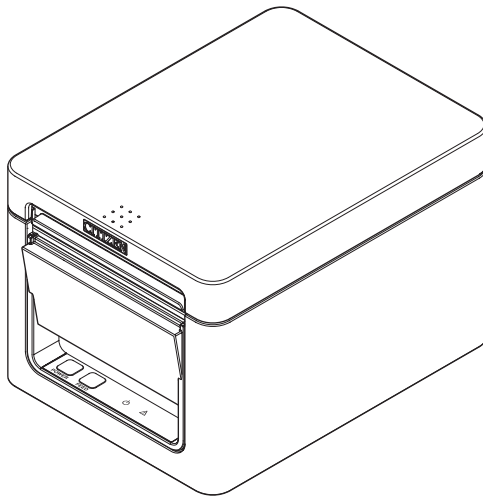


CITIZEN

LINE THERMAL PRINTER

MODEL CT-D150 User's Manual



CITIZEN SYSTEMS JAPAN CO., LTD.

Radio Wave Interference Self-Regulation

This device is a Class A device.

Using this device in a residential environment may cause radio wave interference. In this case, the user may be required to take an appropriate measure.

VCCI-A

GENERAL PRECAUTIONS

- 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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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:**
 - * Gas piping
- A gas explosion could result.
 - * 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:

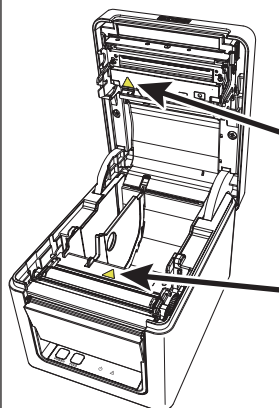
- Do not plug or unplug the power cord with a wet hand.
- Use the printer only at the specified supply voltage and frequency.
- Use only the specified AC adapter with the printer.
- Use only the power cord that comes with the printer, and never use the supplied power cord with another device.
- Check 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 alcohol, 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

The CT-D150 line thermal printer series is designed for use with a broad array of terminal equipment including data, POS, and kitchen terminals.

These printers have extensive features so they can be used in a wide range of applications.

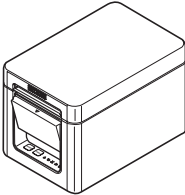
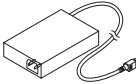
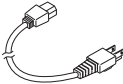
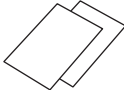
1.1 Features

- High-speed printing at up to 250 mm/sec possible
- Stylish design
- Compact size with the lowest possible height
- The front paper eject structure enables use where the height is restricted
- Compliant with IPX1 for drip-proof capabilities *
- Support for paper widths of 80 mm and 58 mm
- High-speed cutter employed
- Long Life Printing (LLP) function to increase the head life available
- Dual interfaces (USB + serial / Ethernet + USB)
- Built-in drawer kick interface
- USB-linked power OFF function available
- Paper saving function available
- 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
- Various customizations using the memory switches possible
- User created characters and logos can be saved in the user memory
- Support for barcodes including 2D barcodes

*: The product has been checked to determine that vertically falling drops of water will have no harmful effect, but the product is not guaranteed to be completely drip-proof.

1.2 Unpacking

Make sure the following items are included with your printer.

NAME	QUAN-TITY	ILLUSTRATION
Printer	1	
AC Adapter (37AD5)	1	
AC power cord*	1	
Quick Start Guide	2	

*The specifications vary according to destination

1.3 Model Classification

Model numbers indicate printer features according to the following system.

CT - D150 RS C - BK

1
2
3
4

1. Model name
2. Interface
RS: USB + serial
ET: Ethernet+USB
3. Market
A: Asia
C: China
4. 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-D150			
Print method	Line thermal dot print method			
Print widths	72 mm/576 dots, 68.25 mm/546 dots, 64 mm/512 dots, 52.5 mm/420 dots, 48.75 mm/390 dots, 48 mm/384 dots, 45 mm/360 dots, factory default 72 mm			
Dot density	8 × 8 dots/mm (203 dpi)			
Print Speed	250 mm/sec (maximum speed, print density level 100%, 2000 dot lines/sec)			
Number of print columns *1	Font	Maximum number of characters (columns) / 80 mm	Maximum number of characters (columns) / 58 mm	Dot configuration (dots)
	Font A	48	35	12 × 24
	Font B	64	46	9 × 24
	Font C	72	52	8 × 16
	Kanji font A	24	17	24 × 24
	Kanji font C	36	26	16 × 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, Kanji font A:3.00×3.00 mm, Kanji font C:2.00×2.00 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			

