CITIZEN

PRINTER PRESENTER UNIT

MODEL PPU-700

User's Manual

Japan CBM Corporation

Declaration of Conformity

This printer conforms to the following Standards:

Low Voltage Directive 73/23/EEC, 93/68/EEC and the EMC Directive 89/336/EEC, 92/31/EEC, 93/68/EEC.

LVD : EN60950

EMC : EN55022 Class A
EN61000-3-2
EN61000-3-3
EN55024

This declaration is applied only for 230V model.

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

CAUTION: Use shielded cable for this equipment.

Sicherheitshinweis

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

For Uses in Canada
This digital apparatus does not exceed the class A limits for radio noise emissions from digital apparatus, as set out in the radio interference regulations of the Canadian department of communications.

Pour L'utilisateurs Canadiens
Cet appareil numérique ne dépasse pas les limites de carégorie a pour les émissions de bruit radio émanant d'appareils numériques, tel que prévu dans les réglements sur l'interférence radio du département Canadien des communications.

GENERAL PRECAUTIONS

1. The information contained in this manual is subject to change without prior notice.
2. Reproduction or transfer of part or all of this manual in any means is prohibited without permission from CBM.
3. Except explained elsewhere in this manual, do not attempt to service, disassemble, or repair this product.
4. Note that CBM is not responsible for any damage attributable to incorrect operation/handling or improper operating environments that are not specified in this manual.
5. Operate this printer only as described in this manual. Failure to do so may cause accidents or other problems.
6. Data are basically for temporary use and not for storage for a long period or permanently. Please note that CBM is not responsible for damage or lost profit resulting from the loss of data caused by accidents, repairs, tests or other occurrence.
7. If you find loss of information, error, or uncertain matter, please contact your CBM dealer.
8. Please note CBM is not responsible for anything that may occur from operating this printer regardless of what is stated in "7" above.

⚠ CAUTION

This is a Class A information technology equipment based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

SAFETY PRECAUTIONS ... WHICH SHOULD BE STRICTLY OBSERVED

Before using this product for the first time, carefully read these SAFETY PRECAUTIONS. Incorrect operation may result in unexpected accidents (fire, electric shock, or injury).

- 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.

In order to prevent injury hazard to operators, third parties or damage to property, special warning symbols are used in this user's manual to indicate important items to be strictly observed.

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.

⚠WARNING

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

⚠CAUTION

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


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 the "information" on the use, or the like.


This symbol is used to indicate prohibited actions.

⚠ 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 field

• **Neglecting these warnings may result in printer failure, overheating, emission of smoke, fire, or electric shock.**

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 clip, pin or screw into the printer.
- Do not place a flower vase, pot or cup 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.
- Never use organic cleaning solvent such as alcohol, paint thinner, trichloroethylene, benzene, or ketone.

• **A metallic foreign object, if accidentally dropped 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 CBM dealer.**

Do not handle the printer in the following ways:

- Do not allow the printer to sustain strong impacts or hard jolts (e.g., trampling, dropping, striking with a hard edge).
- Never attempt to disassemble or modify the printer.

• **Neglecting to handle properly may result in printer failure, overheating, emission of smoke, fire, or electric shock.**

Install, use, or store the printer out of the reach of children.

• **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.**

⚠ 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.
- 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 a supply outlet with dust or debris left on its plug.
- Do not use a deformed or damaged power cord.

- **Neglecting to handle properly may result in printer failure, emission of smoke, fire, or electric shock.**
- **An overload may cause the power cord to overheat or fire or the circuit breaker to trip.**

- Do not use the printer while the power cord is loaded with anything or it is trampled on.
- Do not use or carry the printer with its power cord bent, twisted, or pulled.
- Do not attempt to modify the power cord unnecessarily.
- Do not lay the power cord in the neighbor of a heating device.

- **Neglecting these cautions may cause wires or insulation to break, which could result in leakage, electric shock, or printer failure. If a power cord sustains damage contact your CBM dealer.**
- Do not leave things around the supply outlet.
- Supply power to the printer form a convenient wall outlet, readily accessible in an emergency.

- **The printer may not be immediately shut down in an emergency.**
- Insert the power plug fully into the supply outlet.
- If the printer is likely to be out of use for a long time, leave it disconnected from its supply outlet.

⚠ CAUTION

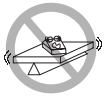
Do not use or store this product in a place where it will be exposed to:
- Flames or moist air
- Direct sunlight
- Hot airflow or radiation from a heating device
- Salty air or corrosive gases
- Ill-ventilated atmosphere
- Chemical reactions in a laboratory
- Airborne oil, steel particles, or dust
- Static electricity or strong magnetic field

• **Otherwise failure, smoke, ignition, fire, or electric shock may occur.**

- Place the printer on a flat, stable surface without vibration.

• **Otherwise dropping may cause injury.**





Do not use the printer under the following conditions.
- A state where the printer ventilation holes are blocked by a nearby wall or something
- A state where any object is placed on the printer
- A state where the printer is covered or wrapped by a cloth or bed clothing

• **Be careful about internal heat buildup, which could cause fire and deform the case.**

- Avoid using the printer near a radio or TV set or from supplying it from the same 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.**



Use the printer with its grounding post connected to a convenient grounding facility.

• **If leakage occurs electric shock may result.**

Do not connect the printer's grounding post onto any of the following facilities.
- Utility 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.
- Utility 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 supply outlet.



⚠ CAUTION

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

- Use the printer only at the specified supply voltage and frequency.
- Use only the specified AC adapter with the printer.
- 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 a supply outlet with dust or debris left on its plug.

• **Neglecting to handle properly may result in printer failure, emission of smoke, fire, or electric shock.**

• **An overload may cause the power cord to overheat or fire or the circuit breaker to trip.**

- Do not leave things around the supply outlet.
- Use the printer near a convenient wall outlet, readily accessible in an emergency.

• **Otherwise the printer may not be immediately shut down in an emergency.**

- Insert the power plug fully into the supply outlet.
- If the printer is likely to be out of use for a long time, leave it disconnected from its supply outlet.

Plug or unplug the power cord or other cables with the power off and by holding the plug or connector.

Do not use the power cord or other signal cables under the following conditions.

- A state where the power cord or cable is loaded by something or trampled on.
- A state where the printer is used or carried with its power cord bent, twisted, or pulled
- Do not lay the power cord in the neighbor of a heating device.
- Do not attempt to modify the power cord unnecessarily.

