

CLP 404

User Manual

FCC COMPLIANCE STATEMENT FOR AMERICAN USERS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Use shielded cables to connect this device to computers.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

EMI COMPLIANCE STATEMENT FOR CANADIAN USERS

The equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. This equipment is designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Use shielded cables to connect this device to computers.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

ETAT DE CONFORMITE EMI A L'USAGE DES UTILISATEURS CANADIENS

Cet équipement produit et utilise l'énergie à radiofréquences et s'il n'est pas installé et utilisé correctement, c'est-à-dire en accord strict avec les instructions du fabricant, il risque de provoquer des interférences avec la réception de la radio et de la télévision.

Cet appareil numérique n'émet pas de bruits radioélectriques dépassant les limites admissibles aux appareils numériques de la classe B prescrites dans le Règlement sur le rayonnement radioélectrique édicté par le ministère des Communications du Canada.

Cet équipement est conçu pour fournir une protection satisfaisante contre de telles interférences dans une installation résidentielle. Cependant, il n'y a pas de garantie contre les interférences avec les réceptions radio ou télévision, provoquées par la mise en et hors service de l'équipement; aussi, il est demandé à l'utilisateur d'essayer de corriger l'interférence par l'une ou plus des mesures suivantes:

Réorienter l'antenne de réception.

Installer l'ordinateur autre part, par égard pour le récepteur.

Brancher l'ordinateur dans une prise de courant différente de façon à ce que l'ordinateur et le récepteur soient branchés sur des circuits différents.

Foreword

Thank you for buying Citizen printer.

This printer is a compact line thermal printer which is widely used for bar code printing and issuing labels and tags.

To use this product for a long time, please read this manual carefully before using it and use it correctly.

Notice

- 1 Be sure to read through the User's Manual before operating the printer. After reading it, keep it handy for reference.
- 2 The contents of this manual may be changed without prior notice.
- 3 Reproduction, transfer, or transmission of the contents of this manual without prior consent is strictly prohibited.
- 4 We are not liable for any damage resulting from the use of the information contained herein, regardless of errors, omissions, or misprints.
- 5 We are not liable for any problems resulting from the use of optional products and consumable supplies other than the designated products contained herein.
- 6 Never touch, disassemble or repair parts other than those specified in this manual.
- 7 We are not liable for damage to the printer caused by user's erroneous use of the printer and inadequate environment.
- 8 Basically the data cannot be saved or stored for a long period or permanently. We shall not be responsible for the damage or loss of profits caused by data loss due to trouble, repairs, inspections.
- 9 Please contact us if there are any mistakes or unclear parts in this manual.
- 10 Obtain a new manual if there are missing or incorrectly collated pages in this manual.

Important Safety Instructions

Read all of these instructions and save them for later reference.

Follow all warnings and instructions marked on the product.

Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

Do not use this product near water.

Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.

Slots and openings on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

Do not allow anything to rest on the power cord. Do not locate this product where the cord will be walked on.

If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

Except as explained elsewhere in this manual, don't attempt to service this product yourself. Opening and removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.

The mains plug on this equipment must be used to disconnect mains power. Please ensure that the socket outlet is installed near the equipment and shall be easily accessible.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- A. When the power cord or plug is damaged or frayed.
- B. If liquid has been spilled into the product.
- C. If the product has been exposed to rain or water.
- D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- E. If the product has been dropped or the cabinet has been damaged.
- F. If the product exhibits a distinct change in performance, indicating a need for service.

Do not disassemble the product. High-voltage parts are used in this product so you might be shocked by an electric current. If the product needs to be repaired, consult our service representative.

16. Do not touch the print head during or immediately after printing. Print head may reach high temperatures.
17. The cover protects the product from dirt and dust, so do not put any heavy items on it.
18. When the power cord is connected, be sure to ground the product.
19. When the power is turned on again, wait 10 seconds or more after turning the power off.
20. Do not place the product in the following locations:
 - where room temperature is below 5°C (41°F) or above 35°C (95°F)
 - where humidity is below 40% or above 80%
 - where a carpet is laid
 - where there is a lot of dust
 - where it is directly exposed to the sun
 - where there are chemicals
 - where there is vibration or shocks
21. When printing is performed
 - Never print without paper
 - Use standard paper
 - Use the recommended ribbon
22. Dust off the print head and paper path regularly.

SAFETY SIGNS

— must be strictly observed!

- To prevent injury to the user or other persons or property damage, the following shall be strictly observed.
- The degree of possible injury and damage due to erroneous use or ignorance of instructions specified is illustrated as follows:



WARNING

Indicates a situation which, if not observed and handled properly, could result in death or serious injury.



CAUTION

Indicates a situation which, if not observed and handled properly, could result in injury or handicap.



This is a mark to graphically call the attention of the reader.



WARNING

- Never perform the following items. If not avoided, these may cause damage or trouble to the printer or cause the printer to be overheated and release smoke and cause burns or an electrical shock. If the printer is damaged or malfunctioning, be sure to turn the power off and remove the power cord from the outlet, then consult our service representative.
 - Do not apply a shock or impact to the printer by stepping on, dropping or hitting the printer.
 - Do not place the printer where it is badly ventilated or do not shut the air vent of the printer.
 - Do not place the printer where chemical reactions occur, such as in laboratories or where air is mixed with salt or gas.
 - Do not use a power voltage or frequency other than those specified.
 - Do not plug/unplug the power cord or attach/detach the interface cable by simply grabbing the power cord or interface cable. Do not pull or carry the printer when the power cord or interface cable is under tension.
 - Do not drop or put foreign matter such as clips and pins into the printer.
 - Do not plug the power cord into an outlet with many other loads.
 - Do not spill drinks such as tea, coffee and juice on the printer or spray insecticide on the printer. If a drink or water is spilled, first be sure to turn the power off and remove the power cord from the outlet. Then consult our service representative.
 - Do not disassemble or modify the printer.

