pozbyć się tego produktu, nie wyrzucaj go razem ze zwykłymi domowymi odpadkami. Według dyrektywy WEEE obowiązującej w Unii Europejskiej dla używanych produktów elektronicznych należy stosować oddzielne sposoby utylizacji.



Compliance Statement for European Users

CE marking shows conformity to the following criteria and provisions:

Low Voltage Directive (2014/35/EU), EMC Directive (2014/30/EU), and RoHS directive (2011/65/EU)

Full text of the EU declaration of conformity is available at the following internet address:

http://www.citizen-systems.co.jp/english/support/download/printer/others/eu_doc/

IMPORTANT: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

CAUTION: Use shielded cable for this equipment.

Sicherheitshinweis

Die Steckdose zum Anschluß dieses Druckers muß nahe dem Gerät angebracht und leicht zugänglich sein.

For Uses in Canada

This Class A Information Technology Equipment (ITE) complies with Canadian CAN ICES-3(A)/NMB-3(A).

This Information Technology Equipment (ITE) does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Pour L'utilisateurs Canadiens

Cet Equipements informatiques (EI) de la classe A est conforme a la norme CAN ICES-3(A)/NMB-3(A) du Canada.

Le present Equipements informatiques (EI) n'emet pas de bruit radio electriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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- Before using this product, be sure to read through this manual. After having read this manual, keep it in a safe, readily accessible place for future reference.
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- Reproduction or transfer of part or all of this document in any means is prohibited without permission from Citizen Systems.
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Use of the Made for Apple badge means that an accessory has been designed to connect specifically to the Apple product(s) identified in the badge and has been certified by the developer to meet Apple performance standards.

Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards.

Please note that the use of this accessory with an Apple product may affect wireless performance.

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SAFETY PRECAUTIONS...WHICH SHOULD BE STRICTLY OBSERVED

Before using this product for the first time, carefully read these SAFETY PRECAUTIONS. Improper handling may result in accidents (fire, electric shock or injury). In order to prevent injury to operators, third parties, or damage to property, special warning symbols are used in the User's Manual to indicate important items to be strictly observed.

- After having read this Manual, keep it in a safe, readily accessible place for future reference.
- Some of the descriptions contained in this manual may not be relevant to some printer models.

The following describes the degree of hazard and damage that could occur if the printer is improperly operated by ignoring the instructions indicated by the warning symbols. Be sure to read this information carefully.



WARNING

Neglecting precautions indicated by this symbol may result in fatal or serious injury.



CAUTION

Neglecting precautions indicated by this symbol may result in injury or damage to property.



This symbol is used to alert your attention to important items.



This symbol is used to alert you to the danger of electric shock or electrostatic damage.



This symbol denotes a request to unplug the printer from the wall outlet.



This symbol is used to indicate that the power supply must be grounded.



This symbol is used to indicate useful information, such as procedures, instructions or the like.



This symbol is used to indicate prohibited actions.

PRECAUTIONS ON PRINTER INSTALLATION



WARNING

Do not use or store this product in a place where it will be exposed to:

- * Flames or moist air.
- * Direct sunlight.
- * Hot airflow or radiation from a heating device.
- * Salty air or corrosive gases.
- * Ill-ventilated atmosphere.
- * Chemical reactions in a laboratory.
- * Airborne oil, steel particles, or dust.
- * Static electricity or strong magnetic fields.



- **These locations create the risk of printer damage, as well as product failure, overheating, emission of smoke, fire, or electric shock. They can also result in fire or electric shocks and so should always be avoided.**

■ **Do not drop any foreign object nor spill liquid into the printer. Do not place any object on the printer either.**

■ **Do not drop any metallic object such as paper clips, pins or screws into the printer.**

■ **Do not place a flower vase, pot, or anything containing water on the printer.**

■ **Do not spill coffee, soft drinks, or any other liquid into the printer.**

■ **Do not spray insecticide or any other chemical liquid over the printer.**

• **Dropping a metallic foreign object into the printer, may cause printer failure, fire, or electric shock.**

Should it occur, immediately turn the printer off, unplug it from the supply outlet, and call your local Citizen Systems dealer.



Do not handle the printer in the following ways:

■ **Do not subject the printer to strong impacts or hard jolts (e.g., being stepped on, dropped or struck).**

■ **Never attempt to disassemble or modify the printer.**

• **These actions create the risk of printer damage, as well as product failure, overheating, emission of smoke, fire, or electric shock.**

They can also result in fire or electric shocks and so should always be avoided.



■ **This device is not appropriate to be used where a child may be present. Install, store, or use the device where it cannot be reached by a child.**

• **Electric appliances could cause an unexpected injury or accident if they are handled or used improperly.**

• **Keep the power cord and signal cables out of the reach of children. Also children should not be allowed to gain access to any internal part of the printer.**

• **The plastic bag the printer came in must be disposed of properly or kept away from children. Wearing it over the head may lead to suffocation.**





CAUTION

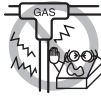
Do not use the printer under the following conditions.

- Avoid locations subject to vibration or instability.
- Avoid locations where the printer is not level.
- **The printer may fall and cause an injury.**
- **The quality of printing may deteriorate.**
- Do not obstruct the printer's air vents.
- Do not place anything on the printer.
- Do not cover or wrap the printer in cloth or blankets.
- **Doing so could cause heat to build up and deform the case or start a fire.**
- Avoid using the printer near a radio or TV set or from supplying it from the same electric outlet as these appliances.
- Avoid using the printer interconnected with a cable or cord that has no protection against noise.
(For interconnections, use shielded or a twisted pair of cables and ferrite cores, or other anti-noise devices.)
- Avoid using the printer with a device that is a strong source of noise.
- **The printer may have an adverse effect on nearby radio or TV transmissions. There may also be cases when nearby electrical appliances adversely influence the printer, causing data errors or malfunction.**
- Installed in any orientation other than those specified.
- **Malfunction, failure, or electric shock may result.**



■ Connect the printer to a ground.

- **Electric leakage may cause an electric shock.**
- **Do not connect the printer's ground to any of the following:**
 - A gas explosion could result.
 - * Gas piping
 - * Telephone line ground
 - * Lightning rod
 - If lightning strikes a large surge of current may cause fire or shock.
 - * Water pipes
 - Plastic water pipes should not be used for grounding. (Those approved by a Waterworks Department may be used.)
- **Before connecting or disconnecting the grounding lead to or from the printer, always unplug it from the electric outlet.**



PRECAUTIONS IN HANDLING THE PRINTER



WARNING

Please observe the following precautions for power source and power cord:

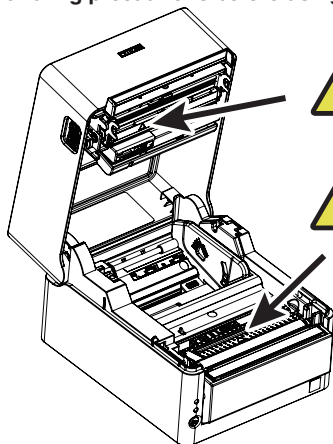
- Do not plug or unplug the power cord with a wet hand.
- Use the printer only at the specified supply voltage and frequency.
- Use only the specified AC adapter with the printer.
- Use only the power cord that comes with the printer, and never use the supplied power cord with another device.
- Check to make sure that the supply outlet from which the printer is powered has a sufficient capacity.
- Do not supply the printer from a power strip or current tap shared with other appliances.
- Do not plug the power cord into an electric outlet with dust or debris left on the plug.
- Do not use a deformed or damaged power cord.
- Do not move the printer while its power is on.
- **Neglecting to handle it properly may result in printer failure, emission of smoke, fire, or electric shock.**
- **An overload may cause the power cord to overheat, catch fire, or the circuit breaker to trip.**
- Do not allow anything to rest on the power cord. Do not place the printer where the power cord may be stepped on.
- Do not subject the power cord to severe bending, twisting, or pulling. Do not carry the product while it is in this state either.
- Do not attempt to modify the power cord unnecessarily.
- Do not place the power cord near any heating device.
- **Neglecting these cautions may cause wires or insulation to break, which could result in electric leakage, electric shock, or printer failure.**
- **If the power cord sustains damage, contact your Citizen Systems dealer.**
- Do not leave things around the electric outlet.
- Supply power to the printer from a convenient electric outlet, readily accessible in an emergency.
- **Pull the plug to immediately shut it down in an emergency.**
- Insert the power plug fully into the outlet.
- If the printer will not be used for a long time, disconnect it from its electric outlet.
- Hold the plug and connector when plugging or unplugging the power cord or signal cable after turning off the printer and the appliance connected to it.





CAUTION

Caution label is attached in the position shown in the following figure. Carefully read the handling precautions before using the printer.



These labels indicate that the head becomes hot, so touching it may cause burns, and touching the auto cutter when opening the paper cover may cause cuts on hands.

Do not transport this printer with the paper roll inside.

- **Printer failure or damage may occur.**

To prevent possible malfunction or failure observe the following.

- Do not open the paper cover during printing.
- Avoid operating the printer without paper properly loaded.
- Avoid the use of paper not complying with specifications.
- **May result in poor print quality.**
- Avoid using torn pieces of paper or paper spliced with plastic adhesive tape.
- Avoid forcibly pulling already loaded paper by hand.
- Avoid using a sharp pointed device to operate panel buttons.



Be sure to firmly insert the cable plugs into their mating sockets.

- **A cross connection may damage the printer's internal electronics or the host system's hardware.**

Only use the printer with devices that have designated solenoid specifications for the cash drawer interface connector.

- **Neglecting this caution may result in malfunction or failure.**



To prevent injury and printer failures from worsening, observe the following:

- Do not touch the printing surface of the thermal head.
- Do not touch any of the moving parts (e.g., paper cutter, gears, active electric parts) while the printer is working.
- In case of trouble do not attempt to repair the printer. Ask Citizen Systems service for repair.
- Be careful that the covers do not pinch your hands or fingers.
- Be careful of the sharp edges on the printer. Do not allow them to injure you or damage property.
- **May result in electric shock, burn, or injury.**



If the printer emits smoke, an odd smell, or unusual noise while printing, immediately abort the current print session and unplug the printer from the electric outlet.

DAILY MAINTENANCE

Observe the following precautions for daily maintenance.

- When cleaning the printer, always turn it off and unplug it from the electric outlet.
- Use a soft, dry cloth for cleaning the surface of the printer case.
For severe stains, use a soft cloth slightly dampened with water.
Never use organic cleaning solvent such as paint thinner, trichloroethylene, benzene, or ketone. Never use a chemically processed cleaning cloth.
- To remove paper dust, use a soft brush.



CAUTION

The thermal head is at a dangerously high temperature immediately after printing.

Allow it to cool off before starting maintenance work.

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1. GENERAL OUTLINE

This product is a line thermal printer capable of printing on media up to 4 inches wide. It can instantly print labels, tickets, and receipts containing a large volume of data that would not fit on normal width receipt paper.

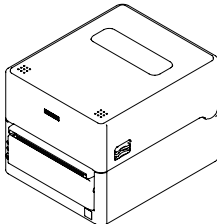
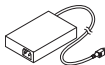




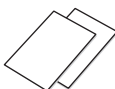
This printer has extensive features so it can be used in a wide range of applications.

1.1 Features

- High-speed printing at up to 200 mm/sec possible
- Stylish design
- Support for media up to 112 mm wide
- Support for label paper and black mark paper
- High-speed cutter employed
- USB interface included as standard
- Equipped with a standard USB power supply port
- Interchangeable interface board
- Built-in drawer kick interface
- USB-linked power OFF function available
- Paper saving function available
- ENERGY STAR compliant power saving function
- XML/Web print function included (wired LAN or wireless LAN model)
- USB host function capable of controlling peripheral devices included (wired LAN or Bluetooth USB host model)
- Support for the JIS X0213 third and fourth level Kanji character sets
- Support for the simplified and traditional Chinese character sets and Hangul character set
- Support for UTF-8 using commands
- Various customizations using the memory switches possible
- User created characters and logos can be saved in the user memory
- Support for barcodes and 2D codes, including GS1-DataBar
- Apple MFi certified Bluetooth communication support (Bluetooth model)

1.2 Unpacking

Make sure the following items are included with your printer.

NAME	QUAN- TITY	ILLUSTRATION
Printer	1	
AC Adapter *1	1	
AC cord	1	
Media shaft *2	1	
USB cable clamp	1	
Sample paper roll	1 roll	
Quick Start Guide	2	

*1: Standard model only

*2: Use this with label paper and ticket paper that has a large core.

1.3 Model Classification

Model numbers indicate printer features according to the following system.

CT	-	S4500	A	RS	E	-	BK
1			2	3	4		5

1. Model name
2. AC adapter storage case
A: None
S: Yes
3. Interface
RS: Serial RS-232C+USB
ET: Ethernet+USB
HET: Ethernet (USB host function) + USB
BT: Bluetooth+USB
HBT: Bluetooth (USB host function) + USB
WX: Wireless LAN+Ethernet+USB
NN: USB
4. Market
U: North America
E: Europe
I: India
5. Body case color
WH: Pure white
BK: Black

Contact us in advance for special combinations, some of which may not be available.