• **Neglecting these cautions may cause wires or insulation to break, which could result in leakage, electric shock, or printer failure. If a power cord sustains damage contact your CBM dealer.**

Be sure to firmly insert the cable plug into its mating socket.

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

⚠ CAUTION

To prevent possible malfunction or failure observe the following.

- Avoid operating the printer without paper properly loaded.
- Avoid the use of paper not complying with specifications.
- **Otherwise thermal print head may be damaged and may result in poor print quality.**
- Do not drop any metallic object such as paper clip, pin or screw into the printer.
- Do not spill coffee or any other liquid into the printer.
- Do not spray insecticide or any other chemical liquid over the printer.
- **A metallic foreign object, if accidentally dropped 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 CBM dealer.**
- Avoid using torn pieces of paper or spliced with plastic adhesive tapes.
- Avoid forcibly pulling already loaded paper by hand.
- **Otherwise paper jam may occur. If paper jam occurs, remove it correctly by referring to "Removing Jammed Paper" in this manual.**
- Do not allow the printer to sustain strong impacts or hard jolts (e.g., trampling, dropping, striking with a hard edge).

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 electrical parts) while the printer is working.
- In case of trouble do not attempt to repair the printer. Ask CBM service for repair.
- Be careful that the paper cover does not entrap your hands or fingers.
- Be careful with sharp edges on the printer. Don't 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 supply outlet.**

ⓘ DAILY MAINTENANCE

Observe the following precautions for daily maintenance.

- When cleaning the printer, always turn it off and unplug it from the supply 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 chips, use a soft brush.
- When transporting the printer, remove the paper roll from its paper holder.

⚠ CAUTION

- **The thermal head is at a dangerously high temperature immediately after printing. Allow it to cool off before launching maintenance work.**

- Clean the thermal head by wiping the dust off the surface of the heating element on the print head with gauze slightly moistened by alcohol.

⚠ CAUTION

- **Do not touch the heating element of the print head by bare hand or via metal strip.**
- **The thermal head is at a dangerously high temperature immediately after printing. Allow it to cool off before launching maintenance work.**

- Clean the presenter by wiping the dust off the surface of the rubber roller with gauze slightly moistened by alcohol.

THE TABLE OF CONTENTS

1. GENERAL OUTLINE

The PPU-700 is a printer designed for use with a broad array of terminal equipment including data, measuring instruments, outdoor information, or as a presenter for issuing various kinds of tickets and coupon tickets.
With extensive features, it can be used in a wide range of applications.
To obtain the best results from the PPU-700 printer, please read the instructions in this manual thoroughly.

1.1 Features

(1) Paper side-insert mechanism facilitating paper insertion and maintenance.
(2) Paper width can be chosen among 58, 67, 80, and 82.5 mm.
(3) Line thermal printing allows high-speed, low-noise printing.
(4) Small size and light weight requiring minimum installation space.
(5) Long-life head and high reliability with simple mechanism.
(6) Built-in input buffer.
(7) Barcode printing is available with special command.
(8) Page mode allows free layout of printing.
(9) User-defined characters and logos can be registered in the flash memory.
(10) User-designed characters can be registered. (95 ANK characters)
(11) Detection of black mark is available. (Option)
(12) Free layout of each unit.
(13) Large-sized roll paper can be used. (Option)
(14) Paper retraction.

1.2 Unpacking

After unpacking the printer, confirm that the following are provided.

- Printer: 1
- User's manual: 1

⚠ CAUTION!

- Place the printer on the equipment positioned horizontally and stably.
- Avoid installation near heater or in direct sunlight.
- Avoid use in the environment with high temperature, high humidity, and very dirty.
- Avoid dew condensation. In the case of dew condensation, keep power off till dew condensation is cleared.

2. BASIC SPECIFICATIONS

2.1 Model Classification

The printer models are classified by the following designation method:

2.1.1 PPU Series (Printer Presenter Unit)

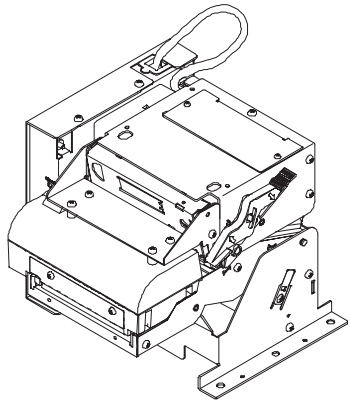
PPU-700 - R K M

Model Name

Interface
R: Serial (RS-232C)
P: Parallel (IEEE 1284 compliant)
U: USB

Character Set
K: Domestic (Supporting Kanji code) (in mm screw)
U: USA (in inch screw)
E: Europe (in millimeter)

Paper Detection
None: Standard (End)
M: Black Mark Detection (Option)



* Screw designation in character set applies only at the selection of serial interface.

2.1.2 Option

(1) PHU Series (Paper Holding Unit)

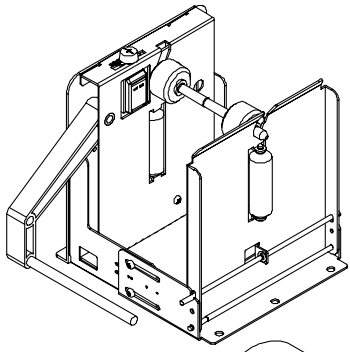
PHU-3 3 1 S

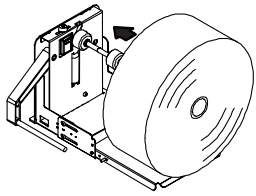
Model Name

Shaft length
3: Paper width 58 to 82.5 mm
2: Paper width 58 mm only

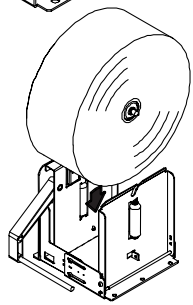
PNE Sensor
1: 1 Sensor (Standard)
2: 2 Sensors

Paper setting
S: Side (Standard)
T: Top





PHU-3**S



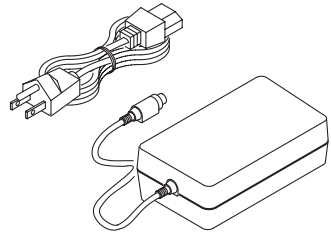
PHU-3**T

(2) 32AD Series (Power Unit)

32AD - J

Model Name

Power Cord
J: Domestic (100V 3-core cord)
U: USA (120V 3-core cord)
E: Europe (230V Class I Cord)