- Scrap or keep the bag away from children in which the printer has been packed. If the bag is pulled over child's head, it may cause suffocation.



CAUTION

- When taking the printer out of the carton, be sure to hold the printer body. If plastic foam is grasped instead of the printer body, the printer may drop and cause injury or property damage.
- Do not place the printer on an unstable, uneven stand or table. Otherwise, the printer may drop or fall and cause injury or property damage.
- Do not put anything on the printer. Otherwise, the printer may drop or fall and cause injury or property damage.
- Pay attention to the printer when it is moved or carried. Dropping the printer may cause injury or property damage.
- Do not place the printer in the following locations. Otherwise, the printer may malfunction.
 - Room temperature of 5°C or less or 35°C or more
 - Humidity of 40% or less or 80% or more
 - Room with carpet
 - Exposed direct sunlight
- When upper cover is opened, open it completely. Otherwise, the cover may close and strike you.
- When upper cover is opened, do not put your fingers into the opening in the back between the upper and lower covers. Fingers may be injured by getting caught.
- Use a three-terminal outlet with a ground. Otherwise, you may be injured by static electricity.
- Be careful of the cutter edge on the front of the upper cover.
- Pay attention to the edges of the plates so that they do not cause injury or property damage.
- Do not touch the print head immediately after printing. The print head is heated and may cause burns.
- When turning the power on again, wait ten seconds or more after turning it off. Otherwise, the printer may malfunction.
- When printing, observe the following items to prevent the printer from malfunctioning.
 - Do not perform printing without paper.
 - Use appropriate paper that meets the standard.
 - Be sure to use our recommended ribbon.
- Remove accumulated dust or particles periodically from the print head and paper path.

Features

- Easily connected with your computer. Labels are issued smoothly after data is received.
- Printed labels are issued upright so as to be easy to read.
- Since the upper cover opens widely, replacing label paper as well as cleaning and changing the print head are simple.
- High-speed printing of 100 mm (3.9 in.)/sec max. is ensured.
- High print reliability is maintained thanks to a function that checks for thermal print head failure.
- Compact size of 190 mm (7.5 in.) (W) x 250 mm (9.8 in.) (D) saves installation space.

Restrictions on printing

- Print density (number of heated dots) in each print line must be less than 50%. Otherwise, printer normal operation will not be ensured (printer may stop due to power protection function).
- Print quality of 5x7 dot structure character (one-time enlargement rate) or line of one dot width will not be ensured.
- Lines and box lines must be used as follows:
 - (A) Line length in horizontal direction must be 50 mm (1.97 in.) or less.
 - (B) Line width must be 12 mm (0.47 in.) or less.
 - (C) Box line (outer line) length in horizontal direction must be 50 mm (1.97 in.) or less.
 - (D) Box line width must be 12 mm (0.47 in.) or less.
- ED(DTR) signal turns OFF when remaining receive buffer memory is less than 256 bytes, so amount of data sent at one time must be 16128 bytes or less.
- If paper length or width is less than 60 mm (2.36 in.), printer normal operation will not be ensured.

Contents

FCC/EMI compliance statement for American/ Canadian users	i
Foreword and notice	iii
Important safety instructions	iv
Safety signs/warning/caution	vi
Features	ix
Restrictions on printing	ix

1 Setup	1
1-1 Confirmation of carton contents	1
1-2 Part names and functions	2
1-3 Power and interface cable connection	4
1-4 Installation space	4
2 Operation	5
2-1 Installing and replacing label paper	5
2-2 Printing, cutting and feeding labels	6
2-3 Printable bar codes	7
2-4 Printing graphics and lines and box lines	8
2-5 Storing and printing user-defined font data	8
2-6 Controlling issued sequence numbers	9
2-7 Handling received data	10
2-8 Self-diagnostics	12
3 Troubleshooting	14
3-1 Indication status	14
4 Specifications	15
4-1 Functions/performance	15
4-2 Environment/installation conditions	19
4-3 Interface	20
4-4 Printable characters	21
4-5 External view	22

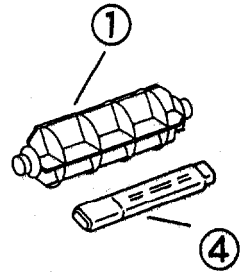
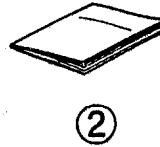
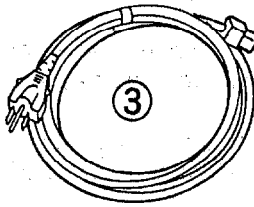
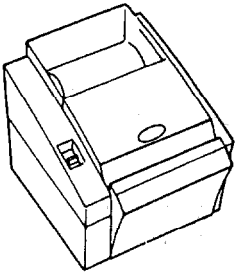
1 Setup

1-1 Confirmation of carton Contents

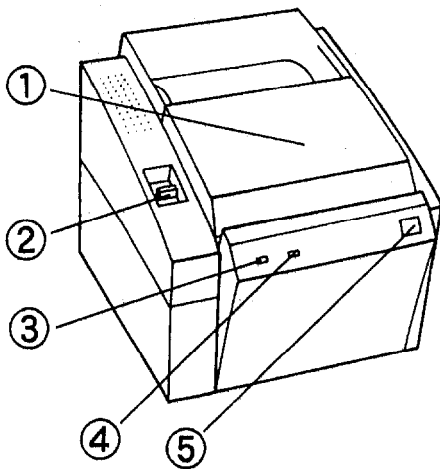
- | | | |
|---|-----------------------|-------|
| 1 | CLP-404 label printer | 1 set |
| 2 | Accessories | 1 set |