Item	Specifications
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	Roll paper: 80 mm x max. ϕ 83 mm Paper thickness: 53 to 85 μ m (paper roll inner diameter 12 mm / outer diameter 18 mm)
Interface	USB + serial / Ethernet + USB
Cash drawer kick-out	Supports 2 cash drawers
Input buffer	4 K bytes/45 bytes
Supply voltage	DC 24 V \pm 5%
Power consumption	Approximately 2.0 A (average), approximately 0.1 A (standby)
AC Adapter (37AD5)	Rated input: AC 100 to 240 V, 50/60 Hz, 150 VA Rated output: DC 24 V, 2.1 A
Weight	Approximately 1.3 kg
Outside dimensions	125 (W) \times 165 (D) \times 108 (H) mm
Operating temperature and humidity	5 to 45°C, 10 to 90% RH (no condensation)
Storage temperature and humidity	-20 to 60°C, 10 to 90% RH (no condensation)
Reliability	Print head life: 150 km, 300 million pulses (room temperature, room humidity, specified recommended paper, specified paper thickness), Auto cutter life: 1.5 million cuts (3-inch), 1 million cuts (2-inch) (room temperature, room humidity, specified recommended paper, specified paper thickness)
Safety standard *3	UL, cUL, FCC, IC, CE, UKCA *4

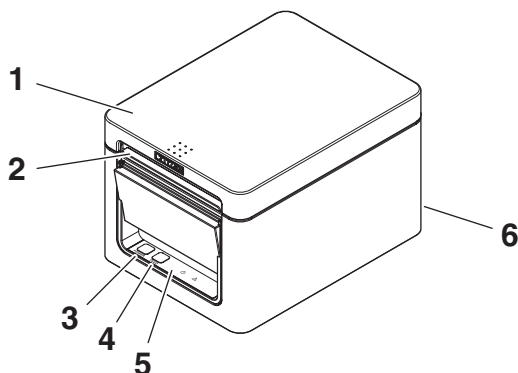
Notes:

- *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: This standard applies when our AC Adapter (37AD5) is used.
- *4: 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



1. Paper cover

Open to load paper.

Also open to clear a cutter error.

* The paper cover cannot be used for manual cutting.



Refer to 4.2 Clearing a Cutter Error

2. Cover open lever

Use to open the paper cover.

3. POWER button

Hold down two or three seconds to switch power on or off.

4. FEED button

Press this button to feed paper.

In case of a cutter error, press the FEED button with the paper cover closed after removing the cause.

The printer enters the mode for setting memory switches and running self test.



Refer to 4.3 Self Test



Refer to 5.3 Manual Setting of Memory Switches



5. Operation panel

6. Rear connectors

Operation panel



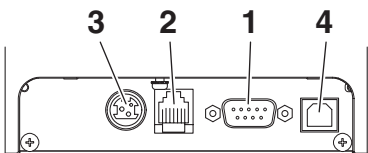
Two LEDs and two keys are placed on the operation panel.

	LED name	Description
	POWER LED	Turns on when the power is turned on and turns off when the power is turned off. Flashes when a memory error occurs and when data is being received.
	ERROR LED	Flashes when the print head is hot, when the paper cover is open, when a cutter error occurs, and so on.

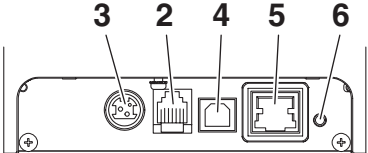


Refer to 4.5 Error Indications

Rear connectors



USB + serial



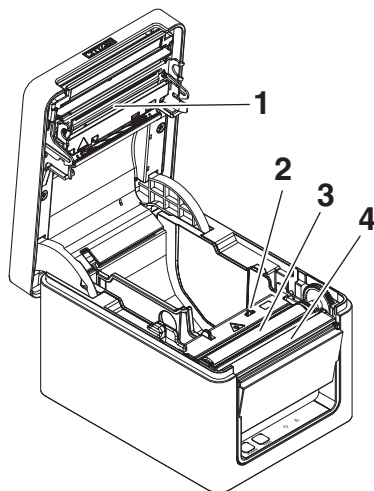
Ethernet + USB

1. Serial connector (serial, USB, etc.)
Connect to the interface cable.
2. Cash drawer kick-out connector
Connect to the cable from the cash drawer.
3. Power connector
Connect to the AC adapter cable.
4. USB connector
5. Ethernet connector
6. Panel button
The current configuration information can be printed.
For details, refer to “Ethernet (LAN) Interface” in Section 3.3.