2.2 Basic Specifications

Item \ Model	PPU-700-RK PPU-700-PK	PPU-700-RU PPU-700-PU	PPU-700-RE PPU-700-PE
Print method	Line thermal dot print method		
Print width *1	72 mm/576 dots		
Dot density	8 × 8 dots/mm (203 dpi)		
Print speed	150 mm/sec (max., Print density level 2), (1200 dot lines/sec)		
Number of print columns	Font A: 48 columns, 12 × 24 dots Font B: 64 columns, 9 × 17 dots Font C: 72 columns, 8 × 16 dots *2		
	Kanji Font: A 24 columns, 24 × 24 dots Kanji Font: B 36 columns, 16 × 16 dots		
Character size	Font A: 1.50 × 3.00 mm Font B: 1.13 × 2.13 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, PC850, 852, 857, 858, 860, 863, 865, 866, WPC1252, Katakana		
	Kanji (JIS Level 1, Level 2)		
User memory	256 KB (Capable of registering user-defined characters and logos)		
Barcode type	UPC-A/E, JAN (EAN) 13 columnns/8 columns, ITF, CODE 39, CODE 128, CODABAR, CODE 93		
Line spacing	4.23 mm (1/6 in.), selectable by use of command		
Paper (See paper spec.)	Thermal paper roll Width: 58 to 82.5 mm External diameter: ϕ203 mm max. (when using PHU) Internal diameter: ϕ25.4 mm Paper thickness: 65 to 150 μm		
Presenter	Standard length: 90 mm		
Interface	Serial (RS-232C compliant), Parallel (IEEE1284 compliant), USB		
Input buffer	4K bytes/72 bytes		
Supply voltage	DC 24V ±7%		
Power consumption	100 W		
AC adapter specification	Rated input: AC 100V to 240V, 50/60 Hz, 150 VA Rated output: DC 24V, 2A		
Type	32AD-J	32AD-U	32AD-E
Weight	PPU: 1.6 Kg (Including control board) PHU: 0.9 Kg (Excluding paper roll)		
Outside dimensions	145 (W) × 160 (D) × 172 (H) mm (See external view)		
Operating temperature and humidity	5 to 40°C, 35 to 85% RH (No dew condensation)		
Storage temperature and humidity	–20 to 60°C, 10 to 90% RH (No dew condensation)		

Model / Item	PPU-700-RK PPU-700-PK	PPU-700-RU PPU-700-PU	PPU-700-RE PPU-700-PE
Reliability	Print head life: 100 Km, 100 million pulses (At normal temperature, humidity with recommended paper used) Auto cutter life: 1 million cuts (At normal temperature, humidity with recommended paper used)		
Safety Standard *3	VCCI Class A	UL, C-UL, FCC Class A	TUV, GS, CE marking

Notes)
*1: The value refers to the use of rolled paper of 80 mm wide.
*2: Only Katakana PC437 is valid for the code page of font C.
*3: Represents the safety standards acquired when CBM-made AC adapter (32AD series) is used.

2.3 Print Paper Specifications

2.3.1 Specified Paper

Thermal Paper Roll

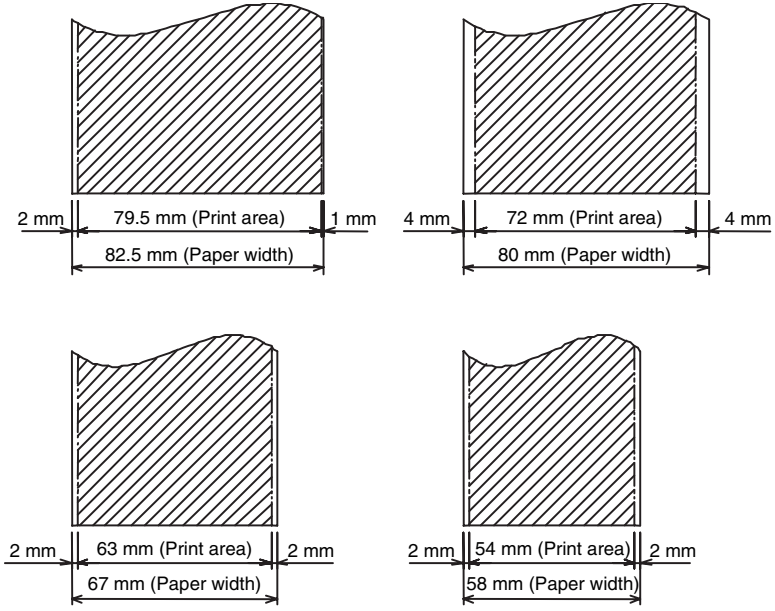
- Type: Heat-sensitive paper
- Paper width: 58 mm, 67 mm, 80 mm, 82.5 mm
- Paper thickness: 0.065 to 0.150 mm
- Roll diameter: ϕ203 max.
- Print surface: Outer side of the roll (surface)
- Core: ϕ25.4 (inner diameter)
- Recommended paper: Nippon Paper Industries TF50KS-E, EC Mitsubishi Paper Mills F230AA

Or other equivalent paper

⚠ CAUTION!