1.4 Basic Specifications

Item	Specifications				
Model	CT-S4500				
Print method	Line thermal dot print method				
Print widths	104 mm/832 dots, 90 mm/720 dots, 82.5 mm/660 dots, 72 mm/576 dots, 68.25 mm/546 dots, 64 mm/512 dots, 54.5 mm/436 dots, 54 mm/432 dots, 52.5 mm/420 dots, 48 mm/384 dots, 45 mm/360 dots, factory default 104 mm/832 dots				
Dot density	8 × 8 dots/mm (203 dpi)				
Print Speed	200 mm/sec (maximum speed, print density level 100%, 1600 dot lines/sec)				
Number of print columns *1	Font	Maximum number of characters (columns) / 112 mm	Maximum number of characters (columns) / 80 mm	Maximum number of characters (columns) / 58 mm	Dot configuration (dots)
	Font A	69	48	35	12 × 24
	Font B	92	64	46	9 × 24
	Font C	104	72	52	8 × 16
Character size *2	Font A:1.50×3.00 mm, Font B:1.13×3.00 mm, Font C:1.00×2.00 mm				
Character type	Alphanumeric characters, international characters, PC437/737/850/852/857/858/860/862/863/864/865/866, WPC1251/1252/1253/1255/1258, Katakana, ThaiCode 11/18 (1Pass/3Pass), TCVN-3, Kanji (JIS first, second, third, and fourth level), Kana, extended characters, JIS X0213, GB18030, BIG5, KS Hangul, EUC Hangul				
User memory	384 KB (capable of storing user-defined characters and logos)				
Bar code types	UPC-A/E, JAN(EAN) 13 digits/8 digits, ITF, CODE39, CODE128, CODABAR (NW-7), CODE93, PDF417, QR Code, GS1-DataBar				
Line spacing	4.25 mm (1/6 inch) (Variable by command)				
Paper	Roll paper: 112 mm × maximum Ø102 mm Paper thickness: 60-85 µm (25.4 mm ≥ core tube inner diameter ≥ 12 mm/32 mm ≥ core tube outer diameter ≥ 18 mm) 85-150 µm (core tube diameter: inner 25.4 mm / outer 32 mm) Label paper: 150 µm or less (core tube diameter: inner 25.4 mm / outer 32 mm)				
Interface	Serial (RS-232C standard), USB, Bluetooth+USB, LAN, wireless LAN+LAN, LAN (USB host function) (USB 2 port)), Bluetooth (USB host function) (USB 2 port))				
Ethernet	100BASE-TX/10BASE-T				
Wireless LAN	IEEE802.11n, IEEE802.11a, IEEE802.11g, IEEE802.11b				
Bluetooth	Version: Bluetooth 3.0 + EDR Profile: SPP (Serial Port Protocol), iAP (iPod Accessory Protocol) Power class: Class2				
USB power supply port	Max. 2.1 A				
Cash drawer kick-out	Supports 2 cash drawers				
Input buffer	4 K bytes/45 bytes				
Power consumption	Approximately 65 W (for normal printing), approximately 1.5 W (during standby)				
AC Adapter	Rated input: AC 100 to 240 V, 50/60 Hz, 150 VA Rated output: DC 24 V, 2.5 A				
Weight	Standard model: Approximately 2.5 kg Model with stored AC adapter: Approximately 3.2 kg				
Outside dimensions	Standard model: 170 (W) × 151.3 (H) × 216.2 (D) mm Model with stored AC adapter: 170 (W) × 193.3 (H) × 216.2 (D) mm				

Item	Specifications
Operating temperature and humidity	5 to 40°C, 10 to 90% RH (no condensation) (60 µm ≤ paper thickness ≤ 85 µm) 10 to 80% RH (no condensation) (85 µm ≤ paper thickness ≤ 150 µm)
Storage temperature and humidity	-20 to 60°C, 5 to 90% RH (no condensation)
Print head life *3	Thermal roll paper: 100 km, 100 million pulses Thermal label roll paper: 50 km, 100 million pulses
Auto cutter life *3	Thermal roll paper: 1 million cuts Thermal label roll paper: 200 thousand cuts
Safety standard *4	UL, cUL, FCC, IC, CE, UKCA *5

Notes:

*1: The number of printable columns is selected using a memory switch.

The numbers of columns noted in this table refer to typical models. The number of columns varies depending on specifications.

*2: Characters appear small because the dimensions include a blank area surrounding each character.

*3: According to our test conditions

*4: This standard applies when our AC Adapter is used.

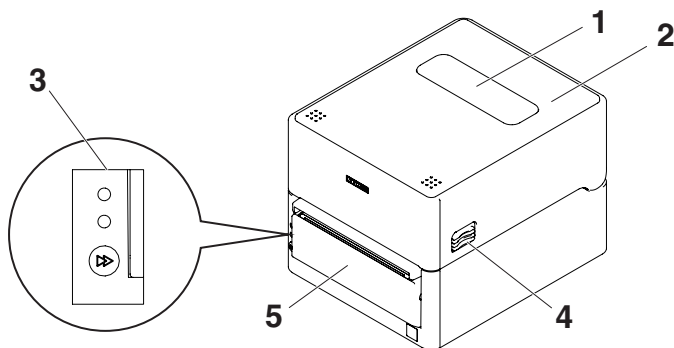
*5: Please contact us for information on other regions and the latest status such as standard numbers.

2. EXPLANATION OF PRINTER PARTS

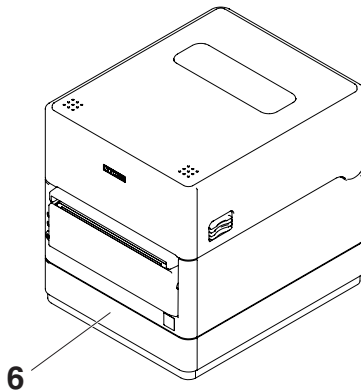
2.1 Printer Appearance

Names of parts

Standard model



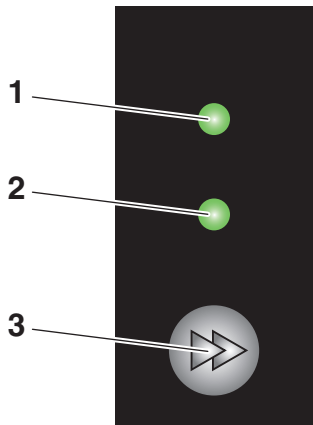
Model with stored AC adapter



1. Media window
Enables users to check the media level.
2. Top cover
Opens upward so users can replace or set media.
3. Operation panel

- 4. Cover release buttons
The cover is opened by pressing the buttons on both the right and left sides.
- 5. Auto cutter
- 6. AC adapter storage case

Operation panel



The operation panel includes 2 LEDs and 1 key.

- 1. Power LED
Turns on when the power is turned on and turns off when the power is turned off.
- 2. Status LED
Turns on or flashes in green, red, and amber depending on the printer status.

Color	Lights/ flashes	Status
Green	On	Printer is online
	Flashes	Receiving data
Amber	On	Startup
Red, green, amber	Flashes	Error or alarm

- 3. FEED key
Paper feeds while the key is pushed.
Enter the test printing or memory switch setting mode.

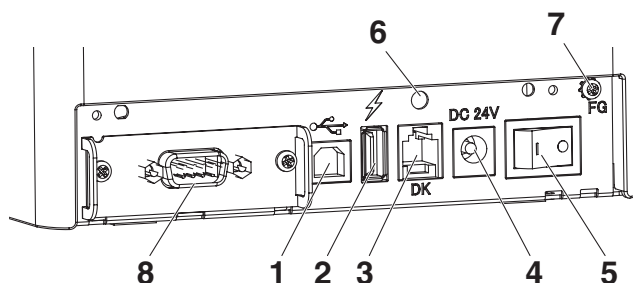


Refer to 4.3 Self Test



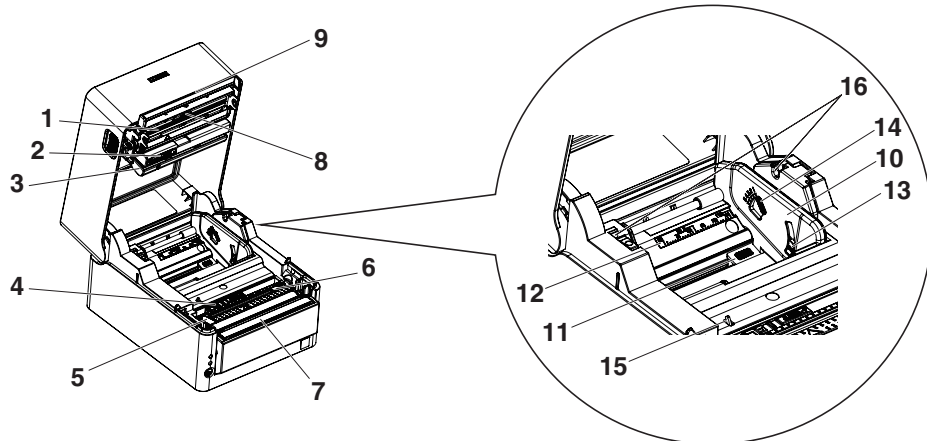
Refer to 5.3 Manual Setting of Memory Switches

Rear connectors (serial interface example)



1. USB interface
2. USB power supply connector
Supplies power to USB devices.
3. Cash drawer kick-out connector
Connect to the cable from the cash drawer.
4. DC jack
Connects to the included AC adapter.
5. Power switch
Turns the printer power supply on and off.
6. USB cable clamp attachment holes
USB cable clamps can be attached.
7. Ground wire attachment screw
Screw in the ground wire from the drawer to attach it.
8. Interface connector (serial, USB, etc.)
Connect to the interface cable.

2.2 Inner area of the top cover



1. Thermal head
Prints characters and graphic data on paper (paper rolls).
2. Upper sensor
This sensor detects the media position.
3. Media damper
When using roll media, absorbs tension generated by media feed operations to prevent print errors.
4. Bottom sensor
This sensor detects the media position.
Devices are equipped with lock mechanisms.
5. Fixed left-side media guide
6. Paper guide (Movable right-side paper guide)
7. Platen roller
This roller transports media.
8. Head balance adjustment slider
9. Manual cutter
10. Paper partition
Move the partition to a position suitable for the paper width.

11. Paper partition position adjustment button

With this button pushed, move the paper partition to the left or right.

12. Paper width scale

13. Paper near-end (PNE) sensor

Detects when the paper is near the end of the roll.

14. Paper near end sensor selector lever

Adjust the position of the sensor to determine when it detects the end of the paper is near.

15. Paper end (PE) sensor

Detects when there is no paper. Printing stops when this sensor detects there is no paper.

16. Media shaft mounting groove

When using a media shaft, attach it to this section.

2.3 Other Built-in Functions

- Buzzer

Buzzes when errors occur or when operations or command operations are performed.



Refer to 4.5 Error Indications

- User memory

You can save user-defined logo and character data in this memory. Data remains stored in this memory even if the printer is turned off. For information on how to save data, refer to the Command Reference.

- Memory switch

Setting of various kinds of functions can be stored in memory. Settings remain stored in the memory even if the printer is turned off.

- USB-linked power OFF (When MSW6-3 of memory switch is set to ON)

When the printer is connected to PC by USB, the printer becomes the state of USB-linked power OFF after 3 seconds when PC power off or USB connection lost.

This mode is canceled when the PC is turned back on or when a USB connection is established.



CAUTION

- Since the POWER LED is unlit when the state of USB-linked power OFF, it cannot be identified from the power OFF.
- Pressing POWER while USB power is off does not turn on power immediately. After a while, USB power supply OFF is canceled and pressing POWER turns on power normally.

- Paper saving functions
Memory switches MSW8-3 through MSW8-4 can be used to configure the settings below, which save paper.
 - Top margin suppression
The printer back feeds the paper before printing which reduces the blank space at the top edge of the paper.
The back feed amount can be specified.
 - Line gap reduce
Automatically compresses the linefeed amount between lines. The compression ratio can be specified.



CAUTION

Remove the partially cut paper before performing back feed for starting printing.
The cut paper may be torn off in the next printing process, which may cause a problem.

- Auto side shift (MSW8-6)
This function dissipates heat load during frequent heat generation by a vertical ruled line or other specific head heating element.
If no data is received within 15 seconds after each cut or print, the print position is automatically slid N* dots to the right. The original print position is returned to at the next slide timing.
* N is the MSW8-6 setting value.



CAUTION

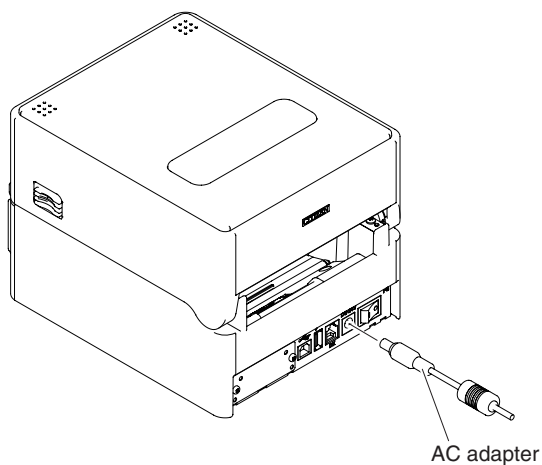
- If the right margin is too narrow, this may result in some print characters being cut off.
- This function is disabled under initial settings.
- To enable this function, use MSW8-6 to specify an appropriate value for the maximum slide amount.

3. SETUP

3.1 Connecting the AC Power Cord

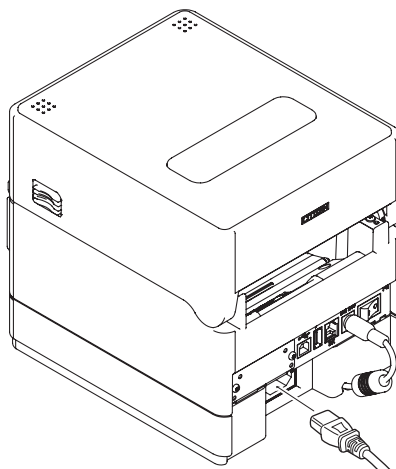
For standard models

1. Turn off the power.
2. Insert the DC plug on the output side of the AC adapter into the DC jack in the printer.
3. Insert the plug of the AC cord into an electrical outlet.



For models with stored AC adapter

1. Turn off the power.
2. Insert the plug of the AC cord into the AC port.
3. Insert the plug of the AC cord into an electrical outlet.



