USER MANUAL

P80C

CUSTOM

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THE IMAGES USED IN THIS MANUAL ARE USED AS AN ILLUSTRATIVE EXAMPLES. THEY COULDN'T REPRODUCE THE DESCRIBED MODEL FAITHFULLY.

UNLESS OTHERWISE SPECIFIED, THE INFORMATION GIVEN IN THIS MANUAL ARE REFERRED TO ALL MODELS IN PRODUCTION AT THE ISSUE DATE OF THIS DOCUMENT.

GENERAL INSTRUCTIONS

CUSTOM S.p.A. declines all responsibility for accidents or damage to persons or property occurring as a result of tampering, structural or functional modifications, unsuitable or incorrect installations, environments not in keeping with the equipment's protection degree or with the required temperature and humidity conditions, failure to carry out maintenance and periodical inspections and poor repair work.

GENERAL SAFETY INFORMATION

Your attention is drawn to the following actions that could compromise the characteristics of the product:

- Read and retain the instructions which follow.
- Follow all indications and instructions given on the device.
- Make sure that the surface on which the device rests is stable. If it is not, the device could fall, seriously damaging it.
- Make sure that the device rests on a hard (non-padded) surface and that there is sufficient ventilation.
- Do not fix indissolubly the device or its accessories such as power supplies unless specifically provided in this manual.
- When positioning the device, make sure cables do not get damaged.
- [Only OEM equipment] The equipment must be installed in a kiosk or system that provides mechanical, electrical and fire protection.
- The mains power supply must comply with the rules in force in the Country where you intend to install the equipment.
- Make sure that there is an easily-accessible outlet with a capacity of no less than 10A closely to where the device is to be installed.
- Make sure the power cable provided with the appliance, or that you intend to use is suitable with the wall socket available in the system.
- Make sure the electrical system that supplies power to the device is equipped with a ground wire and is protected by a differential switch.
- Before any type of work is done on the machine, disconnect the power supply.
- Use the type of electrical power supply indicated on the device label.
- These devices are intended to be powered by a separately certified power module having an SELV, non-energy hazardous output. (IEC60950-1 second edition).
- [Only POS equipment] The energy to the equipment must be provided by power supply approved by CUSTOM S.p.A.
- Take care the operating temperature range of equipment and its ancillary components.
- Do not block the ventilation openings.
- Do not insert objects inside the device as this could cause short-circuiting or damage components that could jeopardize printer functioning.
- Do not carry out repairs on the device yourself, except for the normal maintenance operations given in the user manual.
- The equipment must be accessible on these components only to trained, authorized personnel.
- Periodically perform scheduled maintenance on the device to avoid dirt build-up that could compromise the correct, safe operation of the unit.
- Do not touch the head heating line with bare hands or metal objects. Do not perform any operation inside the printer immediately after printing because the head and motor tend to become very hot.
- Remove jammed paper while switching off the power.
- Please install the product away from the near interferences.
- Use consumables approved by CUSTOM S.p.A.

THE CE MARK AFFIXED TO THE PRODUCT CERTIFY THAT THE PRODUCT SATISFIES THE BASIC SAFETY REQUIREMENTS.

The device is in conformity with the essential Electromagnetic Compatibility and Electric Safety requirements laid down in Directives 2014/30/EU and 2014/35/EU inasmuch as it was designed in conformity with the provisions laid down in the following Standards:

- EN 55032 *(Electromagnetic compatibility of multimedia equipment - Emission Requirements)*
- EN EN55024/EN55035 *(Electromagnetic compatibility of multimedia equipment - Immunity requirements)*
- EN IEC/EN62368-1 *(Audio/video, information and communication technology equipment)*

The device is in conformity with the essential requirements laid down in Directives 2014/53/EU about devices equipped with intentional radiators. The Declaration of Conformity and other available certifications can be downloaded from the site www.custom4u.it.



GUIDELINES FOR THE DISPOSAL OF THE PRODUCT

The crossed-out rubbish bin logo means that used electrical and electronic products shall NOT be mixed with unsorted municipal waste. For more detailed information about recycling of this product, refer to the instructions of your country for the disposal of these products.

- Do not dispose of this equipment as miscellaneous solid municipal waste, but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the wellbeing of humans.
- In accordance with European Directive WEEE 2012/19/EU, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorised disposal of waste electrical and electronic equipment is punishable by law with the appropriate penalties.
- For the waste sorting of the packaging materials, please check the local waste disposal laws.



The format used for this manual improves use of natural resources reducing the quantity of necessary paper to print this copy.

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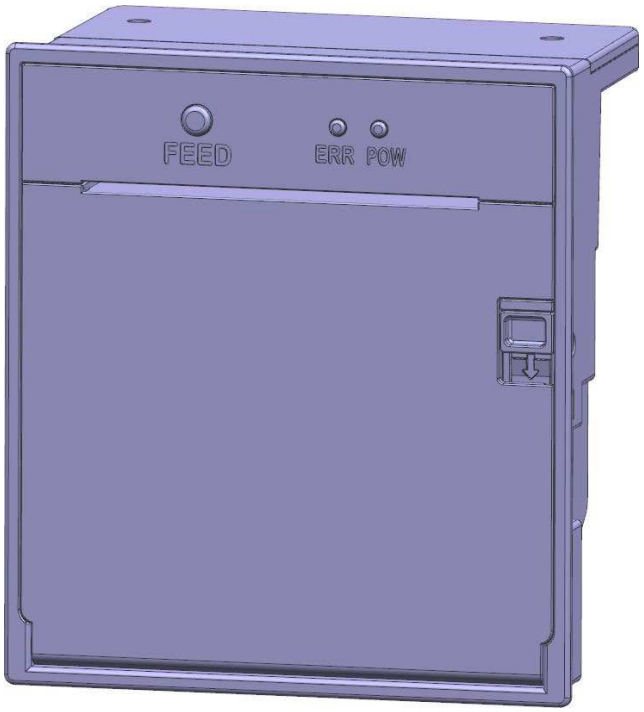
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1 INTRODUCTION

P80C series printers are designed to be installed or connected to a kiosk system.

1 Product composition



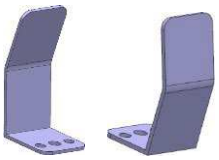
P80C



Cover open key



Paper shift

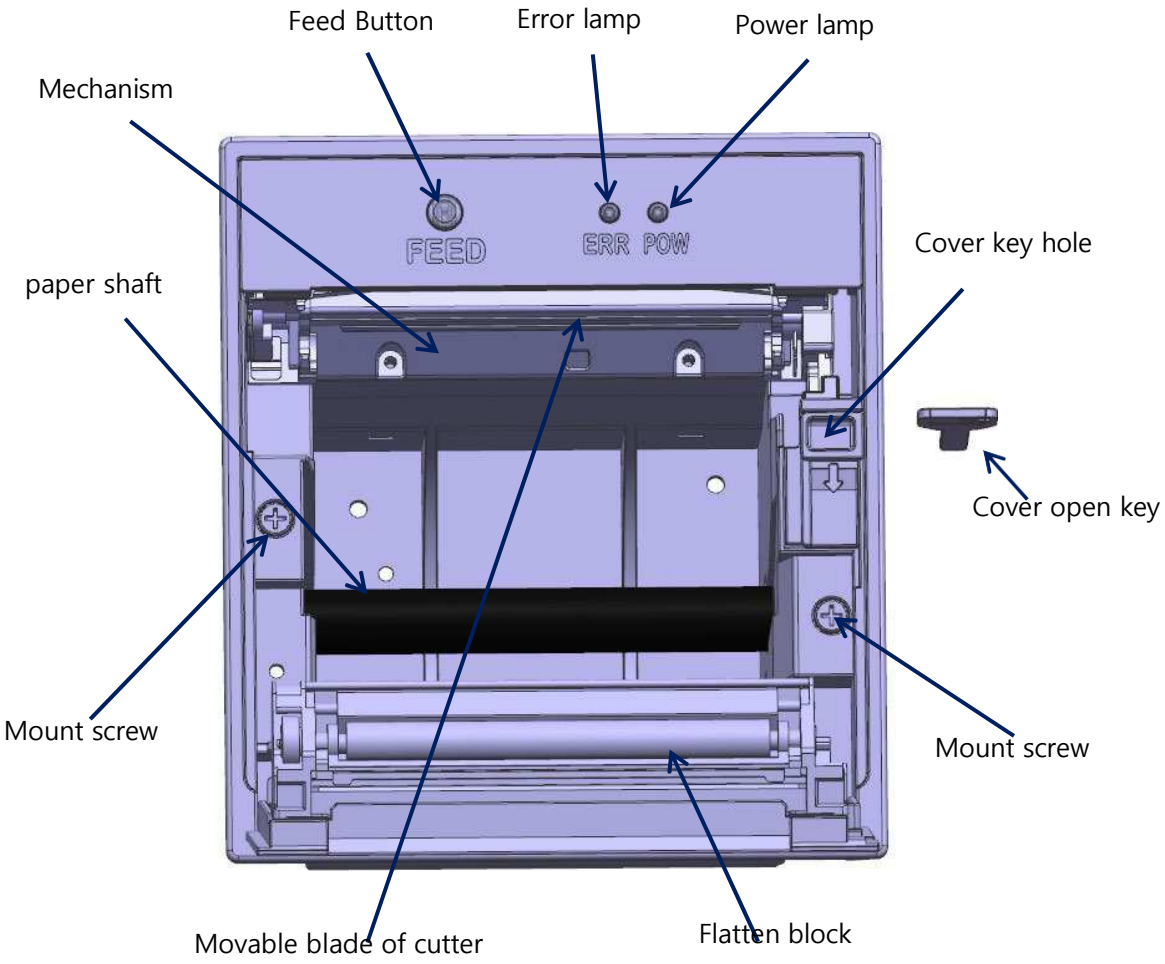


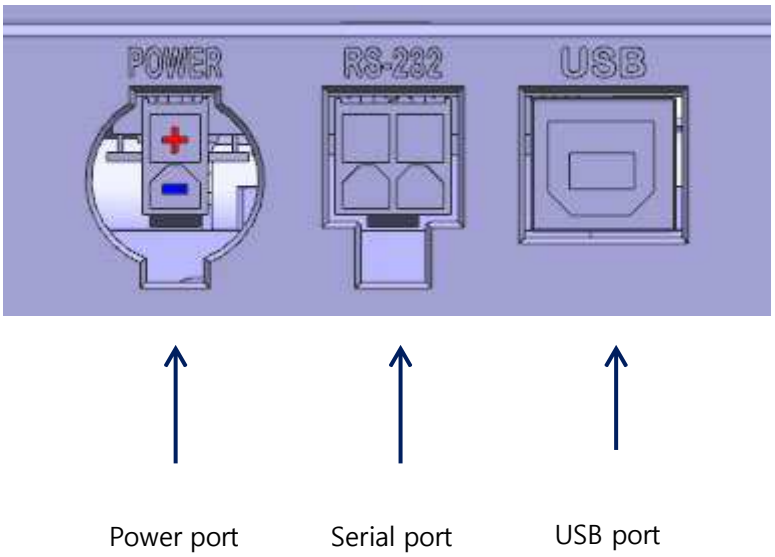
Mount bracket



Screw (M3x3.5)