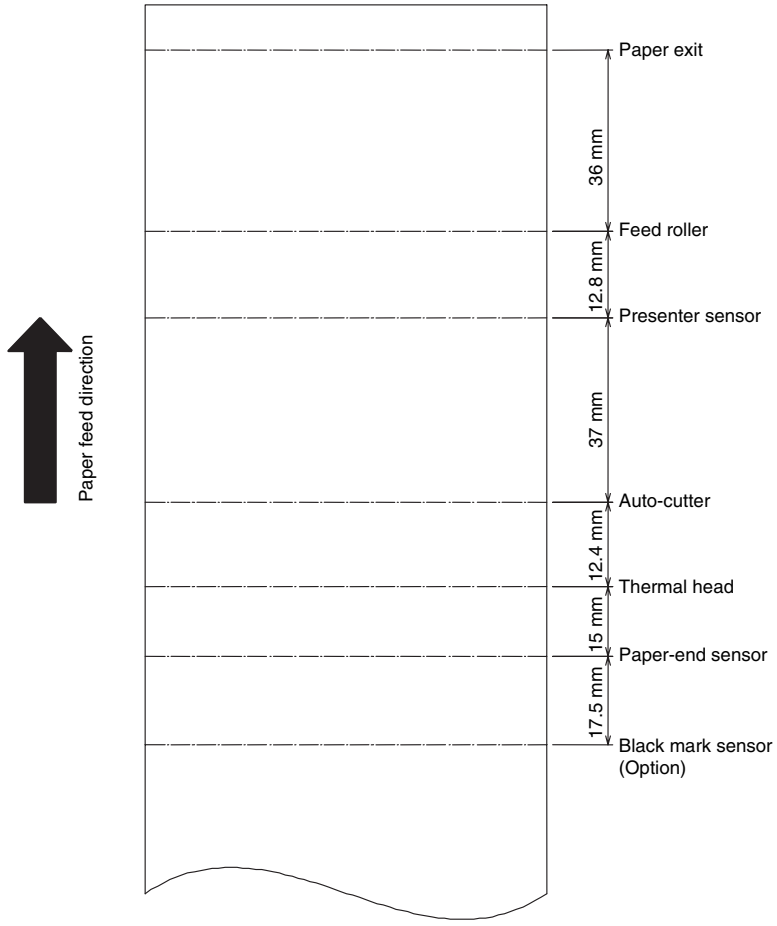
- Paper not complying with the specifications may cause some departure in print tone.
- Adjust the print tone with the DIP switch. (See "5.1 Setting DIP Switches".)
- Do not paste paper end to the core.
- If printed documents are exposed to a particular chemical or oil afterwards, coloration or faint letters may result.
- Rubbing the document surface with your nail or metallic device may cause coloration.
- Coloration occurs at a temperature of around 70°C or above. Keep documents away from heat, moisture, or light.

2.3.2 Print Position



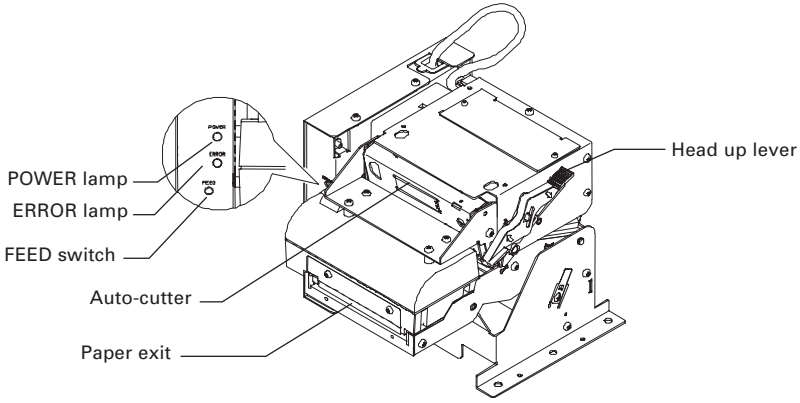
* Hatched portion: Printable area

2.3.3 Print Head and Paper Cut Position



3. APPEARANCE AND COMPONENTS PARTS

3.1 PPU-700 Printer



(1) POWER lamp
Lights when the printer is powered on.

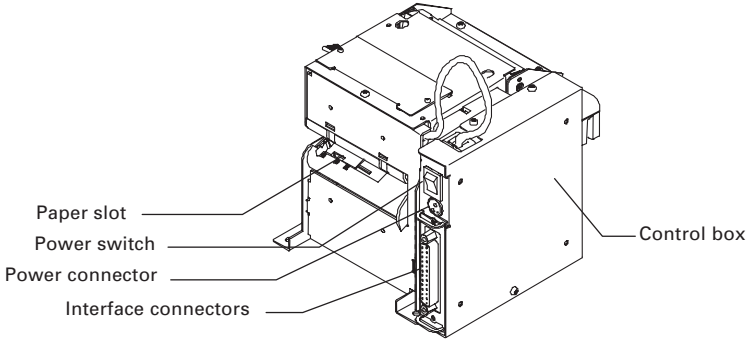
(2) ERROR lamp
Lights or blinks at the occurrence of error.

(3) FEED switch
This switch, when pressed, feeds and cuts paper and ejects the paper from the presenter.

(4) Auto-cutter
Cuts the printed paper.

(5) Paper exit

(6) Head up lever
Used when setting paper or for maintenance.



(7) Paper slot

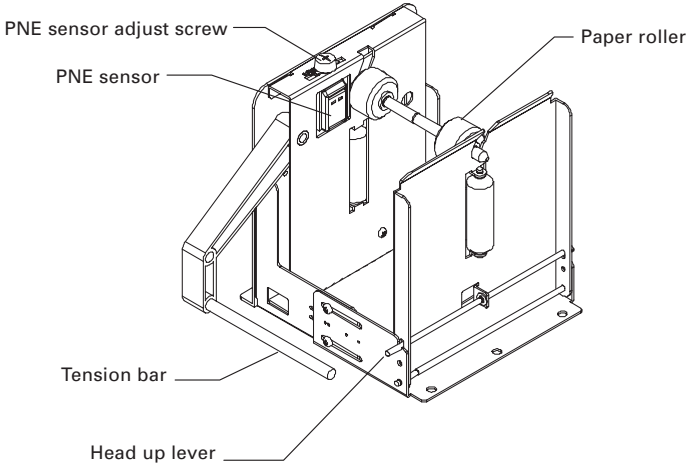
(8) Power switch
Switch to turn ON/OFF presenter power.

(9) Power connector
Connector for connecting the AC adapter (32AD) supplied with the printer.

(10) Interface connectors
Connects the interface cable for communication. Serial, parallel, and USB connectors are provided.

(11) Control box
Control board is contained.

3.2 PHU-3**(Paper Holding Unit) (Option)



(1) PNE sensor
Sensor to detect that paper is low.

(2) PNE sensor adjust screw
Screw to adjust the amount of paper by moving the sensor position.

(3) Tension bar
Absorbs the shock at the rotation of paper roll.

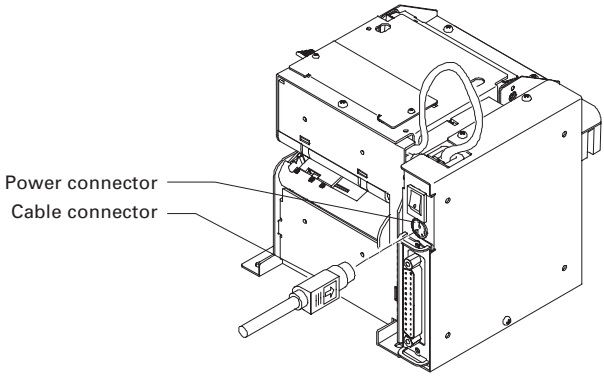
(4) Head up lever (PHU-3**T: Not provided for paper top set type)
Used for opening the side door for paper setting.

