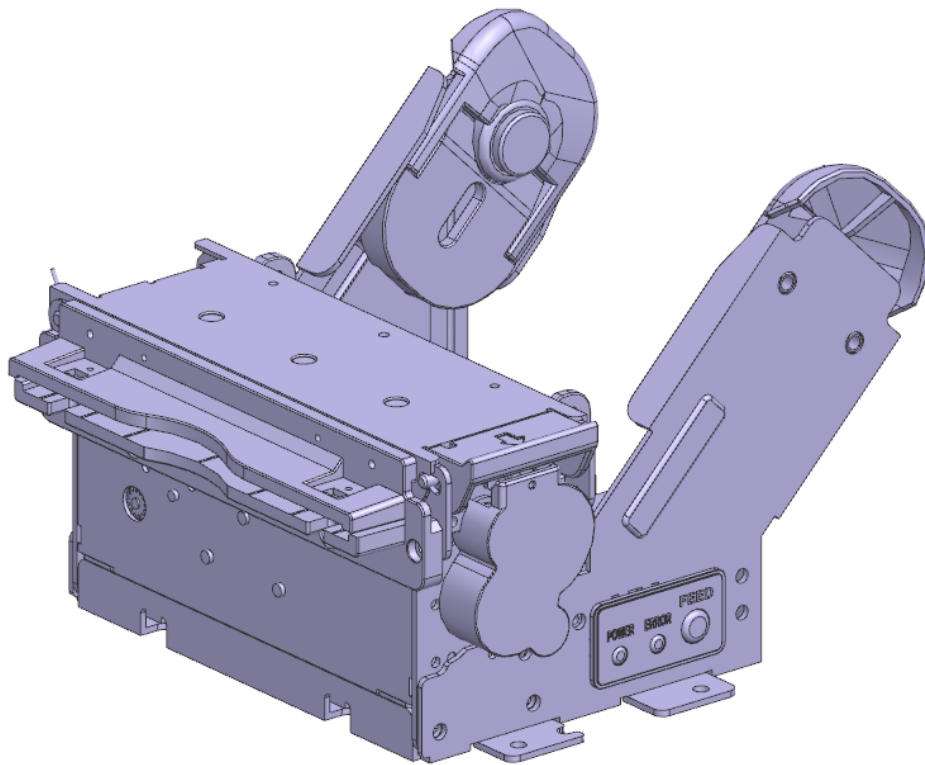


HMK-072 Series

Technical Manual



● Revision History

[illegible]

● Product Manual

This manual describes the basic matters and how to use the HMK-072 series product.

Please adhere to the contents of this manual when installing and using the printer. Otherwise, you may have problems with your device.

The user is responsible for any losses resulting from improper handling and operation.

The contents of this document are subject to change without notice. If you are unsure of anything in this manual, or if you have any questions or concerns, please contact the place where you purchased the product.

● Warnings and Cautions for Safety

In order to use the product correctly and prevent safety accidents, be sure to observe the following.



Failure to observe the warning signs during use of the product may result in damage to the product and serious injury or death.

WARNING

- Do not disassemble, repair or modify the product.
- Do not remove jammed paper while the power is on.
- Do not exceed the rated power.
- Do not wash. => Do not wash the product.
- Do not cause impact to the product.
- Do not leave the product in a humid place.



Failure to observe caution signs during use of the product may cause damage to the product and personal injury.

Caution

- If you detect any abnormalities in the product, please contact us for instructions on how to handle it.
- Make sure you turn off the power before removing foreign matter from the product.
- Provide regular ventilation if installed in a confined space.
- Avoid interference from surrounding installations when installing.
- Wire in a stable environment.
- Observe electrical appliance requirements.