CAUTION

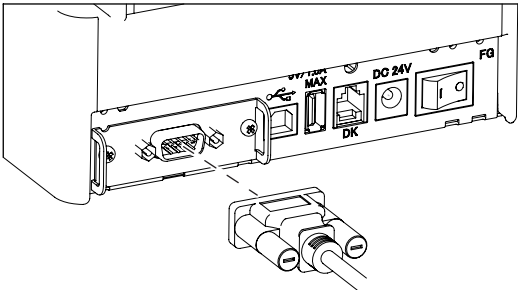
- Use only the specified AC adapter.
- Always hold the AC adapter's cable connector by the connector when removing or inserting it.
- Use an AC power source that does not also supply power to equipment that generates electromagnetic noise.
- Pulling on the AC power cord may damage it, cause a fire, electric shock, or break a wire.
- If a lightning storm is approaching, unplug the AC power cord from the electric outlet. A lightning strike may cause a fire or electric shock.
- Keep the AC power cord away from heat generating appliances. The insulation on the AC power cord may melt and cause a fire or electric shock.
- If the printer is not going to be used for a long time, unplug the AC power cord from the electric outlet.
- Place the AC power cord so that people do not trip on it.
- Make sure of the following before connecting the AC adapter.
The power switch on the printer is turned off.
The plug of the AC cord is removed from the electrical outlet.

3.2 Serial Interface Board

Data can be exchanged by serial communication.

Connecting the Interface Cable

1. Turn off the power.
2. Confirm the orientation of the interface cable and connect it to the port.



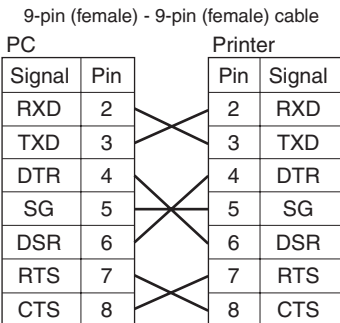
3. Insert the other connector firmly into the interface port of the host computer.



CAUTION

- When disconnecting the cable, always hold the connector.
- Place the interface cable so that people do not trip on it.
- Do not connect multiple interfaces at the same time.

Use a serial cable with the connection layout shown below.



3.3 USB Interface

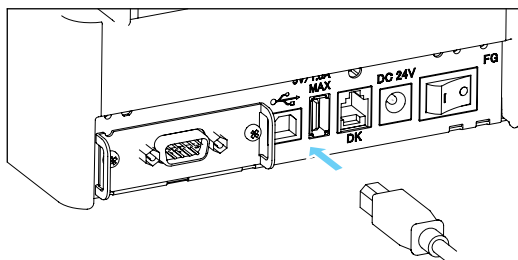
Data can be exchanged by USB communication.

Specifications

Standard	USB 2.0 specification-compliant
Communication speed	Supports 12 Mbps (Full-Speed) transfer

Connecting the Interface Cable

1. Turn off the power.
2. Confirm the orientation of the interface cable and connect it to the port.



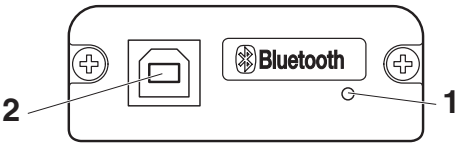
3. Insert the other connector firmly into the interface port of the host computer.

CAUTION

- When disconnecting the cable, always hold the connector.
- Place the interface cable so that people do not trip on it.
- Do not connect multiple interfaces at the same time.
- Be careful not to insert the USB cable into the cash drawer kick-out connector.
- To connect more than one printer to a single computer by USB, you must change the serial number of the USB interface.
- There are models with a USB port on the interface board side.
With such a model, do not connect USB cables to both the printer main unit side and interface board side.
If USB cables are connected to both, priority will be given to communication of the one connected to the port on the main unit side.

3.4 Bluetooth Interface Board

Names of parts



1. Status LED

The Bluetooth communication/connection/error status is indicated by this LED.

2. USB connector





Data can be exchanged by USB communication.

CAUTION

When using this interface board as a USB interface, do not connect USB cables to both the main unit side and interface board side.

If USB cables are connected to both, priority will be given to communication of the one connected to the connector on the main unit side.

Bluetooth status LED

Status	Description	LED Status
Detection standby (Discoverable)	Standing by for detection and connection	
Connection standby (Connectable)	Standing by for connection	
iOS connection	Data session un-opened	
Communicating	iOS: data session opened Other OS: connection established and communication in progress	
Error	Error or settings being configured	Unlit

Pairing operation

You need to perform the operations below the first time you establish a Bluetooth connection for Bluetooth data communication.

1. Detect Bluetooth devices
2. Configure pairing settings

1. Detecting Bluetooth devices

Confirm that Bluetooth is enabled on the host PC before searching for Bluetooth devices.

This product will show up as "CT-S4500_XX"(XX is last 2 digits of unique Serial Number.) when it is detected.

Select this product from among the detected devices.

Note: You can search for devices and change the names.

When memory switch MSW13-5 is set to "No Response," nothing is displayed by device detection.

You can temporarily switch this setting to device detection (detect mode) by opening the paper cover and holding down the FEED button for two seconds. Detect mode is exited when the connection between the host PC is terminated.

2. Configuring pairing settings

Normally, selecting the printer during device detection will transition directly to pairing settings.



CAUTION

Some host PC configurations and models may not transition directly to pairing settings after the printer is selected during device detection.

The operation required to configure pairing settings depends on whether SSP (secure simple pairing) is enabled on the host PC.

If SSP is enabled on the host PC, pairing can be achieved without additional operations.

If SSP is disabled on the host PC, you will be prompted to input a passkey.

Input the passkey as described below.

Passkey

Last four digits of the address on the self test printout (Letters A through F are upper-case)

Example: If the address is 01:23:45:67:89:AB the passkey is 89AB.

If you delete pairing information from the host PC without deleting the corresponding pairing information on the printer, the printer may not show up if you detect devices again with the host PC.

To delete printer pairing information, open the paper cover and then hold down the FEED button for five seconds.

Deleting pairing information on the printer will put the printer into discovery mode.

Auto reconnection

With iOS device Bluetooth communication, a connection between a paired iOS device and the printer is not automatically restored after it is lost. However, when auto reconnection is enabled, the printer tries to reconnect with an iOS device after two-way communication is enabled and automatically restores the connection.



CAUTION

This function is enabled when shipped from the factory. (MSW13-6)

Auto reconnection can take some time to connect when the host is not an iOS device.

- Even if the partner device is an iOS device, the conditions below can interfere with the auto reconnection function.
- **When you want Bluetooth communication to cut off after printing is complete**
- **When there are multiple iOS devices printing on the same printer**

Under such conditions, disable auto reconnection.

Enabling and disabling auto reconnect

During self test, press the FEED button 3 times -> Auto reconnect = Valid

During self test, press the FEED button 4 times -> Auto reconnect = Invalid

At the end of self test, new setting will be printed as Auto reconnect [Valid] or [Invalid].



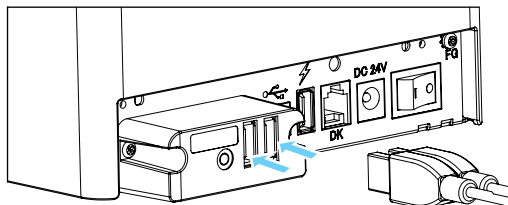
Refer to 4.3 Self Test

3.5 Bluetooth USB host interface board

In addition to printer control via Bluetooth communication, Bluetooth USB host interfaces can control peripheral devices connected via a USB port.

Connecting a Peripheral Device

1. Turn off the power.
2. Connect the cable of a peripheral device to this port.



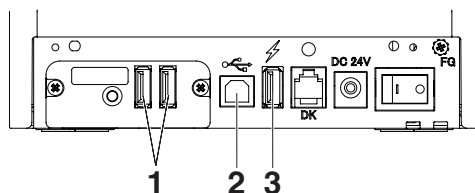
CAUTION

A peripheral device cannot be controlled if it is connected to the USB power supply port. Be sure to connect it to the USB port of the interface board.

Connecting a USB Device

The function assigned to each USB port differs.

Connect the USB device to be connected to the correct place in reference to the following figure.



1. **For peripheral device control**
Connect a peripheral device.
The connected peripheral device can be controlled.
2. **For host computer communication**
Connect with a host computer.
The printer and host computer will communicate via USB.



Refer to 3.3 USB Interface

3. For supplying power

Connect a mobile device or other USB device.

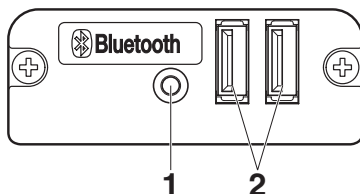
Power can be supplied to a connected USB device.

* This port does not support USB data communication.



Refer to 3.7 USB Power Supply Port

Names of parts



1. Panel button

Control this interface board.

2. USB 2 port

Connect a peripheral device.



CAUTION

- Only connect peripheral devices specified by our company to the USB port.
- Only plug in/remove peripheral devices when the printer power is turned off.

Pairing operation

You need to perform the operations below the first time you establish a Bluetooth connection for Bluetooth data communication.

1. Detect Bluetooth devices
2. Configure pairing settings

1. Detecting Bluetooth devices

Confirm that Bluetooth is enabled on the host PC before searching for Bluetooth devices.

This product will show up as "CT-S4500_XX"(XX is last 2 digits of unique Serial Number.) when it is detected.

Select this product from among the detected devices.

Note: You can search for devices and change the names.

When memory switch MSW13-5 is set to "No Response," nothing is displayed by device detection.

With these settings, pressing and holding the panel button for at least three seconds and then pressing it twice more places the product temporarily in a state where it will be found in device searching (discovery mode).

Discovery mode cancels when the product is connected to a host PC.

2. Configuring pairing settings

Normally, selecting the printer during device detection will transition directly to pairing settings.

CAUTION

Some host PC configurations and models may not transition directly to pairing settings after the printer is selected during device detection.

The operation required to configure pairing settings depends on whether SSP (secure simple pairing) is enabled on the host PC.

If SSP is enabled on the host PC, pairing can be achieved without additional operations.

If SSP is disabled on the host PC, you will be prompted to input a passkey.

Input the passkey as described below.

Passkey

Last four digits of the address on the self test printout (Letters A through F are uppercase)

Example: If the address is 01:23:45:67:89:AB the passkey is 89AB.

If you delete pairing information from the host PC without deleting the corresponding pairing information on the printer, the printer may not show up if you detect devices again with the host PC.

When deleting pairing information, press and hold the panel button for at least three seconds, and after the buzzer sounds, press it four more times.

If successful, "Erase Bonded Device" is printed.

Deleting pairing information on the printer will put the printer into discovery mode.

Auto reconnection

With iOS device Bluetooth communication, a connection between a paired iOS device and the printer is not automatically restored after it is lost. However, when auto reconnection is enabled, the printer tries to reconnect with an iOS device after two-way communication is enabled and automatically restores the connection.

CAUTION

This function is enabled when shipped from the factory. (MSW13-6)

Auto reconnection can take some time to connect when the host is not an iOS device.

■ Even if the partner device is an iOS device, the conditions below can interfere with the auto reconnection function.

- **When you want Bluetooth communication to cut off after printing is complete**
- **When there are multiple iOS devices printing on the same printer**

Under such conditions, disable auto reconnection.

Enabling and disabling auto reconnect

During self test, press the FEED button 3 times -> Auto reconnect = Valid

During self test, press the FEED button 4 times -> Auto reconnect = Invalid

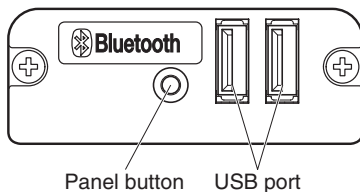
At the end of self test, new setting will be printed as Auto reconnect [Valid] or [Invalid].



Refer to 4.3 Self Test

Panel button operation

Use the panel button on the rear of the Bluetooth board to operate this board.



- BT device search (MSW13-5) settings

1. Press and hold the panel button to turn on printer power.

2. Press the panel button within one second after starting the printer.

The setting changes in accordance with the number of times you press the panel button.

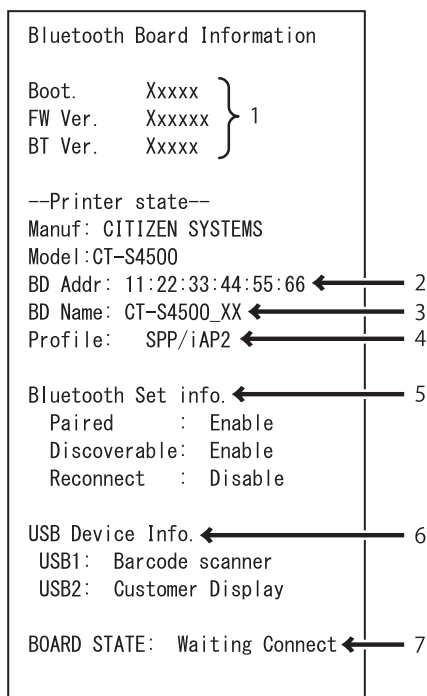
Two presses: Discovery possible

Three presses: No response

After these operations the printer restarts.

- Print the interface board state

After starting the printer, pressing the panel button once prints the interface board state.



Print example

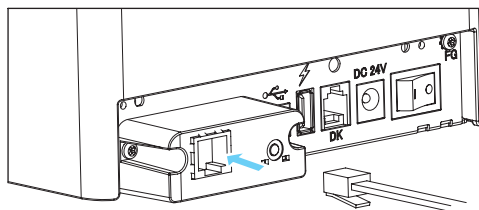
1. Board firmware version
2. Address of equipped Bluetooth module
3. Bluetooth name
4. Response profile in Bluetooth transmission
5. Bluetooth setting state
6. Name of connected USB device ("No connection" is displayed when there is no connection)
7. Board status

3.6 Ethernet (LAN)/Wireless LAN Interface Board

This section provides an overview of the interface board. For details on this board, including explanations about the USB host function and XML peripheral device support, refer to the separate manual.

Connecting the Interface Cable

1. Turn off the power.
2. Confirm the orientation of the interface cable and connect it to the port.



3. Connect the other connector to a hub, router, or similar device.

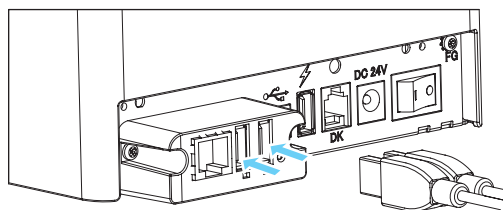


CAUTION

- When disconnecting the cable, always hold the connector.
- Place the interface cable so that people do not trip on it.
- Do not connect multiple interfaces at the same time.
- Hold the connector of the LAN cable perpendicular and straight when connecting or disconnecting it. Doing it at an angle may cause the connector to misconnect.