(5) Paper roller
Used for supporting paper roll.

4. OPERATION

4.1 Connecting AC Adapter and AC Power Cord

1. **Turn the printer power off.**
2. **Confirm the direction of the cable connector of the AC adapter and insert it into the power connector until it is locked.**

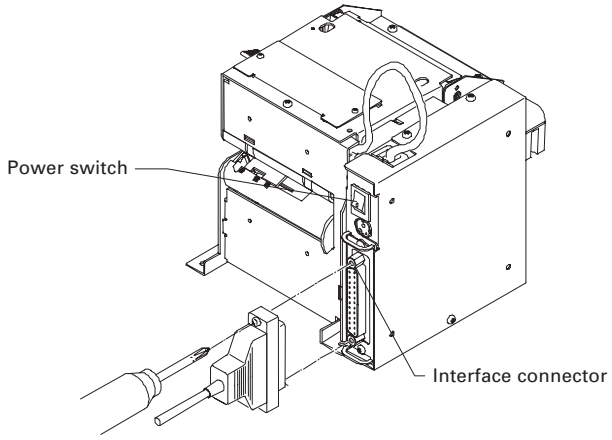


⚠ CAUTION!

- Keep 24 V ±7% for supply voltage.
- Always hold the connector portion when attaching or removing the cable connector of the AC adapter.
- AC power supply must be separated from the equipment that may cause noise.
- Do not pull the power cord. Otherwise, the cord may be damaged resulting in a fire, electric shock, or disconnection.
- When lightning is coming, unplug the AC power cord from the wall outlet and do not use the printer. Lightning strike may cause a fire or electric shock.
- Keep the power cord off any heating instrument. The cover of the cable may be melt resulting in a fire or electric shock.
- If you leave the printer unused for a long period, keep the AC power cord unplugged from the wall outlet for safety purpose.

4.2 Connecting Interface Cables

1. **Turn off the printer (and the computer to be connected).**
2. **Orient the interface cable connector correctly and insert it to the interface connector of the printer.**
3. **Secure the cable connector firmly.**
4. **Connect the other end of the interface cable to the computer.**

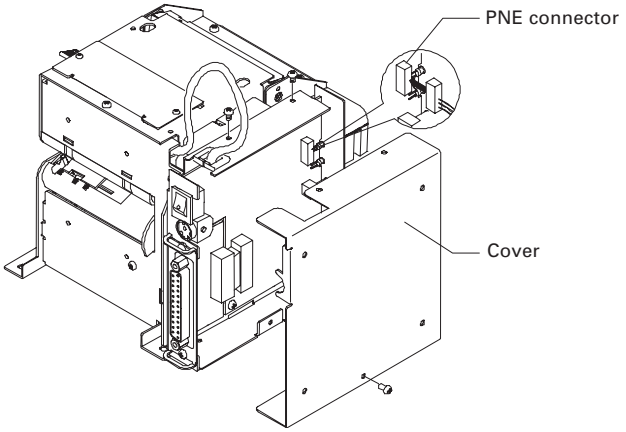


⚠ CAUTION!

- Verify the pin assignment of the interface connector and cable referring to “6. Parallel Interface” and “7. Serial Interface”. Wrong wiring may result in fault, malfunction, or the like of the computer as well as the printer.
- Always hold the connector when connecting or disconnecting the interface cable. Holding the cable may cause disconnection of the cable core.
- Confirm that the interface cable is connected securely. Poor contact may result in a failure in communication.

4.3 Connecting Paper Holding Unit (PHU) (When PHU is used)

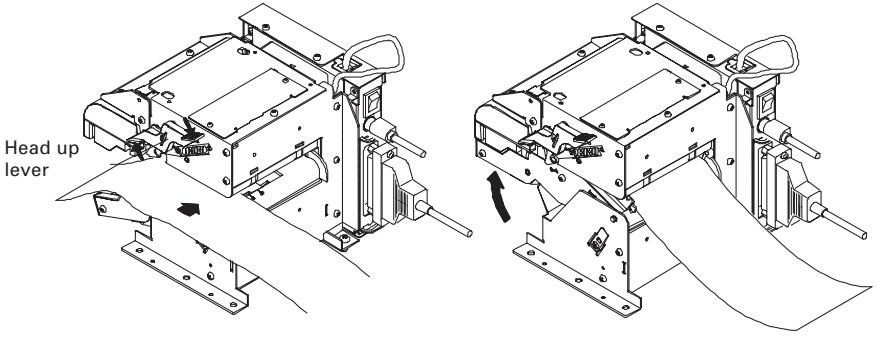
1. **Turn the printer power off.**
2. **Remove the three screws on the control box and open the cover.**
3. **Connect the PHU to the PHU connector on the printed board in the control box in the correct direction.**



4.4 Setting/Replacing Paper Roll

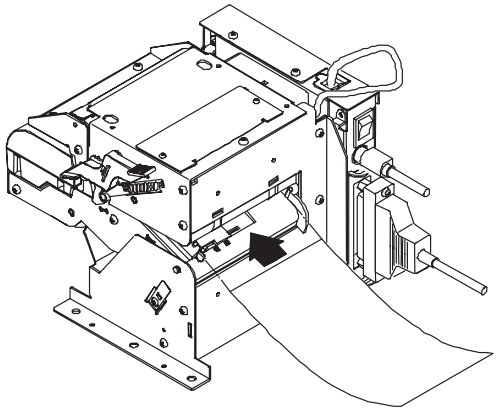
4.4.1 Paper Setting from Paper Side-in

1. **Open the paper guide with the head up lever.**
2. **Cut the top end of the paper roll at about right angle to the roll direction. (Fig. 4-1)**
3. **Insert a paper roll.**
4. **Confirm that the roll paper end is rest in the guide. Close the paper guide.**
5. **Roll paper is automatically loaded and paper initializing operation starts.**
6. **When paper initialize operation is finished, the printer is ready for printing.**



4.4.2 Paper Setting by Auto-loading

1. **Keep the paper guide closed.**
2. **Cut the end of the roll paper almost at right angle. (Fig. 4-1)**
3. **Insert the roll paper from the paper slot till it gets a drag.**
4. **Paper is detected and automatically fed for a certain time and then paper initialize operation starts.**
5. **When paper initialize operation is finished, the printer is ready for operation.**
6. **When paper feeding fails, extract the paper once and repeat the procedure from step 3.**



⚠ CAUTION!