<Contents>

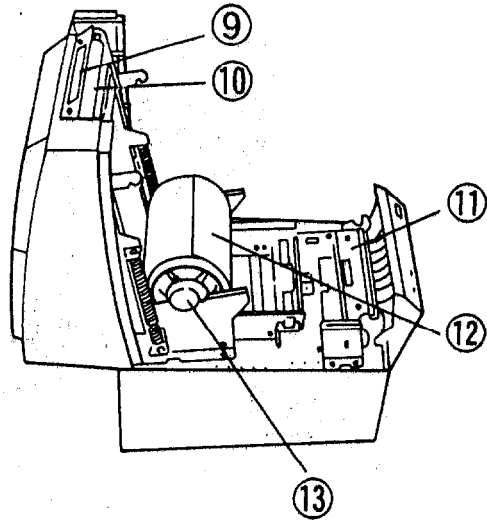
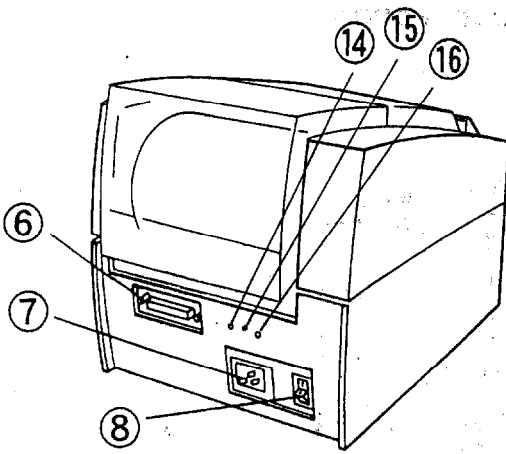
- | | | |
|---|----------------------------|--------|
| ① | Label feed reel | 1 pc |
| ② | User's manual | 1 copy |
| ③ | Power cord | 1 pc |
| ④ | Thermal print head cleaner | 1 pc |



2 Part names and functions

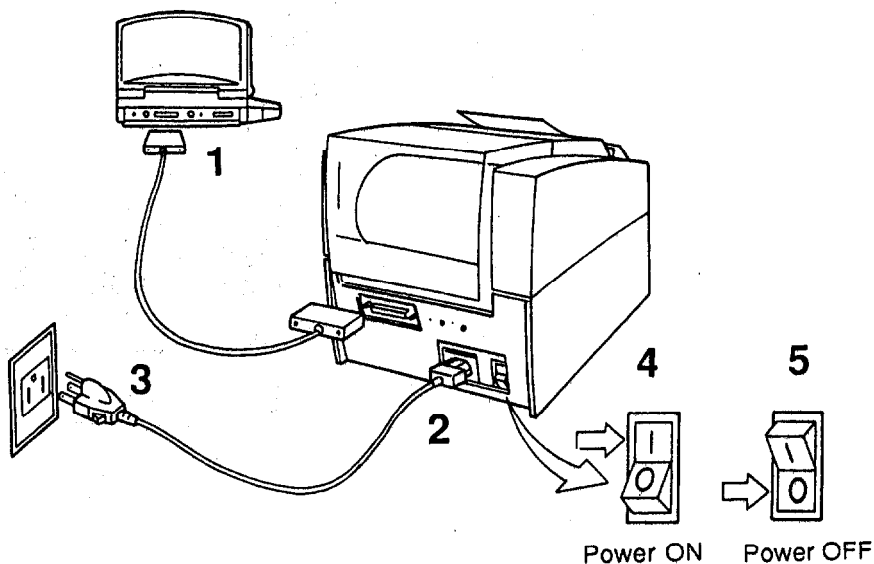


- | | |
|--|---|
| ① Upper cover | To be opened when label paper is set, replaced or jammed. |
| ② Cover open lever | Pulled front when upper cover is opened. Platen roller is attached with upper cover. |
| ③ Power lamp* | Lights when power switch is switched ON ( \| ) and flashes when data is received and labels are issued. Do not cut off labels when lamp is flashing. |
| ④ Error lamp* | Lights and flashes when malfunction occurs. |
| * Self-diagnostics status is indicated by combination of power lamp and error lamp | |
| ⑤ Paper feed key | Pressed when label is advanced or error is cleared. When pressed in normal conditions, one label is fed. If label stops at other than cut position when pressed, it is fed to cut position and stops. |



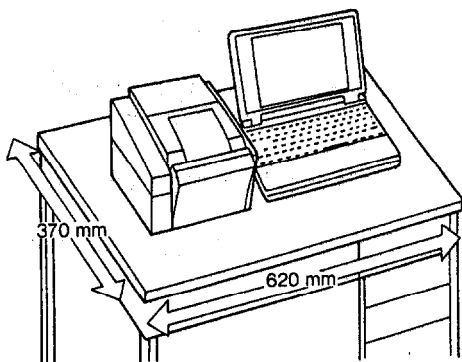
- | | |
|---|--|
| ⑥ Interface connector | 25-pin connector for RS232C interface. |
| ⑦ Power inlet | 120 VAC 3-pole inlet for U.S.A. version.
220-240 VAC 3-pole inlet for Europe version. |
| ⑧ Power switch | Power is switched ON ( \| ) and OFF (O). |
| ⑨ Cutter | Cuts off labels. |
| ⑩ Platen roller | Holds and feeds label. |
| ⑪ Thermal print head | Prints on thermal label paper. |
| ⑫ Thermal label paper | |
| ⑬ Label feed reel | Sets thermal label paper. |
| ⑭ Detection adjustment volume screw | Used for adjusting volume of light from label detector. |
| ⑮ Detection indicator lamp | Indicates label detection status. |
| ⑯ Print density adjustment volume screw | Used for adjusting print density. |

3 Power and interface cable connection



- 1 Connect RS232C interface cable to printer. Check that the other end of the RS232C interface cable is inserted into the port on the computer.
- 2 Connect power cord to printer.
- 3 Fit the 3-core power plug into receptacle.
- 4 Turn power switch to ON (|). First the error lamp flashes, then power lamp lights up.
- 5 Turn power switch to OFF (O).