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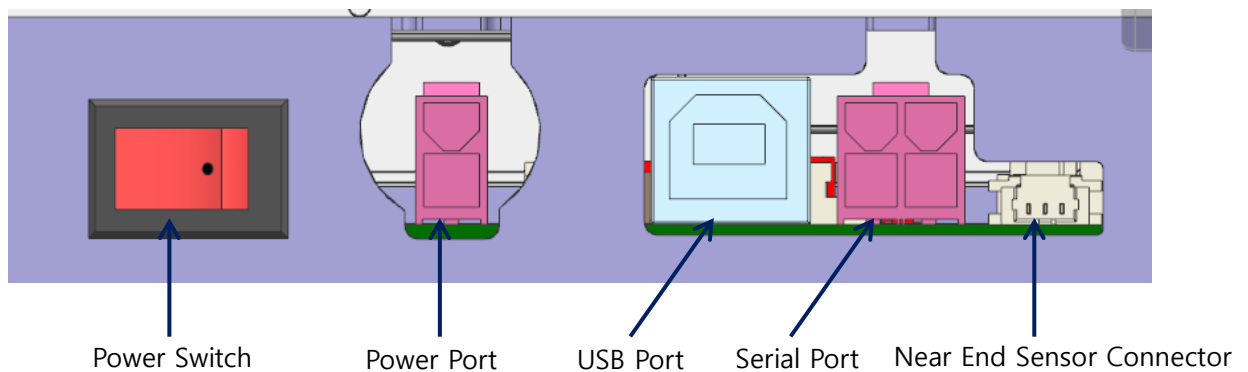
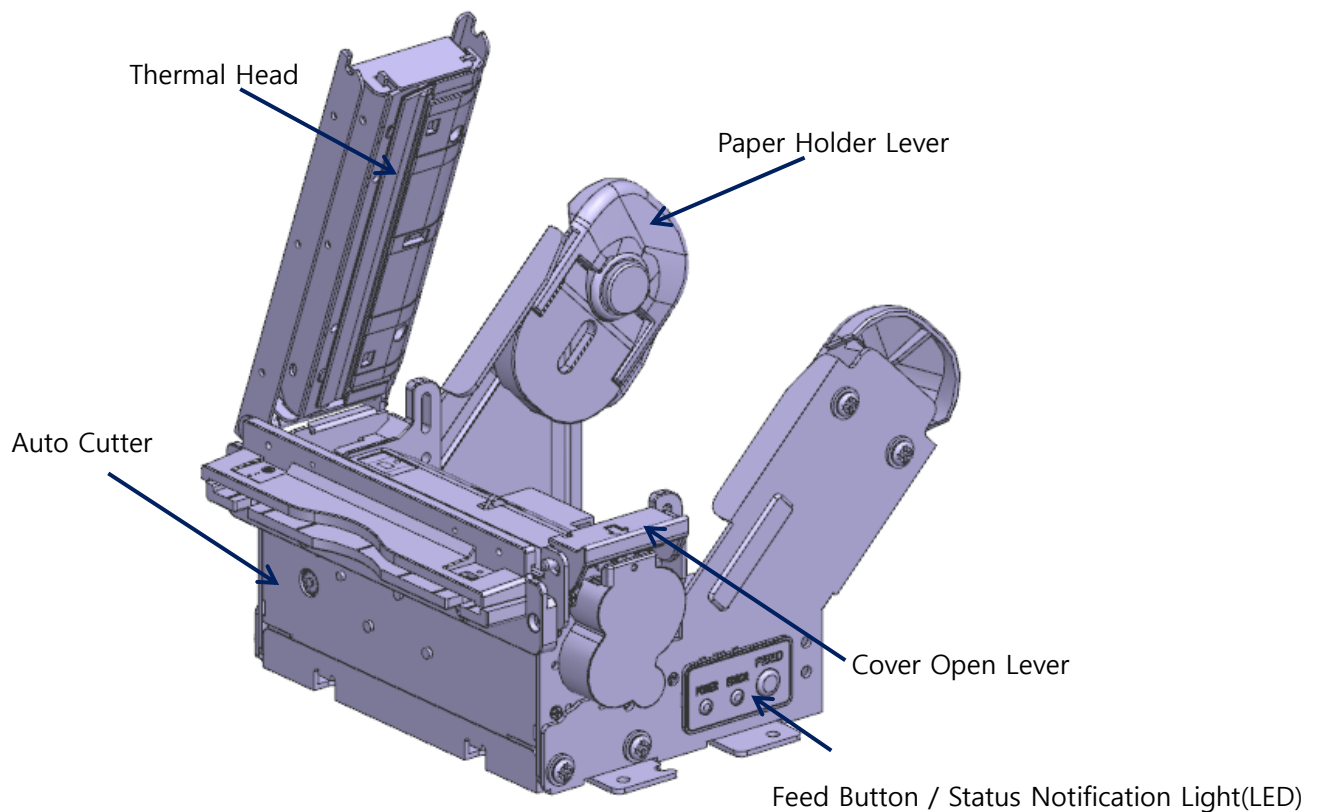
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I . Printer Features

HMK-072 series printers are designed to be used by installing or connecting to Kiosk Systems. This printer uses direct thermal printing method and the paper width can be set to suit user's environment. Also, with HMK-072 Series Printers, both of Roll type paper and Fan Folder type paper can be used.