Refer to 3.3 Ethernet (LAN) Interface

2.2 Inside the Paper Cover



1. Print head (thermal)
Prints characters and graphic data on paper (paper rolls).
2. Paper end (PE) sensor
Detects when there is no paper. Printing stops when this sensor detects there is no paper.
3. Platen
Feeds the paper.
Do not remove the platen except to do maintenance.
4. Auto cutter
Cuts the paper.



Refer to 5.3 Manual Setting of Memory Switches

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 the POWER button while the state of USB-linked power OFF 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.



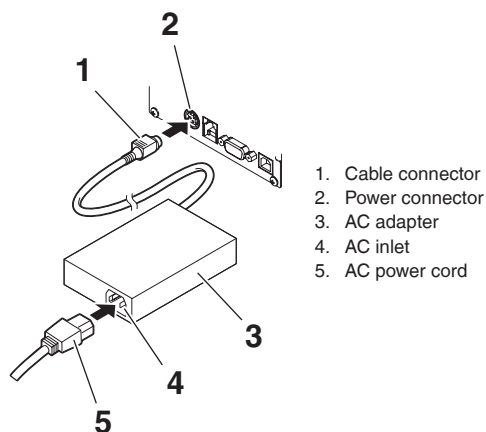
CAUTION

- 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

1. Turn off the power.
2. Connect the power connector to the AC adapter cable connector.
Next, connect the AC power cord to the AC inlet, and insert the plug into an electric outlet.

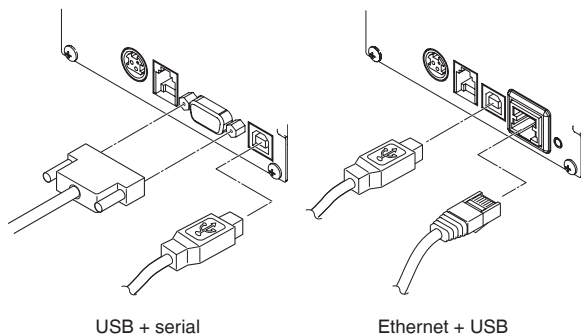


CAUTION

- 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.
- Be sure to unplug the AC power cord when connecting the cable connector to the power connector. If the AC power cord is left plugged into the electric outlet, the 24 V and GND terminals of the cable connector may come into contact with the screw head or other metal parts and cause a short circuit, resulting in malfunction of the AC adapter.

3.2 Connecting Interface Cables

1. Turn off the power.
2. Orient the interface cable correctly and insert it into the interface connector.



CAUTION

- When disconnecting the cable, always hold the connector.
- 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.
- 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.

Use a serial cable with the connection layout shown below.

9-pin (female) - 9-pin (female) cable
PC Printer

Signal	Pin		Pin	Signal
RXD	2		2	RXD
TXD	3		3	TXD
DTR	4		4	DTR
SG	5		5	SG
DSR	6		6	DSR
RTS	7		7	RTS
CTS	8		8	CTS

CAUTION

Place the interface cable so that people do not trip on it.

3.3 Ethernet (LAN) Interface

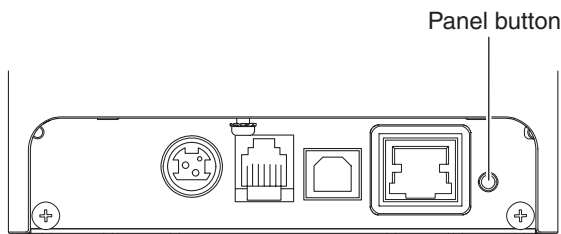
The following describes an overview of the Ethernet (LAN) interface.

For details on this function, refer to a separate manual.

Note that the Ethernet (LAN) interface is not available in the USB + serial model.

Panel button operation

The function of the panel button is as follows.



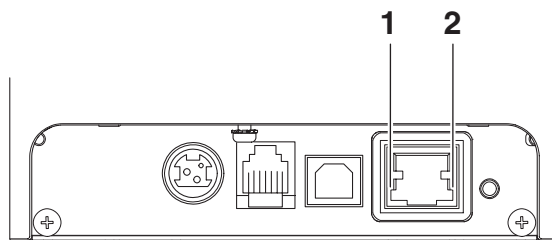
- Printing network setup information
Press the panel button.
- Returning to factory settings
Hold down the panel button. A buzzer* will sound and then hold down the panel button again within 3 seconds. It returns network settings to its factory settings.
* Depending on settings, the buzzer may not sound.

CAUTION

- The board will automatically restart after this operation is complete.
- If settings are configured to obtain an IP address from a DHCP server automatically, the new IP address may be different from the previous one.

LED Functions

The tables below explain how to interpret LED indications.



1. Network transmission speed

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

2. Network status

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

Changing network settings

You can use a web browser to access a special settings page to check and change board settings.

