

CITIZEN

**Printer Module Unit
MODEL PMU3300
User's Manual**

CITIZEN SYSTEMS JAPAN CO., LTD.

WEEE MARK

En

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

Ge

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

Fr

Si vous souhaitez vous débarrasser de cet appareil, ne le mettez pas à la poubelle avec vos ordures ménagères. Il existe un système de récupération distinct pour les vieux appareils électroniques conformément à la législation WEEE sur le recyclage des déchets des équipements électriques et électroniques qui est uniquement valable dans les pays de l'Union européenne.

Les appareils et les machines électriques et électroniques contiennent souvent des matières dangereuses pour l'homme et l'environnement si vous les utilisez et vous vous en débarrassez de façon inappropriée.

Sp

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

It

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

Du

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

Da

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

Por

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

Pol

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Compliance Statement for European Users

CE marking shows conformity to the following criteria and provisions:

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

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

http://www.citizen-systems.co.jp/en/prINTER/download/eu_doc.html

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.

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

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

Pour L'utilisateurs Canadiens

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

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

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.

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- Do not use or store this product in place where it will be exposed to:
 - Flames or moist air
 - Direct sunlight
 - Hot airflow or radiation from a heating device
 - Ill-ventilated atmosphere
 - Chemical reactions in a laboratory
 - Airborne oil, steel particles, or dust
 - Static electricity or strong magnetic field
- Do not drop any foreign object or spill liquid into the printer. Do not place any object on the printer either.
- 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 dealer.
- Do not handle the printer in the following ways:
 - Do not allow strong force or impacts to the printer such as trampling, dropping or striking.
 - Never attempt to disassemble or modify the printer.
- 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.
 - The plastic bag the printer come in must be disposed of properly or kept away from children. Wearing it over the head may lead to suffocation.
- Please observe the following precautions for power source and power cord:
 - Do not plug or unplug the power cord with wet hand.
 - Use the printer only at the specified supply voltage and frequency.
 - Check to make sure that the supply outlet from which the printer is powered has a sufficient capacity. An overload may cause the power cord to overheat or fire or the circuit breaker to trip.
 - Do not use a deformed or damaged power cord.
 - Do not move the printer while the printer power is on.
 - Do not use the printer with objects placed on top or stepped on.
 - Do not use or carry the printer with its power cord bent, twisted, or pulled. Neglecting these cautions may cause wires or insulation to break, which could result in leakage, electric shock, or printer failure.
 - Do not attempt to modify the power cord unnecessarily.
 - 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.

- 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.

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.
- Be careful about internal heat buildup, which could cause fire and deform the case.
 - 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 others.
- Placing a printer near a TV or radio may cause malfunctions such as reception failure or data corruption due to noise. Avoid the followings.
 - 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.
 - Avoid using the printer with a device that is a strong source of noise.

<ul style="list-style-type: none"> ● 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: <ul style="list-style-type: none"> 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.
<ul style="list-style-type: none"> ● To prevent possible malfunction or failure observe the following. <ul style="list-style-type: none"> Avoid operating the printer without paper properly loaded. Avoid the use of paper not complying with specifications. Avoid using torn pieces of paper or spliced with plastic adhesive tapes. Avoid forcibly pulling already loaded paper by hand. Avoid using a sharp pointed device to operate panel keys. Avoid using it installed in a direction other than specified
<ul style="list-style-type: none"> ● 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.
<ul style="list-style-type: none"> ● To prevent injury and printer failure from worsening, observe the following: <ul style="list-style-type: none"> Do not touch the printing surface of the thermal head. Do not touch any of 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. Please ask service. Be careful that the paper cover or cases do not entrap your hands or fingers. Be careful with sharp edges on the printer. Do not allow them to injure you or damage property. ● 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.
<p>[Other precautions regarding failure]</p> <ul style="list-style-type: none"> ● Never touch the head by hand just after printing as it is heated during printing. Otherwise, there is a risk of burn. ● Never open the printer cover during printing and while the cutter is in operation. Otherwise, auto cutter may be broken. ● As thermal head heater and driver IC are easy to break by static electricity, do not contact metal to them. ● Do not block the paper exit. Never hold the paper during printing. ● Do not print in the state where moisture is present on the head surface due to condensation, etc. <ul style="list-style-type: none"> This may cause damage to the thermal head. When recovering from condensation, make it completely dry. ● Do not operate the printer continuously more than 10 minutes. (paper feed error may occur from overheating in the motor) ● If the printer is used in low temperature or humid atmosphere, the print paper may be contaminated. ● This printer has no drip-proof construction. Do not get it wet or operate it with wet hands. ● This printer has no dust-proof construction. Avoid using it in a dusty atmosphere. ● Set the roll paper straight and without slack. ● Do not transport with the roll paper set in the roll paper holder.
<p>[Print quality]</p> <ul style="list-style-type: none"> ● In the case of intermittent printing where printing and paper feeding is interrupted by the status of waiting for data coming from the host, paper feed may sometimes be disordered in the 1 to 3 dot lines from the start of printing. Especially, care must be taken when printing graphics or the like. ● Printing may be disordered in the first 1 to 2 dots of printing just after the operation of auto cutter. ● Caution on operation is required as the printer feeds paper as much as several dots after closing the printer cover. ● Use of paper not recommended may be a disclaimer of warranty in print quality or life of thermal head. Especially, inclusion of "Na+, K+, Cl-" in the component of recording paper may degrade the life of thermal head remarkably. ● If you carry out the printing in low-temperature (0°C or less) environment, the printing result fades. ● The printing result is affected by the condition of used thermal paper (storage environment, aged deterioration). ● If the product is left for a while after the manual cut or when power is ON, the paper feed may be disordered (jammed character) between few dot lines after the printing is started. Therefore, caution such as a printing after inserting line feed is necessary.
<p>[Others]</p> <ul style="list-style-type: none"> ● This product uses plated sheet steel and may cause rust in the edge section. This will not affect the printer's function.