Connecting a Peripheral Device

1. Turn off the power.
2. Connect the cable of a peripheral device to this port.

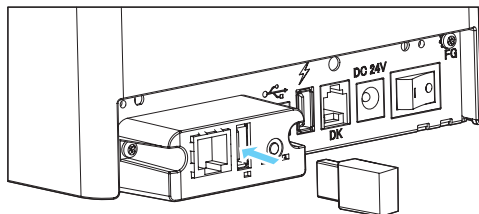


CAUTION

A peripheral device cannot be controlled if it is connected to the USB power supply port. Be sure to connect it to the USB port of the interface board.

Connecting the wireless LAN adapter

1. Turn off the power.
2. Connect the wireless LAN adapter to the connector.



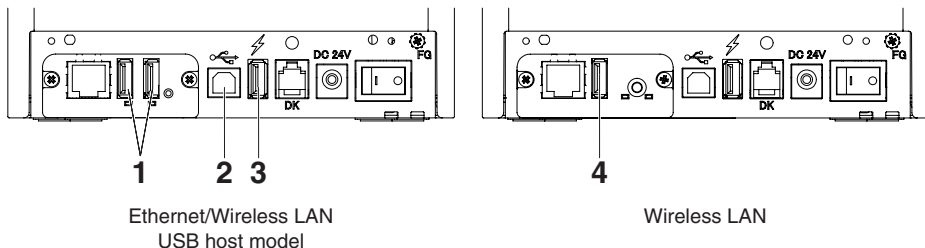
CAUTION

The wireless LAN cannot be used when connected to the USB power supply connector. Be sure to connect it to the USB connector on the interface board.

Connecting a USB Device

The function assigned to each USB port differs.

Connect the USB device to be connected to the correct place in reference to the following figure.



1. For peripheral device control

Connect a peripheral device.

The connected peripheral device can be controlled.

2. For host computer communication

Connect with a host computer.

The printer and host computer will communicate via USB.



Refer to 3.3 USB Interface

3. For supplying power

Connect a mobile device or other USB device.

Power can be supplied to a connected USB device.

* This port does not support USB data communication.



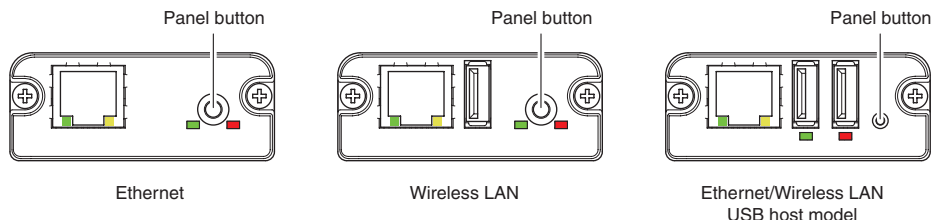
Refer to 3.7 USB Power Supply Port

4. For wireless LAN adapter connection

Connect a wireless LAN adapter.

Panel button operation

Board operations are performed using the panel button on the rear of the LAN board.



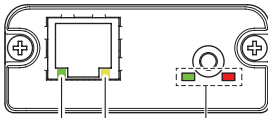
- **Enabling LAN connection**
Turn on the printer. Operation of this board will start about 20 seconds later.
- **Printing LAN setup information**
Press the panel button.
- **Entering setting mode**
Hold down the panel button. A buzzer* will sound once to indicate that setting mode has been entered.
 - You can use setting mode to read factory settings.
 - If no operation is performed for 3 seconds in configuration mode, the mode switches back to normal mode.
- **Returning to factory settings**
Enter the board setting mode, and then hold down the panel button. This returns the board to its factory settings.

CAUTION

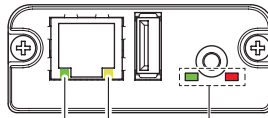
The board will automatically restart after this operation is complete. After clearing settings, you will need to re-configure network settings.

LED Functions

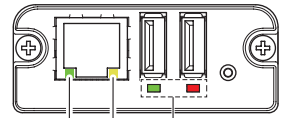
The tables below explain how to interpret LED indications.



Ethernet



Wireless LAN



Ethernet/Wireless LAN
USB host model

1. Wired LAN transmission speed

Transmission speed	LED (green)
100 Mbps	Lit
10 Mbps/Not connected	Unlit

2. Wired LAN connection/transmission status

Connection status	LED (yellow)
Connected	Lit
Not connected	Unlit
Data transmission in progress	Flashing

3. Wired/Wireless LAN status

Connection status		LED (green)	LED (red)	Description
No printer connection		Unlit	—	Board is not connected with a printer.
Printer connection	No network connection	Lit	Unlit	Board is connected with a printer.
	Connected by wired LAN	Lit	Flashing (1-second cycle)	Getting an IP address from the DHCP server over wired LAN.
	Wired LAN operation	Lit	Lit	Network operation being performed over wired LAN.
	Connected by wireless LAN *	Flashing (2-second cycle)	Flashing (1-second cycle)	Connecting to an access point or getting an IP address from the DHCP server over wireless LAN.
	Wireless LAN operation *	Flashing (2-second cycle)	Lit	Network operation being performed over wireless LAN.
Resource error		Alternate flashing (1-second cycle)		Board is unable to operate normally.
System error		Alternate flashing (0.2-second cycle)		Board is unable to operate normally.

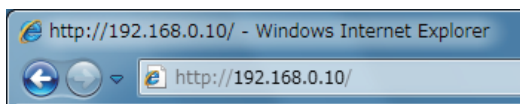
*: Only when using wireless LAN

Web Manager

The interface board has a Web Manager function that can be used to connect to the board with a web browser and change board settings.

Starting up Web Manager

1. Start up a web browser.
2. In the address field, input the board's IP address and then press [Enter].



HOME Screen

This is the Web manager home screen.

The following screen is an example for a wireless LAN.

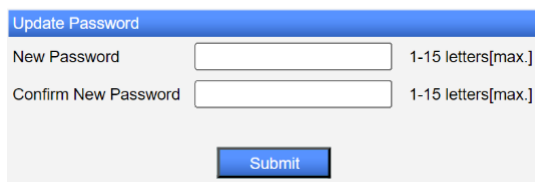


Here, press the [CONFIG] button.

CONFIG Screen

In the factory default state, the administrator password setting screen is displayed.

Update Password.
You need to update LAN board password as this is your first time logging in!



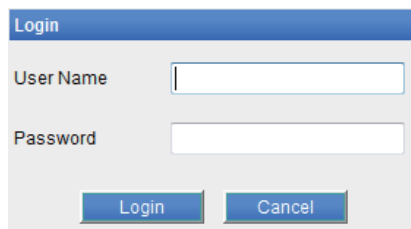
The 'Update Password' dialog box has a blue title bar. It contains two text input fields: 'New Password' and 'Confirm New Password'. To the right of each field is the text '1-15 letters[max.]'. Below the fields is a blue 'Submit' button.

- New Password/Confirm New Password
Set the administrator password for this board.

Notes

- Specify 1 to 15 single-byte alphanumeric characters.
- If you forget the set password, initialize the interface board to return to the factory default state, and set the password again. For details on how to initialize the interface board, refer to the separate manual.

This will display the Login dialog box shown below. Log in as an administrator and then configure interface board settings.



The 'Login' dialog box has a blue title bar. It contains two text input fields: 'User Name' and 'Password'. Below the fields are two buttons: 'Login' and 'Cancel'.

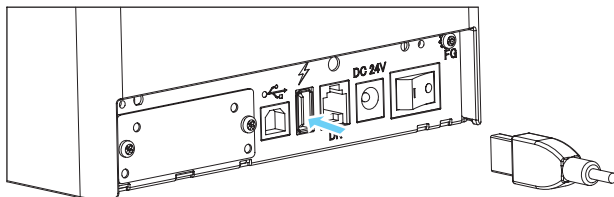
- User Name
Input a board administrator user name. (Initial setting: admin)
- Password
Input the administrator user password.
- [Login] button
After inputting an administrator user name and password, click the [Login] button. This displays the setting screen.
For details about settings, refer to the separate manual.

3.7 USB Power Supply Port

Power (max. 2.1 A) can be supplied to a mobile device or other USB device by connecting the cable of the USB device to the power supply port.

Connecting Mobile Device or Other Device

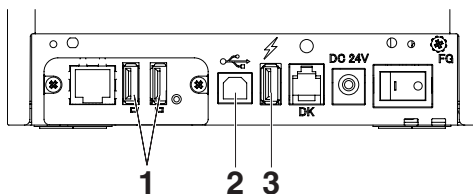
1. Turn off the power.
2. Connect the cable of a mobile device or other device to the USB power supply port.



Connecting a USB Device

The function assigned to each USB port differs.

Connect the USB device to be connected to the correct place in reference to the following figure.



1. **For peripheral device control**
Connect a peripheral device.
The connected peripheral device can be controlled.
2. **For host computer communication**
Connect with a host computer.
The printer and host computer will communicate via USB.



Refer to 3.3 USB Interface

3. For supplying power

Connect a mobile device or other USB device.

Power can be supplied to a connected USB device.

* This port does not support USB data communication.



Refer to 3.7 USB Power Supply Port

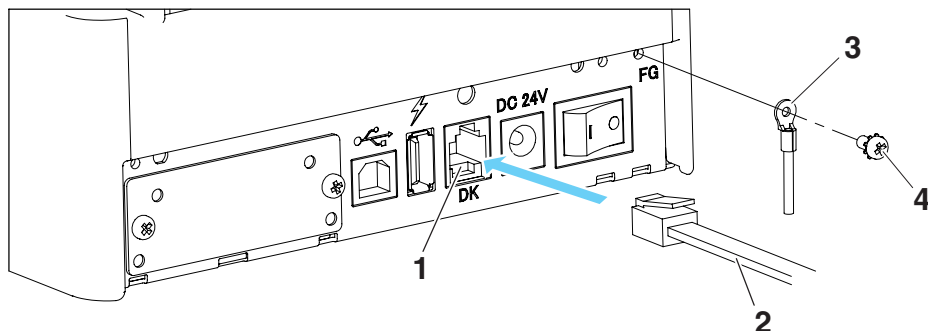


CAUTION

- This port does not support USB data communication.
- Power may not be able to be supplied depending on the USB device to be used.
In this case, use the device's dedicated AC adapter or battery charger.
- A USB cable for power supply is not included with this product.
Use a commercially available USB cable or the one that comes with the USB device.

3.8 Connecting the Cash Drawer

1. Turn off the power.
2. Confirm the orientation of the cash drawer kick-out cable connector and connect it to the cash drawer kick-out connector at the back of the printer.
3. Remove the screw for the ground wire.
4. Screw the cash drawer's ground wire to the body of the printer.

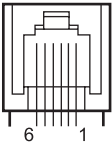


1. Cash drawer kick-out connector
2. Cash drawer kick-out cable connector
3. Ground wire
4. Screw for ground wire

CAUTION

- Connect only the cash drawer kick-out cable to this connector. (Do not connect a telephone line.)
- Signals cannot be output from the cash drawer kick-out connector while printing.
- Hold the connector of the drawer kick cable perpendicular and straight when connecting or disconnecting it. Doing it at an angle may cause the connector to misconnect.

(1) Connector pin configuration

No.	Signal	Function	
1	FG	Frame ground	
2	DRAWER1	Cash drawer 1 drive signal	
3	DRSW	Cash drawer switch input	
4	VDR	Cash drawer drive power supply	
5	DRAWER2	Cash drawer 2 drive signal	
6	GND	Signal ground (common ground on circuits)	

Applicable connector: RJ-11

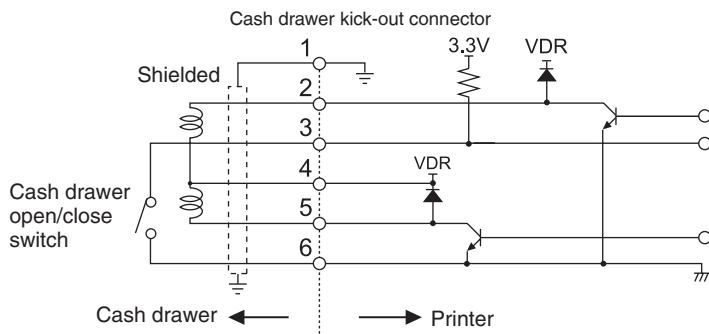
(2) Electric characteristics

- 1) Drive voltage: 24 VDC
- 2) Drive current: Approx. 1 A max. (not to exceed 510 ms.)
- 3) DRSW signal: Signal levels: "L" = 0 to 0.5 V, "H" = 3 to 5 V

(3) DRSW signal

Status can be tested by commands.

(4) Drive circuit

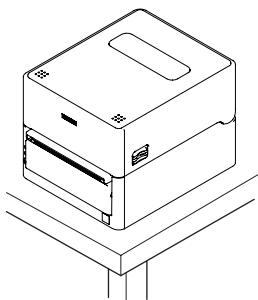


CAUTION

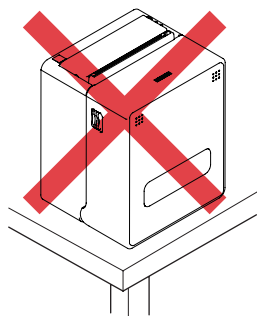
- Cash drawers 1 and 2 cannot be operated at the same time.
- The solenoid used for the cash drawer should be 24 Ω or more. Do not allow the electric current to exceed 1 A. Excessive current could damage or burn out the circuits.

3.9 Precautions for Installing the Printer

This printer can only be positioned horizontally. It cannot be positioned vertically or on a wall.



Horizontal position



Vertical position



CAUTION

Do not use the printer under the following conditions.