1. Printer Features

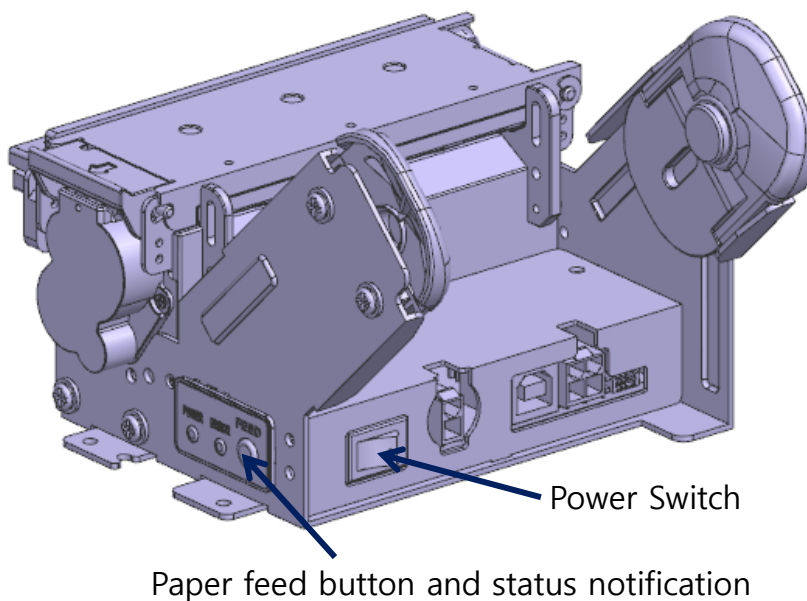


II. Main Functions

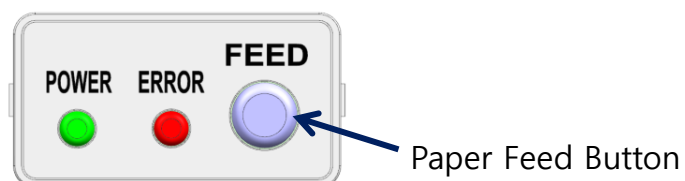
1. Power Switch/Paper Feed Button and Status Notification Indicator

1) Power Switch

The power switch is used to turn the power on or off, and it is also used for self test and changing printer status settings.



2) Paper Feed Button



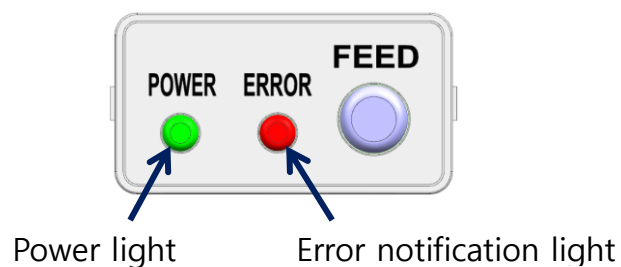
The FEED button can perform the following functions.

① Paper feed: When paper is inserted, pressing the feed button feeds paper for as long as the button is pressed.

② Self Test: While holding the FEED button, turn on the power and then release the button after the Error light turns on once. The self test contents will then be printed.

③ Checking and changing the printer status: If you turn on the power while holding the FEED button, the Error light flashes continuously. When the button is released at this time, the printer status menu is printed.