2 Printer main part name

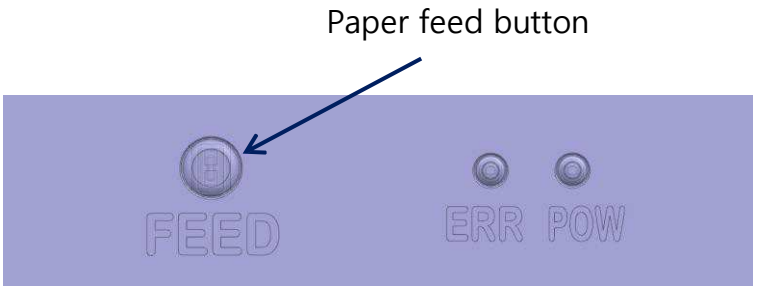




2 MAIN FUNCTIONS

1. Paper feed button and status notification lamp

Paper feed button



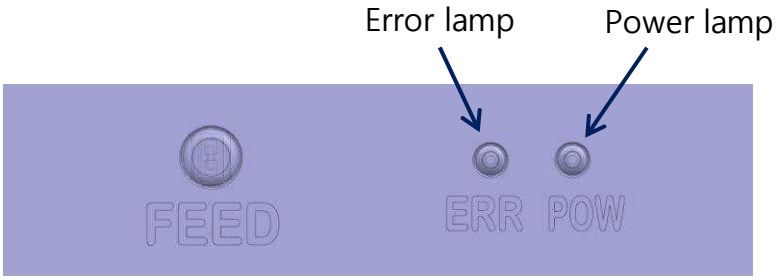
The FEED button can perform the following functions.

① Paper transfer : Pressing the transfer button with the paper inserted transfers the paper while it is being pressed.

② Self-test : The self-test result will be printed when the FEED button is pressed and the ERROR notification lamp is illuminated once and then released

③ Checking and changing printer status : The ERROR notification lamp flashes continuously when the transfer button is pressed and the power is turned on and pressed continuously, when the button is released, the printer status menu is printed.

Status notification lamp



① Power lamp : When the power is on, the power (POW) notification indicator (green lamp) will illuminate.

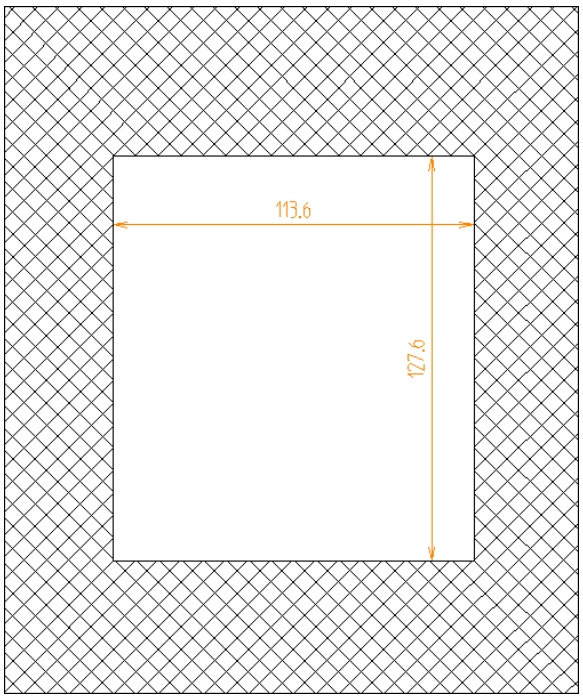
② Error notification lamp : Depending on the status of the printer, the flashing speed of the notification lamp tells you the status of the printer as below.

Notification lamp status	Alarm sound	Status of printer
Flashing briefly	Beep(briefly)	No paper
Flashing for a long time	Beep(Long term)	Cover open, cutter jammed, paper jammed, etc

3 INSTALLATION METHOD

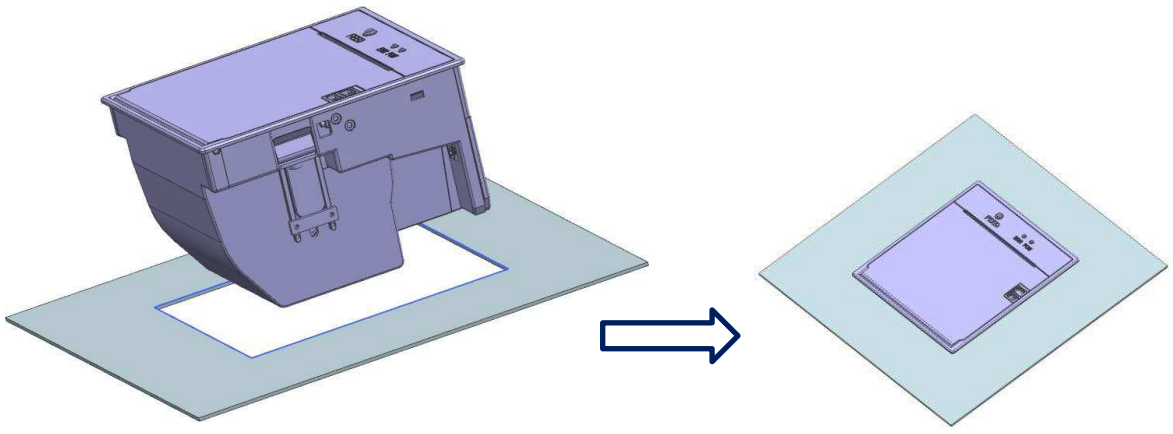
1 Recommended size for panel installation

- Width : 113.6mm, - Length : 127.6mm, - Panel thickness : T1.0 or T1.6

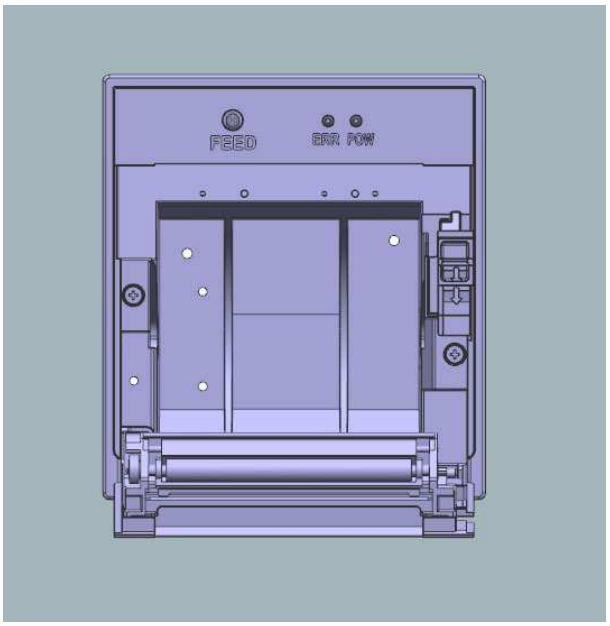


2 How to install the panel printer I

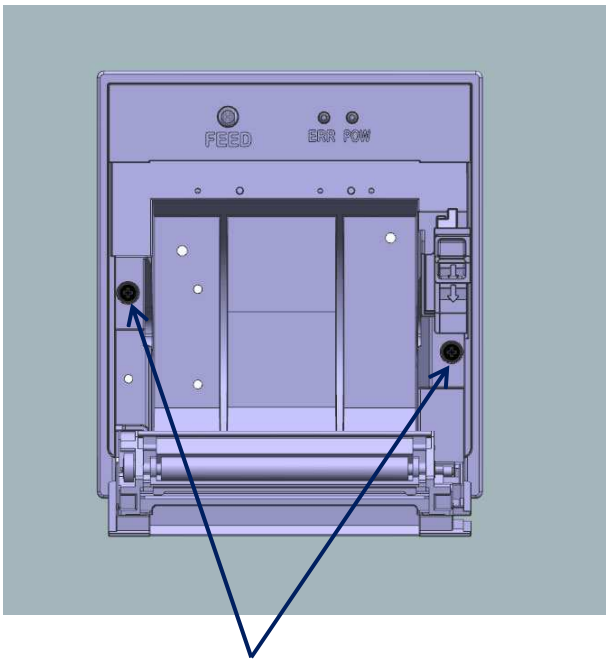
1) Put the product in the square hole of the panel..



2) Open the printer cover.



3) Tighten the two mounting screws for fixing the panel..

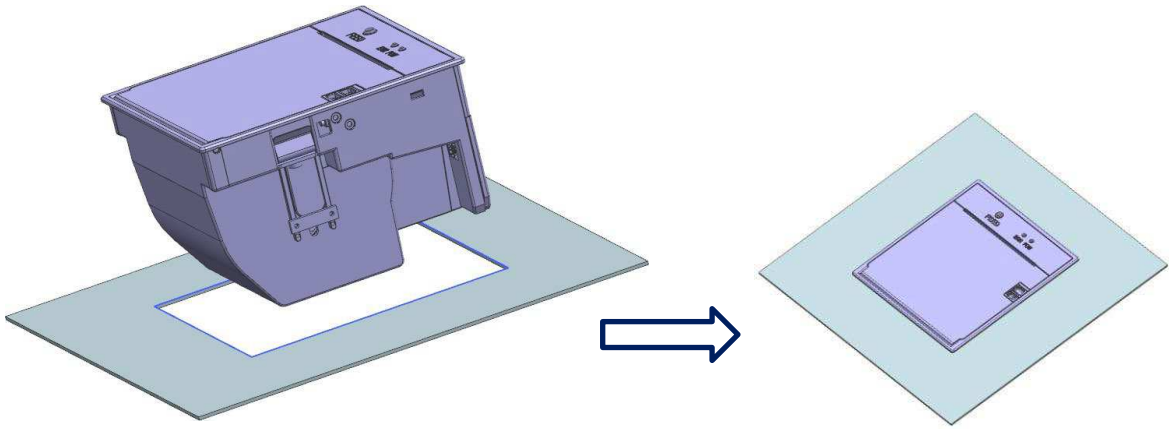


Mounting screws

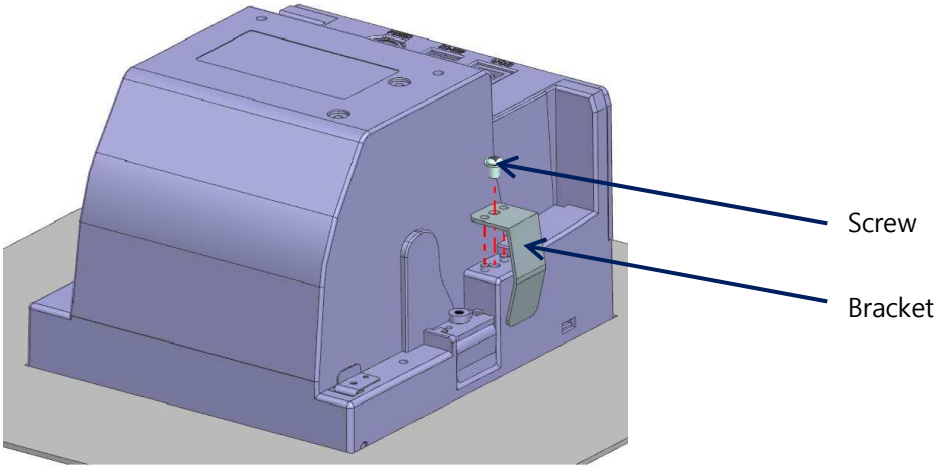
CAUTION When fixing the mounting screw, be careful to fix it as excessive force may cause deformation of the product.