Contents

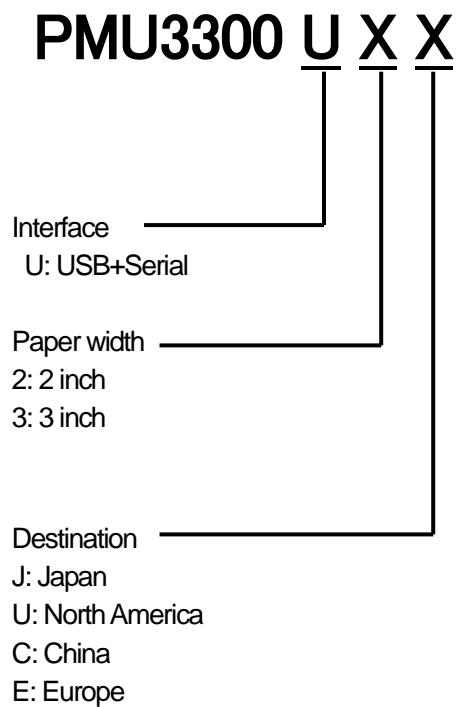
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1. PRODUCT OUTLINE

1.1 Features

- 1) Equipped with Auto cutter (Full/Partial cut)
- 2) Low noise printing
- 3) Includes input buffer
- 4) High-speed printing up to 150mm/sec
- 5) Operation in low-temperature environment
- 6) Memory switches allow customization and selection of functions
- 7) User defined characters and logo can be registered in non-volatile user memory.
- 8) Printing layout can be freely adjusted by page mode
- 9) Barcode printing is available. The two-dimensional barcode is supported.
- 10) Dedicated paper holder unit PHU-500 is available as an option.

1.2 Model Classifications



1.3 Items in the package

Printer
Mounting collars
Screws for mounting collars
Safety instruction
File download link introduction

2. GENERAL SPECIFICATION

2.1 Printing specification

Item	PMU3300 U2 (2 inch)			PMU3300U2 (3 inch)	
Printing Method	Line thermal (thermal printing method)				
Dot configuration	576 dots/line				
Dot density	8 dots / mm				
Printing speed *1	MAX 150mm/ sec. (1200 dot line / sec.)				
Paper feed	0.125mm				
Printing line columns	Font	Maximum number of columns / 3 inch (576 dots)	Maximum number of columns / 2inch (384 dots)	Font configuration (H x V)	Font size (H x V)
	Font A	48	35	12 x 24 dot	1.50 x 3.00mm
	Font B	64	46s	9 x 17 dot	1.13 x 3.00mm
	Font C	72	52	8 x 16 dot	1.00 x 2.00mm
	Kanji Font A	24	17	24 x 24 dot	3.00 x 3.00mm
	Kanji Font C	36	26	16 x 16 dot	2.00 x 2.00mm
Character type	Alphanumeric, International Characters Code 437, 850 (858), 852, 857、858、860、863、864、865、866 WPC1252, Katakana, Thai code18, WPC1258 Japanese Kanji (JIS I / II), Non-Kanji, JIS-C6226-983 Simplified Chinese GB18030-2000				
User memory	384KB (User created logo can be registered)				
Bar codes	EAN (13digits / 8digits), ITF, CODE39, CODE128, CODABAR UPC-A/E, CODE93, PDF417, QR code				
Minimum length	70mm				
Line feed rate	4.25mm (approx. 1/6 inch) can be set with command				
Printing paper	Paper width: 58 / 60mm		Paper width: 80mm		
	Paper thickness 60~75μm				
Interface	Serial (Asynchronous full-duplex communication), USB2.0 (Full-Speed)				
Input buffer	4K / 45 byte				
Power source	Input voltage DC24V±10% / Power consumption 1.9A (9A at peak)				
Weight	700g				
Operating temperature	-15~65℃ / 10~85% (no condensation), Guarantee of print quality +5 - +45℃				
Storage temperature	-40~85℃ / 10~85% (no condensation)				
Machine reliability	Head life: 50km, 50million pulse (normal temperature, normal humidity, recommended paper) Auto cutter life:1 million cut (normal temperature, normal humidity, recommended paper)				

- *1 - The printing speed above should be under the conditions of voltage at 24V, 25°C, and printing duty 12.5%.
 - The printing speed may be slow depending on the setting of printing condition or combination of commands.

2.2 Printing Paper Specification (Thermal paper)

- | | |
|------------------------|---|
| 1) Paper width | 2 Inch: 58 / 60 (+0, -1) mm
3 Inch: 80 (+0, -1) mm |
| 2) External dimensions | |
| Roll diameter: | Less than $\phi 203\text{mm}$ |
| Core diameter: | Core inner diameter $\phi 12$ / Outer diameter $\phi 18$ or
Core inner diameter $\phi 25.4$ / Outer diameter $\phi 32$ |

NOTE:

- The roll core of the paper should be placed in parallel to the printer platen.
- When the outer diameter of the roll paper is $\phi 80\text{mm}$ or more, printing unevenness and character collapse may occur due to repeated stoppage of paper feed. To prevent this, use additional dumper mechanism.
- Never switch the paper width during operation.

- 3) Paper thickness : 60μm to 75μm

- #### 4) Recommended thermal paper

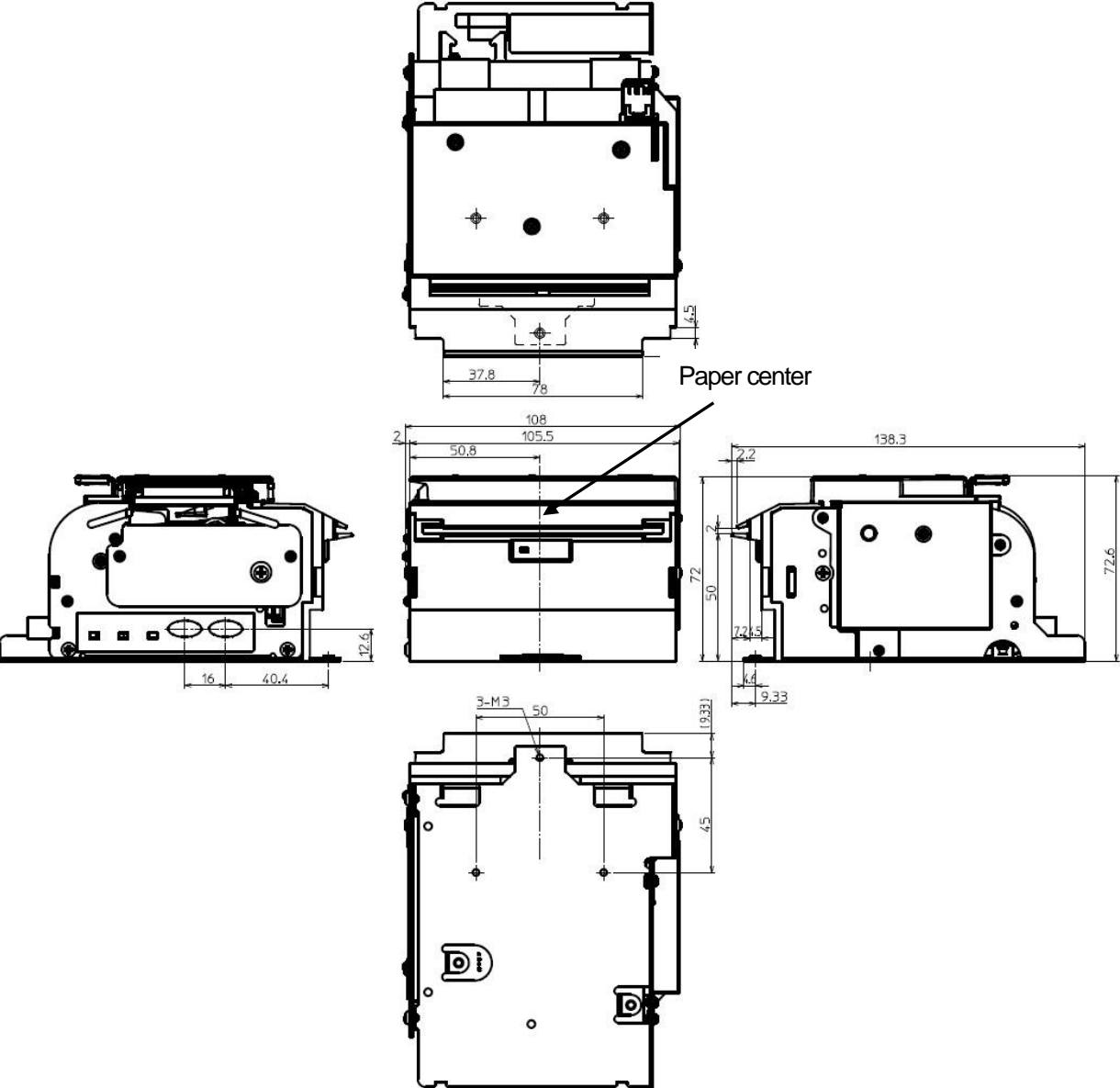
It is necessary to change the print density setting depending on the paper type and paper thickness. Change the density setting with a memory switch or command.