3) Status Notification Lights



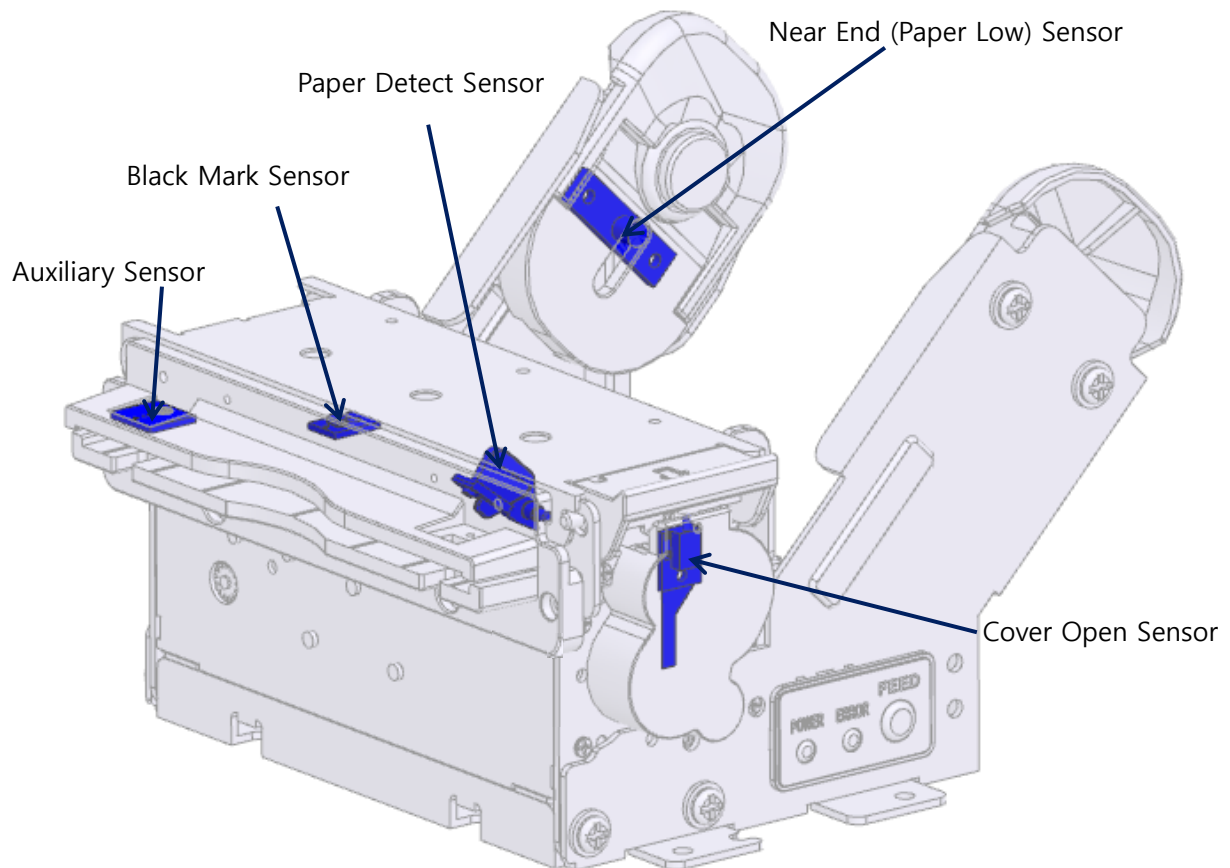
① Power light: When the power is turned on, the green power light turns on.

② Error light: Depending on the printer status, the light blinks to inform you of the printer status as shown below.

Notification light status	Printer status
Flashing briefly	No paper
Long flashing	Cover open, cutter jammed, paper jammed, etc.

2. Detect Sensors

Several detection sensors placed on the printer transmit the printer's status to the host system..



1) Cover Open Sensor

The cover open switch detects when the cover is open and stops the printing and ticket feeding process until the cover is closed.

2) Paper Detect Sensor

A sensor that detects the presence and absence of paper, used to control paper insertion and printing, as well as notifications to notify the user to reload paper.

3) Black Mark Sensor

It is used to control the starting point of printing by detecting the black mark position.

4) Near End(Paper Low) Sensor

The Near End(Paper Low) Sensor(Paper shortage detection sensor) is a detection sensor that automatically informs the user when to change paper..

.

5) Auxiliary Sensor

The auxiliary sensor is a sensor that notify of discharging paper after printing.

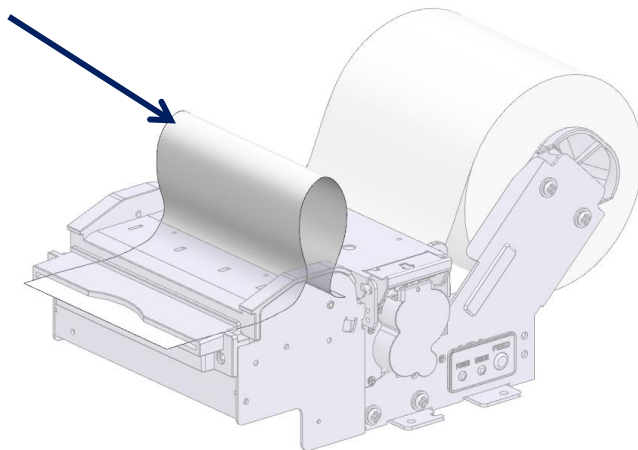
3. PRESENTER (OPTION)

When the presenter function is added, receipt handling becomes easy and the following functions can be used.