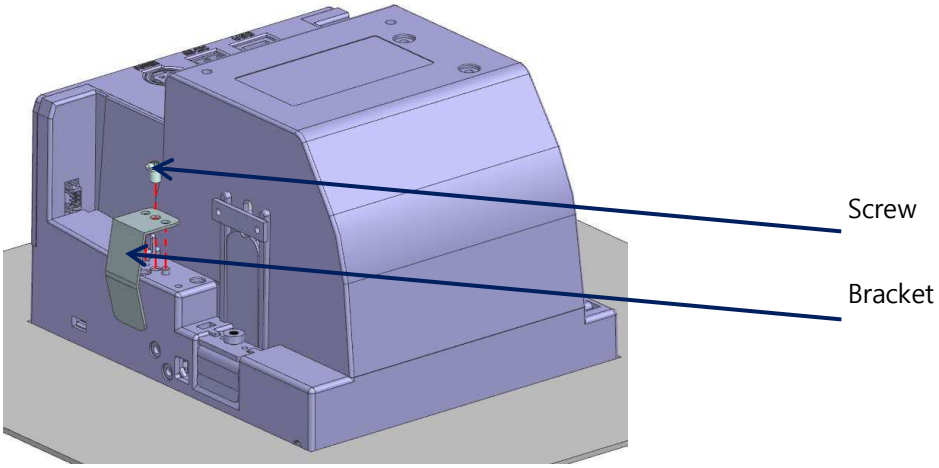
3 How to install the panel printer II

1) Put the product in the square hole of the panel.



2) Fix up the fixing brackets on both sides using screws. (Fixing brackets, screws supplied separately)

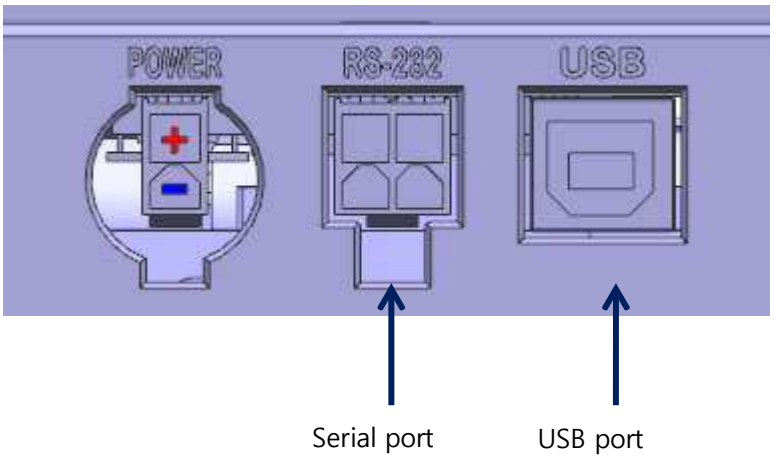




4 HOW TO USE A PRINTER

1 Interface connection

Use the interface cable that connects to the host that meets the specifications

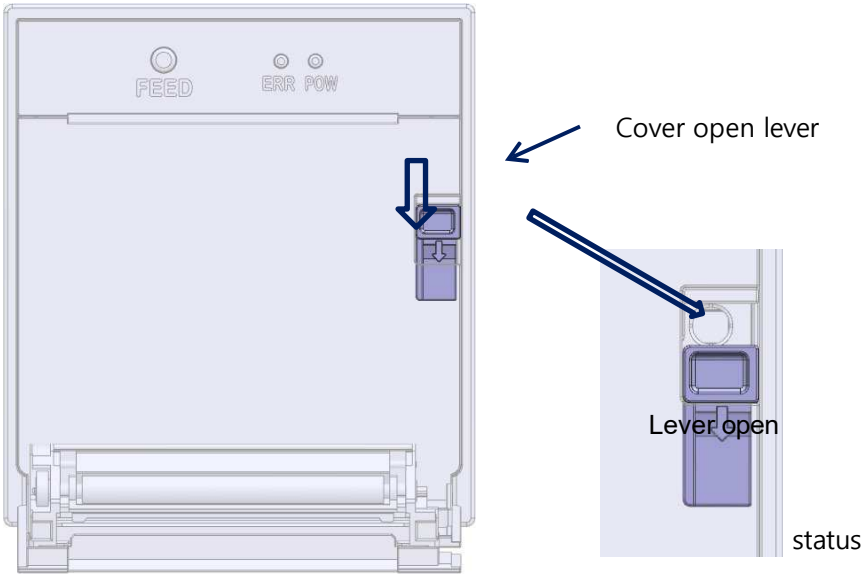


Make sure to turn off the power switch when connecting the communication cable.

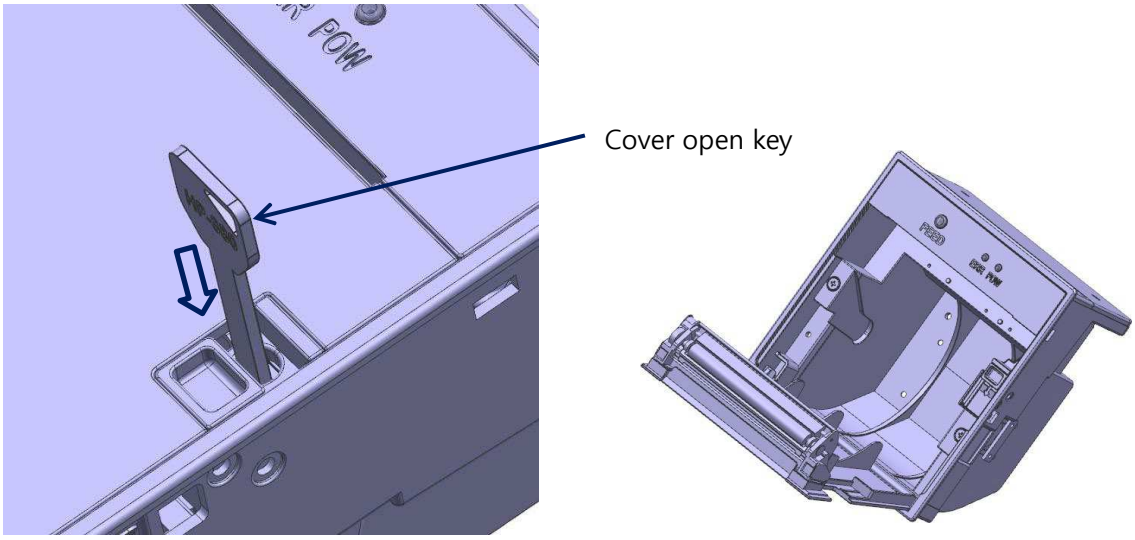
2 Paper change

How to open the cover

① Move the cover open lever in the direction of the arrow until it is caught.

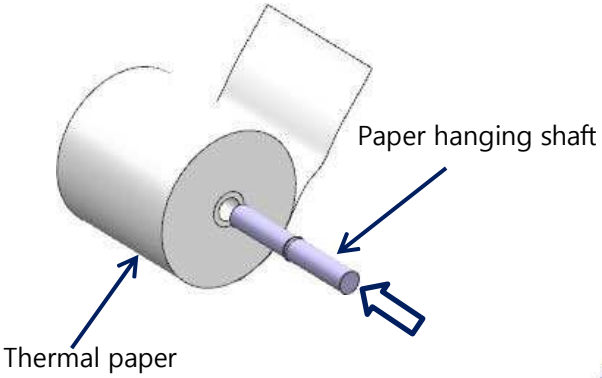


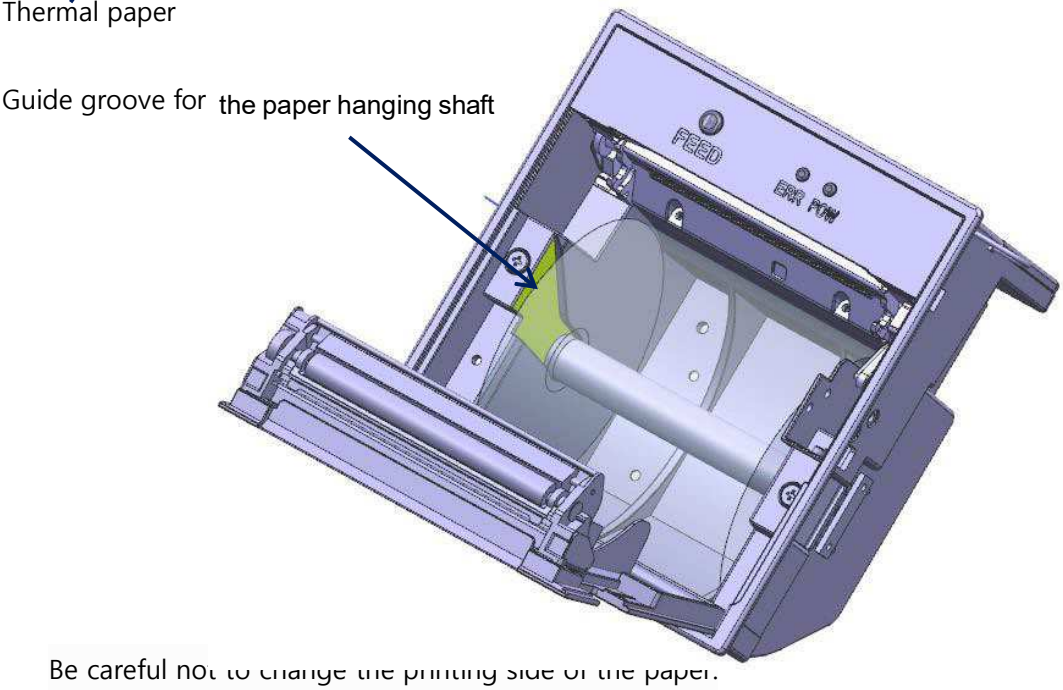
③ Insert the cover open key in the hole and press it in the direction of the arrow until the cover is opened.