- Avoid locations subject to vibration or instability.
- Locations that are very dirty or dusty.
- Avoid locations where the printer is not level.
- **The printer may fall and cause an injury.**
- **The quality of printing may deteriorate.**
- Oriented other than as specified.
- **Malfunction, failure, or electric shock may result.**

3.10 Adjusting the Paper Near-end Sensor

Change the settings of the paper near-end sensor to set the position at which the near-end of the paper is detected.

1. Open the top cover.
2. Adjust the sensor position by moving the paper near end sensor selector lever while gently pushing it in. The sensor position differs as follows depending on the core outer diameter of the roll paper to be used.

(Unit: mm)

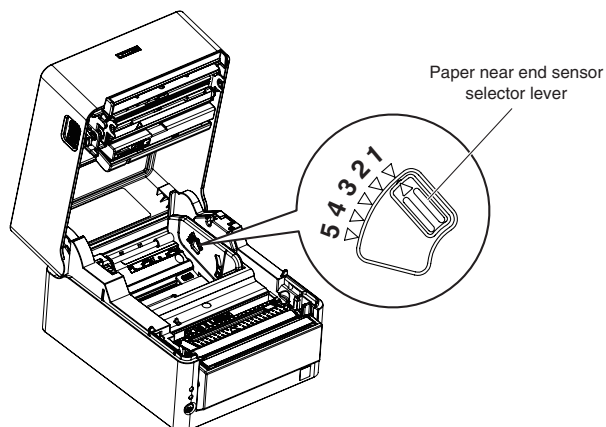
Sensor position	Paper roll outer diameter when near-end is detected	Maximum core outer diameter of roll paper to be used
1*	Approximately $\phi 21.0$	$\phi 18.0$
2	Approximately $\phi 24.5$	$\phi 21.5$
3	Approximately $\phi 28.0$	$\phi 25.5$
4	Approximately $\phi 31.5$	$\phi 28.0$
5	Approximately $\phi 35.0$	$\phi 32.0$

Notes:

*Sensor position when shipped from the factory. However, factory settings differ depending on the destination market.

CAUTION

- When the media shaft will be used, the roll diameter detection function of the paper near end sensor will not function properly so disable MSW2-8 (PNE sensor).
- When the memory switch settings are as follows, the paper near-end sensor is disabled.
MSW4-4 (paper selection): Black mark paper/label media
MSW4-5 (paper position detection method): Label gap detection
- When the memory switches are set as follows, the PNE sensor may not function properly due to factors such as the shape of the shaft center of the roll paper.
If that happens, disable MSW2-8 (PNE sensor).
MSW4-4 (paper selection): Black mark paper / label paper
MSW4-5 (paper position detection method): Black mark detection
- The diameter of the roll of paper that is detected is an estimate. Some variations may occur depending on the paper.
- When using the supplied sample roll paper, align the sensor position to position 5.
The paper near end may not be able to be detected correctly with the default sensor position.



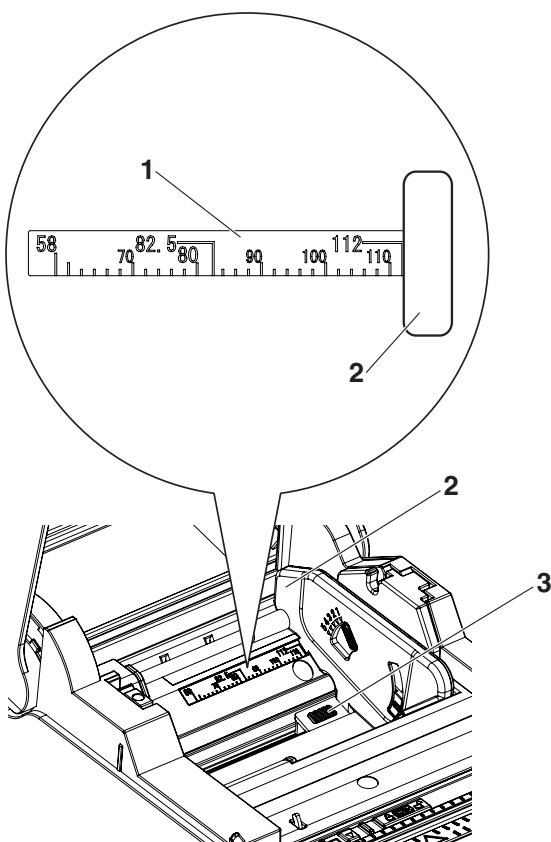
3.11 Roll paper partition

When using roll paper narrower than 112 mm in width, move the paper partition to a suitable position.

1. Turn off the power.
2. Press the cover release buttons on both the right and left sides to open the top cover.
3. Move the paper partition left or right while pressing the paper partition position adjustment button to align it with the paper width position on the paper width scale.
4. Change the print area width while referring to “Manual Setting of Memory Switches.”



Refer to 5.3 Manual Setting of Memory Switches



1. Paper width scale (unit: mm)
2. Paper partition
3. Paper partition position adjustment button

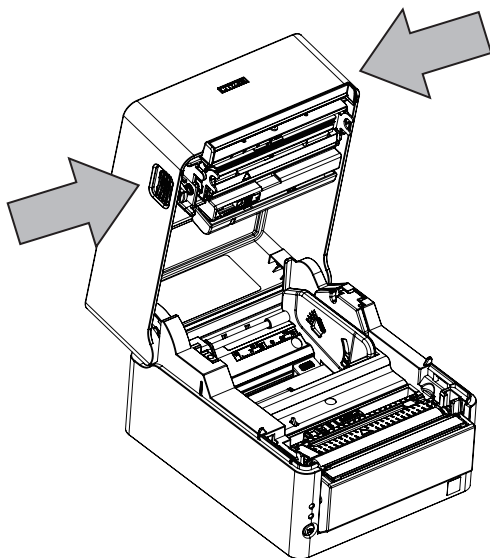


CAUTION

- When opening the top cover, be careful not to touch the entrance of the blade of the auto cutter.
- The print head is very hot immediately after printing. Be careful not to touch it with your hands.
- Do not touch the print head with bare hands or metal objects.
- When narrow paper will be used for a long period of time, use the printer with only paper of that width.
If the width is changed to that for wide paper after using the printer with narrow paper for a long period of time, paper feeding and printing may not be performed properly.
- Use thermal roll paper with a width of at least 80 mm. Using paper that is less than 80 mm wide is not recommended.
- Do not move the paper partition while the paper partition position adjustment button is not pressed. Doing so may cause damage.
- If the paper partition position is not appropriate, improper operation and printing may occur.

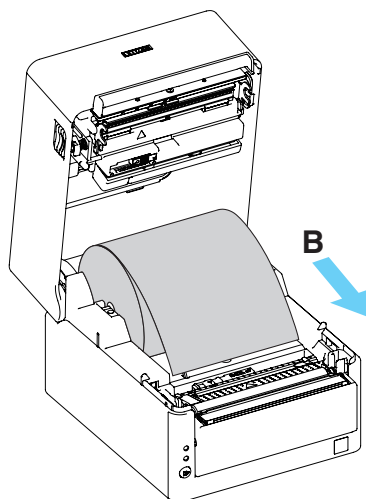
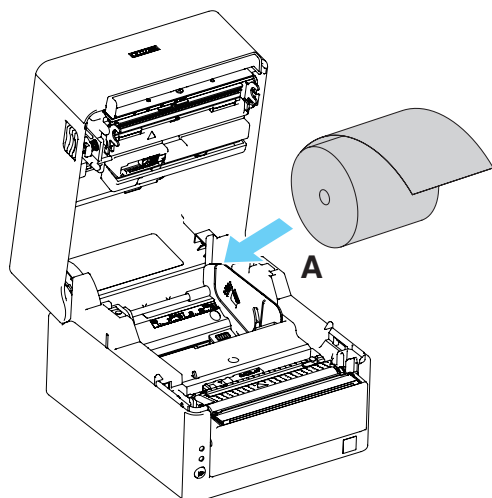
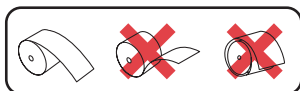
3.12 Loading Paper

1. Turn on the power.
2. Press the cover release buttons on both the right and left sides to open the top cover.

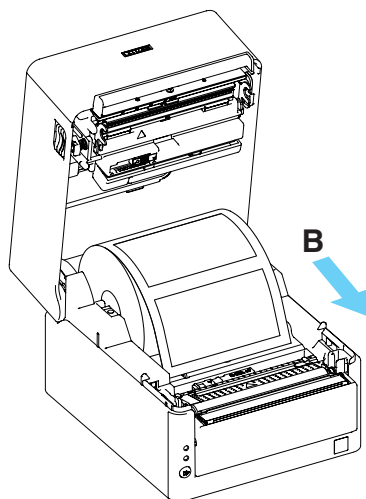
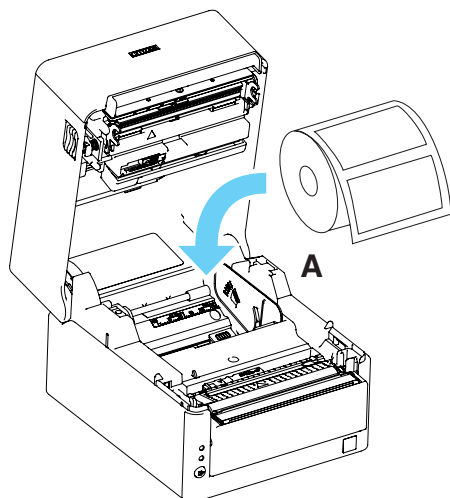
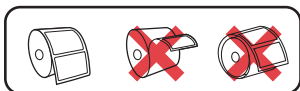


3. Load the roll paper with the printable side of the paper facing outward as shown by arrow A and with no slack.
4. Pull a few centimeters of paper straight out in the direction of arrow B.

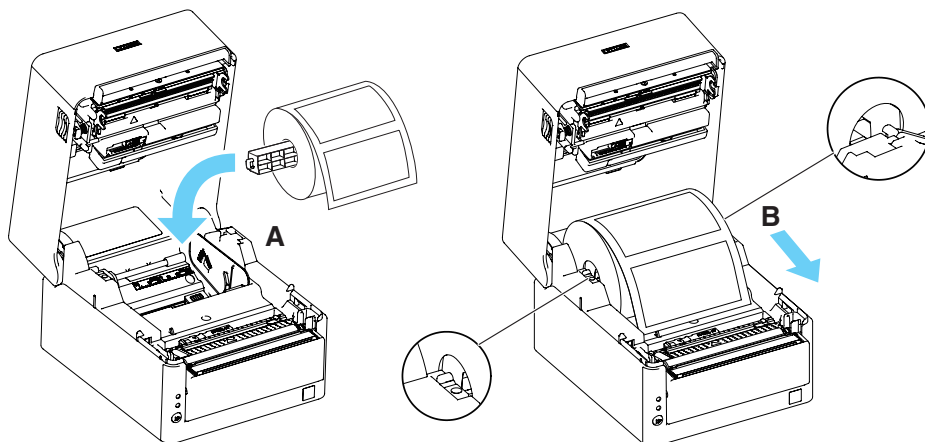
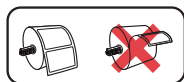
- Continuous



- Label media



- Label media (when using a media shaft)



CAUTION

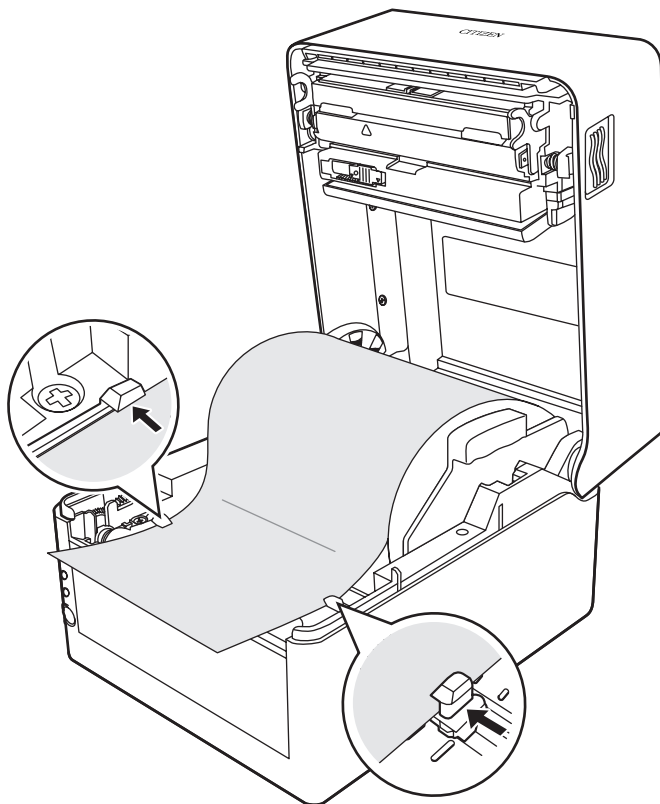
- When opening the paper cover, be careful not to touch the entrance of the blade of the auto cutter.
- The print head is very hot immediately after printing. Be careful not to touch it with your hands.
- Do not touch the print head with bare hands or metal objects.
- Always use the specified types of paper rolls.
- Confirm that the paper roll is set correctly.
- If the paper is skewed and not coming straight out of the paper cover, open it and straighten the paper.
- Be careful of paper cuts while loading the paper.
- Do not pass paper through the rear of the printer.



Refer to PRECAUTIONS IN HANDLING THE PRINTER

5. **Make sure the paper is flush with the left media guide and then adjust the position of the right media guide to match the paper width.**

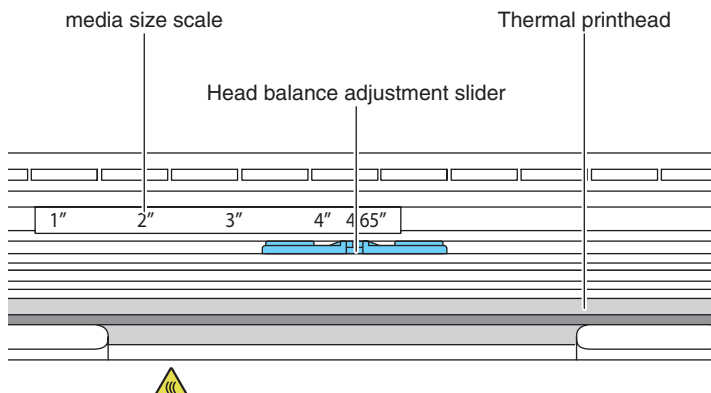
From the front of the printer, set in front of the edge of media by approximately 10 mm.