- Access the special settings page
- 1. Use a web browser to access the URL of the special settings page. Enter the IP address assigned to the printer as the part of URL. (Example: For an IP address of 169.254.1.10, input: <http://169.254.1.10>.)
- 2. This displays the page to display the current status.

Print Server Configuration	
Host name	no name
MAC address	00:0D:AC:FF:00:D3
Current TCP/IP settings	
IP address from DHCP	On (Enable)
IP address	192.168.0.2
Subnet mask	255.255.255.0
Gateway IP address	192.168.0.1
Print settings	
Print port number	9100
Time-out duration for print data	60 [Second]
<input type="button" value="Change Settings"/>	

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3. Press the [Change Settings] button to enter the following Change Settings screen. For details, refer to a separate manual.

Print Server Configuration

Host name

no name

0-31[Characters]

MAC address

00:0D:AC:FF:00:D3

TCP/IP settings

IP address from DHCP

☒ Enable ☐ Disable

IP address

169.254.1.10

When DHCP not operating

Subnet mask

255.255.0.0

When DHCP not operating

Gateway IP address

0.0.0.0

When DHCP not operating

Print settings

Print port number

9100

Time-out duration for print data

60

Seconds

Save Settings

Cancel changes

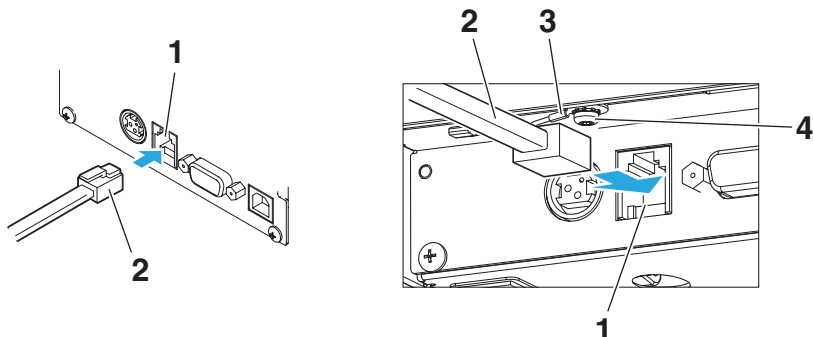
Back to Home

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3.4 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.



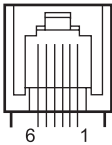
1. Cash drawer kick-out connector
2. Cash drawer kick-out cable connector
3. Ground wire
4. Screw for ground wire



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)	

Connector used: TM5RJ3-66 (Hirose) or equivalent

Applicable connector: TM3P-66P (Hirose) or equivalent

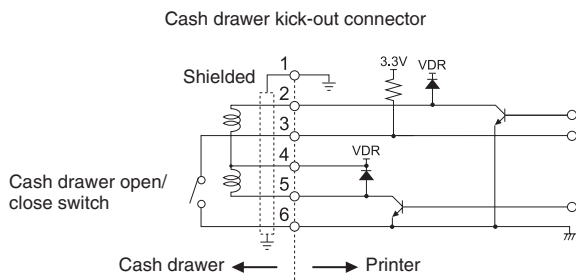
(2) Electric characteristics

- 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

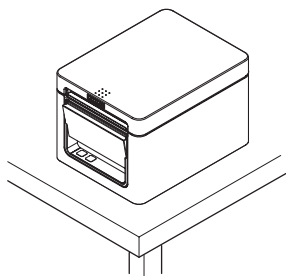


CAUTION

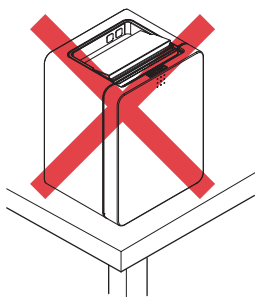
- Cash drawers 1 and 2 cannot be operated at the same time.
- The solenoid used for the cash drawer should be 24 Ω or more. Do not allow the electric current to exceed 1 A. Excessive current could damage or burn out the circuits.