Manufacturer	Product name	Features
Nippon Paper	TF50KS-E2D	normal type
Oji Paper	PD160R	high quality preservation type

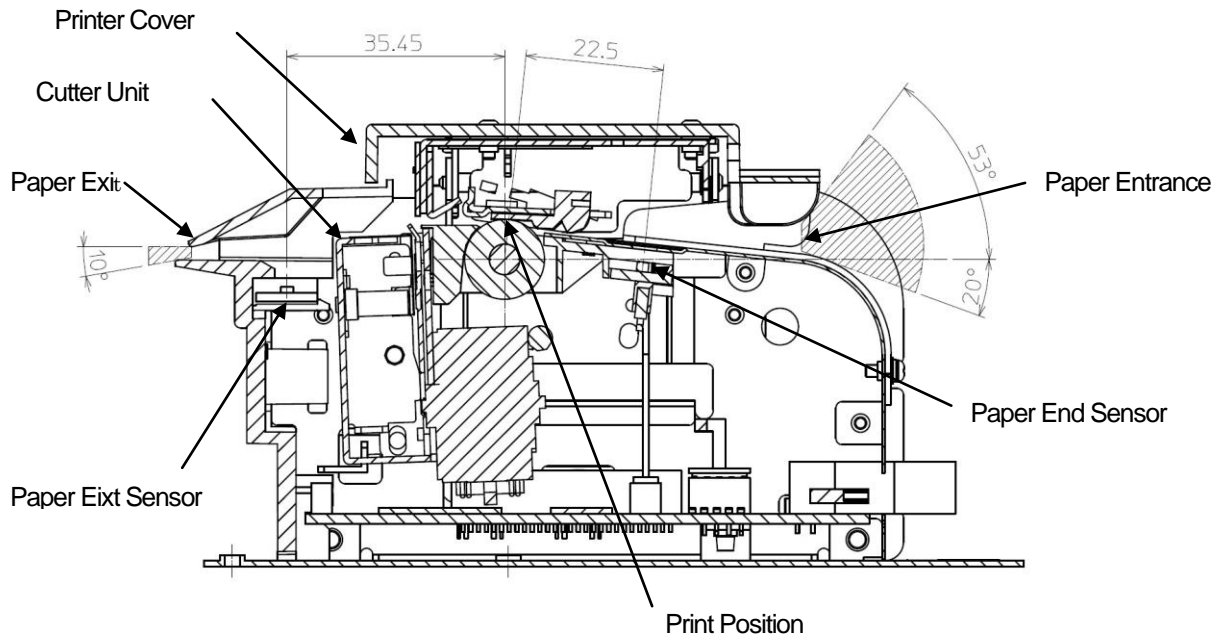
* The printing result is affected by the condition of used thermal paper (storage environment, aged deterioration).

3. EXTERNAL VIEW AND NOTE ON THE ENCLOSURE

3.1 Dimensions



3.2 Internal structure

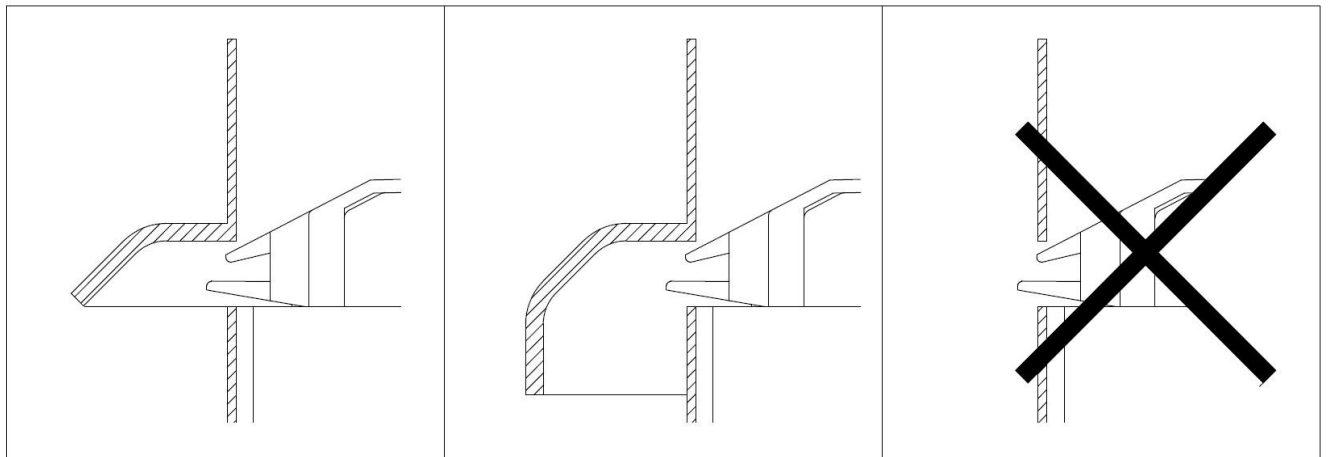


3.3 Notes on the enclosure side

The PMU3300 is a printer that can be installed in various devices. Please pay attention to the following points regarding the enclosure design and so on.