- Always use the specified type of paper roll.
- Use of other type of paper roll may result in a failure in assuring the print quality, head life, presenter function, etc.
- Paper roll with fluffed or folded end shall not be inserted. Paper jam or wrong insertion of paper may occur.
- Rewind the paper roll to remove loose winding.
- When the paper roll is set slanted, lift the head up lever and adjust the paper roll position or remove the paper roll and then place it correctly.
- During auto-loading, do not touch the roll paper by hand. Otherwise irregular paper feed or paper skew may result.
- Do not lift or hold the roll paper during printing. Otherwise, paper jam may occur.
- After paper setting is completed, the printer is ready for printing. In this case, note that printing occurs just after paper setting if data remains in the buffer.

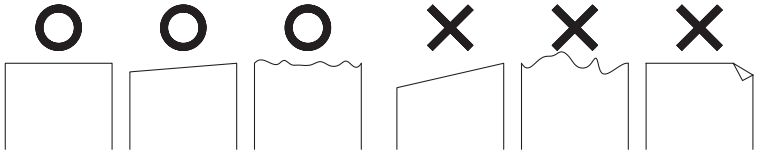
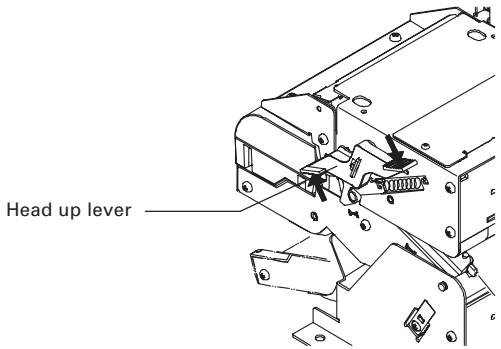


Fig. 4-1

4.5 Removing the Remaining Paper Roll

1. **Operate the head up lever.**
2. **The guide opens. Remove the roll paper.**

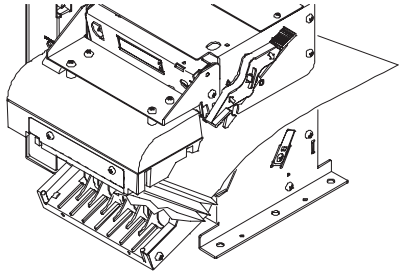


⚠ CAUTION!

The thermal head is at a high temperature immediately after printing. Sufficient care must be taken in the work just after printing.

4.6 Removing Jammed Paper

1. **Turn the printer power off.**
2. **Cut the roll paper at the point near the paper slot.**
3. **Operate the head up lever to open the guide.**



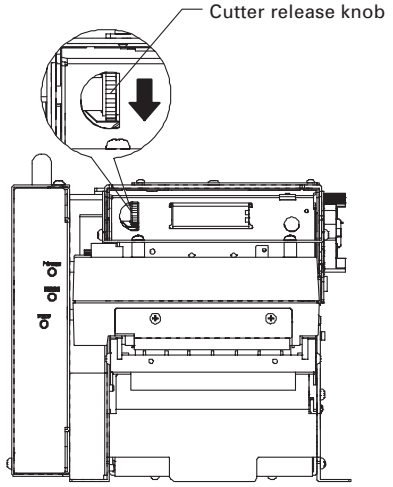
⚠ CAUTION!

- Do not access the printer head just after printing operation because the print head remains hot.
- Do not touch the surface of the heated portion of the head with a bare hand or with a metal tool.

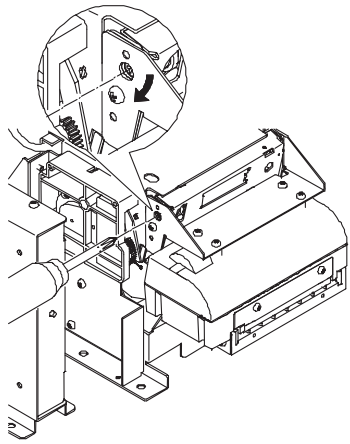
4.7 Removing Cutter Lock

When cutter lock is used, opening the guide with the head up lever may fail. Forced opening may cause a break. Remove cutter lock in the following procedure.

1. **Turn on the printer. The auto-cutter starts initialize operation to restore the cutter.**
2. **If the above operation is not successful for restoring the cutter, turn off the printer and turn the cutter release knob of the auto-cutter in the arrow direction using a pointed tool (such as pincette or ball-point pen). The blade of the auto-cutter will be restored.**
3. **Remove the paper remainder on the blade of the cutter by using tweezers or the like.**



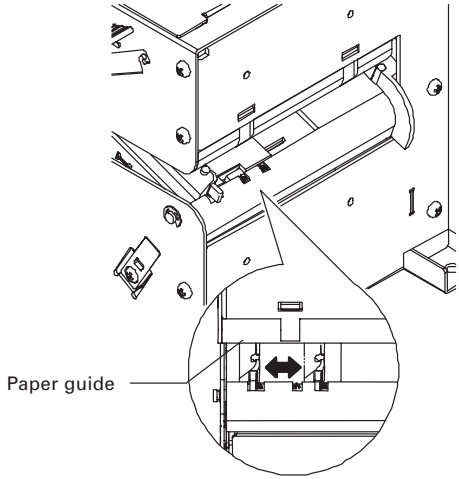
4. **When the control box is set apart from the printer, turn the cross hole shown in the figure in the arrow direction to restore the blade.**



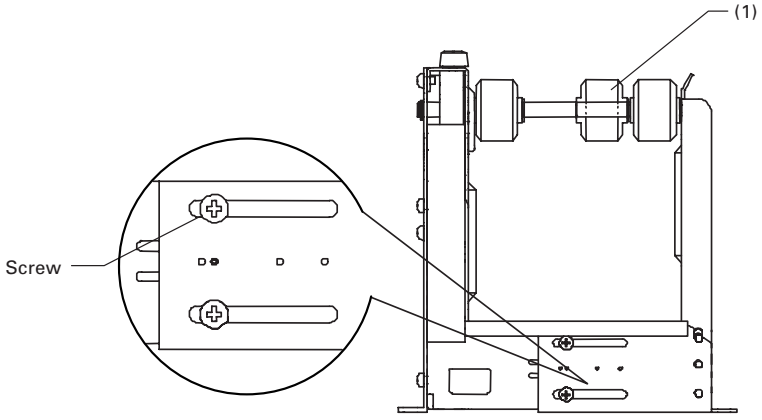
4.8 Changing Paper Width

The printer can accept four kinds of paper widths: 82.5 mm, 80 mm, 67 mm, and 58 mm.
Use the following procedure to set the paper width.