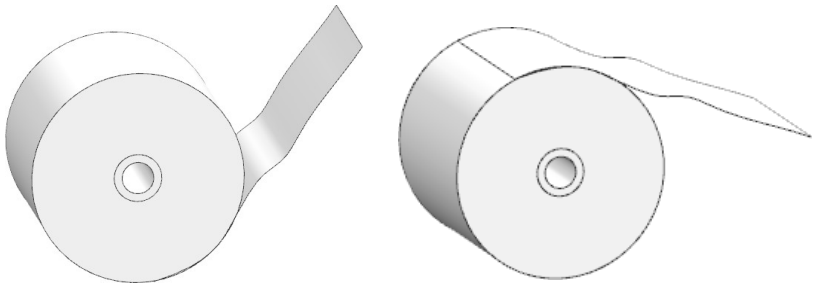
How to fix the paper

① Insert the paper shaft into the paper pipe and fit it into the product guide groove.



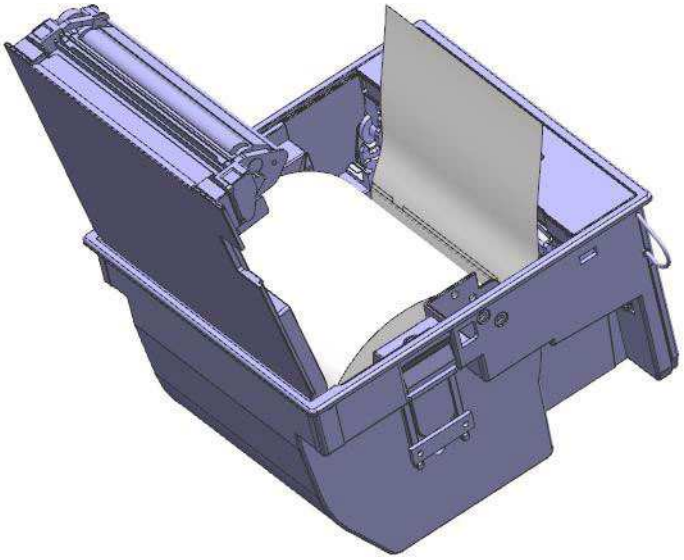


Be careful not to change the printing side of the paper.

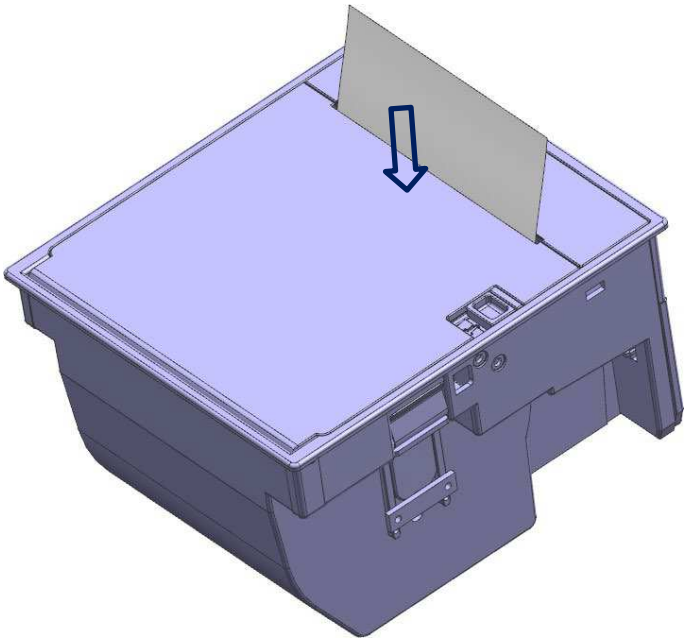


OK NG

② Make sure the end of the paper is out of the printer and close the cover.



Press the center of the cover in the direction of the arrow to close it.



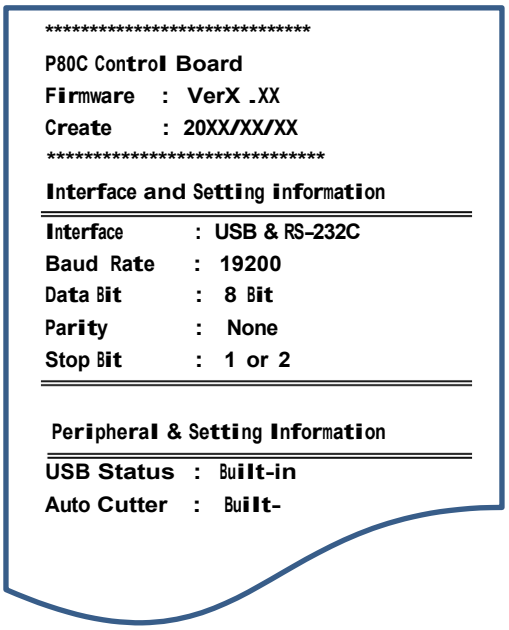
CAUTION

When closing the cover, press firmly on the middle part of the cover (near the arrow) to close it. Failure to do so may result in blurred printing.

Self-test print

Self-testing allows you to see the current settings on your printer.

1. With the power off, press the feed button and power it on
2. Power on and hold the feed button (approximately 1 second) until the red notification light flashes, and when the feed button is released, printing starts.
3. The following contents will be printed.



- Model Name
- Firmware Version and Created Date
- Interface Configuration
- Sample Print

3 HEX DUMP PRINT

Turn on the power after placing the Dip SW1 number 8 to ON position. After printing as [HEX DUMP MODE], it will print all receiving datas to 16 hexadecimal data for all receiving datas. This would be useful when developing an application because this notifies the transmission status.

Prints if 12 digits is received.

Data under 12 digits will be printed when you press the feed button.

Control code (below $1F_{16}$) will be printed as ".".

Prints as "^" when 80_{16} or above.

[Print Sample]

16 hexadecimal indication	ASCII Indication
[HEX DUMP MODE]	
41 42 43 44 45 46 47 47 49	A B C D E F G H I
30 31 32 33 34 35 36 37 38	0 1 2 3 4 5 6 7 8
FF 1B 69	^ . i

5 PRINTER FUNCTION SETTING

There are two ways to set the printer's functions such as serial communication conditions, Ethernet, black mark, etc., which are: a manual setting method in which the printer itself is changed, and a method using tools such as a memory switch program that connects to a PC. For the direct communication method through the Window Driver, refer to the separate manual attached with the setting program on our website.

1 Setting Manually

1) If the power is turned on while holding the FEED button for more than 2 seconds, the ERROR light turns off and then on and off repeatedly, and the items for which settings can be adjusted are printed as follows.

```
[Menu]
      1.Baud rate
      2.Parity
      3. Flow control
      4. Hex Dump Mode
      5. Print  Density
      6. Auto Melody
      7. Cut Mode
      8. Auto Buzzer
      9. Print  Speed
Select and then Enter...

Enter : Press the feed button once for
                more than 1second.
Select: Press the feed button many times
                less than 1second as menu number.
Exit  : Turn power off then on.
```

2) Item change and specification are determined by the length of time that the FEED button is pressed. Pressing the FEED button for less than 1 second will change to the next item. For example, if you want to adjust the print density, press the FEED button 5 times shortly to change the item to "5. Print Density".

After that, if you press and hold the FEED button for more than 1 second, the item is specified and the current setting value is output.

[Print Density]
-> 1. Normal
2. Medium
3. Dark
4. Most Dark

-> : Indicate current set status
Select and then Enter...

"->" indicates the currently set value.

3) In the same way, press for less than 1 second to toggle to the item you want to change and then set the item.

For example, if you want to change the current setting value from "1. Normal" to "4. Most Dark", simply press the FEED button 4 times and then press and hold 1 time..
It was changed successfully!

This indicates that the change was successful.

The value is invalid, try again!

This is displayed when the selected item is invalid or when you move to another menu without changing the item.

4) If the change is made successfully, the changeable items printed first are displayed.

If you need to make further adjustments, you can proceed in the same way.

Turn the power off and on after making all the changes.

2 Firmware update

With the adoption of flash memory, you can easily update the printer program from a PC.

When updating, be sure to read the steps below.

1) Turn the power off and then back on.

2) Make sure that the communication cable is connected with the printer.
(You can shorten the update time by using a USB cable.)

3) Run the provided update program, set the model name and communication port, and perform the update.
The ERROR LIGHT turns off, and after a few seconds, it flashes rapidly and the update starts.
Never turn off the printer power before the update is completed.

4) When the update complete mark appears, the update is completed.
※ If there is an update error during update, the ERROR LIGHT blinks slowly. After closing the update program, check the model and communication cable for abnormalities. After checking that the values are correct, run the update program again and repeat step 1).

5) After the update is completed, it is automatically reset and becomes available to use.

※ For more information on updating firmware, please check our website or contact the person in charge.

6 PRODUCT SPECIFICATIONS

1 Specification

ITEM		SPECIFICATION
Printing method		Thermal dot line printing
Resolution (dot size)		203 DPI
Dots per line		576 dots
Paper feed width (1 step)		0.125 mm
Paper thickness		50 ㎛ ~ 80 ㎛
Paper width		80 mm
Paper outer diameter size		Φ 80
Printing width		72 mm
Number of characters per line	Font A(12x24)	51
	Font B(9x16)	68
	Korean A(24x24)	25
	Korean B(16x16)	38
Printing speed		Max 200 mm/s
Font size	Font A(12x24)	1.50 x 3.00 mm
	Font B(9x16)	1.13 x 2.00 mm
	Korean A(24x24)	3.00 x 3.00 mm
	Korean B(16x16)	2.00 x 2.00 mm
Number of characters		English 95
		Extended characters (Code page) : 128 x 10
Barcode	1 Dimension	UPC-E, EAN8, EAN13, ITF, CODABAR, CODE39, CODE93, CODE128
	2 Dimension	PDF417, QR CODE
Cutter		Guillotine method (complete cutting, partial cutting possible)
Interface	Serial	RS232C
	USB	USB2.0 Full Speed
Receiving Buffer		4 Kbyte
SMPS rating	Input voltage	24 V(DC)
	Output current	2.5 A, 60 W
Life (25^{O}C, standard condition)		Head 100Km (100 million pulse) Cutter : 1,000,000 times (for print duty 12%, it may vary slightly depending on the paper used.)
Temperature range		Operating temperature -20°C ~ 60°C(#1) Storage temperature -25°C - 60°C
Humidity range		Operating humidity 40 - 85% RH (non-condensing) Storage humidity 40 - 95% RH

(#1) Guaranteed operating temperature range of the product is only from 0°C to 45°C, the guaranteed life time of product may be reduced if used outside the guaranteed temperature range.