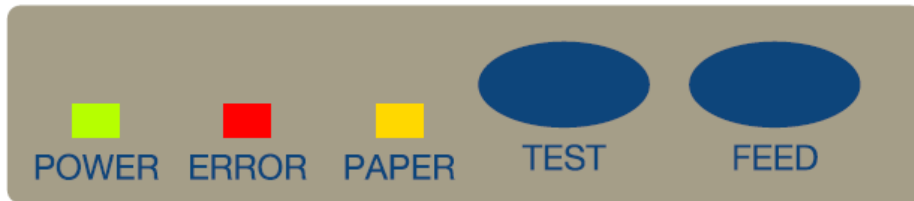
- Please consider the shape to prevent dust and water droplets from getting in from the outside.
- If smooth paper ejection is interfered with near the paper exit, a paper jam may occur inside the printer, so cover the paper exit and provide a space for the ejected paper to fit.

The picture below shows an example of a cover near the paper exit in order to meet the above conditions.



- The paper can be charged by static electricity during printing, which may cause the ejected paper to stick to the printer, so be sure to release static electricity from the printer. For example, ensuring grounding from the printer frame to the enclosure side; install a static brush or other device near the exit to discharge the paper.

4. OPERATION PANEL

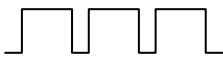
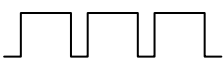







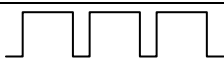



4.1 LED

There are three LEDs on the operation panel.

- 1) POWER LED (Green) Indicates the power status.
 - ON: Power is supplied.
 - Blinking: Memory check error. Hexadecimal dump mode, Memory switch setting mode
 - OFF: Power is not supplied.
- 2) ERROR LED (Red) Indicates the status of various errors, etc.
 - ON: Cover open
 - Blinking: Various kinds of error, Macro execution wait
 - OFF: Normal operation
- 3) PAPER LED (Orange) Indicates the status of the paper.
 - ON: Paper-end
 - Blinking: Paper near-end
 - OFF: Normal operation

4.2 Details on Error Indication by LED

Error		POWER LED (Green)	ERROR LED (Red)	PAPER (Orange)
Automatically recoverable error	Head overheat error	Lit		Unlit
	Cover open error (MSW3-8 is set to OFF)	Lit		Unlit
	Low voltage error	Lit		Unlit
	High voltage error	Lit		Unlit
Recoverable error	Cover open error (MSW3-8 is set to ON.)	Lit		Unlit
	Cutter lock error	Lit		Unlit
	Paper jam error	Lit	Unlit	
Unrecoverable error	Memory error		Lit	Unlit
	System error	Lit		Unlit
Other status	Paper end	Lit	Unlit	Lit
	Paper near end	Lit	Lit	
	Cover open	Lit	Lit	Unlit
	Waiting for a macro execution	Lit		Unlit

4.3 FEED button

- When pressed once, the printer feeds one line depending on the amount of line feed set by ESC 2 and ESC 3.
- For the error of auto cutter, error is released by pressing FEED button after removing the cause.
(MSW3-1 Resume Ctrr Err = Valid)
- When paper feed above 25 mm is done with FEED button, the printer cuts the paper.
(MSW3-2 Auto Cutter = Valid)-
- When the FEED button is pressed while waiting for macro execution, the macro is executed.
- FEED button is also used in the self-printing mode, hexadecimal dump print mode, and memory switch setting mode.

4.3.1 Self-Printing Mode

1) Function

Function to enable the printer setting status to be verified by printing.

2) Starting method

The self-printing is started in three methods shown below.

Hold FEED BUTTON and turn ON the power supply

Contents of Self printing are as follows.

(1) Name of the printer:	PMU3300
(2) ROM version:	E00-XXXX=Firm ware version
(3) DATE	20XX-XX-XX=Date
(4) BOOT version	XXX.XX=Boot version
(5) FONT version	XXX.XX=Font version
(6) CONF	XX = Configuration
(7) SUM	XXX-XXXX=Check Sum
(8) Serial interface setting	
(9) Contents of the memory switch	
(10) Font A (20H~FFH)	
(11) Font B (20H~FFH)	
(12) Font C (20H~FFH)	

3) Completing the Self printing

After completing the printing of certain printing pattern, the printer is reset and initialized.

4.3.2 Hexadecimal Dump Mode Printing

1) Function

It prints the data sent from the host in hexadecimal and its corresponding characters.

2) Starting hexadecimal dump

- With the paper loaded and the printer cover open, press and hold the FEED button and turn on the printer.
- Close the cover.
- "<<< HEX DUMP MODE >>>" is printed on the paper, and the following data received is printed in hexadecimal and its corresponding characters.
- If the corresponding character cannot be found in the data, the received data is printed as "."
- While executing hexadecimal dump, the command other than the real time command does not function.
- When the printing data is less than one line, the line is printed by generating offline.

3) Closing the hexadecimal dump

- Pressing the TEST button exits the hexadecimal dump print mode and prints "<<<NORMAL MODE >>>".

[Example of hexadecimal dump mode printing]

```
<<< HEX DUMP MODE >>>
1B 40 31 32 33 34 35 36 .@123456
37 38 39 30 0A          7890.
```

```
<<< NORMAL MODE >>>
```


4.3.3 Memory Switch Setting Mode

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.

See "7 MEMORY SWITCHES" for details on the memory switches to be set.

Setting the Memory switches

1) Load paper.

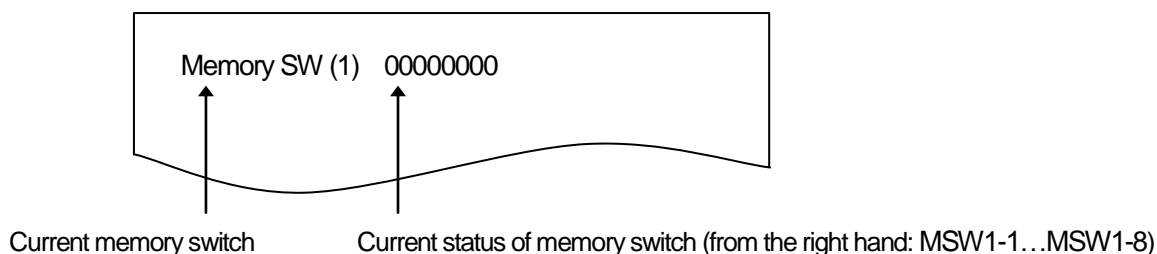
2) While the paper cover is open, press and hold the FEED button and turn on the power.

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 (01)" and the current setting, 0 (off) or 1 (on).