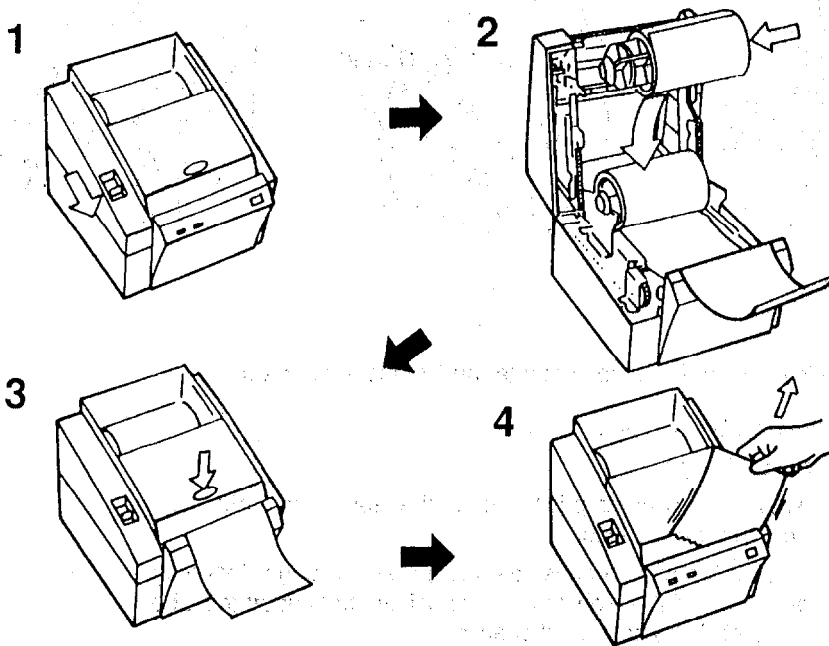
4 Installation space



To operate the printer, replace label paper, or check the printer regularly, ample space is necessary (see figure).

2 Operation

2-1 Installing and replacing label paper



- 1 Pull front the cover open lever and open the upper cover by hand.



Warning: At this time, do not put your fingers in the opening of the back of the upper cover. Fingers may be injured if caught.

- 2 Insert the label feed reel in the core of the new label roll paper and put it in the V groove. At this time, label surface faces down and top of the label paper protrudes from the cutter edge approx. 5 cm (1.97 in.).
- 3 Press down the marked place on the upper cover and ease it into position and press the paper feed key.

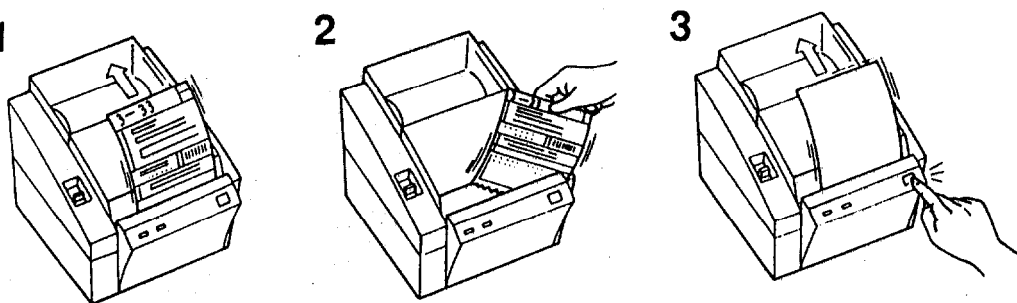


Warning: Be careful of the cutter edge on the front of the upper cover.

- 4 Cut off the top of the label paper in the right, up/backward direction.

Note: If the upper cover is opened while label paper is set up, the label position will shift. Be sure to press the paper feed key whenever the upper cover is closed.

2 Printing, cutting and feeding labels



- 1 Data is received from the computer and labels are printed.
- 2 Cut off the label as follows:
After feeding stops,
 - (A) when the power lamp is lit, cut off the label in the right, up/backward direction;
 - (B) when the power lamp is flashing, press the paper feed key once to feed the label to the cut position and cut off the label in the right, up/backward direction.
- 3 When an error occurs, clear the error by pressing the paper feed key.
- 4 When power is turned off, do not move the label from the cut position.

Note: The printer starts operation after power is turned on if a label is at the cut position. If label is shifted after power is turned on, a label error may occur.

2-3 Printable bar codes

Characters attached to bar codes can be specified and printed with dot fonts.

Type of bar code	Basic bar width (unit: dot)		
	Narrow bar	Wide bar	Gap between bars
Interleaved 2of5	1	3	—
	2	5	—
	3	8	—
Code39	1	3	1
	1	3	2
	2	5	2
	2	5	3
	2	5	4
CODABAR (NW7)	1	3	1
	2	5	2
2 OUT OF 5 (3 bars)	1	3	1
	2	5	2
	3	8	3
2 OUT OF 5 (5 bars)	1	3	1
	2	5	2
	3	8	3
EAN13	Basic module width 1 dot		
EAN8	Basic module width 1 dot		
CODE128	Basic module width 1 dot		
CODE93	Basic module width 1 dot		
UPC-A	Basic module width 1 dot		
UPC-E	Basic module width 1 dot		
CASE CODE	2	5	—
UCC/EAN-128	Basic module width 1 dot		

4 Printing graphics and lines and box lines

Graphics, logos, lines and box lines can be printed. Graphics and logo data is converted into bit images by the computer and downloaded to the printer.