7 INTERFACE SPECIFICATION

1 USB

- Standard : USB 2.0 Compatible, Full Speed(12Mb) response

- Connector : Type B

- Cable : USB2.0 Standard Cable

- Data Method : Bulk IN, Bulk OUT

  * Bulk IN : End point 6

  * Bulk OUT : End point 2

  * Full Speed : Max Packet Size 64 Byte(Bulk OUT),64 Byte(Bulk IN)

2 Serial (RS-232C)

- Data Transfer Method : Serial

- Handshake : Hardware (RTS/CTS or DTR/DSR)

- Baud Rate : 9600, 19200, 38400, 57600, 115203., BPS

- Data Bit : 8 bit

- Parity : None, Odd, Even

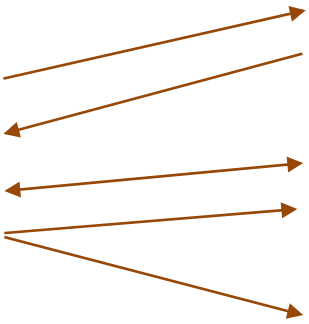
- Stop Bit : 1, 2 bit

- Connector: Hanlim CHD1140-4

- Cable : DSUB9(Female) - 4pin Custom Cable

Printer

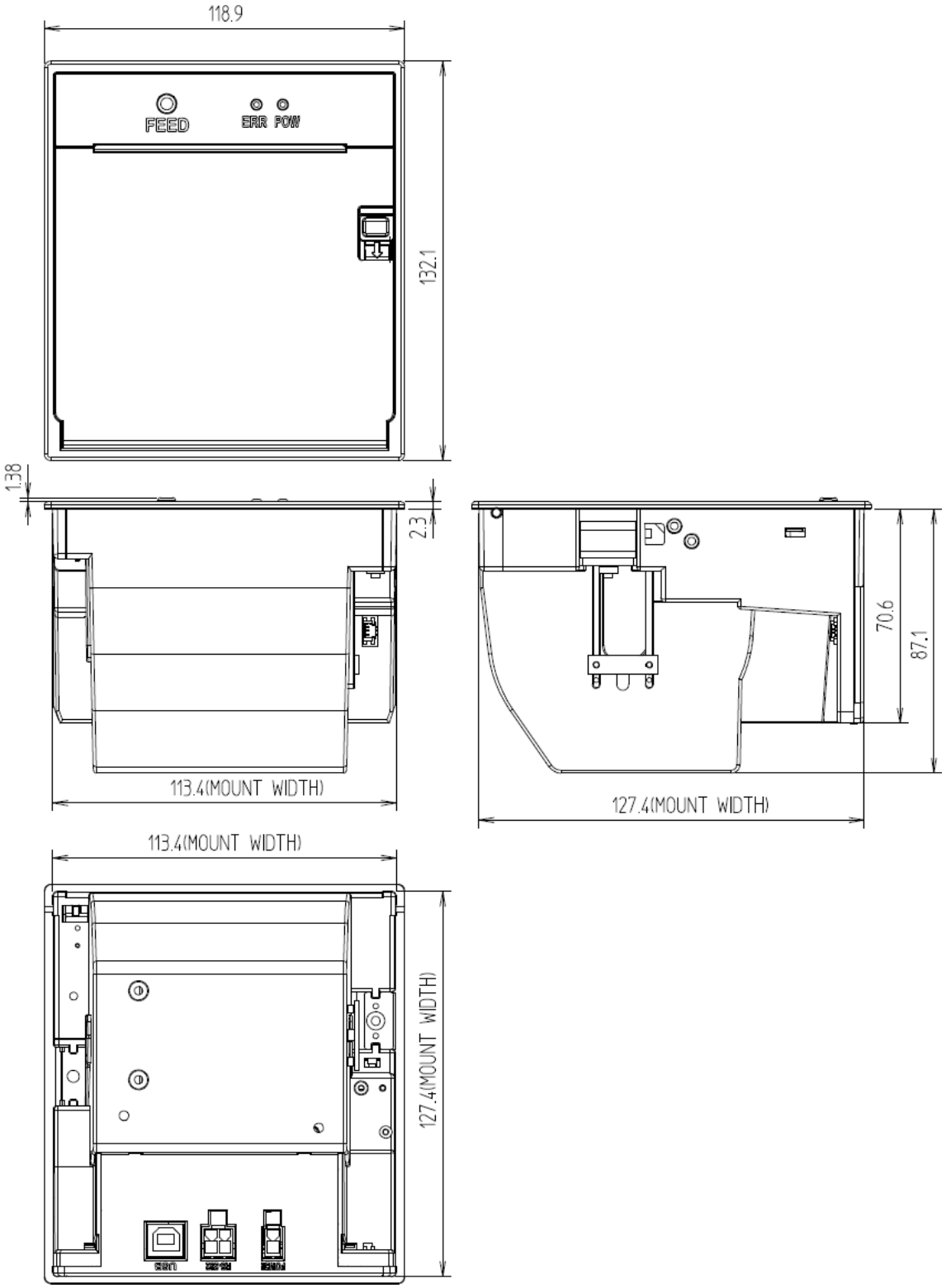
Pin	Signal	I/O
1	TxD	Output
2	RxD	Input
4	GND	-
3	RTS	Output



Host

Pin	Signal	I/O
1	DCD	-
2	RxD	Input
3	TxD	Output
4	DTR	Output
5	GND	-
6	DSR	Input
7	RTS	Output
8	CTS	Input
9	RI	-

8 EXTERNAL DIMENSION



9 COMMAND SPECIFICATIONS

Classification	Function	Page
CR	Print and line feed	29
LF	Print and line feed	29
CAN	Delete print data	29
HT	Horizontal tab	29
SUB x	Extended Graphic Mode, Korean mode	30
SUB R	Border of characters Border of characters	30
SUB s	Set print speed	31
ESC D	Set horizontal tab position	32
ESC SP	Set the amount of space to the right of ASCII characters	32
ESC !	Collective setting of ASCII character decorations	33
ESC $	Set the absolute position of print	34
ESC *	Set bit image (vertical arrangement)	35
ESC -	Set and Cancel ASCII character underscore	37
ESC 2	Initial row spacing	37
ESC 3	Set row spacing	38
ESC @	Printer reset	38
ESC E	Bold format	38
ESC G	Double printing	39
ESC J	FEED	39
ESC j	BACK FEED	39
ESC M	Font selection	40
ESC R	Set international characters	41
ESC a	Printing position Alignment	42
ESC d	Print and row unit FEED	42
ESC {	180° rotation	43
ESC i	Paper Cut (Full Cut)	43
ESC m	Paper Cut (Partial Cut)	43
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CR

Function	Print and line feed	
Code	ASCII	CR
	Hex	0Dh
	Decimal	13
Description	Same as LF	

LF

Function	Print and line feed	
Code	ASCII	LF
	Hex	0Ah
	Decimal	10
Description	① STANDARD MODE: Prints data and line feeds as the line space setting.	
	② PAGE MODE: Line feeds as the line space setting.	
Caution	LF immediately after CR is ignored.	

CAN

Function	Delete print data	
Code	ASCII	CAN
	Hex	18h
	Decimal	24
Description	Delete print data in print area.	

HT

Function	Horizontal tab	
Code	ASCII	HT
	Hex	09h
	Decimal	9
Description	Move print position to next tab.	
Caution	Tab position is set to ESC+'D'+n.	

SUB+'x'+n

Function	Extended Graphic Mode, Korean mode			
Code	ASCII	SUB	x	n
	Hex	1A	78h	n
	Decimal	26	120	n
Range	0≤n≤1			
Initial value	n=0			
Description	n=0: Korean mode - When the first code is A1h or higher, 2 bytes are processed and converted into Korean automatically. n=1: Extended Graphic Mode - All codes are processed as 1-byte codes. Extended Graphic characters can be printed.			

SUB+'R'+n

Function	Set the border(outline) of characters			
Code	ASCII	SUB	b	n
	Hex	1A	52h	n
	Decimal	26	82	n
Range	0≤n≤1			
Description	n=0: Remove border (rectangle) of characters. n=1 Enables border (rectangle) of characters.			
Caution	When enlarged horizontally, it is effective up to the size of 8 times; however, when enlarged vertically, it is effective only up to the size of 2 times.			

SUB+'s'+n

Function	Set print speed			
Code	ASCII	SUB	s	n
	Hex	1A	73h	n
	Decimal26	82	n	
Range	1≤n≤14			

Initial value	n=14
Description	n=1: Prints at a speed of 70mm/s. n=2: Prints at a speed of 80mm/s. n=3: Prints at a speed of 90mm/s. n=4: Prints at a speed of 100mm/s. n=5: Prints at a speed of 110mm/s. n=6: Prints at a speed of 120mm/s. n=7: Prints at a speed of 130mm/s. n=8: Prints at a speed of 140mm/s. n=9: Prints at a speed of 150mm/s. n=10: Prints at a speed of 160mm/s. n=11: Prints at a speed of 170mm/s. n=12: Prints at a speed of 180mm/s. n=13: Prints at a speed of 190mm/s. n=14: Prints at a speed of 200mm/s.

ESC+'D'+n1...nk+NUL

Function	Horizontal tab position setting				
Code	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44h	n1...nk	00
	Decimal	27	68	n1...nk	0
Range	1≤n≤255, 0≤k≤32				
Description	Set the horizontal tab position.				
Caution	n denotes the number of digits from the start of the line to the set position. k is the total number of tabs in a row.				

ESC+SP+n

Function	Set the amount of space to the right of ASCII characters.			
Code	ASCII	ESC	SP	n
	Hex	1B	20h	n
	Decimal	27	32	n
Range	0≤n≤255			
Initial value	n=0			
Description	Set the space to the right of ASCII characters to nx 0.125mm.			
Caution	Spacing for Korean is set using FS+'S'+n.			

ESC+'!'+n

Function	Collective setting of ASCII character decorations			
Code	ASCII	ESC	!	n
	Hex	1B	21h	n
	Decimal	27	33	n
Range	0≤n≤255			
Initial value	n=0			
Description	Sets the font and character decoration all at once			
Caution	For Korean, only font and highlight are applied.			

Bit	Function	Hex	Decimal
0	0: Font 12x24, Select 24x24	00h	0
	1: Font 8x16, Select 16x16	01h	1
1	-	-	-
2	-	-	-
3	0: Highlight off	00h	0
	1: Highlight on	08h	8
4	0: Vertical enlargement off	00h	0
	1: Vertical enlargement on	10h	16
5	0: Horizontal enlargement off	00h	0
	1: Horizontal enlargement on	20h	32
	-	-	-
7	0: Underline off	00h	0
	1: Underline on	80h	128

ESC+'$'+nL+nH

Function	Setting of absolute position				
Code	ASCII	ESC	$	nL	nH
	Hex	1B	24h	nL	nH
	Decimal	27	36	nL	nH
Range	0≤nL+nH×256≤65535, 0≤nL≤255, 0≤nH≤255				
Initial value	nL=0, nH=0				
Description	The print position is moved from the end of the left margin to the (nL+nH×256)×0.125mm position. When the print area is exceeded, it moves to the end point of the left margin.				