(The current settings for memory switches 7 to 10 are not printed.)

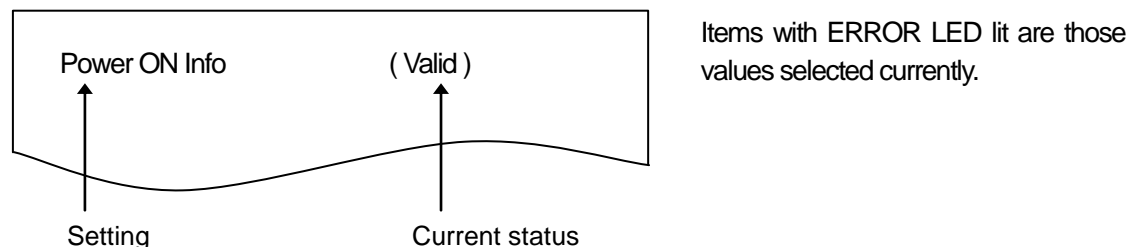


4) Press the FEED button.

Each press of the FEED button cycles through the list of memory switches in the following sequence:

"Memory SW (01)" > "Memory SW (02)" > ... "Memory SW (10)" > "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.

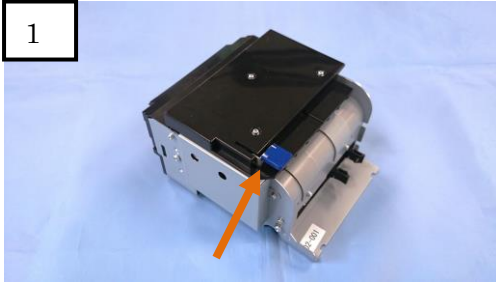
4.4 TEST button

When TEST button is pressed, printer starts the 4.3.1 self-printing.

Right after the self- printing, the printer is initialized.

5. SETTING PAPER, PAPER GUIDE and MAINTENANCE

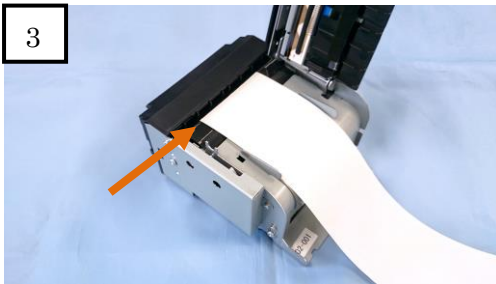
5.1 Manual loading



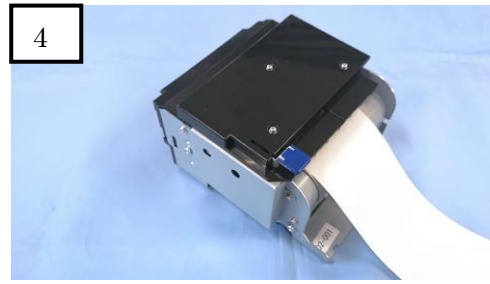
Lift the lever up.



Open the cover.

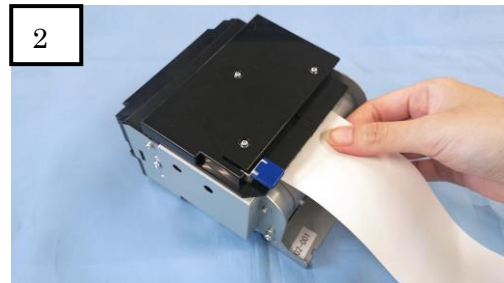


Put the roll paper in the place.
(Paper leading edged to the arrowed position.)

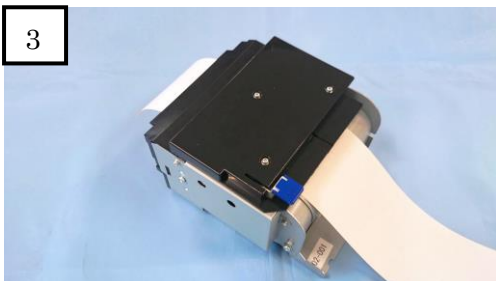


Close the cover.

5.2 Auto Loading



Insert the roll paper and push it until the leading edge hits the platen. And hold it awhile.



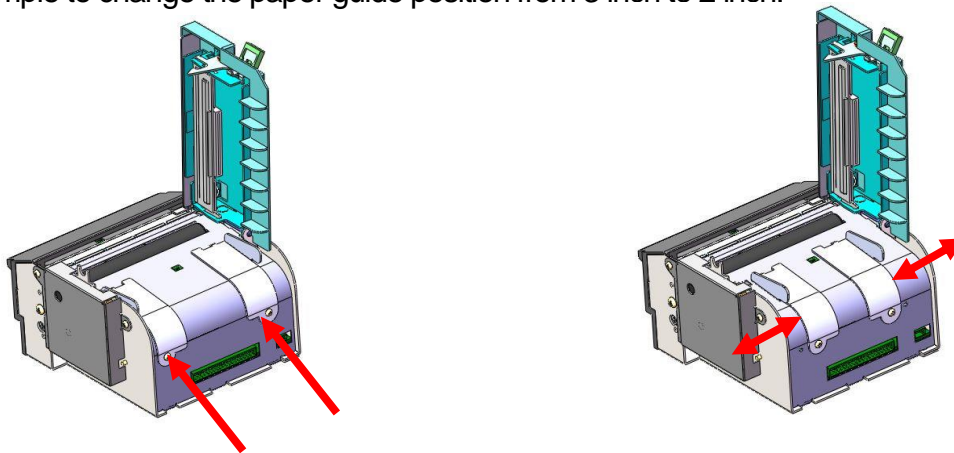
Auto Loading sets the paper.

Caution

- Never open the printer cover during printing operation.
- Always use recommended rolled paper.
- Use of paper not recommended may not secure print quality and life.
- Set the roll paper straightly without surface waviness.
- Do not touch the print head by hand just after printing as it is heated during printing.
- Do not touch the thermal head directly to avoid electrostatic damage.
- Be careful to prevent nipping of finger when closing the printer cover.
- Be careful not to touch the movable blade or fixed blade of the cutter.
- When the roll paper is set to the printer, the leading edge of the paper should be clean edge.
- When loading paper, be careful not to cut your hand on the edge of the paper.

5.3 Changing of Paper Width

Example to change the paper guide position from 3 inch to 2 inch.



- Remove the screw indicated by the arrow in the above left diagram.
- Adjust the guide to fit the paper width as shown in the above right figure and fix the removed screws.
- Change the paper guides according to the paper to be used.
- Change the setting on memory switch, MSW8-1.

5.4 How to clean the print head and the platen unit

If dust or paper powder attaches the print head or platen unit, it reduces print quality and causes trouble such as paper feed failure. Be sure to clean the print head and the platen unit periodically.