3.5 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



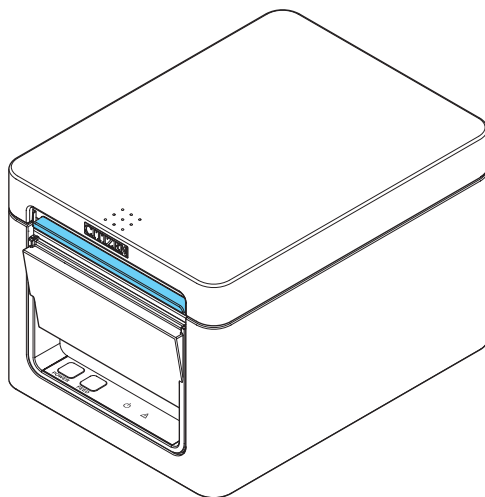
CAUTION

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.**

3.6 Loading Paper

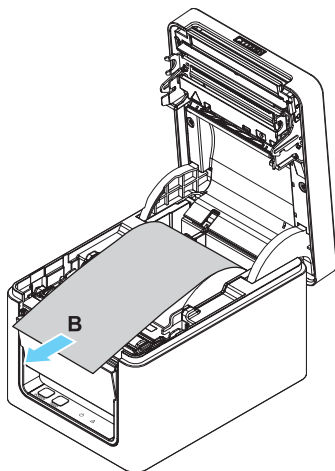
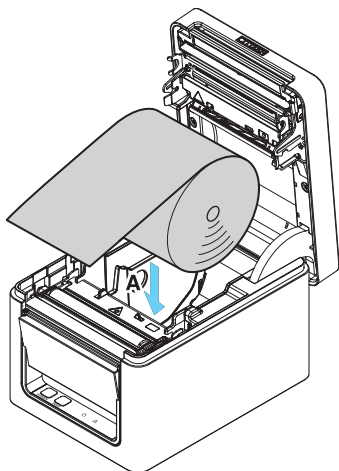
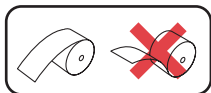
1. Turn on the power.
2. Flip up the cover open lever to open the paper cover.



CAUTION

When pressing up on the lever, take care that you do not pinch your fingers in the gap above the top of the lever.

3. Load the paper roll so that the printable side of the paper is facing up, as shown by arrow A.
4. Pull a few centimeters of paper straight out in the direction of arrow B.
5. Close the paper cover until you hear a click. Paper is fed and cut automatically (by the factory setting).



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.
- Always pull a few centimeters of paper straight out of the printer if you open the paper cover while paper is loaded.
- Press on the center of the paper cover to close it securely.
- Be careful of paper cuts while loading the paper.



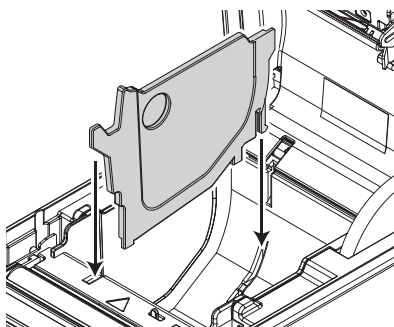
Refer to PRECAUTIONS IN HANDLING THE PRINTER

3.7 58-mm Width Roll Paper Partition (Option)

1. Turn off the power.
2. Flip up the cover open lever to open the paper cover.
3. Mount the supplied partition to the groove. When using the 80-mm width roll paper, remove the partition.
4. Change the print area width while referring to “Manual Settings for the Memory Switches” in Section 5.3.



Refer to 5.3 Manual Setting of Memory Switches



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.
- When using 58-mm wide paper, use the printer as a dedicated printer for that paper size. The printer may not correctly feed paper or print if it is switched to 80-mm wide paper after using 58-mm wide paper.



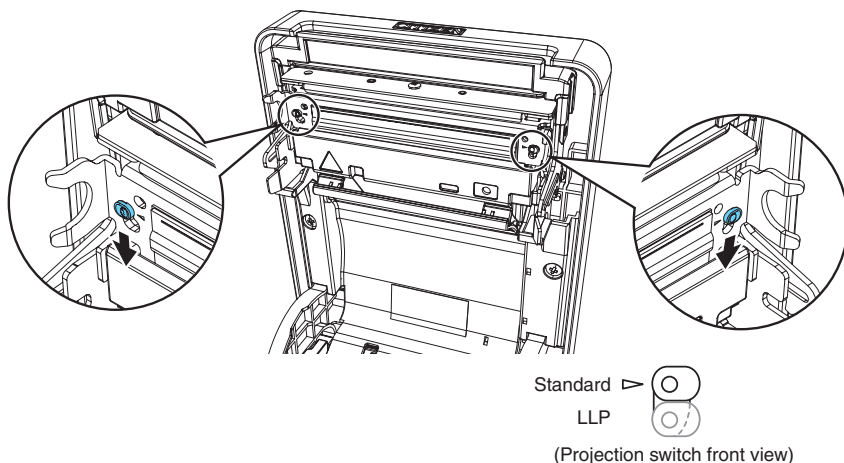
Refer to PRECAUTIONS IN HANDLING THE PRINTER

3.8 Setting the Long Life Printing (LLP) Function

It can extend the abrasion life of the head-resistant by reducing the pressure to press the print head against the paper.