- Line length of 0.01 in. (or 0.1 mm) and line width of 0.01 in. (or 0.1 mm) can be specified.

5 Storing and printing user-defined font data

To print characters other than stored fonts, user-defined font data must be downloaded from the computer.

Downloaded user-defined font data can be used as it is or re-used after being stored.

User-defined font data is classified into:

① 1-byte fonts

② Graphics

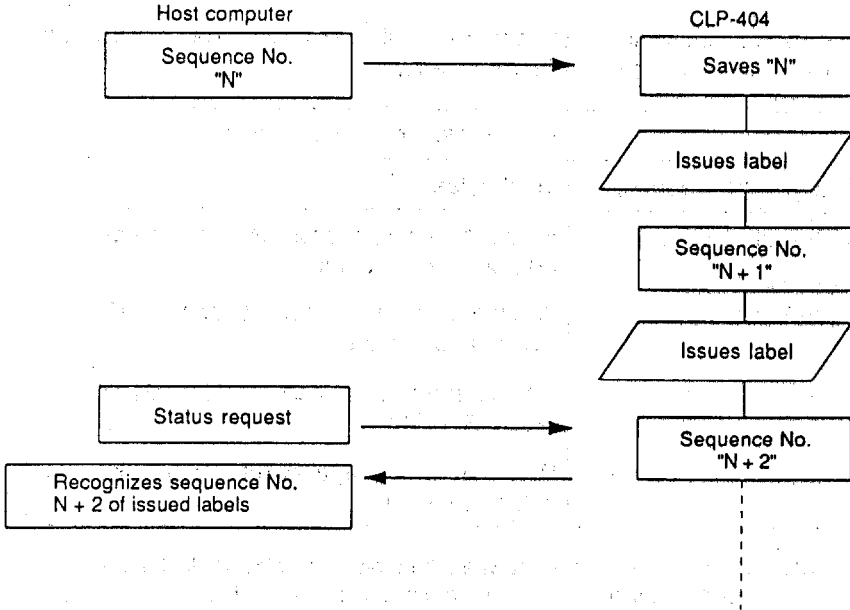
1-byte fonts ① can be extended and rotated.

Downloaded user-defined font data, however, is cleared when the power of the printer is turned off.

Up to 188 characters or 16 K bytes of user-defined font data can be stored.

2-6 Controlling issued sequence numbers

Sequence numbers coming from the computer are saved in the printer and increased by 1 every printing. The computer controls issued labels referring to the sequence number of the status report.



7 Handling received data

The printer stores the received data from the computer in the receive buffer and then picks up the data in sequence and analyzes it and execute the command. However, system level immediate execution commands, described separately, are executed as soon as they are received.

1 Receive buffer

Received data is stored temporarily and its flow is controlled according to the changes in the buffer blank capacity.

	FIFO-system circulation buffer
Receive buffer capacity	16 K bytes
X-ON/X-OFF output (when selecting X-ON/OFF control).	When remaining capacity is 512 bytes or less, X-OFF is output. When remaining capacity returns to 12 K bytes, X-ON is output
ER (DTR) control	When remaining capacity is 256 bytes or less, ER is OFF. When remaining capacity returns to 12 K bytes, ER is ON

Note: Protocol selection is set when the product is shipped. If changes are needed, consult your dealer or specified service shop.



Warning: Never try to open the case and touch the inside parts. You may be struck by electricity.

2 Storing and analyzing data

Data is stored in sequence but not analyzed until a CR is received.

After a CR is received,

- (A) when stored data is a system level immediate execution command, the command is executed immediately and removed from the receive buffer;
- (B) when stored data is other than (A), stored data is set as an unanalyzed command.

Also, when a large amount of data such as graphics data is to be sent, the data up to the CR must be 16128 bytes or less and separated correctly with CRs.

This regulation, however, is excepted during the time when graphics data (8-bit hex BMP format) or downloaded characters are stored and CRs are considered part of data.

3 Exception processing

1) Handling of control codes

(1) SOH(01H)/STX(02H)/ESC(1BH)

These are stored in the receive buffer as part of the command.

(2) CR(0DH)

This sets received data and resets the communication error status. The CR itself is stored in the receive buffer and ends (divides) the command.

(3) X-ON(11H)/X-OFF(13H)

These do not affect the printer even if received. These are not stored in the receive buffer.

(4) Control codes (00H to 1FH) other than those above

These do not affect the printer and are not stored in the receive buffer.

2) Communication error and buffer overflow

If parity, framing or overrun error occurs in received data and if data is received beyond receive buffer capacity, all undetermined data blocks (from last CR to next CR received) are removed. Error is reset when a CR is received.

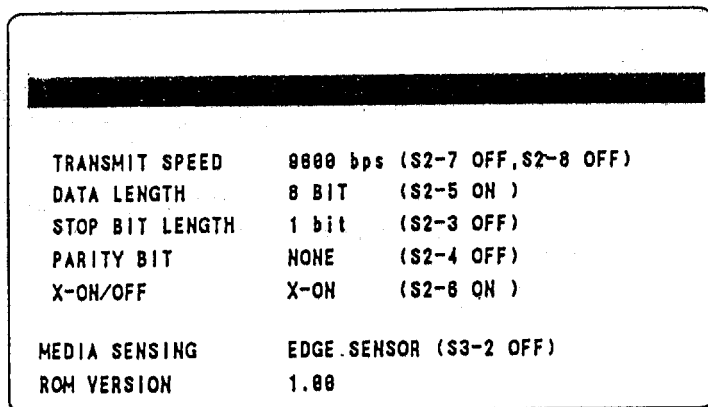
The printer does not inform the user of these errors.