CAUTION

If force is used to push the right movable media guide against the paper, improper feeding of the paper may occur, which may have an impact on printing.

6. Use something with a sharp point such as the tip of a pen to slide the head balance adjustment slider located near the thermal head left or right along the paper size scale (inches) so that the position of the notch in the slider matches the paper width.



CAUTION

- Use this printer with the width adjusted to at least 2 inches.
- Adjust the head pressure horizontal balance carefully so as not to damage the thermal head. Damaged thermal heads will result in poor printing, paper jams, and malfunction.
- When using paper with a width of 80 mm or more in a very hot and humid environment, we recommend setting this within the range of 3.5" to 4.65".

7. Close the top cover.



CAUTION

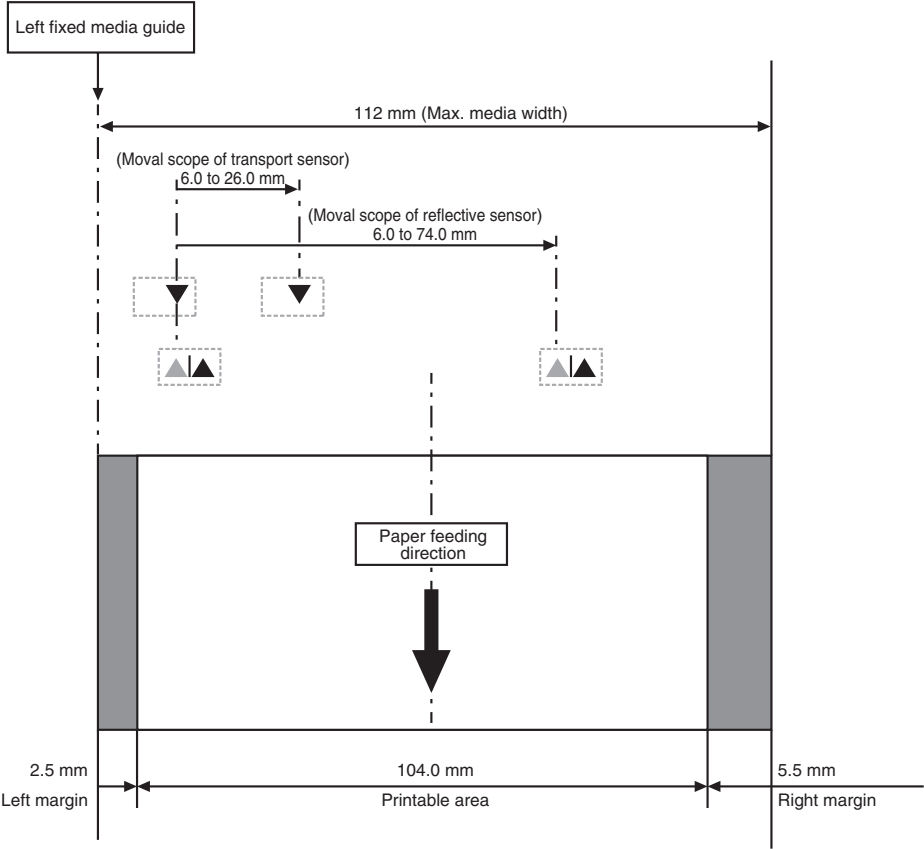
Press the push marks on left and right sides at the top of the top cover and ensure that the top cover hooks on each side lock securely. If the top cover is not securely locked, this may cause print errors, paper jams, and malfunction.

3.13 Adjusting Media Sensor Positions

This section describes the procedure to adjust sensors when loading media. Transmissive and reflective sensors can be used for the media sensors.

Range of Paper Sensor Adjustment

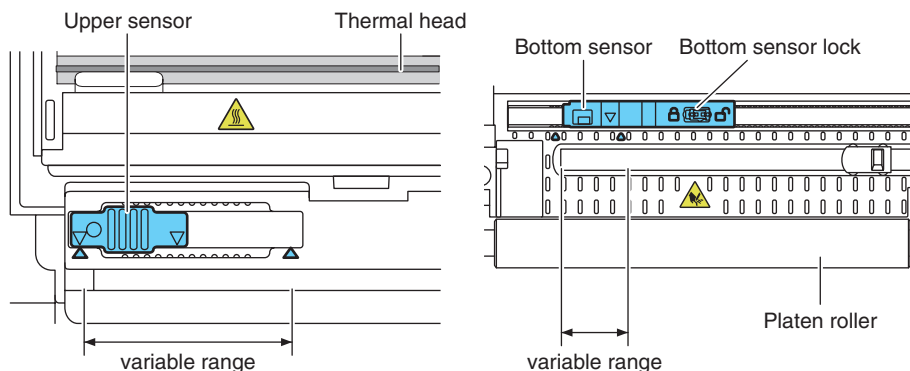
The following figure illustrates the range of media sensor adjustment.



Transmissive Sensor Adjustment

- **Adjust the position of the bottom sensor and upper sensor in accordance with the media width.**

Move the bottom sensor and upper sensor by the same number of steps from the position of the triangle (▲).



The range of bottom sensor and upper sensor horizontal adjustment is 10 steps between the triangle marks (▲).

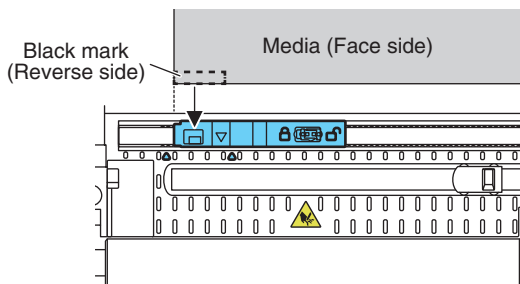
Use a pen or other object with a narrow tip to unlock the bottom sensor and then reposition it. Lock the sensor in place once the new position has been determined.

CAUTION

- The bottom sensor and upper sensor must be in alignment with each other.
- Attempting to move the sensor while still locked may damage it.

Reflective Sensor Adjustment

- **Set the bottom sensor at a position where the center of the sensor window is in alignment with the center of the black mark.**



3.14 Selecting a Paper Type

Paper type selection is available by the combination of memory switches MSW4-4 and MSW4-5 by the used of “Memory Switch Select Mode”. In addition, the following procedure is available.

1. Enter Selecting Paper Type mode.

- 1) With the top cover open, turn on the printer power switch while pressing and holding the FEED key.
The buzzer sounds and the status LED flashes in green.
- 2) Remove your finger from the FEED key briefly, and then press the FEED key three times in succession.

Next, closing the top cover causes the buzzer to sound briefly three times. The type of paper currently selected is represented by the status display LEDs.

2. Select Paper Type.

Press the FEED key to match the paper used with the paper type displayed by the status display LED.

(Refer to the table below.)

Paper	Status LED
Label media	Green
Press the FEED key ↓	
Thermal roll paper	Amber
Press the FEED key ↓	
Black mark paper	Red
Returns to label paper selection.	

3. Save the selected Paper Type to the Printer.

Open the top cover and then close it as it is.

The paper type selected is stored in the printer memory switch as shown in the table below.

The paper type setting mode finishes and the printer restarts automatically.

Paper type	MSW	
	4-4	4-5
Thermal roll paper	Thermal roll paper	-
Black mark paper	Black mark paper/label media	Black mark detection
Label media	Black mark paper/label media	Label gap detection

3.15 Calibrating the Paper Sensor

Calibrate the paper sensor to suit the actual paper you are using before using label paper or black mark paper.

Before executing this mode, use the paper selection mode or the MSW-4 and MSW4-5 settings to set the paper type you want to use.



Refer to 3.14 Selecting a Paper Type



Refer to 5.3 Manual Setting of Memory Switches

1. Enter Adjusting Paper Sensor mode.

- 1) With the top cover open, turn on the printer power switch while pressing and holding the FEED key.

The buzzer sounds and the status LED flashes in green.

- 2) Remove your finger from the FEED key briefly, and then press the FEED key four times in succession.

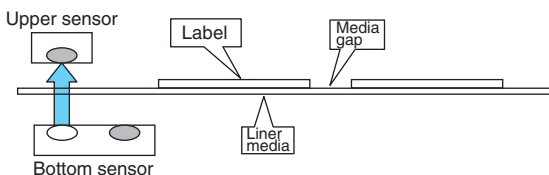
Next, closing the top cover causes the buzzer to sound briefly four times.

2. Set Paper to be adjusted to the Printer.

Setting transmissive sensor positions and media

1. Align the bottom sensor and upper sensor with each other at the same position.
2. Peel a label and set the media so that only the backing paper (glassine paper) reaches the platen roller and media sensor.

Set media with black marks so that a black mark does not cover the media sensor.

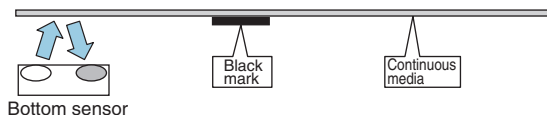


3. In this status, close the top cover.

Setting reflective sensor positions and media

1. Adjust the bottom sensor so that it is underneath the paper.
2. Set the media so that the media covers the platen roller and media sensor.

Set the media so that a section without a black mark covers the platen roller and media sensor.



3. In this status, close the top cover.

3. Adjust media sensor sensitivity and measure the paper length.

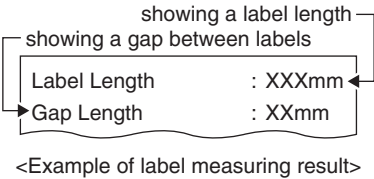
If you press the FEED key, the buzzer sounds once for a short time, the label is fed, and media sensor sensitivity adjustment and paper length measurement are performed automatically regardless of the setting of MSW4-1.

The buzzer sounds once for a long time after length measurement and then the printer restarts automatically.

The length measurement result is saved to the printer and retained in memory even if the power of the printer is turned off. The length measurement result is printed in a test print.

If the media sensor sensitivity adjustment or paper length measurement fails, the buzzer sounds and a black mark / label gaps detection error occurs.

To resolve the error, you need to turn off the power of the printer, load the media that is currently set, and start the media sensor adjustment mode again.



3.16 Precautions for Creating Applications and Practical Operations

If printing is done immediately after the paper is partially cut and torn off, the top of the next print out may be distorted.

For printing after cutting, we recommend to print with the first line empty.

If you are using a serial interface that has a slow data transmission speed, streaks may appear in the printouts when you are printing graphics or gradated text, which require large amounts of data.

USB interfaces may be susceptible to the effects of electromagnetic interference from the host or environment.

If this is the case, try using a cable with ferrite cores on both ends, which are very effective at eliminating EMI.

3.17 Download Site for Various Electronic Files

You can view support information and download the latest documents, drivers, utilities, etc. from the following site.

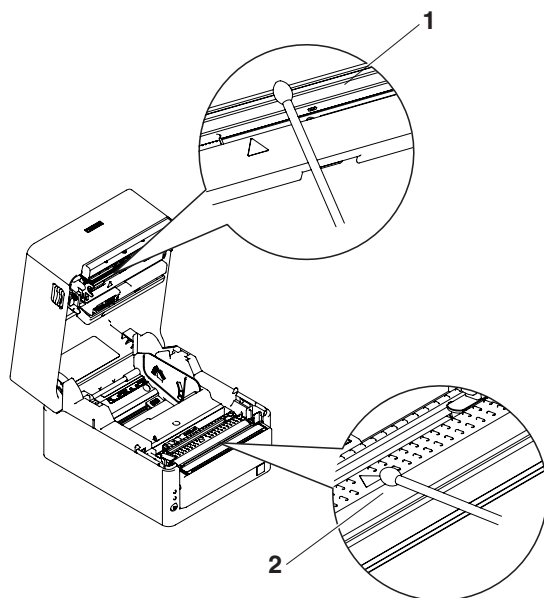
<https://www.citizen-systems.co.jp/en/printer/download/#CT-S4500>

4. MAINTENANCE AND TROUBLESHOOTING

4.1 Periodic Cleaning

Printing may not be performed normally if the thermal head, paper feed roller (platen roller), or sensor protection sheet are dirty, so cleaning should be performed regularly (every two or three months).

1. Turn off the power.
2. While pressing the cover release buttons on both sides, open the top cover.
3. If immediately after printing, leave the printer for several minutes until the thermal head cools down.
4. Use a cotton swab dipped in ethyl alcohol to wipe the heating surfaces and paper feed rollers of the thermal heads clean of paper dust, etc.



1. Thermal head
2. Paper feed roller (platen)



CAUTION

- The thermal head is hot immediately after printing. Be careful not to touch it with your hands.
- Do not touch the heating surfaces of the thermal head with bare hands or allow metals to come into contact with it.



Refer to PRECAUTIONS IN HANDLING THE PRINTER

4.2 Clearing a Cutter Error

If the auto cutter stops during the auto cutter operation with the blade of the auto cutter in the open position due to foreign matter entering, paper jamming, etc., the Status LED flashes. When a cutter error occurs, resolve the cutter error with the following procedure.

1. **Turn on the power.**
2. **While pressing the cover release button, open the top cover.**
3. **Remove any jammed paper including any scraps of paper. (Remove the paper roll that is loaded in the holder also.)**
4. **Reload the paper roll and close the paper cover.**



CAUTION

- When opening the paper cover, be careful not to touch the entrance of the blade of the auto cutter.
- The print head is very hot immediately after printing. Be careful not to touch it with your hands.
- Do not touch the print head with bare hands or metal objects.