Indication of interval for executing the cleaning

Platen unit: for every 10km printing distance or once a month

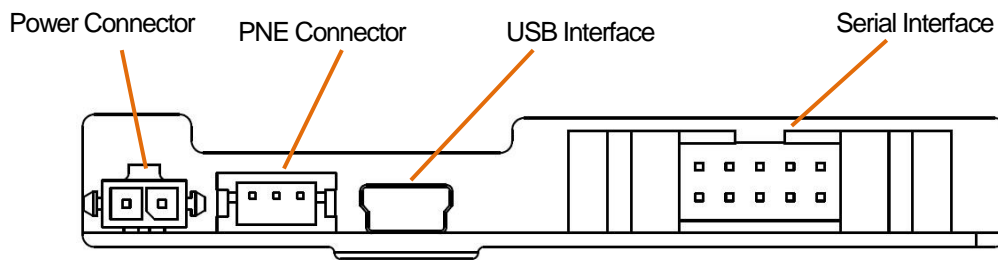
Print head: when the printing quality goes down, for every 10km printing distance or once a month

Procedure

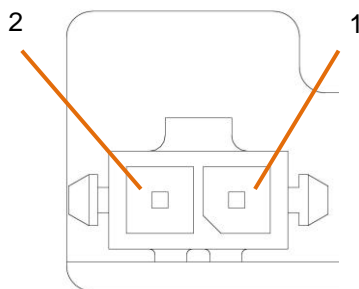
1. Turn off the power of the printer and open the printer cover.
2. Wipe off stains, such as paper dust or the like, on the heating element of the print head using a cotton swab impregnated with ethanol or isopropyl alcohol.

Caution The print head can be very hot immediately after the printing, so do not touch it with hands.
Do not touch the heating element surface of the print head with bare hands or metal.

6. CONNECTOR AND INTERFACE



6.1 Power connector



Connector: 2-1445089-2 / Tyco electronics

Pin No.	Signal	Function
1	Vp	DC24V Input t
2	GND	Common ground on circuit

*The above pins must be connected.

6.2 Serial Interface

6.2.1 Specifications

1) Synchronization: Asynchronization

2) Baud rate

1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps

3) 1 word

Start bit : 1 bit

Data bit : 7 or 8 bits (User selection)

Parity bit : Odd, even or no parity (User selection)

Stop bit : 1 bit or 2 bits (User selection)

4) Signal Polarity

[Output (TXD/DTR)]

A. RS-232C mode (Serial connector 5 pin, 6 pin are open or input signal of +0.8V or less)

- Mark=Logic "0" (Output signal level +0.4V or less)

- Space=Logic "1" (Output signal level +3.9V or more)

B. TTL/CMOS mode (Input signal level of serial connector 5 pin, 6 pin is +2.0V or more)

- Mark=Logic "1" (Output signal level +0.4V or less)

- Space=Logic "0" (Output signal level +3.9V or more)

[Input (RXD/TXD)]

A RS-232C mode (Serial connector 5 pin, 6 pin are open or input signal of +0.8V or less)

- Mark (Input signal level: -3 to -15V) =Logic "1"

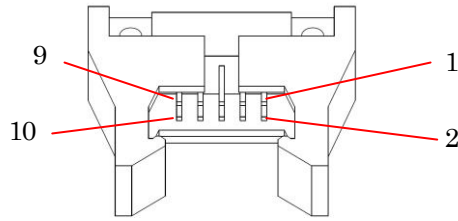
- Space (Input signal level: +3 to +15V) =Logic "0"

B. TTL/CMOS mode (Input signal level of serial connector 5 pin, 6 pin is +2.0V or more)

- Mark (Input signal level: -3 to -15V) =Logic "0"

- Space (Input signal level: +3 to +15V) =Logic "1"

6.2.2 Connector PIN



Connector: XG4A-1034 / OMRON

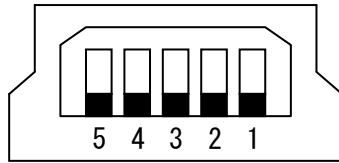
9	7	5	3	1
10	8	6	4	2

Pin No.	Signal	Input /Output	Signal Level	Function
1	GND		-	Common signal on circuit
2	TXD	Output	V_{OH} : +3.9V to +5.2V V_{OL} : 0V to +0.4V	Transferred data
3	GND		-	Common signal on circuit
4	RXD	Input	-15V to +15V	Received data
5*	MODE	Input	V_{IH} : +2.0V to +5.5V V_{IL} : 0V to +0.8V	Mode selection signal ("L": RS232C / "H": TTL/CMOS)
6*	MODE	Input	V_{IH} : +3.9V to +5.5V V_{IL} : 0V to +0.8V	Mode selection signal ("L": RS232C / "H": TTL/CMOS)
7	DSR	Input	-15V to +15V	Data set ready
8	GND		-	Common signal on circuit
9	DTR	Output	V_{OH} : +3.9V to +5.2V V_{OL} : 0V to +0.4V	Printer Busy signal
10	GND		-	Common signal on circuit

* Pin 5, 6:

- Since pins 5 & 6 are pulled down on the printer's circuit board (by pull-down resistor), if they are not connected, the RS232C mode is selected automatically.
- Pins 5 and 6 are joined together on the printer board.

6.3 USB Interface



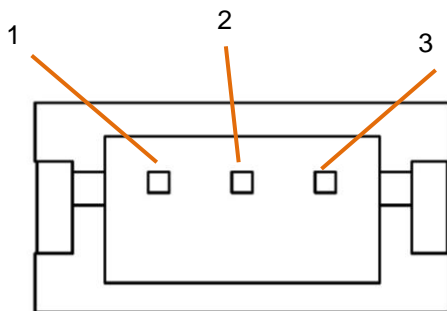
Pin No.	Signal name
1	VBus (+5V)
2	-Data (D-)
3	+Data (D+)
4	NC
5	GND

NC : None Connect

* USB communication monitoring is possible with the USB printer class.

If there is no communication with the PC for a certain period, it is determined that the USB connection is in an abnormal state and the printer automatically resets (restarts). This is a 'watchdog' function automatically built in to the printer and works when used with our driver.

6.4 Paper Near End Sensor Connector



Connector: 53325-036 / Molex

Pin No.	Signal	Function
1	Anode	Voltage input for Anode
2	GND	Common ground on circuit
3	Sensor Out	Sensor output signal

*The above pins must be connected.