8 Self-diagnostics

Printer's functions are checked as follows:

(1) Printing test pattern

Head test pattern, DIP switch settings 1 and 2, and software version number are printed on the label.

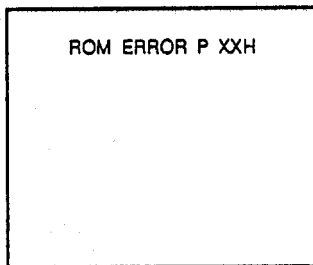


TRANSMIT SPEED	9800 bps	(S2-7 OFF, S2-8 OFF)
DATA LENGTH	8 BIT	(S2-5 ON)
STOP BIT LENGTH	1 bit	(S2-3 OFF)
PARITY BIT	NONE	(S2-4 OFF)
X-ON/OFF	X-ON	(S2-6 ON)
MEDIA SENSING	EDGE SENSOR	(S3-2 OFF)
ROM VERSION	1.00	

Test printing sample

(2) Memory check

Internal memory is checked when the power of the printer is turned on. If any failure is found in the memory check, an error message is printed on the label.



Error printing sample

(3) Thermal print head check

Thermal print head is checked when the power of the printer is turned on. If any failure is found, error and power lamps flash simultaneously.

(4) Printing hex dump

```
9A 0D 0A 31 30 31 32 30 30 30 30 30 32 30 30 37 ...1012000002007  
30 30 50 41 43 40 41 47 45 20 43 4F 55 4E 54 0D 80PACKAGE COUNT.  
0A 31 30 31 32 30 30 30 30 30 37 30 30 33 31 30 .101200000700010  
55 4E 49 54 0D 0A 0D 0A 1B 50 30 30 0D 0A 31 32 UNIT.....P00..12  
31 32 30 30 30 31 31 34 30 30 30 30 30 43 49 54 1200011400000CIT  
49 5A 45 4E 20 57 41 54 43 40 20 43 4F 2E 2C 4C IZEN WATCH CO..L  
54 44 0D 0A 0D 0A 31 32 31 31 30 30 30 31 30 30 TD....1211000100  
30 30 31 34 30 43 49 54 40 5A 45 4E 20 57 41 54 80140CITIZEN VAT  
43 40 20 43 4F 2E 2C 4C 54 44 0D 0A 0D 0A 31 32 CH CO..LTD....12  
31 31 30 30 30 31 30 52 30 30 31 34 30 31 37 33 1100010200140123  
34 35 30 37 30 30 30 0D 0A 0D 0A 31 32 31 31 30 4507000....12110  
30 30 30 30 30 30 30 31 34 30 43 31 32 33 5A 31 0000300140C123Z1  
32 33 30 30 0D 0A 0D 0A 31 32 31 31 30 30 30 30 2300....12110000  
30 30 30 30 31 34 30 4C 49 4E 45 20 50 52 49 4F 8000140LINE PRIO  
52 49 54 50 20 45 4E 43 4F 44 45 52 0D 0A 0D 0A RITY ENCODER....  
31 32 31 31 30 30 30 30 30 34 30 30 32 34 30 30 1211000004002400
```


Troubleshooting

1 Indication status

Error

	Indication	Status
Label error	Error lamp lighting	Labels are out or jammed.
Platen error	Error lamp slow flashing	Cover is opened.
Internal memory error	Message printed out	Memory error detected by internal memory check when power is turned on
Print head failure		Print head failure detected when power is turned on



Operation

	Indication	Status
RAM test	Error lamp slow flashing	RAM being tested when power is turned on
ROM test	Error lamp fast flashing	ROM being tested when power is turned on
Print head failure test	Error lamp lighting	Print head failure being checked when power is turned on
Label detection	Label detection lamp lighting	Label gap being checked
Label printing and issuing	Power lamp flashing	Power lamp flashes from start of data reception to completion of label issuing

4 Specifications

4-1 Functions/performance

Item	Description
Printing method	Direct thermal printing
Print head	[REDACTED] al head
Print area [mm] Width Length	0 to 104 00 Note: Do not print in the area 2 mm inside the border of the label. Printing in this area may not be performed.
Print density [dots/mm]	8
Print speed [mm/s]	100, 80, 60
Print head width [mm]	104
Type of prints	<p>(1) 1-byte dot fonts</p> <p>131 alphanumeric characters and symbols</p> <p>① Font: Gothic</p> <p>② Size:</p> <ul style="list-style-type: none">(a) 05 (W) x 07 (H) dots(b) 12 (W) x 16 (H) dots(c) 16 (W) x 24 (H) dots(d) 24 (W) x 36 (H) dots(e) 32 (W) x 48 (H) dots <p>See section 3-3 for details.</p> <p>(2) Bar code</p> <p>Interleaved 2of5, CODE39, CODE93, CODE128, CODABAR (NW7), EAN13, EAN8, 2 OUT OF 5 (3 bars and 5 bars), UPC-A, UPC-E, CASE CODE, UCC/EAN-128</p> <p>(3) Line/Graphics</p> <p>(4) User-defined fonts</p> <p>As in (1) above, number of stored characters is maximum 188 (16 K bytes).</p>

Item	Description
Extension and rotation of characters	(1) Characters can be extended in the vertical and horizontal directions. <ul style="list-style-type: none"> ① Vertical direction: 1 to 9 times ② Horizontal direction: 1 to 4, 6, 8, 9 (5 and 7 disabled) (2) Rotation: 0° 
Extension and rotation of bar codes	(1) Extension: Bar height and size can be set separately. (2) Rotation: 0° 
Interface	RS-232C serial interface
Variation of print position	(1) Vertical direction: ± 1.5 mm (0.06 in.) or less (base: label edge in direction of issue) (2) Horizontal direction: ± 1.5 mm (0.06 in.) or less (base: label center)
Minimum line width	Print quality of 1-dot (5 x 7-dot) character and 1-dot structure line and bar code is not guaranteed.