ESC+'*'+m+nL+nH+d1+…+dk

Function Setting of bit image

Code

ASCII	ESC	*	m	nL	nH	d1…dk	
Hex	1B	2Ah	m	nL	nH	d1…dk	Decimal
27	42	m	nL	nH	d1…dk		

Range m = 0, 1, 32, 33

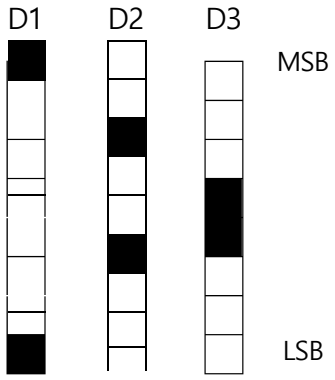
1≤nL+nH×256≤1023, 0≤nL≤255, 0≤nH≤3, 0≤d≤255

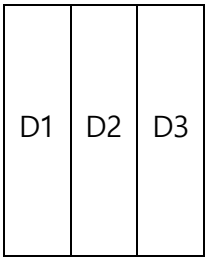
Initial value

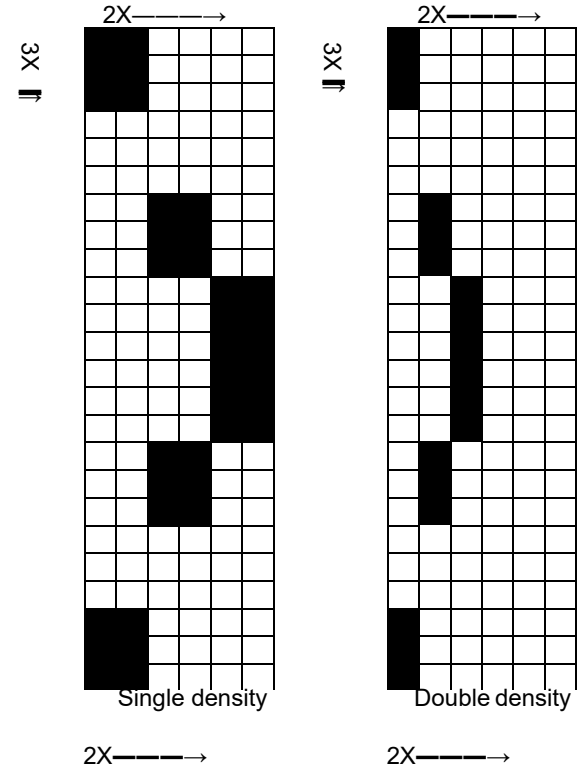
Description Bit data is printed as graphic data in mode m by the number of dots designated by nL+nH×256.

m	mode	Number of dots in vertical direction	Number of dots in horizontal direction	Number of data (k)
0	8 dots single density	8	224	nL+nH×256
1	8 dots double density	8	448	nL+nH×256
32	24 dots single density	24	224	(nL+nH×256)×3
33	24 dots double density	24	448	(nL+nH×256)×3

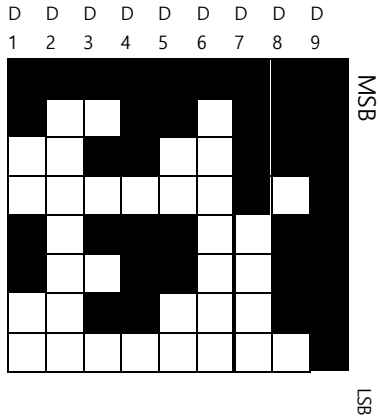
8-dot mode



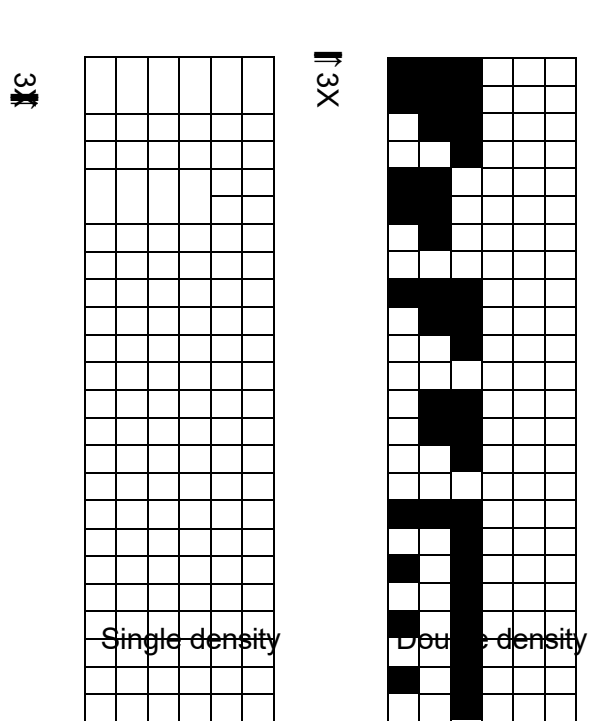




24-dot mode



D1	D4	D7
D2	D5	D8
D3	D6	D9



ESC+'-'+n

Function	Set / Cancel underline			
Code	ASCII	ESC	-	n
	Hex	1B	2Dh	n
	Decimal	27	45	n
Range	0≤n≤255			
Initial value	n=0			
Description	Set / Cancel underline.			

n	Function
0	Underline off
1	Set underline thickness to 0.125mm
2	Set underline thickness to 0.25mm
3	Set underline thickness to 0.375mm
4	Set underline thickness to 0.5mm
5	Set underline thickness to 0.625mm
6	Set underline thickness to 0.75mm
7	Set underline thickness to 0.875mm

ESC+'2'

Function	Set initial line spacing		
Code	ASCII	ESC	2
	Hex	1B	32h
	Decimal	27	50
Range	0≤n≤255,		
Initial value	n=0		
Description	Set the row spacing to the initial value 4mm.		

ESC+'3'+n

Function	Set row spacing			
Code	ASCII	ESC	3	n
	Hex	1B	33h	n
	Decimal	27	51	n
Range	0≤n≤255,			
Initial value	n=0			
Description	Set row spacing to nx 0.125mm.			

ESC+'@'

Function	Printer reset		
Code	ASCII	ESC	@
	Hex	1B	40h
	Decimal	27	64
Range	0≤n≤255		
Description	Clear buffer and initialize all parameters.		

ESC+'E'+n

Function	Set bold font			
Code	ASCII	ESC	E	n
	Hex	1B	45h	n
	Decimal	27	69	n
Range	0≤n≤255			
Initial value	n=0			
Description	Bold format is turned off when n=0. Bold format is turned on when n=1.			

ESC+'G'+n

Function	Set double print(double strike) font			
Code	ASCII	ESC	G	n
	Hex	1B	47h	n
	Decimal	27	71	n
Range	0≤n≤255			
Initial value	n=0			
Description	n=0 : Cancel Double print font n=1 : Set Double print font.			

ESC+'J'+n

Function	Feeding			
Code	ASCII	ESC	J	n
	Hex	1B	4Ah	n
	Decimal	27	74	n
Range	0≤n≤255			
Description	After printing the data in the buffer, it is fed by n x 0.125mm.			

ESC+'j'+n

Function	Back Feeding			
Code	ASCII	ESC	j	n
	Hex	1B	6Ah	n
	Decimal	27	106	n
Range	0≤n≤255			
Description	After printing the data in the buffer, it is back-fed by nx 0.125mm.			

ESC+'M'+n

Function	Font selection			
Code	ASCII	ESC	M	n
	Hex	1B	4Dh	n
	Decimal	27	77	n
Range	0≤n≤255			
Initial value	n=0			
Description	Set the printer font.			

n			
Upper 4 bits (2-byte font)		Lower 4 bits (ASCII, 1-byte font)	
0000	Korean 24x24 Gothic	0000	12x24
0001	Korean 16x16 Dotum font	0001	8x16 (9x16)
0010	Japanese 24x24 Ming font	0010	Reservation
0011	Chinese 24x24 Gothic	0011	Reservation



CAUTION If you set the memory switch using the memory switch setting utility, you can select and use one of the above fonts as the default font without this command. For details, refer to the memory switch setting items.

ESC+'R'+n

Function	Setting of international characters			
Code	ASCII	ESC	R	n
	Hex	1B	52h	n
	Decimal	27	82	n
Range	0≤n≤13			
Initial value	n=13			
Description	International characters are set as shown in the table below.			

n	Country name
0	United States
1	France
2	Germany
3	United Kingdom
4	Denmark 1
5	Sweden
6	Italy
7	Spain 1
8	Japan
9	Norway
10	Denmark 2
11	Spain 2
12	Latin America
13	Korea

ESC+'a'+n

Function	Set printing position alignment			
Code	ASCII	ESC	a	n
	Hex	1B	61h	n
	Decimal	27	97	n
Range	0≤n≤2			
Initial value	n=0			
Description	Align the printing position			

n	Alignment position
0	Left
1	Center
2	Right

ESC+'d'+n

Function	Print and n row feed			
Code	ASCII	ESC	d	n
	Hex	1B	64h	n
	Decimal	27	100	n
Range	0≤n≤255			
Description	Feeds by n line(s) after printing data.			

ESC+'{'+n

Function	180° rotation			
Code	ASCII	ESC	{	n
	Hex	1B	7Bh	n
	Decimal27	123	n	
Range	0≤n≤255			
Initial value	n=0			
Description	Prints by rotating 180°.			
Caution	The reference point moves from the left end to the right end.			

n	Function
0	Turn off 180° rotation
1	Turn on 180° rotation

ESC+'i'

Function	Full Cutting		
Code	ASCII	ESC	i
	Hex	1B	69h
	Decimal27	105	
Description	The paper is fully cut.		

ESC+'m'

Function	Partial Cutting		
Code	ASCII	ESC	m
	Hex	1B	6Dh
	Decimal27	109	
Description	The paper is partially cut.		
Caution	In the case of the presenter model, partial cutting is set to invalid and full cutting is performed.		

FS+'!'+n

Function	Collective setting of Korean character printing mode			
Code	ASCII	FS	!	n
	Hex	1C	21h	n
	Decimal28	33	n	
Range	0≤n≤255			
Initial value	n=0			
Description Caution	Set Korean printing mode character decoration collectively Applies only to Korean.			

Bit	Function	Hex	Decimal
0	-	00h	0
1	-	00h	0
2	Horizontal enlargement off	00h	0
	Horizontal enlargement on	04h	4
3	Vertical enlargement off	00h	0
	Vertical enlargement on	08h	8
4	-	00h	0
5	-	00h	0
6	-	00h	0
7	Underline off	00h	0
	Underline on	80h	128

FS+'&'

Function	Korean character mode (2-byte mode) setting		
Code	ASCII	FS	&
	Hex	1C	26h
	Decimal28	38	
Description	Sets Korean mode (2-byte mode).		
Caution	Necessary when printing Korean characters in extended graphic mode.		
	It is automatically recognized during Korean mode, so no setting is required. (Refer to SUB+'x'+n command.)		

FS+'.'

Function	Cancel Korean character mode (2-byte mode)		
Code	ASCII	FS	.
	Hex	1C	2Eh
	Decimal28	46	
Description	Korean mode (2-byte mode) is deactivated.		
Caution	Necessary when deactivating 2-byte mode during extended graphic mode.		
	It is automatically recognized during Korean mode, so no setting is required. (Refer to SUB+'x'+n command.)		