*Use the dedicated paper holder

7. MEMORY SWITCHES

Memory switch is a generic name for the following:

- (1) Memory switches (MSW1, MSW2, MSW3, MSW4, MSW5, MSW6)
- (2) Customize value (MSW7, MSW8, MSW9, MSW10)

■ Memory switches (MSW1, MSW2, MSW3, MSW4, MSW5, MSW6)

No.	Function	OFF	ON
MSW1-1	Power ON Info	Valid	Not Send
MSW1-2	Buffer Size (* Note 1)	4K bytes	45 bytes
MSW1-3	Busy Condition	Full / Err	Full
MSW1-4	Receive Error	Print “?”	No Print
MSW1-5	CR Mode	Ignored	LF
MSW1-7	DSR Signal	Invalid	Valid
MSW2-2	Auto Cutter	Invalid	Valid
MSW2-3	Spool Print	Invalid	Valid
MSW2-4	Full Col Print	Line Feed	Wait Data
MSW2-5	Resume aft PE	Next	Top
MSW2-8	PNE Sensor	Valid	Invalid
MSW3-1	Resume Cutter Error	Valid	Invalid
MSW3-2	PE signal by PNE	Valid	Invalid
MSW3-6	Timeout Cut	Invalid	Valid
MSW3-7	CBM1000 Mode	Invalid	Valid
MSW3-8	Resume Open Err	Close	Command
MSW4-3	Feed & Cut at TOF	Invalid	Valid
MSW4-8	Partial Only	Invalid	Valid
MSW5-2	Line Pitch	1/360	1/406
MSW5-3	USB Mode	Virtual com	Printer Class
MSW5-6	Speed/quality	Speed	Quality
MSW6-1	Act. For Driver	Invalid	Valid
MSW6-3	Auto Tension Adj (* Note 2)	Invalid	Valid
MSW6-6	Hebrew	Invalid	Valid
MSW6-7	Paper Exit Sensor	Invalid	Valid
MSW6-8	Continuous Print (* Note 3)	Invalid	Valid

■ . . . Default (factory shipment setting)

Note 1: MSW1-2 In case of USB interface, the input buffer is set to 16Kbytes regardless of this setting.

Note 2: When using paper rolls with a diameter of 130φ or larger with the PHU500 paper holder, set to “Valid”.

Note 3: By default, if the paper is not removed, the next print will not be performed.

■ Customize value (MSW7, MSW8, MSW9, MSW10)

Customize value can be set by the GS (E command.)

No.	Function	Value	
MSW7-1	Baud Rate	1200bps	2400bps
		4800bps	9600bps
		19200bps	38400bps
		57600bps	115200bps
MSW7-2	Data Length	7 bits	8 bits
MSW7-3	Stop Bit	1 bit	2 bits
MSW7-4	Parity	NONE	EVEN
		ODD	—
MSW7-5	Flow Control	DTR/DSR	XON/XOFF
MSW7-7	VCom Protocol	PC setting	DTR/DSR
		XON/XOFF	—
MSW8-1	Print Width	360dots	512dots
		384dots	576dots
		420dots	390dots
		432dots	546dots
		436dots	
MSW9-1	Code Page	PC437	PC866
		Katakana	PC857
		PC850,PC858	WPC1252
		PC860	Space
		PC863	PC864
		PC865	ThaiCode18
		PC852	WPC1258
MSW9-2	Int'l Char Set	U.S.A.	Japan
		France	Norway
		Germany	Denmark2
		England	Spain2
		Denmark	Latin America
		Sweden	Korea
		Italy	Croatia
		Spain	China
		Vietnam	
MSW9-3	Kanji	ON	OFF
MSW9-4	JIS / Shift JIS	JIS	Shift JIS

■ . . . Default (factory shipment setting)

Note 4: Default settings of MSW8 differs by the destinations.

No.	Function	Value	
MSW10-1	Print Density	70%	75%
		80%	85%
		90%	95%
		100%	105%
		110%	115%
		120%	125%
		130%	135%
		140%	
MSW10-2	Print Speed	Level1	Level2
		Level3	Level4
		Level5	Level6
		Level7	Level8
		Level9	
MSW10-4	Emulation mode (* Note 5)	ESC/POS	Axiom

■ . . . Default (factory shipment setting)

Note 5: Target emulation of driver, SDK and Utility is ESC/POS only..

8. PRINT CONTROL COMMANDS (ESC/POS)

Refer to "Command reference" for further details on command.

- Print Control Commands

Control Command	Function	MODE	GS P
LF	Printing and paper feed	S·P	
CR	Back to printing	S·P	
FF	Printing in page mode and recovery	P	
ESC FF	Printing data in PAGE MODE	P	
ESC J	Printing and feeding paper in minimum pitch	S·P	○
ESC d	Printing and feeding the paper by "n" lines	S·P	

- Print Character Commands

Control Command	Function	MODE	GS P
CAN	Canceling print data in PAGE MODE	P	
ESC SP	Setting the right spacing of the character	S·P	○
ESC !	Collectively specifying the printing mode	S·P	
ESC %	Specifying/canceling download character set	S·P	
ESC &	Defining the download characters	S·P	
ESC -	Specifying/canceling underline	S·P	
ESC ?	Deleting download characters	S·P	
ESC E	Specifying/canceling emphasis printing	S·P	
ESC G	Specifying/canceling double strike printing	S·P	
ESC M	Selection of character fonts	S·P	
ESC R	Selecting the international character set	S·P	
ESC V	Specifying/canceling 90°-right-turned characters	S	
ESC t	Selecting the character code table	S·P	
ESC {	Specifying/canceling the inverted characters	S	
GS !	Specifying the character size	S·P	
GS B	Specifying/canceling the black/white inverted printing	S·P	
GS b	Specifying/canceling the smoothing	S·P	

- Print Position Commands

Control Command	Function	MODE	GS P
HT	Horizontal tab	S·P	
ESC \$	Specifying the absolute positions	S·P	○
ESC D	Setting horizontal tab position	S·P	
ESC T	Selecting the character printing direction in PAGE MODE	P	
ESC W	Defining the print area in PAGE MODE	P	○
ESC \	Specifying the relative position	S·P	○
ESC a	Aligning the characters	S	
GS \$	Specifying the absolute vertical position of characters in PAGE MODE	P	○
GS L	Setting the left margin	S	○
GS W	Setting the print area width	S·P	○
GS \	Specifying the relative vertical position of a character in PAGE MODE	S·P	○

- Line Feed Span Commands

Control Command	Function	MODE	GS P
ESC 2	Specifying 1/6-inch line feed rate	S·P	
ESC 3	Setting line feed rate of minimum pitch	S·P	○

- Bit Image Commands

Control Command	Function	MODE	GS P
ESC *	Specifying the bit image mode	S·P	
GS *	Defining the download bit image	S·P	
GS /	Printing the downloaded bit image	S·P	
GS v 0	Printing of raster bit image	S	

- Status Commands (Standard parallel does not correspond.)