Item	Description																																														
Print medium	<p>Label size is fixed when the product is shipped</p> <p>(1) Roll-paper labels (See Fig. 1.)</p> <table border="1" data-bbox="426 192 1046 701"> <thead> <tr> <th></th> <th>Item</th> <th>Standards</th> </tr> </thead> <tbody> <tr> <td>①</td> <td>Thickness</td> <td>Approx. 0.16 mm (0.006 in.) (Total thickness)</td> </tr> <tr> <td>②</td> <td>Width</td> <td>60 to 120 mm (2.36 to 4.72 in.) (Label width: 58 to 118 mm (2.28 to 4.65 in.))</td> </tr> <tr> <td>③</td> <td>Length</td> <td>60 to 200 mm (2.36 to 7.87 in.)</td> </tr> <tr> <td>④</td> <td>Pitch</td> <td>250 mm (9.85 in.) max.</td> </tr> <tr> <td>⑤</td> <td>Gap between labels</td> <td>3 to 50 mm (0.12 to 1.97 in.)</td> </tr> <tr> <td>⑥</td> <td>Core inner diameter</td> <td>∅ 50.8 mm (2 in.)</td> </tr> <tr> <td>⑦</td> <td>Outside diameter</td> <td>∅ 100 mm (3.94 in.) max.</td> </tr> <tr> <td>⑧</td> <td>Winding direction</td> <td>See Fig. 1</td> </tr> </tbody> </table> <p>(2) Fanfold paper labels (See Fig. 2.)</p> <table border="1" data-bbox="426 756 1046 1138"> <thead> <tr> <th></th> <th>Item</th> <th>Standards</th> </tr> </thead> <tbody> <tr> <td>①</td> <td>Thickness</td> <td>Approx. 0.16 mm (0.006 in.) (Total thickness)</td> </tr> <tr> <td>②</td> <td>Width</td> <td>60 to 120 mm (2.36 to 4.72 in.) (Label width: 58 to 118 mm (2.28 to 4.65 in.))</td> </tr> <tr> <td>③</td> <td>Length</td> <td>60 to 200 mm (2.36 to 4.72 in.)</td> </tr> <tr> <td>④</td> <td>Pitch</td> <td>250 mm (9.84 in.) or less</td> </tr> <tr> <td>⑤</td> <td>Gap between labels</td> <td>3 to 50 mm (0.12 to 1.97 in.)</td> </tr> </tbody> </table> <p>Note: Continuous adhesive paper cannot be used for (1) and (2).</p>			Item	Standards	①	Thickness	Approx. 0.16 mm (0.006 in.) (Total thickness)	②	Width	60 to 120 mm (2.36 to 4.72 in.) (Label width: 58 to 118 mm (2.28 to 4.65 in.))	③	Length	60 to 200 mm (2.36 to 7.87 in.)	④	Pitch	250 mm (9.85 in.) max.	⑤	Gap between labels	3 to 50 mm (0.12 to 1.97 in.)	⑥	Core inner diameter	∅ 50.8 mm (2 in.)	⑦	Outside diameter	∅ 100 mm (3.94 in.) max.	⑧	Winding direction	See Fig. 1		Item	Standards	①	Thickness	Approx. 0.16 mm (0.006 in.) (Total thickness)	②	Width	60 to 120 mm (2.36 to 4.72 in.) (Label width: 58 to 118 mm (2.28 to 4.65 in.))	③	Length	60 to 200 mm (2.36 to 4.72 in.)	④	Pitch	250 mm (9.84 in.) or less	⑤	Gap between labels	3 to 50 mm (0.12 to 1.97 in.)
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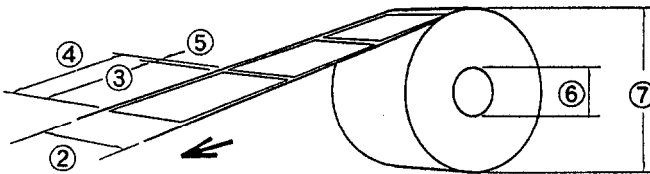


Fig. 1 Roll-paper labels

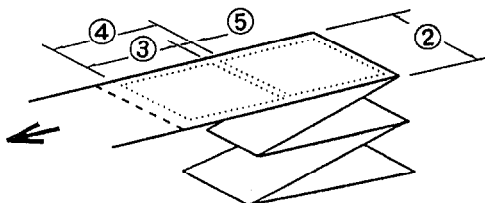
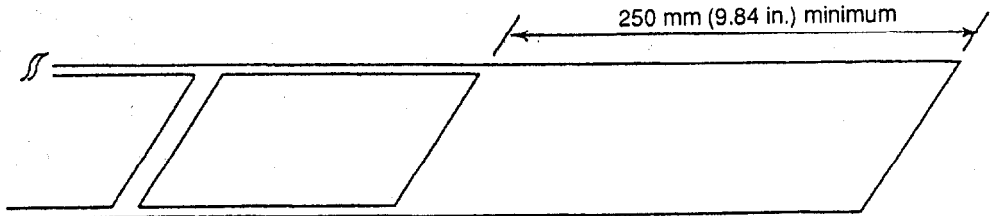


Fig. 2 Fanfold-paper labels

Item	Description
Recommended paper of print media	V6KB8 (Osaka Sealing Printing Co., Ltd.)
Issuance method	(1) Cut mode <i>On Demand</i> (2) Continuous issuance <i>Batch</i>

No labels are allowed on the area at least 250 mm (9.84 in.) from the end of the label paper when beginning or ending label winding.