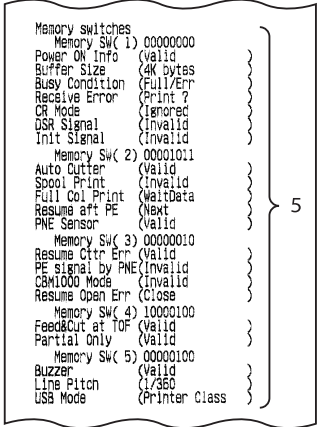
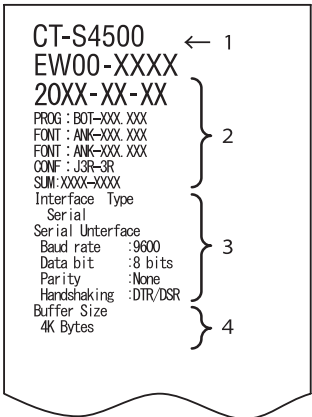
Refer to PRECAUTIONS IN HANDLING THE PRINTER

4.3 Self Test

You can use self test to check for printer problems.

Performing a self test operation

1. While paper is loaded, press and hold the FEED button and turn on the power.
2. Hold the FEED button down for about one second until the buzzer sounds. Release the button to start self test. The printer will print its model name, version, memory switch settings, and built-in fonts.



1. Printer type name
2. Firmware version
3. Interface settings
4. Buffer size
5. Memory switch settings

4.4 Hexadecimal Dump Printing

Print received data in hexadecimal. If problems such as missing or duplicated data occur, this function allows you to check whether or not the printer is receiving data correctly.

How to do hexadecimal dump printing

1. Load paper.
2. With the top cover open, turn on the printer power while pressing and holding the FEED key, and then close the top cover.
3. The printer will print “HEX dump print mode” followed by the received data printed in hexadecimal numbers and some characters.

How to stop hexadecimal dump printing

Do one of the following to stop printing.

- Press the FEED button consecutively three times
- Turn off the power
- Receive a reset command from an interface



CAUTION

- The printer prints “.” if there is no character corresponding to the data.
- None of the commands function during hexadecimal dump printing.
- If print data does not cover a complete line, press the FEED button to advance the paper.

Print example

HEX dump print mode

```
61 62 63 64 65 66 67 0A 0D 0D 0D 0D abcdefg.....  
0D 0D 0D                                     .....
```

4.5 Error Indications

- Paper end, paper near-end

The end of paper is detected in two stages, paper near-end and paper end.

For paper near-end, the status LED lights amber. Prepare to replace the paper.

For paper end, the status LED lights red and the buzzer sounds. Load a new paper roll. The buzzer may not sound depending on the memory switch setting.

- Cover open

If the cover is opened, the status LED lights red.

The buzzer may sound depending on the memory switch setting.

Do not open the cover during printing. If the cover is accidentally opened, the status LED flashes in red and the buzzer sounds. Check the paper, pull it straight out of the printer by a couple of centimeters, and then close the cover. Printing restarts. A command must be sent to restart printing depending on the memory switch setting.

- Cutter error

If the auto cutter stops due to paper jamming, etc., the status LED flashes in red and the buzzer sounds. Remove the cause and press the FEED key. If the auto cutter still does not move and the paper cover cannot be opened, refer to “Clearing a Cutter Error.”












Refer to 4.2 Clearing a Cutter Error

- Print Head Hot

Dense printing, heavy black printing, and continuous printing in a high temperature environment increase the temperature of the print head. When the print head exceeds a certain temperature, the printer stops printing and waits until the temperature of the print head decreases. At this time, the status LED flashes in red. When the temperature decreases, printing restarts automatically.

The status display for various messages is shown below.

Status	Color	Status LED	Buzzer*1
Paper near-end	Amber	Lit	No
Paper-end	Red	Lit	Yes*2
Cover open*3	Red	Lit	No*2
Cover open II*4	Red		No*2
Cutter locked	Red		Yes
Low-voltage error	Red		No
High-voltage error	Red		No
System error	Red		No
Memory error	Red		No
Print head hot	Amber		No
Black mark/label gaps detection error	Red		Yes
Wait for Macro Execution	Amber		No

Notes:

*1: Buzzer sounds when MSW5-1 (buzzer setting) is set to ON.

*2: The buzzer can be set to sound or not sound with MSW10-5 (buzzer event).

*3: Indicated when a cover is opened during standby.

*4: Indicated when a cover is opened during standby.

4.6 Paper Jams

Take care to avoid obstruction of the paper outlet and paper jamming around the outlet during printing.

If paper cannot get out of the printer, it can roll up on the platen inside the printer and cause an error.

If the paper wraps around the platen, open the paper cover and carefully pull the paper out.

4.7 Precautions for Performing Printing for Which Printing Speed Changes

When printing for which the printing speed changes is performed, white lines may be printed or paper may not be fed depending on the printing conditions. To prevent these problems, change the following memory switch settings.

1. **Enable MSW2-3 (buffering).**
2. **Increase the baud rate of MSW7-1 (serial baud rate).**
3. **Change MSW10-2 (print speed) to a lower level.**



CAUTION

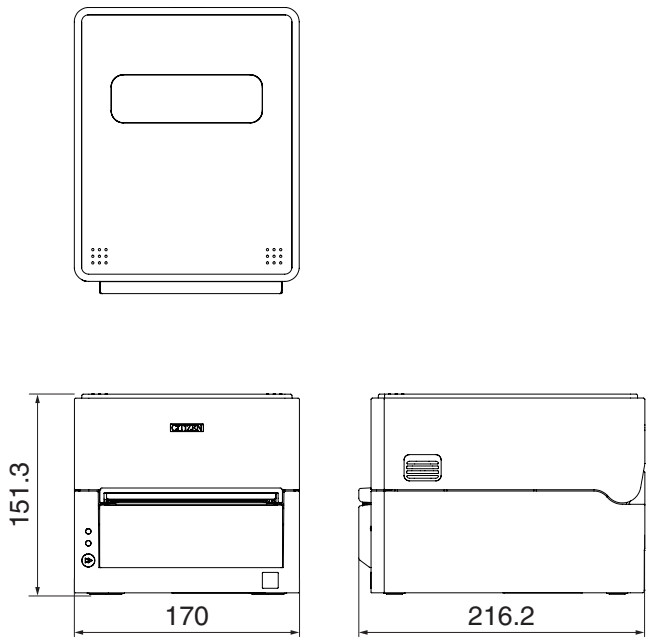
Depending on the serial interface transmission speed, ambient temperature, print data duty, and other factors, changing the above settings may not eliminate the problems.

5. OTHER

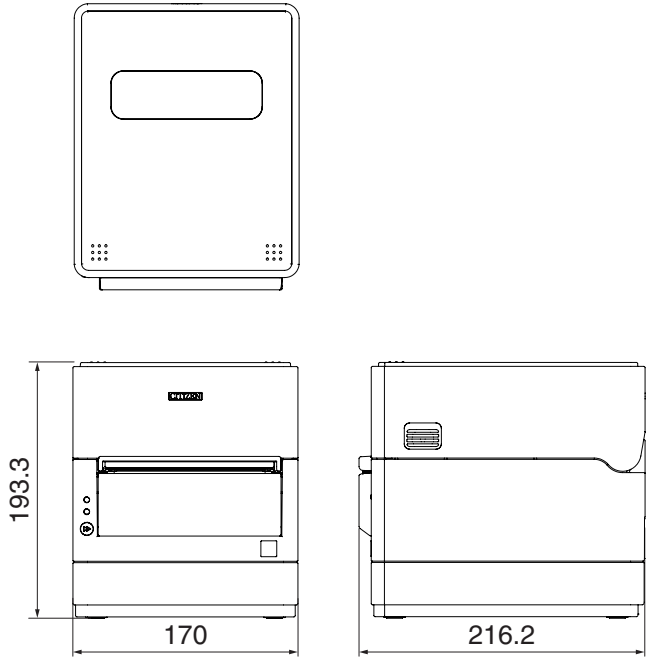
5.1 External Views and Dimensions

(Unit: mm)

Standard model



Standard AC adapter-equipped model



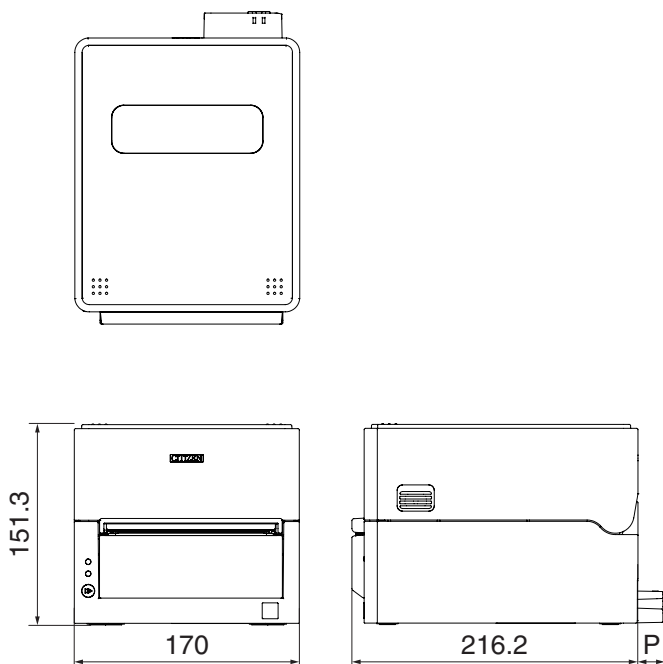
Optional interface-equipped model

Protrusion amount at back of optional interface (P)

Serial RS-232C: 1.5 mm

Ethernet, Ethernet USB host, and wireless LAN: 20 mm

Bluetooth and Bluetooth + USB host: 19 mm



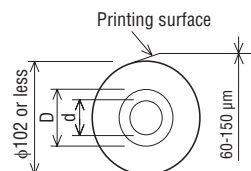
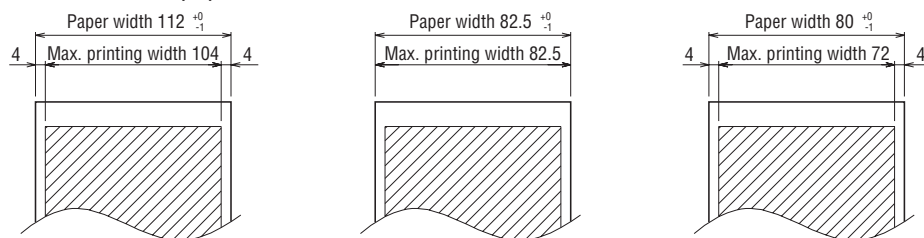
5.2 Printing Paper

Use the paper shown in the following table or paper of the same quality.

Paper type	Product name
Recommended thermal roll paper	Nippon Paper TF50KS-E, TF50KS-E2D Oji Paper PD150R, PD160R Mitsubishi Paper Mills P220AE-1
Recommended thermal label roll paper	Nippon Paper HD75 Ricoh 150LA-1P-ST

(Unit: mm)

● Thermal roll paper



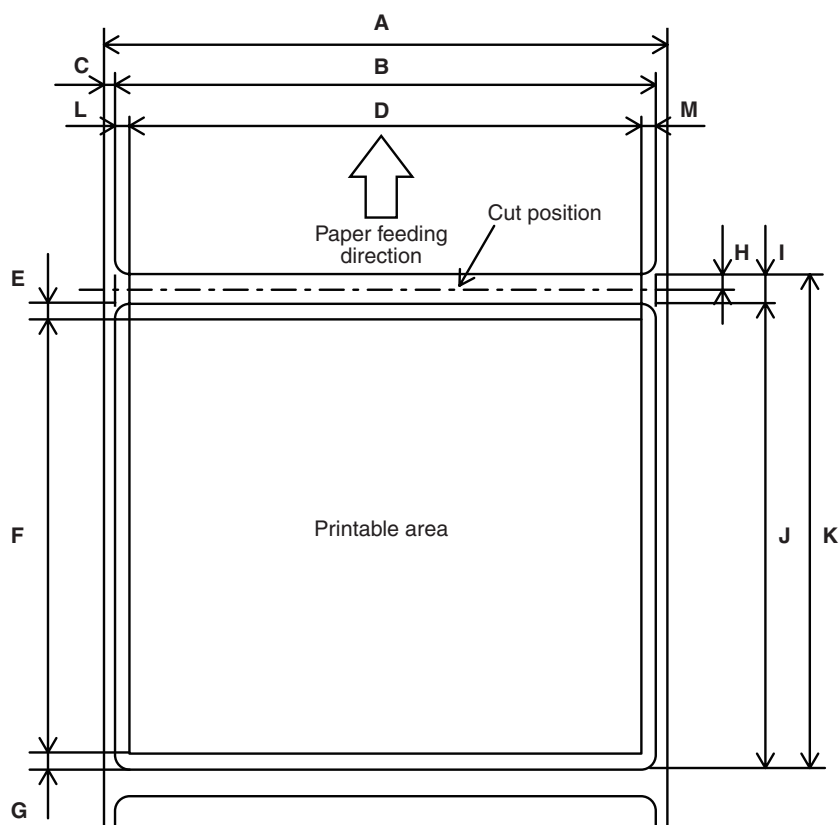
Paper thickness (μm)	60 to 85	85 to 150
Core inner diameter d (mm)	ø12 to ø25.4	ø25.4
Core outer diameter D (mm)	ø18 to ø32	ø32

CAUTION

Use thermal paper that is wound as follows:

- Not creased and fits tight to the core.
- Not folded.
- Not glued to the core.
- Rolled with the printable side out.