FS+'-'+n

Function	Set Korean Character underline				
Code	ASCII	FS	-	n	
	Hex	1C	2Dh	n	
	Decimal28	45	n		
Range	0≤n≤2				
Initial value	n=0				
Description	Sets underlining of Korean characters.				

n	Function
0	Deactivates underlining of Korean characters.
1	The thickness of Korean underline is set to 0.125mm.
2	The thickness of Korean underline is set to 0.25mm.

FS+'S'+n1+n2

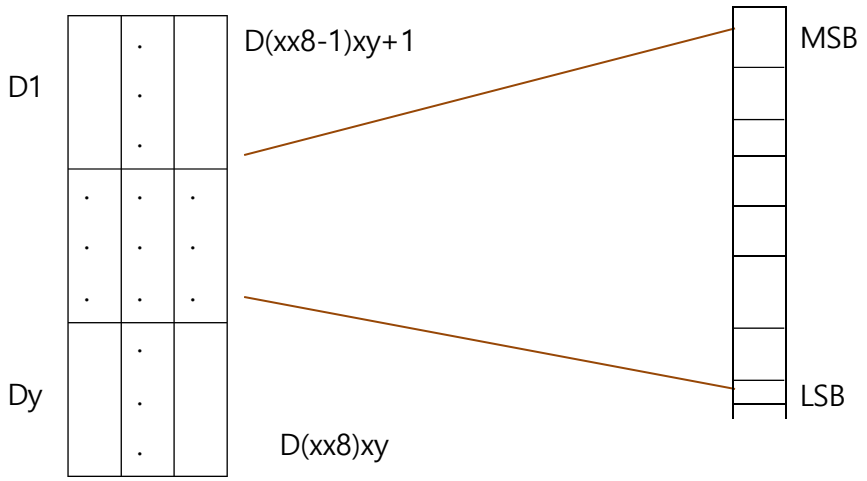
Function	Set spacing between Korean characters				
Code	ASCII	FS	S	n1	n2 n2
	Hex	1C	53h	n1	
	Decimal28	83	n1	n2	
Range	0≤n1≤255, 0≤n2≤255				
Initial value	n=0				
Description	Sets spacing between Korean characters. The left space between Korean characters is set to n1×0.125mm. The right space between Korean characters is set to n2×0.125mm.				

FS+'W'+n				
Function	Set Korean Character size			
Code	ASCII	FS	W	n
	Hex	1C	57h	n
	Decimal28	87	n	
Range	0≤n1≤255			
Initial value	n=0			
Description	Korean character size is set to be double horizontally and vertically. When n=0, 2X horizontal and 2X vertical are disabled. When n=1, 2X horizontal and 2X vertical are set.			

FS+'q'+n+(xL+xH+yL+yH+d1...dk)1.....+(xL+xH+yL+yH+d1...dk)n

Function	Registration of NV (non-volatile) logo (bit image)
Code	ASCII FS q n (xL xH yL yH d1..dk)1...(xL xH yL yH d1..dk)n Hex 1C 71h n (xL xH yL yH d1..dk)1...(xL xH yL yH d1..dk)n Decimal 28 113 n (xL xH yL yH d1..dk)1...(xL xH yL yH d1..dk)n
Range	1≤n≤255 0≤xL+xH×256≤65535 (0≤xL≤255, 0≤xH≤255) 0≤yL+yH×256≤65535 (0≤yL≤255, 0≤yH≤255) 0≤d≤255 k=(xL+xH×256)×(yL+yH×256)×8 The registerable capacity is up to 64KB.
Description	Registers the designated NV (non-volatile) logo (bit image) in non-volatile memory. n means the total number of NV logos. xL,xH sets the number of dots in the horizontal direction of (xL+xH×256)×8. yL,yH sets the number of dots in the vertical direction of (xL+xH×256)×8. k means the number of bit images of one NV logo.
CAUTION	As long as the NV logo does not exceed the capacity, several types can be registered, but when re-registering, care must be taken to ensure that all of them are erased and then re-registered.

<Registered image>



FS+'p'+n+m

Function	NV logo print				
Code	ASCII	FS	p	n	m m
	Hex	1C	70h	n	
	Decimal28	112	n	m	
Range	1≤n≤255, 0≤m≤3				
Initial value	n=0				
Description	The registered NV logo is printed in m mode. n refers to the nth registered logo.				

m	Printing mode
0	STANDARD
1	Horizontal enlargement
2	Vertical enlargement
3	Horizontal and vertical enlargement

GS+'!'+n

Function	Set the character enlargement ratio
Code	ASCII GS ! n Hex 1D 21h n Decimal29 33 n
Range	0≤n1≤255 (However, the maximum value of horizontal and vertical enlargement is limited to 8.)
Initial value	n=0
Description	Sets the character enlargement ratio.



CAUTION

When enlarging horizontally and vertically at the same time, add both numbers below.

Example) 3 times horizontally, 3 times vertically: n=32+2=34

Bit	Function
0-3	Sets the vertical enlargement ratio.
4-7	Sets the horizontal enlargement ratio.

Horizontal enlargement

n(Hex)	n(Decimal)	Enlargement ratio
00h	0	1X
10h	16	2X
20h	32	3X
30h	48	4X
40h	64	5X
50h	80	6X
60h	96	7X
70h	112	8X

Vertical enlargement

n(Hex)	n(Decimal)	Enlargement ratio
00h	0	1X
01h	1	2X
02h	2	3X
03h	3	4X
04h	4	5X
05h	5	6X
06h	6	7X
07h	7	8X

GS+'('+'K'+pL+pH+fn+m (fn=49)

Function	Set the print density						
Code	ASCII	GS	(	K	pL	pH	fn	m
	Hex	1D	28h	4Bh	pL	pH	fn	m
	Decimal	29	40	75	pL	pH	fn	m
Range	pL=2, pH=0, fn=49 0≤m≤5, 251≤m≤255							
Initial value	m=0							
Description	Sets the print density.							

m	Print density	m	Print density
-	-	0	Standard Density
251	Density level -5	1	Density level +1
252	Density level -4	2	Density level +2
253	Density level -3	3	Density level +3
254	Density level -2	4	Density level +4
255	Density level -1	5	Density level +5

CAUTION

If a Density other than the standard Density is specified, the life of the head is shortened.

It is recommended to print below the standard density.

GS+'B'+n

Function	Printing Black & White in reverse			
Code	ASCII	GS	B	n
	Hex	1D	42h	n
	Decimal	29	66	n
Range	0≤n≤255			
Initial value	n=0			
Description	Select the Printing black and white in reverse. When n=0, standard printing When n=1, black and white reverse printing			

GS+'H'+n

Function	Designates barcode HRI character print position.			
Code	ASCII	GS	H	n
	Hex	1D	48h	n
	Decimal	29	72	n
Range	0≤n≤3			
Initial value	n=0			
Description	Sets the printing position of barcode numbers and characters.			

n	Printing position
0	No printing
1	Prints on top of the barcode.
2	Prints at the bottom of the barcode.
3	Prints on top and at the bottom of the barcode.

GS+'L'+nL+nH

Function	Sets the left margin.				
Code	ASCII	GS	L	nL	nH nH
	Hex	1D	4Ch	nL	
	Decimal29	76	nL	nH	
Range	0≤nL≤255, 0≤nH≤255				
Initial value	nL+nH×256=0 (nL=0, nH=0)				
Description	Sets the left margin to (nL+nH×256)×0.125mm.				

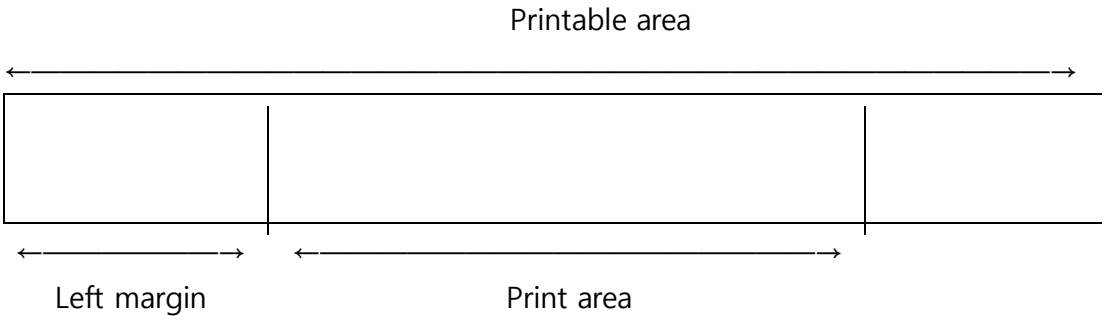
GS+'V'+m

Function	Paper cutting			
Code	ASCII	GS	V	m m
	Hex	1D	56h	
	Decimal29	86	m	
Range	0≤m≤1			
Initial value	m=0			
Description	Paper is cut using the specified options.			

m	Function
0	Full Cutting
1	Partial Cutting

GS+'W'+nL+nH

Function	Designates the printing area.				
Code	ASCII	GS	W	nL	nH
	Hex	1D	57h	nL	nH
	Decimal29	87	nL	nH	
Range	0≤nL≤255, 0≤nH≤255				
Initial value	nL+nH×256=448 (56mm, nL=0, nH=0)				
Description	Sets the printing area to (nL+nH×256)×0.125mm in the left margin.				



GS+'h'+n				
Function	Sets the barcode height.			
Code	ASCII	GS	h	n
	Hex	1D	68h	n
	Decimal29	104	n	
Range	1≤n≤255			
Initial value	n=162 (20.25mm)			
Description	The barcode height is set to n×0.125mm.			

GS+'k'+m+d1…dn+NUL

Function Barcode printing

Code ASCII GS k m d1…dn NUL
Hex 1D 6Bh m d1…dn 00h
Decimal29 107 m d1…dn 0

Range 1≤m≤7, n and d differ depending on the barcode (see table below).

Description Prints barcode

m	Barcode type	n (number of barcode data)	d (barcode data)
1	UPC-E	n=7 (verification characters added automatically)	48≤d≤57
2	EAN13	n=12 (verification characters added automatically)	48≤d≤57
3	EAN8	n=7 (verification character added automatically)	48≤d≤57
4	CODE39	1≤n (start and stop characters added automatically)	48≤d≤57, 65≤d≤90 d=32,36,37,43,45,46,47
5	ITF (I of 2/5)	1≤n (odd, even numbers)	48≤d≤57
6	CODABAR	1≤n	48≤d≤57, 65≤d≤68 d=36,43,45,46,47,58
7	CODE128	2≤n≤255 (verification and stop characters added automatically)	0≤d≤127

Caution In CODE128, in the case of special characters as shown in the table below, add "{" to set to 2 bytes.