Control Command	Function	MODE	GS P
DLE EOT	Sending status in real-time	S·P	
ESC u	Sending the status of peripheral equipment	S·P	
ESC v	Sending printer status	S·P	
GS a	Enabling/disabling ASB (Automatic Status Back)	S·P	
GS r	Sending status	S·P	

- Panel Switch Commands

Control Command	Function	MODE	GS P
ESC c 5	Enabling/disabling the panel switches	S·P	

- Macro Commands

Control Command	Function	MODE	GS P
GS :	Starting/ending macro definition	S·P	
GS ^	Executing the macro	S·P	

- Cutter Commands

Control Command	Function	MODE	GS P
ESC i	Full cut command		
ESC m	Partial cut command		
GS V	Cutting the paper	S·P	

- Bar Code Commands

Control Command	Function	MODE	GS P
GS H	Selecting of printing position of HRI characters	S·P	
GS f	Selecting the font of HRI characters	S·P	
GS h	Specifying the height of the bar code	S·P	
GS k	Printing the bar code	S·P	
GS w	Specifying the horizontal size of the bar code	S·P	

- 2-dimensional Code Commands

Control Command	Function	MODE	GS P
GS (k	Setting and printing 2-dimensional code	S·P	

- Commands for Flash Memory

Control Command	Function	MODE	GS P
FS p	Printing the bit image in user NV memory	S	
FS q	Defining the bit image in user NV memory	S	

- Printer Setting Commands

Control Command	Function	MODE	GS P
GS (E	User-defined command	S	
GS (K	Selecting print control method	S	

- Other Commands

Control Command	Function	MODE	GS P
DLE ENQ	Real-time request to printer	S·P	
DLE DC4	Outputting specified pulse in real-time	S·P	
ESC =	Data input control	S·P	
ESC @	Initializing the printer	S·P	
ESC L	Selecting PAGE MODE	S	
ESC S	Selecting STANDARD MODE	P	
GS (A	Execution of test printing	S	
GS I	Sending the printer ID	S·P	
GS P	Specifying the basic calculation pitch	S·P	

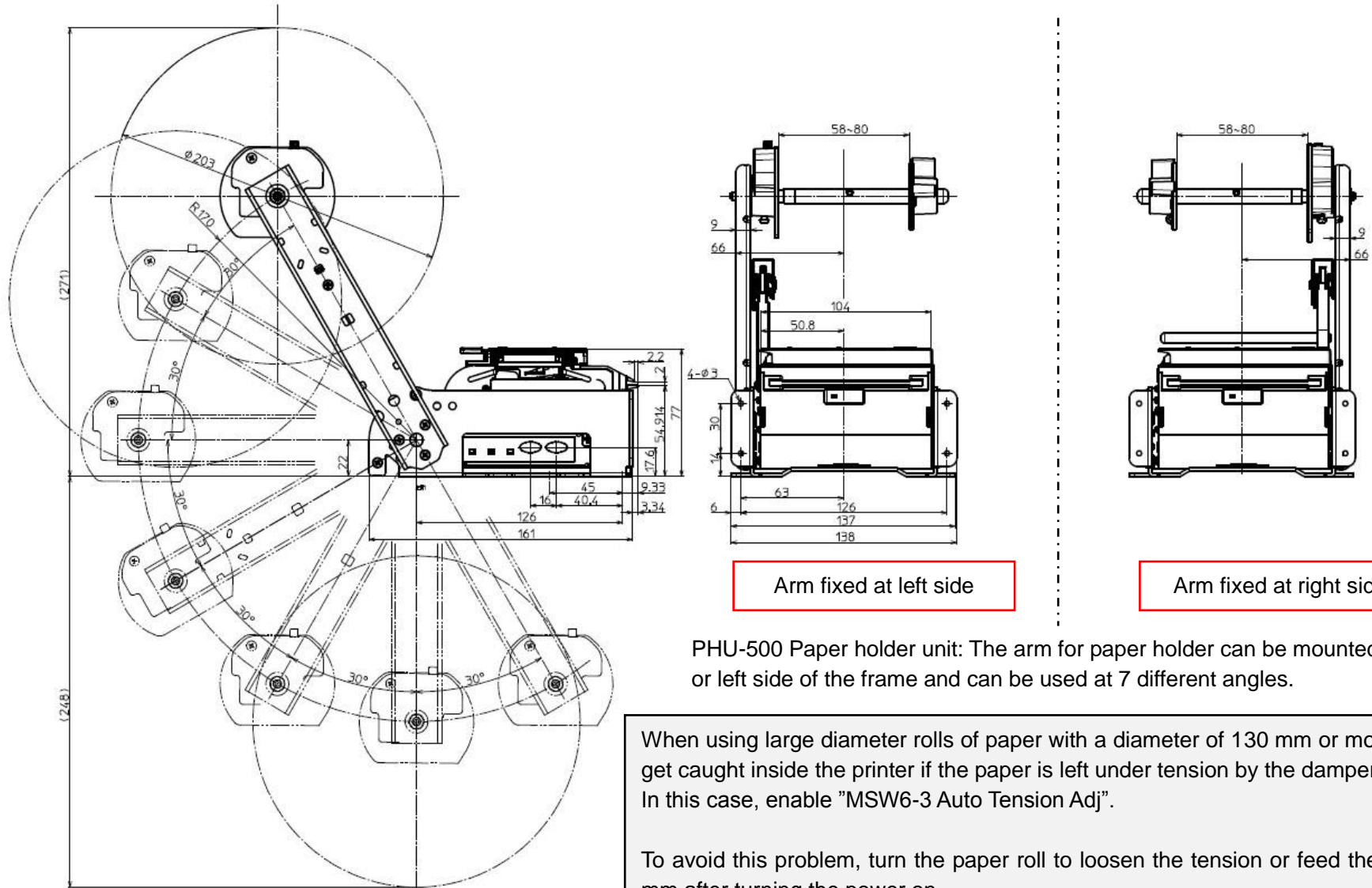
Notes:

- In the Mode column: S = STANDARD MODE, P = PAGE MODE.
- ○ = shows the command affected by GS P.

9. OPTION: PAPER HOLDER UNIT PHU-500

PHU-500 Paper Holder Unit

The paper holder arms can be mounted on either the left or right side of the frame and can be used at seven different angles in each position.



PHU-500 Paper holder unit: The arm for paper holder can be mounted on the right or left side of the frame and can be used at 7 different angles.

When using large diameter rolls of paper with a diameter of 130 mm or more, the paper may get caught inside the printer if the paper is left under tension by the damper. In this case, enable "MSW6-3 Auto Tension Adj".

To avoid this problem, turn the paper roll to loosen the tension or feed the paper about 200 mm after turning the power on.