1) Loop Function

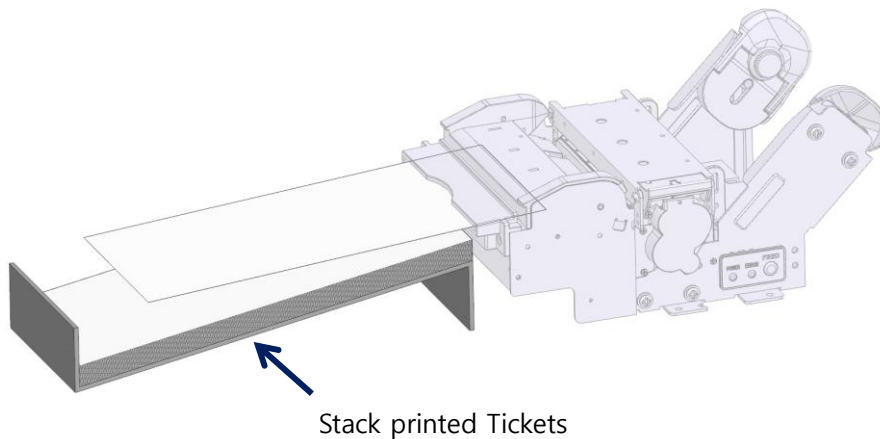
If the length of the printout is longer than a certain level, this function keeps the paper in the middle until printing is finished. Users can only take the contents after printing is complete, ensuring safety.

Paper loop status



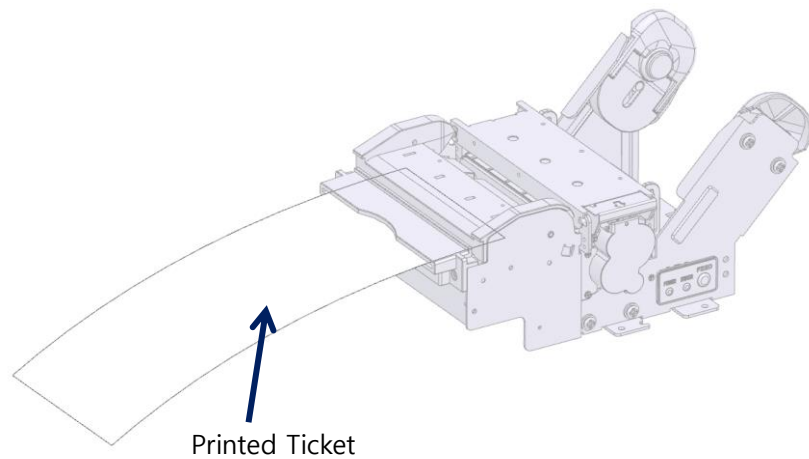
2) Eject Function

When printing is finished, the ticket or receipt is released out of the machine. When printing multiple tickets in a row, it is arranged in the order in which they were printed. (Ticket holder sold separately)



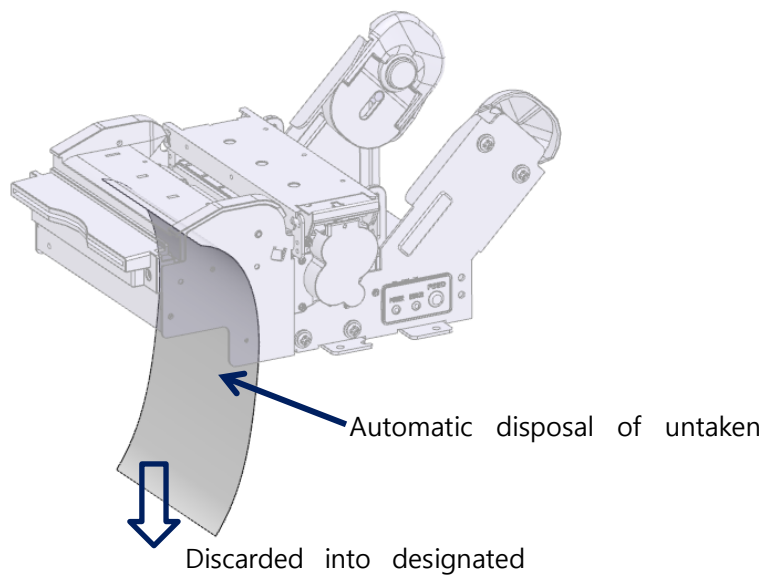
3) Hold Function

Function of the presenter holding the paper until the user takes the printed ticket or receipt.