1. **Move the paper guide of the paper slot at the back of the printer to meet the paper width.**
2. **Command**



3. **When using the paper holder (PHU-3***), loosen the screws (4 places including other side) shown in the figure, adjust the holder to the specified width, and then tighten the screws.**
   When the paper width is 58 mm or 67 mm, remove the E ring and move the paper roller located at position (1) in the figure.



4.9 FEED Switch

1. **The FEED switch, when pressed, feeds paper, cuts the paper, and then ejects the paper.**

4.10 Paper End

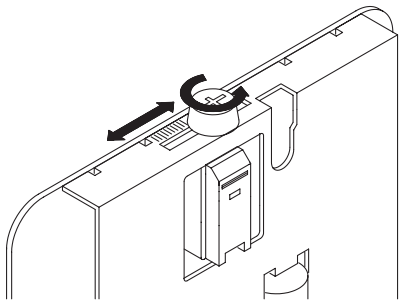
1. **If no print paper is present in the printer, Busy, Fault, and PError alarms are sent to the computer through the parallel interface or DTR output is sent to the printer through the serial interface.**
2. **If data remains in the buffer, printing occurs after supplying paper.**
3. **Set a new paper roll in accordance with "4.4 Setting/Replacing Paper Roll".**
4. **After paper setting, Busy (DTR), Fault, and PError outputs are cleared. For details, refer to "6. Parallel Interface" and "7. Serial Interface".**

4.11 Paper Near-End Sensor (When PHU-3*** is used)

1. **When the print paper remainder becomes low, the Paper Near-End (PNE) sensor sends a signal to the computer telling the paper is low and stops printing. This function is enabled or disabled by the memory switch. For memory switch setting, refer to "6.2 Memory Switch Functions".**
2. **The PNE sensor can be adjusted in the following range by loosening the top screw.**
3. **Set a new paper roll in accordance with "4.4 Setting/Replacing Paper Roll".**

Type	Number of PNE Sensors	Adjustable Range	
		Level 1	Level 2
PHU-3*1*	1	ϕ23.6 to ϕ50	—
PHU-3*2*	2	ϕ23.6 to ϕ40	ϕ33.6 to ϕ50

Note: For PHU-3*2*, the space between level 1 and level 2 shall be fixed at 5 mm.



4.12 Paper Retraction

1. **This printer has a function of automatically collecting the ejected paper. This function is enabled or disabled by the memory switch. For memory switch setting, refer to "6.2 Memory Switch Functions".**
2. **After print paper is cut, paper is collected after a certain period of time has passed with the presenter loaded with paper.**
3. **The time can be adjusted by a command.**
4. **Before collecting the ejected paper, allow a space for paper path at the mounting area and at the bottom of the printer and prepare a collection box. For details, refer to "xxxxx".**

4.13 Self-printing

1. **This printer has a function of printing a set of predetermined characters. Turn on the printer while pressing the FEED switch. Hold the FEED switch pressed for about 1 second and then release the FEED switch. Then the printer starts self-printing. Model name, ROM version, DIP switch status, memory switch status, and built-in characters are printed.**
2. **After self-printing is completed, the printer performs initialize operation and is ready for printing.**

⚠ CAUTION!

Do not print with low paper supply.

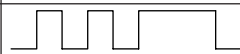
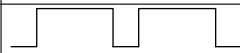
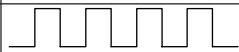
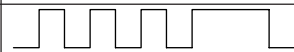
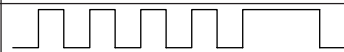
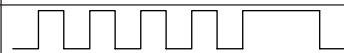
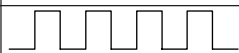
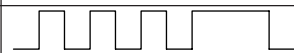
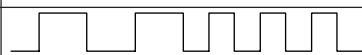
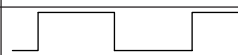
4.14 Operation Panel and Error Indication

(1) POWER LED (Green)

ON: Printer is powered on.
OFF: Printer is powered off.
Blinking: The printer is in some operation.

(2) ERROR LED (Red)

The ON/Blink status indicates the status of the error. Blinking also occurs while the printer is waiting for macro execution. (For details, refer to Command Details and Macro execution command.)

ERROR	POWER LED	ERROR LED
Paper end	Lights	Lights
Paper near-end	Lights	Lights
Cover open	Lights	Lights
Cutter motor lock	Lights	
Head overheat	Lights	
Memory check error		Lights
Low voltage error	Lights	
High voltage error	Lights	
Sum check error		
CPU abnormal operation		
Presenter error	Lights	
Black marked paper detection error	Lights	
Macro execution wait	Lights	

Description of Errors

- Paper end
  When the paper roll has run out, the Paper end sensor located in the paper path near the print head detects the end of the paper roll, causing the PE to be output and the printing to stop.

- Paper near-end
  When the paper roll diameter is reduced to the lower limit, the Paper near-end sensor is activated and causes the PE to be output, indicating that the paper supply has become low.

- Cover open
  When the cover is open, the cover open sensor reacts to stop the printing operation.

- Head overheat
  To protect the print head from overheating, the head temperature sensor is activated if the head temperature rises over approx. 65°C, causing ERROR to be output and the printing to stop. Printing resumes automatically when the head temperature lowers below 60°C.

- Cutter motor lock
  While the cutter motor is running, if the cutter position sensor inside the cutter unit keeps ON or OFF for approx. 1 second or more, the printer judges that the motor has locked, causing the cutter operation and printing operation to stop. (See “4.7 Removing Cutter Lock”.)

- Low voltage error
  This error occurs when the voltage supplied to the printer is too low. If this error occurs, turn the printer power off immediately.

- High voltage error
  This error occurs when the voltage supplied to the printer is too high. If this error occurs, turn the printer power off immediately.

- Presenter error
  This error occurs when the presenter cannot eject paper or it cannot collect the ejected paper. To clear this error, remove the jammed paper or press the FEED switch.