● Label media



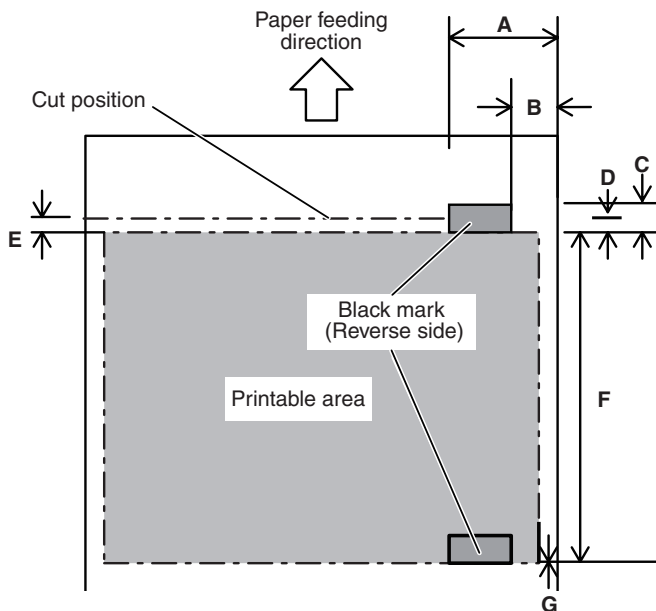
(Unit: mm)

Mark	Item	Dimensions
A	Label backing width	58 to 112 0/-1
B	Label width	54 to 108±0.5
C	Left edge of label	2±0.5
D	Print width	45 to 104
E	Top margin	2+2/-2
F	Print length	21 to 296
G	Bottom margin	2+2/-2
H	Cut position between labels	2 or more
I	Gap between labels	4 to 30
J	Label length	25 to 300
K	Label pitch	1+J
L	Left margin	2±1
M	Right margin	2±1

CAUTION

- Make sure the cut position is between labels.
 - Cut the backing paper. Do not cut label paper (tack paper).
 - Always re-calibrate the paper sensor whenever you change the label backing paper type.
 - Do not use full-surface label media.
 - Rolled with the printable side out.
 - For roll paper end processing, do not glue the roll paper to the core.
- Also, do not fold the end.

● Black mark paper



(Unit: mm)

Mark	Item	Dimensions	
		Minimum	Maximum
A	Left edge of black mark	15	66.5
B	Right edge of black mark	0	51.5
A-B	Black mark width	15	-
C	Black mark height	4	17.8
D	Cut position in black mark	Center in height direction ± 2	
E	Top margin	$2+2/-2$	
F	Black mark pitch	30 to 300	
G	Bottom margin	0 ± 1	



CAUTION

- The black mark PCS value should be at least 0.90.
- Concerning the accuracy of feeding with black mark detection, allow for an error of ± 2 mm from the reference print position, or for a maximum error of -5% from the value set for the print length.
- The print area is as shown in the illustration above when black marks are being used.
Make sure to allow for adequate margins.
The printer will perform a page skip operation if the print data runs outside of the print area.
- When pre-printing on black mark paper, print outside of the area detected by the black mark sensor.

5.3 Manual Setting of Memory Switches

Memory switches are used to set various printer settings. Memory switches can be set manually, or by utilities or commands. This section explains how to perform manual settings.

For information on how to set the memory switches using commands, please refer to the Command Reference.

Individual setting mode

Set the memory switches individually.

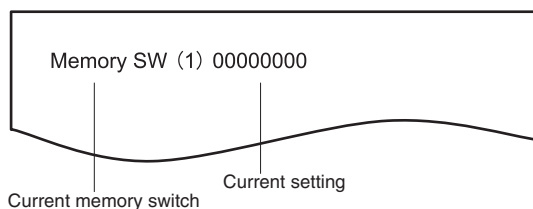
Do the settings while confirming the memory switch function and settings on the print-out.

1. **Load paper.**
2. **With the top cover open, turn on the printer power while pressing and holding the FEED key.**
3. **Press the FEED button twice and close the paper cover.**

The printer enters the mode for setting memory switches individually.

The printer prints "Memory SW (1)" and the current setting, 0 (off) or 1 (on).

(The current settings for memory switches 7 to 13 are not printed.)



4. **Press the FEED button.**

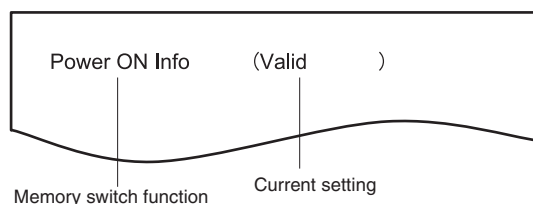
Each press of the FEED button cycles through the list of memory switches in the following sequence: "Memory SW (1)" > "Memory SW (2)" > ... "Memory SW (11)" or "Memory SW (13)" > "Save To Memory" > "Memory SW (1)".

Press the FEED button until the number for the memory switch you want to change is printed.

5. **Press the FEED button for at least two seconds.**

A setting for the memory switch is printed, through the cycle, each time the FEED button is pressed for at least two seconds.

Press the FEED button for at least two seconds to cycle through the list until the function of the memory switch you want to change is printed.



6. Press the FEED button.

A setting is printed each time the FEED button is pressed in order through the cycle.
When the current settings are printed, the COVER LED lights.
Press the FEED button until the setting you want is printed.

7. Press the FEED button for at least two seconds.

The selected settings are set.
The next memory switch function and settings are printed.

8. Repeat steps 5 to 7 to change different functions for the current memory switch number.

9. Open the paper cover and close it.

The changed memory switch settings are printed.

10. Repeat steps 4 to 9 to change functions for a different memory switch number.

11. Press the FEED button until “Save To Memory” is printed.

12. Press the FEED button for at least two seconds.

The changed memory switch settings are saved and a list of them is printed.
The printer exits individual setting mode when printing is finished.

Memory switch initialization

Set all the memory switches to the factory settings.

1. Do steps 1 through 3 of the procedure to enter individual setting mode.

2. Press the FEED button until “Save To Memory” is printed.

3. Open the paper cover.

4. Press the FEED button for at least two seconds.

All memory switches change to the factory settings.

5. Close the paper cover.

The function of each memory switch is shown in the following table. (Shaded values are factory settings.)

Switch no.	Function	OFF	ON
MSW1-1	Power ON Info	Valid	Not Send
MSW1-2	Buffer Size	4 Kbytes	45 bytes
MSW1-3	Busy Condition	Full/Err	Full
MSW1-4	Receive Error	Print"?"	No Print
MSW1-5	CR Mode	Ignored	LF
MSW1-6	Reserved	Fixed	—
MSW1-7	DSR Signal	Invalid	Valid
MSW1-8	INIT Signal	Invalid	Valid
MSW2-1	Reserved	—	Fixed
MSW2-2	Auto Cutter	Invalid	Valid
MSW2-3	Spool Print	Invalid	Valid
MSW2-4	Full Col Print	LineFeed	WaitData
MSW2-5	Resume aft PE	Next	Top
MSW2-6	Reserved	Fixed	—
MSW2-7	Reserved	Fixed	—
MSW2-8	PNE Sensor	Valid	Invalid
MSW3-1	Resume Ctrr Err	Valid	Invalid
MSW3-2	PE signal by PNE	Valid	Invalid
MSW3-3	Reserved	Fixed	—
MSW3-4	Reserved	Fixed	—
MSW3-5	Reserved	Fixed	—
MSW3-6	Reserved	Fixed	—
MSW3-7	CBM1000 Mode	Invalid	Valid
MSW3-8	Resume Open Err	Close	Command
*1MSW4-1	P.Length	Auto Measure	Command
*1MSW4-2	Power on TOF	Invalid	Valid
*1*2MSW4-3	Feed&Cut at TOF	Invalid	Valid
MSW4-4	Paper Select	Thermal Roll	BM.P/Lbl.P
MSW4-5	Position detect	Black mark	Label
MSW4-6	Measure at Close	Invalid	Valid
MSW4-7	Reserved	Fixed	—
*3NSW4-8	Partial Only	Invalid	Valid
MSW5-1	Buzzer	Valid	Invalid
MSW5-2	Line Pitch	1/360	1/406
MSW5-3	USB Mode	Virtual COM	Printer Class
MSW5-4	Reserved	Fixed	—
MSW5-5	Reserved	Fixed	—
MSW5-6	Reserved	Fixed	—
MSW5-7	Reserved	Fixed	—
MSW5-8	Reserved	Fixed	—

Switch no.	Function	OFF	ON
MSW6-1	Act. For Driver	Invalid	Valid
MSW6-2	Character Space	Invalid	Valid
MSW6-3	USB Power Save	Invalid	Valid
MSW6-4	Reserved	Fixed	—
MSW6-5	Reserved	Fixed	—
MSW6-6	Reserved	Fixed	—
MSW6-7	Reserved	Fixed	—
MSW6-8	Reserved	Fixed	—

Switch no.	Function	Initial setting	Setting value
MSW7-1	Baud Rate	9600 bps	1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps
MSW7-2	Data Length	8bits	7bits, 8bits
MSW7-3	Stop Bit	1bit	1bit, 2bits
MSW7-4	Parity	NONE	NONE, ODD, EVEN
MSW7-5	Flow Control	DTR/DSR	DTR/DSR, XON/XOFF
MSW7-6	DMA Control	Valid	Valid, Invalid
MSW7-7	VCom Protocol	PC Setting	PC Setting, DTR/DSR, XON/XOFF
MSW8-1	Print Width	832 dots	360 dots, 384 dots, 420 dots, 432 dots, 436 dots, 512 dots, 546 dots, 576 dots, 660 dots, 720 dots, 832 dots, user defined
MSW8-3	Top Margin	12 mm	3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, 10 mm, 11 mm, 12 mm
MSW8-4	Line Gap Reduce	Invalid	Invalid, 3/4, 2/3, 1/2, 1/3, 1/4, 1/5, ALL
MSW8-5	Reduced Char V/H	100% / 100%	100% / 100%, 75% / 100%, 50% / 100%, 100% / 75%, 75% / 75%, 50% / 75%
MSW8-6	Auto Side Shift	Invalid	Invalid, 1 dot, 2 dots, 3 dots, 4 dots, 5 dots, 6 dots, 7 dots
MSW9-1	Code Page	PC437	Katakana, PC437, PC737, PC850, PC852, PC857, PC858, PC860, PC862, PC863, PC864, PC865, PC866, WPC1251, WPC1252, WPC1253, WPC1255, WPC1258, Space page, TCVN3, TCVN3 Caps, Thai Code11 1Pass, Thai Code11 3Pass, Thai Code18 1Pass, Thai Code18 3Pass
MSW9-2	Int'Char Set	U.S.A	USA, France, Germany, England, Denmark, Sweden, Italy, Spain, Japan, Norway, Denmark 2, Spain 2, Latin America, Korea, Croatia, China, Vietnam
MSW9-4	Kanji code	Invalid	Disabled, JIS (Japan), SJIS: CP932 (Japan), SJIS: X0213 (Japan), GB18030 (China), KS Hangul (South Korea), EUC Hangul (South Korea), BIG5-HKSCS

Switch no.	Function	Initial setting	Setting value
MSW10-1	Print Density	100 %	70 %, 75 %, 80 %, 85 %, 90 %, 95 %, 100 %, 105 %, 110 %, 115 %, 120 %, 125 %, 130 %, 135 %, 140 %
MSW10-2	Print Speed	Level 9	Level 5, Level 6, Level 7, Level 8, Level 9
MSW10-4	Old Command	Invalid	Invalid, CBM1, CBM2
MSW10-5	Buzzer Event	Not By C. Open	All Event/Error, Not by C.Open, Not by C.Open/PE
MSW10-6	Buzzer Sound	Tone 2	Tone 1, Tone 2, Tone 3, Tone 4
MSW13-1	Security/Target	Low/All	Low/All, Mid/All, Mid/Paired only, Hi/All, Hi/Paired only
MSW13-5	BT Device Scan	Discoverable	No Response, Discoverable
MSW13-6	Auto Reconnect	Valid	Valid Invalid, Valid

*1: These settings are enabled only when MSW4-4 is set to black mark paper / label paper.

*2: If MSW2-2 is disabled, the cut action is not performed regardless of the setting of MSW4-3.

*3: When black mark paper / label paper is used (MSW4-4 is ON), the media is fully cut regardless of the setting of MSW4-8. Furthermore, if the length of the label to be used is 37 mm or less, feeding and cutting is performed when the power turns on even if MSW4-2 is OFF.

5.4 Selecting and Setting the Cut Action

Use the following procedure to select and set the cut action for when a cut command is received.

Changing between forced partial and forced full is possible only with this procedure. Changing between cutting as commanded and forced partial (forced full) is possible also with memory switch MSW4-8.

1. Switch to the cut action selection mode.

1. Load the media and open the top cover.

Turn on the power switch of the printer while pressing the FEED key.

The buzzer sounds and the status LED flashes in green at this time.

2. Press the FEED key once.

When you close the top cover, the buzzer sounds once for a short time, and the printer switches to the cut action selection mode.

2. Select the cut action.

Press the FEED key to select the cut action.

The cut action types are shown in the following table. The cut action can be checked from the status LED.

Cut action	Status LED	Corresponding MSW4-8 selection option
Cutting as commanded	Green	Disabled
Press the FEED key ↓		
Partial cut only	Amber	Enabled (forced partial)
Press the FEED key ↓		
Full cut only	Red	Enabled (forced full)
Press the FEED key ↓		
Returns to cutting as commanded (green)		

3. Set the selected cut action.

Open and then close the top cover to save the selected cut action and end the cut action selection mode.

When the mode ends, the printer restarts automatically.



CAUTION

When using thermal label roll paper or using thermal roll paper with a thickness of 85 µm or more, set the cut action to forced full.

CITIZEN SYSTEMS AMERICA CORPORATION

1411 West 190th Street, Suite 675 Gardena, CA 90248

Tel: (310) 781-1460 Fax: (310) 781-9152

<http://www.citizen-systems.com>

CITIZEN SYSTEMS EUROPE GmbH

Otto-Hirsch-Brücken 17
70329 Stuttgart
Germany

Tel: +49 (0) 711 49032-0

Fax: +49 (0) 711 49032-45

<http://www.citizen-europe.com>

Elizabeth House, 56-60 London Road
Staines-Upon-Thames, TW18 4HF
United Kingdom

Tel: +44 (0) 20 8893 1900

Fax: +44 (0) 20 8893 0080

CITIZEN SYSTEMS JAPAN CO., LTD.

6-1-12, Tanashi-cho, Nishi-Tokyo-shi Tokyo, 188-8511. Japan

Tel: +81 (0) 42 468 4608 Fax: +81 (0) 42 468 4687

<https://www.citizen-systems.co.jp/printer/>