The Long Life Printing (LLP) function can be enabled by changing the position of the projection switch inside the paper cover.

1. **Turn off the power.**
2. **Flip up the cover open lever to open the paper cover.**
3. **Flip down the projection switches on both sides in the arrow direction with the tip of a screwdriver.**
Flip down the projection switches on the left and right from the standard position to the LLP position one by one.
4. **Close the paper cover firmly until it clicks.**



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.
- The set position of the projection switches on the left and right must be identical.
- When this setting is enabled, the printing density may decrease. If necessary, increase the printing density or use a paper with excellent coloring properties.
- This function reduces physical friction by reducing the head pressure and does not guarantee friction resistance for all bad quality papers.



Refer to PRECAUTIONS IN HANDLING THE PRINTER

3.9 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.

3.10 Download Site for Various Electronic Files

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

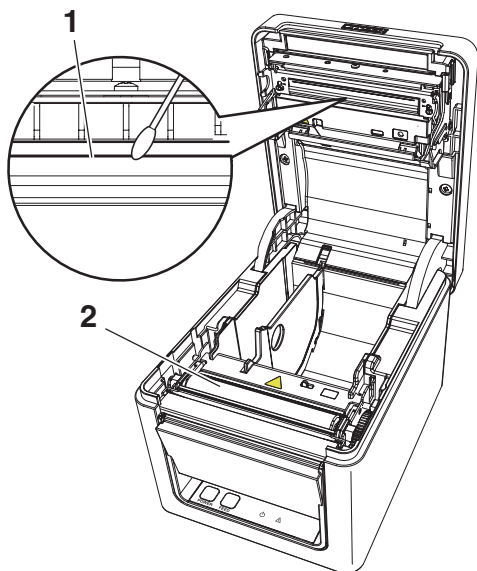
<https://www.citizen-systems.co.jp/en/printer/download/#CT-D150>

4. MAINTENANCE AND TROUBLESHOOTING

4.1 Periodic Cleaning

A dirty print head or platen may reduce printing quality or cause malfunctions. We recommend cleaning the printer periodically (every 2 to 3 months) as shown below.

1. Turn off the power.
2. Flip up the cover open lever to open the paper cover.
3. Wait a few minutes until the print head cools.
4. Use a cotton swab dampened with ethyl alcohol to wipe off any dirt and dust that is on the print head and platen.



1. Print head
2. Platen

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

4.2 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 ERROR LED flashes.

When a cutter error occurs, resolve the cutter error with the following procedure.

1. **Turn off printer power.**
2. **Flip up the cover open lever to open the paper 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.**
5. **Turn on the power.**



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.



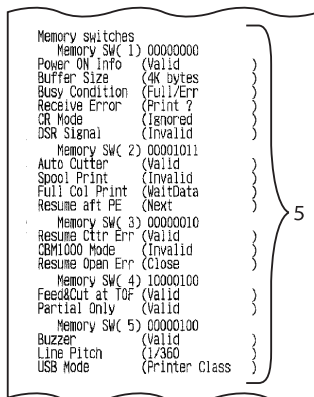
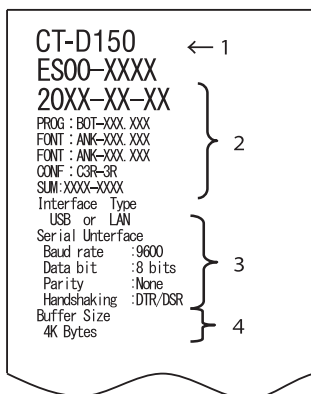
Refer to PRECAUTIONS IN HANDLING THE PRINTER

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. While the paper cover is open, hold down the FEED button as you turn on printing power. Keep FEED button pressing until the POWER LED starts to flash, and then close the paper 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

If the paper ends, the ERROR LED lights and a 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 ERROR LED lights.

The buzzer may also sound depending on the memory switch setting.

Do not open the cover during printing. If the cover is accidentally opened, the ERROR LED flashes. 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 ERROR LED flashes.

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. The ERROR LED flashes during this time. When the temperature decreases, printing restarts automatically.

The status display for various messages is shown below.

Status	POWER LED (green)	ERROR LED (red)	Buzzer sound *3
Paper End	Lit	Lit	Yes
Paper cover is open *1	Lit	Lit	No
Paper cover is open *2	Lit		No
Cutter Error	Lit		Yes
Memory Error		—	No
Print Head Hot	Lit		Yes
Low-voltage Error	Lit		No
High-voltage Error	Lit		No
System Error	Lit		No
Wait for Macro Execution	Lit		No

Notes

*1: This message is displayed when the paper cover is opened in standby mode.