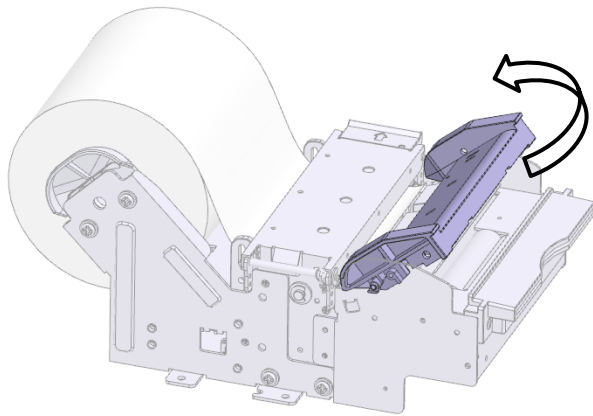
4) Automatic Retract(Dispose) Function

If the user does not take the printed ticket or receipt after a certain period of time, it is the function to collect and discard the printed material into the designated device or space.



5) Presenter Jam removal method

If a paper jam occurs in the presenter, raise the Cover open roller in the direction of the arrow to open it, remove the paper, and close the Cover open roller again.

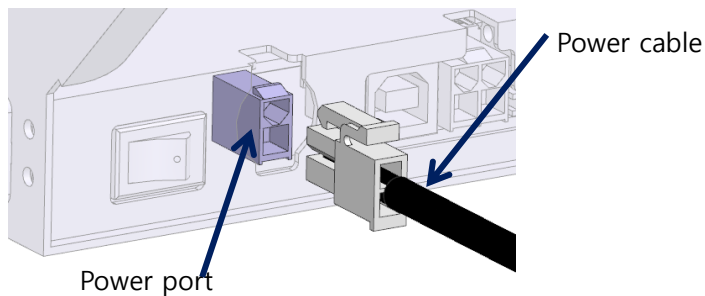


III. Printer Use Guide

1. Power port connection method

When connecting power, be sure to connect the power cable to the power port while the power Switch turned off.

① 2 hole power cable connection



WARNING

The rated power of this product is 24V, so do not use a power supply that is out of specification. It may cause product failure or safety accident.



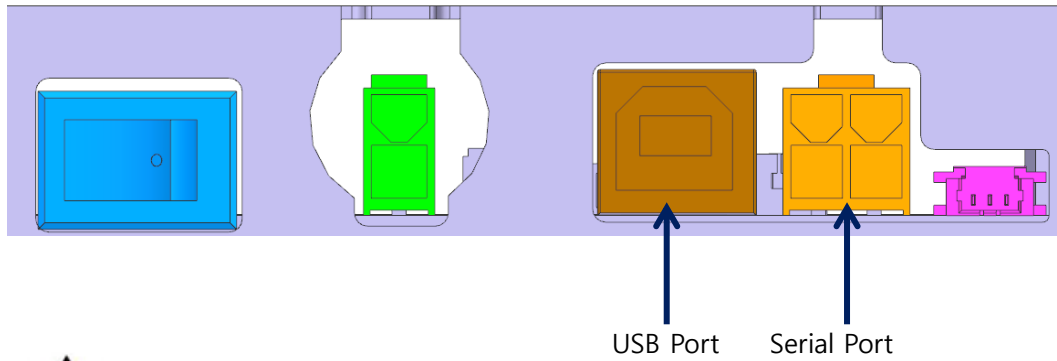
CAUTION

Please use only the power supply provided by our company for the power supply.

Be sure to connect according to the instructions in the manual.

2. Interface connection

Use an interface cable that meets the specifications of the host.

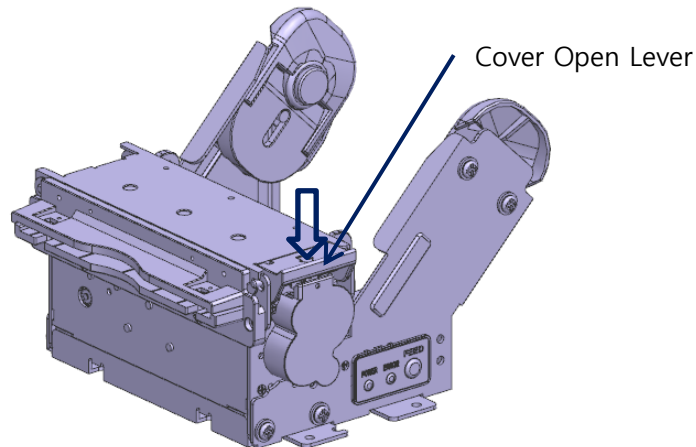


CAUTION When connecting a communication cable, be sure to that the power switch is turned off.