Special characters	Barcode data		
	ASCII	Hex	Decimal
SHIFT	{S	7Bh, 53h	123, 83
CODE A	{A	7Bh, 41h	123, 65
CODE B	{B	7Bh, 42h	123, 66
CODE C	{C	7Bh, 43h	123, 67
FNC1	{1	7Bh, 31h	123, 49

FNC2	{2	7Bh, 32h	123, 50
FNC3	{3	7Bh, 33h	123, 51
FNC4	{4	7Bh, 34h	123, 52
"{"	{{	7Bh, 7Bh	123, 123

In addition, the starting character of CODE A, CODE B, or CODE C must be added at the beginning to distinguish the CODE 128 type.

CODE128 classification	Starting character	Example of printing barcode data "ABCD"
CODE A	g	"gABCD"
CODE B	h	"hABCD"
CODE C	i	"iABCD"

GS+'w'+n

Function: Sets the horizontal size of the barcode.

Code

ASCII	GS	w	n
Hex	1D	77h	n
Decimal29	119	n	

Range: 1≤n≤4

Initial value: n=2

Description: Sets the horizontal size of the barcode.

n	Multi-level barcode Module width	2-level barcode	
		Narrow element	Wide element
1	0.25mm	0.125mm	0.375mm
2	0.375mm	0.25mm	0.625mm
3	0.5mm	0.375mm	1mm
4	0.625mm	0.5mm	1.25mm

* Multi-level barcode: UPC-E, EAN13, EAN8

* 2-level barcode: CODE39, ITF, CODABAR

GS+'r'+n

Function	Status check response			
Code	ASCII	GS	r	n
	Hex	1D	72h	n
	Decimal29	114	n	
Range	n=1			
Description	Transmits the current status of the printer.			



CAUTION

Since this command cannot be received while the printer is offline, the status cannot be checked. Therefore, it is desirable to use real-time status check (DLE+EOT+n).

GS+'a'+n

Function	Enabling and disabling status check automatic response			
Code	ASCII	GS	a	n
	Hex	1D	61h	n
	Decimal29	97	n	
Range	0≤n≤1			
Initial value	n=1			
Description	Set or cancel the status check automatic response function.			

This printer has a function enabling it to automatically respond when the status changes after checking the printer status. This command can be used to enable or disable this function.

n	Function
0	Status check automatic response function disabled
1	Status check automatic response function enabled

<Status transmission data>

Bit	State	Hex	Decimal
0	0: There is paper. 1: No paper.	00h 01h	0 1
1	0: Printer head down 1: Printer head up	00h 02h	0 2
2	0: Paper not jammed. 1: Paper jammed.	00h 04h	0 4
3	0: Paper remained enough. 1: Not much paper left.	00h 08h	0 8
4※	0: Print completed 1: During printing or feeding	00h 10h	0 16
5	0: No cutter error(jam). 1: There is a cutter error(jam).	00h 20h	0 32
6	0 (Not used)	00h	0
7	0: No paper in the auxiliary sensor. 1: There is paper in the auxiliary sensor.	00h 80h	0 128

※ The status value of bit 4 is valid only when real-time command DLE + EOT + n command is executed, otherwise it is fixed to 0.

DLE+ENQ+n

Function	Clearing each buffer in the printer in real time			
Code	ASCII	DLE	ENQ	n
	Hex	10h	05h	n
	Decimal16	5	n	
Range	n=2			
Description	n=2: Each buffer of the printer is cleared in real time.			



CAUTION

If data that matches this command is received, care must be taken as the same operation as this command is performed (bit image data, etc.).

DLE+EOT+n

Function	Send the printer status values in real time.			
Code	ASCII	DLE	EOT	n
	Hex	10h	04h	n
	Decimal16	4	n	
Range	n=2			
Description	As soon as this command is received, 1 byte of the printer status value is transmitted in real time.			



CAUTION

If data that matches this command is received, care must be taken as the same operation as this command is performed (bit image data, etc.).

<Status transmission data>

Bit	State	Hex	Decimal
0	0: There is paper. 1: No paper.	00h 01h	0 1
1	0: Printer head down 1: Printer head up	00h 02h	0 2
2	0: Paper not jammed. 1: Paper jammed.	00h 04h	0 4
3	0: Paper remained enough. 1: Not much paper left.	00h 08h	0 8
4	0: Print completed. 1: Printing or feeding in progress.	00h 10h	0 16
5	0: No cutter error(jam). 1: Cutter error(jam).	00h 20h	0 32
6	0 (Not used)	00h	0
7	0: No paper in the auxiliary sensor. 1: There is paper in the auxiliary sensor.	00h 80h	0 128

GS+'v'+'0'+m+xL+xH+yL+yH+d1+…+dk

Function Raster bit image (horizontal)

Code

ASCII	GS	v	0	m	xL	xH	yL	yH	d1..dk
Hex	1D	76h	30h	m	xL	xH	yL	yH	d1..dk
Decimal	28	118	48	m	xL	xH	yL	yH	d1..dk

Range 0≤m≤3 or 48≤m≤51,

1≤(xL+xH×256)≤150 (0≤xL≤150, xH=0)

1≤(yL+yH×256)≤436 (0≤yL≤255, 0≤yH≤1)

0≤d≤255 (yL+yH×256)

k (total number of data) = (xL+xH×256) × (yL+yH×256)

Description

Prints raster bit image in mode m.

xL,xH sets the number of data in the horizontal direction (bytes) of the image data.

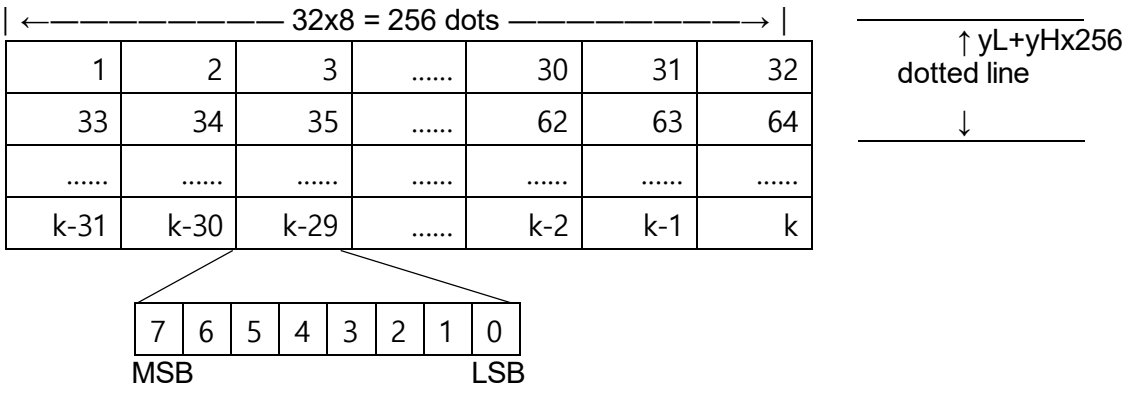
yL,yH sets the number of dotted lines in the vertical direction of the image data.

d indicates raster bit image data.

m	Mode	Enlargement
0, 48	Normal	1X
1, 49	Horizontal enlargement	2X horizontal
2, 50	Vertical enlargement	2X vertical
3, 51	Horizontal, vertical enlargement	2X horizontal, 2X vertical

Example) Unfolded image

When xL+xH×256 = 32 bytes,



SUB+'B'+n1+n2+n3+d1……dk

Function 2D barcode

Code

ASCII	SUB	B	n1	n2	n3	d1 .....dk
Hex	1A	42h	n1	n2	n3	d1 .....dk
Decimal	26	66	n1	n2	n3	d1 .....dk

Range

n1	2D barcode type
1	PDF417
2	QR code

1) PDF417

n2	Number of barcode data
	1 < n2 ≤ 255

n3	Barcode size
3	3 rows
4	4 rows
5	5 rows
6	6 rows
7	7 rows
8	8 rows
9	9 rows

2) QR code

n2	Number of barcode data
n3=1	1 < n2 ≤ 17
n3=3	1 < n2 ≤ 53
n3=5	1 < n2 ≤ 106
n3=9	1 < n2 ≤ 230

n3	Barcode size
1	Version 1
3	Version 3
5	Version 5
9	Version 9

※ Vertical size is set automatically.

Description

Select and use the appropriate barcode size according to the number of barcode data.

n1: 2D barcode type

n2: number of barcode data n3: barcode size

d1... dk: barcode data

SUB+'1'			
Function	Select rule line 1		
Code	ASCII	SUB	1
	Hex	1A	31h
	Decimal26	49	
Description	Rule line 1 is selected among rule lines 1 and 2.		

SUB+'2'			
Function	Select rule line 2		
Code	ASCII	SUB	1 => 2
	Hex	1A	32h
	Decimal26	50	
Description	Rule line 2 is selected among rule lines 1 and 2.		

SUB+'W'+nL+nH+kL+kH

Function	WRITE rule line data					
Code	ASCII	SUB	nL	nH	kL	kH
	Hex	1A	nL	nH	kL	kH
	Decimal	26	nL	nH	kL	kH

Range 0≤nL+nH×256≤640、(0≤nL≤255, 0≤nH≤3)
0≤kL+kH×256≤640、(0≤kL≤255, 0≤kH≤3)

Description Writes 1 from nL+nH×256 to kL+kH×256 on the selected rule line.
It is ignored if the defined range is exceeded.

CAUTION Once written, the data is preserved without being erased until the clear rule lines command is received or the power is turned off.

SUB+'C'

Function	Clears rule line data.		
Code	ASCII	SUB	C
	Hex	1A	43h
	Decimal	26	67

Description All selected rule lines are cleared to 0.

CAUTION To speed up processing, rule line print ON/OFF is used for printing/non-printing of rule lines written once, and this level=>Command is used to re-write rule line data.

SUB+'O'

Function	Rule line ON		
Code	ASCII	SUB	O
	Hex	1A	4Fh
	Decimal	26	79

Description Rule lines are set to Valild(ON). When it is enabled, it is written once and the selected rule lines are printed along with the character.

SUB+'F'

Function	Rule line OFF		
Code	ASCII	SUB	F
	Hex	1A	46h
	Decimal26	70	
Description	Rule lines are set to OFF, and rule line data is preserved.		

SUB+'P'

Function	Print rule line 1 dotted line		
Code	ASCII	SUB	P
	Hex	1A	50h
	Decimal26	80	
Description	Rule line 1 dotted line is printed.		



CAUTION

When printing character and graphic, do not use this command, but use the rule lines ON command. This command should be used to print rule lines in the space between row and row.

ESC+'t'+n

Function	International code page setting			
Code	ASCII	ESC	t	n
	Hex	1B	74h	n
	Decimal27	116	n	
Range	0≤n≤8			
Initial value	n=0			
Description	International characters of each code page are set as shown in the table below.			



CAUTION

Valid when set to 1-byte mode with SUB + x command or FS + "." command.

Invalid when set to 2-byte mode.

n	Code Page
0	PC437 (US)
1	KANA (JAPAN)
2	Greece
3	Windows1251
4	PC866 (Cyrillic #2)
5	Windows1250 (Poland)
6	PC850 (Multilingual)
7	PC860 (Portugal),
8	Windows1252
9	Iran System Encoding Standard
10	PC857 (Turkish)

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