*2: This message is displayed when the paper cover is opened during paper feeding or printing.

*3: The buzzer sounds when MSW5-1 (buzzer setting) is enabled. However, the condition that the buzzer sounds varies depending on the MSW5-1 and MSW10-5 settings.

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.**



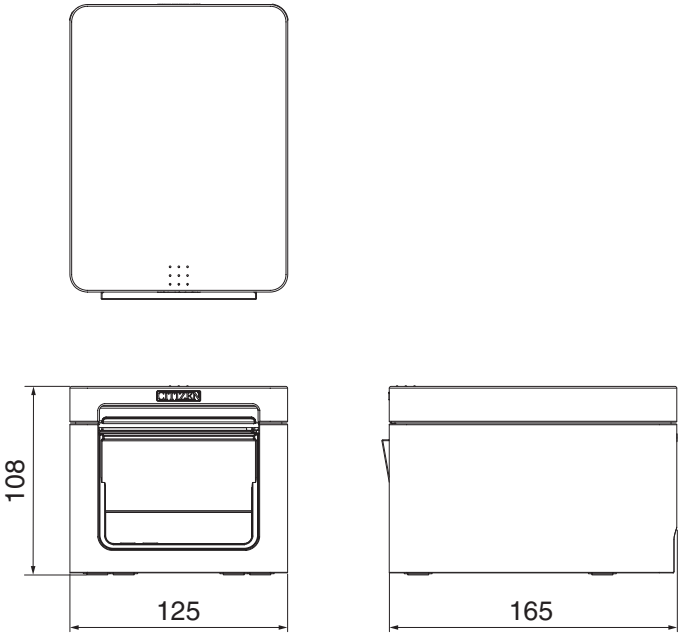
CAUTION

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)

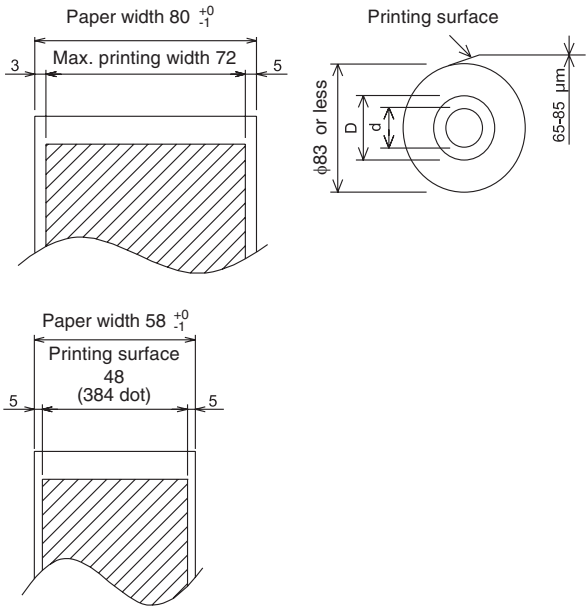


5.2 Printing Paper

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

Paper type	Product name
Recommended thermal roll paper	Nippon Paper TP50KR-2Y, TP50KJ-R, TF50KS-E2D Oji Paper PD150R, PD160R, PD160R-63 Mitsubishi Paper Mills HP220AB-1, F230AA, P220AB Koehler KT48-FA

(Unit: mm)



Paper thickness (μm)	53 to 85
Core inner diameter d (mm)	φ12
Core outer diameter D (mm)	φ18



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.

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.

Quick setting mode

The settings for the memory switches for a replacement printer's manufacturer, model, paper width, and character spacing can be set at the same time to the optimum settings.

Do the settings while confirming the selected items on the printout.

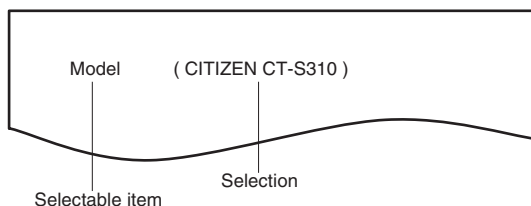
1. Load paper.

2. While the paper cover is open, press and hold the FEED button and turn on the power.

3. Press the FEED button three and close the paper cover.

The printer enters memory switch quick setting mode.

The selectable item "Model" and the selection are printed.



4. Press the FEED button.

A selection is printed in order through the cycle each time the FEED button is pressed.

Press the FEED button until the selection you want is printed.

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

The selection is set.

If there is another selectable item, it and the selection are printed.

6. Repeat steps 4 and 5 to select and set the printer's model, paper width, character spacing (EPSON T88 only).

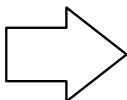
When all the items are set, "Save To Memory" is printed.

7. 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 quick setting mode when printing is finished.