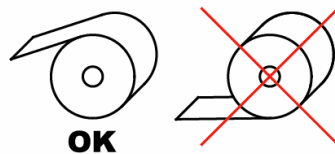
3. Paper Change

1) Cover open method

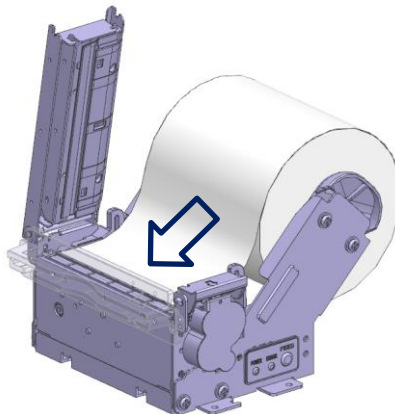
- ① Press the open lever in the direction of the arrow to open the printer cover



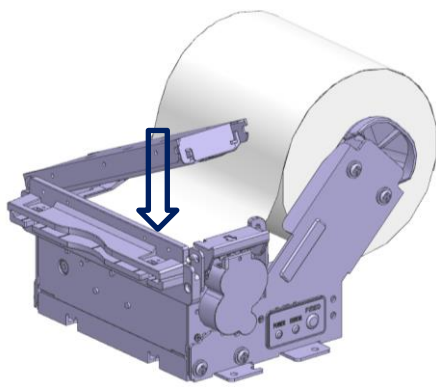
- ② Insert paper into the opened paper slot. Be careful not to change the side to be printed on the paper at this time



- ③ Insert paper enough so that the end of the paper comes out to the front of the printer's platen roller.



- ④ Close the cover by pressing it in the direction of the arrow

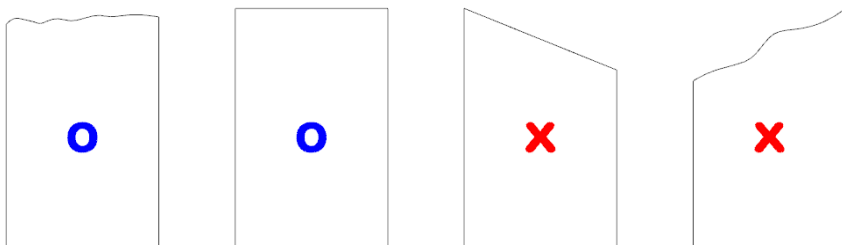


CAUTION When closing the cover, be sure to press the middle part of the cover (near the arrow) to close it. Otherwise, blurring of the print, etc. may occur.

2) Auto Loading Method

- ① Turn on the Printer's Power

Cut the end of the paper straight as shown below with scissors.



CAUTION If the end of the paper is not cut straight as shown in the example, the paper may not be inserted properly or a paper jam may occur.

- ① When the paper is pushed to the paper detect sensor inside the paper input port with the cover closed, the printer will start the auto loading, and the paper is cut after a certain length is fed.

4. Self Test

You can check the current settings of the printer through the self test.

- ① With the power off, turn on the printer while pressing down on the feed button

② If you turn on the power and keep pressing the feed button (about 1second), the red ERROR light flickers, and when you remove the feed button, the printing begins.

③ Printing contents are printed as follows.

```
*****
HMK-072 Control Board
Firmware   : VerX .XX
Create     : 20XX/XX/XX
*****
Interface and Setting information
=====
Interface   : USB & RS-232C
Baud Rate   : 19200
Data Bit    : 8 Bit
Parity       : None
Stop Bit     : 1 or 2
=====

Peripheral & Setting Information
=====
USB Status   : Built-in
Auto Cutter   : Built-
```

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

5. HEX Dump Print

After setting HEX DUMP in the setting mode, turn the power off and on. After printing as [HEX DUMP MODE], it will print all receiving data to 16 hexadecimal data for all receiving data. 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 print when you press the feed button

Control Code (1F₁₆ or below) will be printed as "."

80₁₆ or above will be printed as "^".

[Print Sample]