- Black mark detection error
  This error occurs when the printer cannot detect the black mark. If this error occurs, turn the printer power off and confirm the paper and memory switch setting.

5. DIP SWITCHES

5.1 Setting DIP Switches

The DIP switch is located on the serial interface board of the printer.
DIP switch setting with the printer power on is not valid. After setting, turn the printer power on.

1. **Turn the printer power off.**
2. **Remove the screw from the board. (Be sure not to have the screw be lost.)**
3. **Slide the interface board to remove it.**
4. **Set the DIP switch.**
5. **After setting, remount the interface board and screw it.**

⚠ CAUTION!

- Pay attention to the edge of the interface board.
- The screw used is M2 × 3 mm. Do not use screws of other size. (If the screw is lost, use the screw of the same size. Do not use longer size.)
- Turn the printer power off before setting DIP switches. Otherwise, a failure may occur.
- Do not use keen edged tool when setting the DIP switch.
- Do not use the printer with the interface board removed.

5.2 DIP Switch Functions

DIP Switches

Switch No.	Function	ON	OFF	Factory Setting
1	Setting and selecting condition for communication	DIP switch setting is enabled.	DIP switch setting is disabled.	ON
2	Communication mode	Xon/Xoff	DTR/DSR	OFF
3	Bit length	7-bit	8-bit	OFF
4	Parity check	With parity	No parity	OFF
5	Selecting parity	Even parity	Odd parity	OFF
6	Selecting baud rate	(See Table 1)		ON
7				ON
8	INIT	Reset	Disabled	OFF

Table 1 Selecting baud rate

Baud Rate (bps)	Switch No.	
	6	7
2,400	OFF	OFF
4,800	ON	OFF
9,600	OFF	ON
19,200	ON	ON

6. MEMORY SWITCHES

6.1 Setting Memory Switches

Memory switch is a generic name for the following.

(1) Memory switches MSW1, MSW2, MSW3, MSW4
(2) Customize value
(3) Condition for communication through serial interface

The memory switch can be selected, changed, or written by the combination of three actions: pressing the FEED switch, pressing and holding the FEED switch, and opening or closing the paper cover.

1. Entering memory switch setting mode

   Set paper to the printer and keep the printer cover open. With the FEED switch pressed and held, turn the printer power on, and then press the FEED switch twice. Close the cover. If the current settings of the memory switch, etc. are printed, the printer is now in the memory switch setting mode.

2. Selecting memory switch

   When the FEED switch is pressed short (within 2 seconds), printing occurs in the order of "MSW1" → "MSW2" → "MSW3" → "MSW4" → "Write/ Factory Setting" → "MSW1" → ..... repeatedly. When the memory switch you want to change is reached, press and hold the FEED switch (for more than 2 seconds).

3. Selecting each switch item

   There are eight setting items for each switch. Press and hold the FEED switch for long (within 2 seconds), the printer goes to the next item and prints the current setting of the item. Repeat pressing and holding till the item you want to change setting is reached.

4. Changing the setting

   When the item you want to change is reached, press the FEED switch short. The changed set value is printed. To return to the previous setting press the FEED switch short. When you press the FEED switch long, the set value is accepted and then the printer goes to the next setting item.

5. Returning to the memory switch select mode

   When the setting of the desired content is completed, open the paper cover and then close the paper cover. This allows the printer to print the setting of the changed memory switch.

6. Saving the setting and exiting the memory switch setting mode

   Press the FEED switch short to move to "Write/Factory Setting". Then press and hold the FEED switch. The printer prints the content of new setting and exits the memory switch setting mode to return to the normal standby state.
   * Unless saving the setting is executed, the changed setting cannot be enabled.

7. Initializing the memory switch
   When you want to return the memory switch setting to the initial state, go to "Write/Factory Setting" in the above procedure. Here, open the paper cover and press and hold the FEED switch. This allows the printer to return to the initial state.
   * All the memory switch settings are returned to the factory set values.

6.2 Memory Switch Functions

MSW1

Switch No.	Function	0 (OFF)	1 (ON)	Factory Setting
1-1	Sends power ON notification.	Send	Does not send	OFF
1-2	Input buffer	4K bytes	45 bytes	OFF
1-3	Condition to become Busy state	Receive buffer full off line	Receive buffer full	OFF
1-4	Treatment of data when receiving error occurs	Replaced with "?"	Ignored	OFF
1-5	Automatic carriage return (CR command)	Enabled	Disabled	OFF
1-6	Reserved	Fixed	—	OFF
1-7	Selects serial #6 pin DSR signal.	Not used	Used	OFF
1-8	Selects serial #25 pin INIT signal.	Not used	Used	OFF

MSW2

Switch No.	Function	0 (OFF)	1 (ON)	Factory Setting
2-1	Reserved	—	Fixed	ON
2-2	Auto-cutter	Disabled	Enabled	ON
2-3	Buffering printing	Disabled	Enabled	ON
2-4	Full digit printing	PPU	EPSON	ON
2-5	Treatment after PE recovery when cover is closed	Print next line	Print top	OFF
2-6	Reserved	Fixed	—	OFF
2-7	Reserved	Fixed	—	OFF
2-8	NPE enabled/disabled	Enabled	Disabled	OFF

MSW3

Switch No.	Function	0 (OFF)	1 (ON)	Factory Setting
3-1	Recovery from cutter error with FEED switch	Enabled	Disabled	OFF
3-2	Cover open error at selection of recoverable error	Cover closed	Command	OFF
3-3	Selects parallel #31 pin RESET signal	Reset	Ignored	OFF
3-4	Selects paper	Thermal paper	Black marked paper	OFF
3-5	Reserved	Fixed	—	OFF
3-6	Reserved	Fixed	—	OFF
3-7	Selects mode	PPU mode	L90 mode	OFF
3-8	Printer cover open during printing	Automatic recovery error	Recoverable error	OFF

MSW4

Switch No.	Function	0 (OFF)	1 (ON)	Factory Setting
4-1	Reserved	Fixed	—	OFF
4-2	Reserved	Fixed	—	OFF
4-3	Setting first print position at power on	Set	Not set	OFF
4-4	Collecting operation	Disabled	Enabled	OFF
4-5	Direction of collection	Backward	Forward	OFF
4-6	Paper ejection	Normal ejection	Direct ejection	OFF
4-7	Presenter operation with paper	Operation disabled	Operation enabled	OFF
4-8	Reserved	Fixed	—	OFF

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