Selected item

Manufacturer	Paper width	Character space
CITIZEN CT-S310	58 mm	-
	80 mm	-
EPSON T88	58 mm	0 dot
		1 dot
	80 mm	0 dot
		1 dot
EPSON 203dpi	80 mm	-
	58 mm	-



Automatic memory switch settings

MSW2-4 Full Col Print	MSW3-7 CBM1000 Mode	MSW8-1 Print Width	MSW6-2 Character Space
WaitData	Invalid	384 dots	-
WaitData	Invalid	576 dots	-
WaitData	Invalid	360 dots	0 dot
WaitData	Invalid	390 dots	1 dot
WaitData	Invalid	512 dots	0 dot
WaitData	Invalid	546 dots	1 dot
WaitData	Invalid	576 dots	0 dot
WaitData	Invalid	420 dots	-

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.

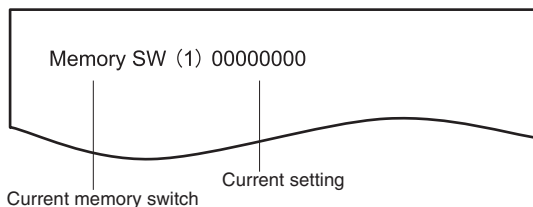
2. While the paper cover is open, press and hold the FEED button and turn on the power.

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.

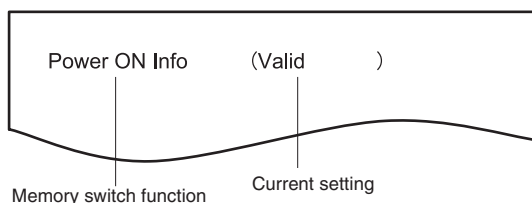
Each press of the FEED button cycles through the list of memory switches in the following sequence: “Memory SW (1)” > “Memory SW (2)” > ... “Memory SW (11)” or “Memory SW (13)” > “Save To Memory” > “Memory SW (1)”.

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	4K bytes	45 bytes

Switch no.	Function	OFF	ON
MSW1-3	Busy Condition	Full/Err	Full
MSW1-4	Receive Error	Printt"?"	No Print
MSW1-5	CR Mode	Ignored	LF
MSW1-6	Reserved	Fixed	—
MSW1-7	DSR Signal	Invalid	Valid
MSW1-8	Reserved	Fixed	—
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	Reserved	Fixed	—
MSW3-1	Resume Ctrr Err	Valid	Invalid
MSW3-2	Reserved	Fixed	—
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
MSW4-1	Reserved	Fixed	—
MSW4-2	Reserved	Fixed	—
MSW4-3	Feed&Cut at TOF	Invalid	Valid
MSW4-4	Reserved	Fixed	—
MSW4-5	Reserved	Fixed	—
MSW4-6	Reserved	Fixed	—
MSW4-7	Reserved	Fixed	—
MSW4-8	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	—
MSW6-1	Act. For Driver	Invalid	Valid
MSW6-2	Character Space	Invalid	Valid
MSW6-3	USB Power Save	Invalid	Valid
MSW6-4	Reserved	Fixed	—

Switch no.	Function	OFF	ON
MSW6-5	Reserved	Fixed	—
MSW6-6	Reserved	Fixed	—
MSW6-7	Reserved	Fixed	—
MSW6-8	Power ON trigger	Power switch ON	AC power input

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	576 dots	576 dots, 546 dots, 512 dots, 420 dots, 390 dots, 384 dots, 360 dots
MSW8-3	Top Margin	11mm	3mm, 4mm, 5mm, 6mm, 7mm, 8mm, 9mm, 10mm, 11mm
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
MSW8-7	Liner Free Mode	Invalid	Disabled, 1 h, 6 h, 12 h, 18 h, 24 h, 5 m, 10 m, 15 m, 20 m, 30 m
MSW9-1	Code Page	PC437	Katakana, PC 437, PC737, PC 850, PC 852, PC 857, PC 858, PC 860, PC862, PC 863, PC 864, PC 865, PC 866, WPC1251, WPC1252, WPC1253, WPC1255, WPC1258, Space page, ThaiCode11 1Pass, ThaiCode11 3Pass, ThaiCode18 1Pass, ThaiCode18 3Pass, TCVN-3
MSW9-2	Int'Char Set	U.S.A. China *	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, GB18030 (CHN)*	Disabled, JIS (Japan), SJIS: CP932 (Japan), SJIS: X0213 (Japan), GB18030 (China), KS Hangul (South Korea), EUC Hangul (South Korea), BIG5 (Taiwan)
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 1, Level 2, Level 3, Level 4, 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

*The specifications vary according to destination

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