4-2 Environment/installation conditions

Item	Description	
Dimensions	Width	190 mm (7.48 in.)
	Height	200 mm (7.87 in.)
	Depth	250 mm (9.84 in.)
Weight	Approx. 3.5 kg	
Power supply	120V, 60Hz or 220V-240V, 50/60Hz (see rating label on printer)	
	Printing:	60 VA
	Peaking (with all black):	330 VA
	Pausing:	15 VA
	If power voltage is interrupted and voltage changes to zero for one half cycle while printer is printing black part of more than 50% in the horizontal direction, the printer will malfunction.	
Operating environment	<p>Temperature: 5° to 35°C</p> <p>Humidity: 40 to 80% RH (Non-condensing)</p> <ul style="list-style-type: none"> • The following places should be avoided for printer safety and maintaining performance. <ul style="list-style-type: none"> (a) Temperatures of 5°C or lower and 35°C or higher and humidity of 80% RH or higher. (b) Exposure to direct sunlight or near a stove or heater. (c) Areas exposed to dust, vibration, and flammable liquid or corrosive gases. 	
Grounding	<p>Ground wires should be soft copper with a core diameter of 1.6 mm (0.06 in.) or more (or similar corrosion-resistant metal cable with the same strength and thickness).</p> <p>Ground resistance must be 100 Ω or more.</p>	
Label storage	<p>Storage temperature: 35°C or less</p> <p>No direct sunlight and no condensation.</p>	

3 Interface

Serial interface

RS-232C is used for the serial interface of the printer.

Standard

	Description	Remarks
Method	Start-stop synchronization	
Speed	1200/2400/4800/9600 bps	Set when shipped
Data bit length	7 or 8 bits	Set when shipped
Stop bit length	1 or 2 bits	Set when shipped
Parity bit	None or even parity	Set when shipped
Character code	ASCII	
Hardware	RS-232C	
Connector	D-SUB 25-pin connector (male) or equivalent	Female connector on printer side
Cable length	15 m (49.2 ft) max.	

RS-232C signal level

Status	Start/Stop	Data logic	Control signal	Input signal to printer	Output signal from printer
A	Start	0 (Space)	ON	+3 to +30 V	+5 to +10 V
Z	Stop	1 (Mark)	OFF	-3 to -30 V	-5 to -10 V

4-4 Printable characters

The printer generates 1-byte dot fonts (alphanumeric characters and symbols).

4-4-1 Alphanumeric characters and symbols

(1) 131 characters (alphanumeric characters and symbols)

Codes 00h to 1Fh are control characters, so they are ignored as print data. Codes 80h to 9Fh and E0h to FFh are undefined characters, so they designate spaces when printing.

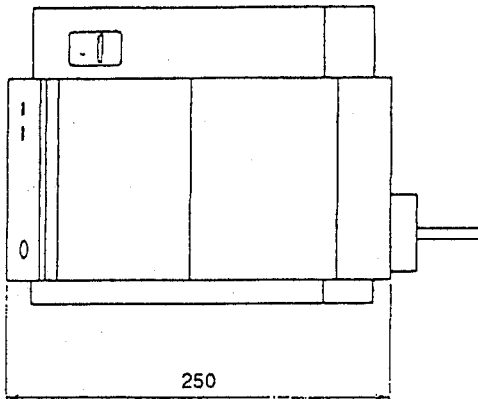
	2	3	4	5	6	7	8	9	A	B				E
0	(SPACE)	0	@	P	`	p	Ç	É	á					
1	!	1	A	Q	a	q	ü	æ	í					ß
2	"	2	B	R	b	r	é	Æ	ó					
3	#	3	C	S	c	s	â	ô	ú					
4	\$	4	D	T	d	t	ä	ö	ñ					
5	%	5	E	U	e	u	à	ò	Ñ					
6	&	6	F	V	f	v	å	û						
7	'	7	G	W	g	w	ç	ù						
8	(	8	H	X	h	x	ê	ÿ						
9	)	9	I	Y	i	y		Ö						
A	*	:	J	Z	j	z	è	Ü						
B	+	;	K	[	k	{		ø						
C	,	<	L	\	l	|	î	£						
D	-	=	M	]	m	}	ï	ø						Ø
E	.	>	N	^	n	~	Ä	ß		¥				
F	/	?	O	_	o	Δ	Å	Ø						

Special characters

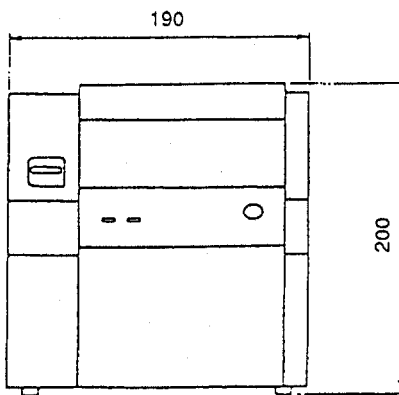
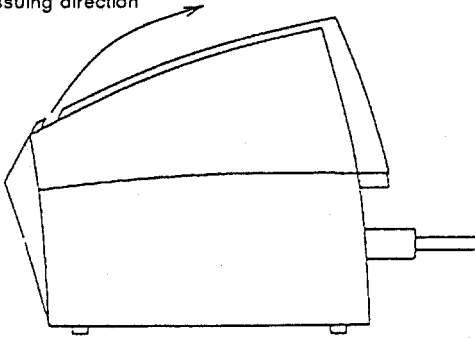
Note: These special characters are available, except for 5 x 7-dot character size.

■ (SPACE) is 1-character space.

5 External view



Label issuing direction



External view of printer