16 Hexadecimal	ASCII
[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

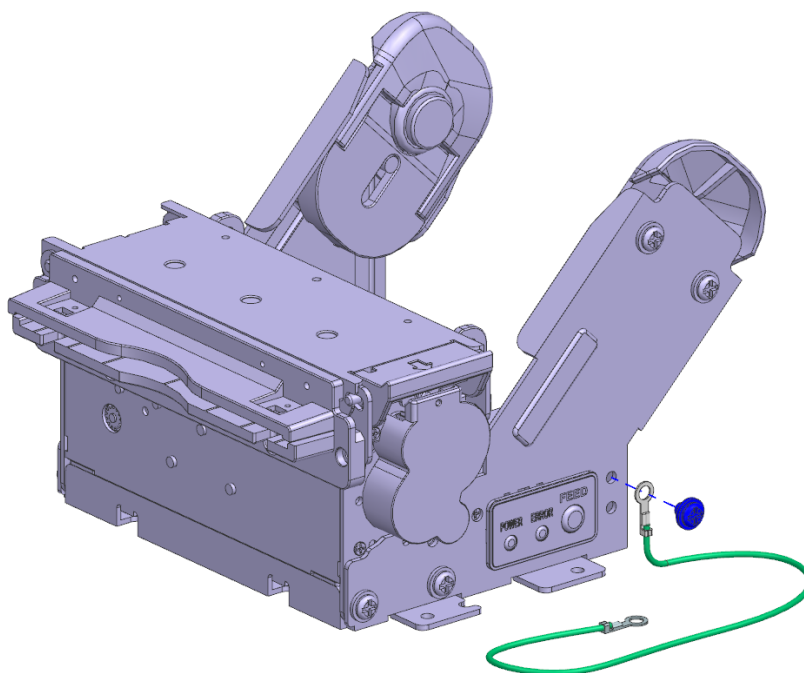
IV. Printer installation method

1. Electrostatic discharge and ground current handling

Ground (FG) a separate ground terminal on the printer frame and the frame of the product's outer case.

You can prevent damage to the printer's control board and thermal head from ESD(Electro Static Discharge).

As shown in the image below, align the ground cable with the printer frame ground hole, fix it with screws, and ground the other end of the ground cable to the outer case of the product.



CAUTION

It is recommended to ground the printer to the product surely when installing the printer. Otherwise, it may cause printer failure.

※ Note: To prevent static electricity on the paper during printing, you can use an Anti-Static Brush by additional installing it at the paper exit.

V. Printer Function Settings

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 for the less than 1 second 5 times 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.

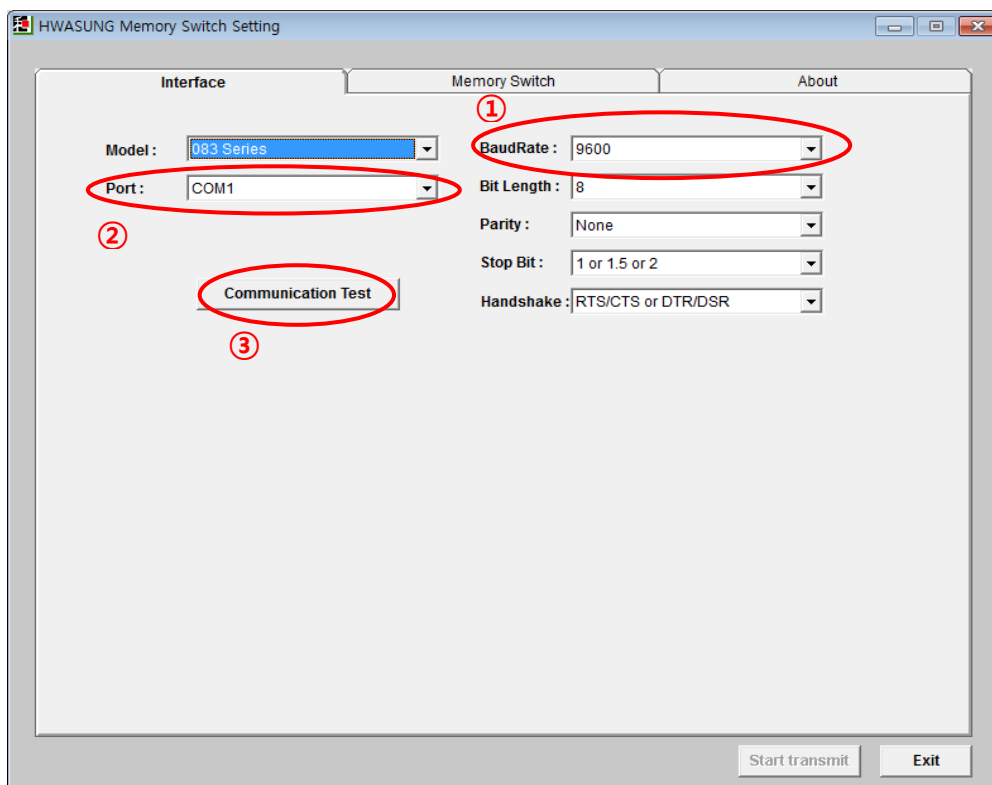
2. Set Using Memory Switch Program

Using the utility program, memory switch settings such as printer functions as well as conditions of communication the host can be set. The memory switch utility program is provided on our website..



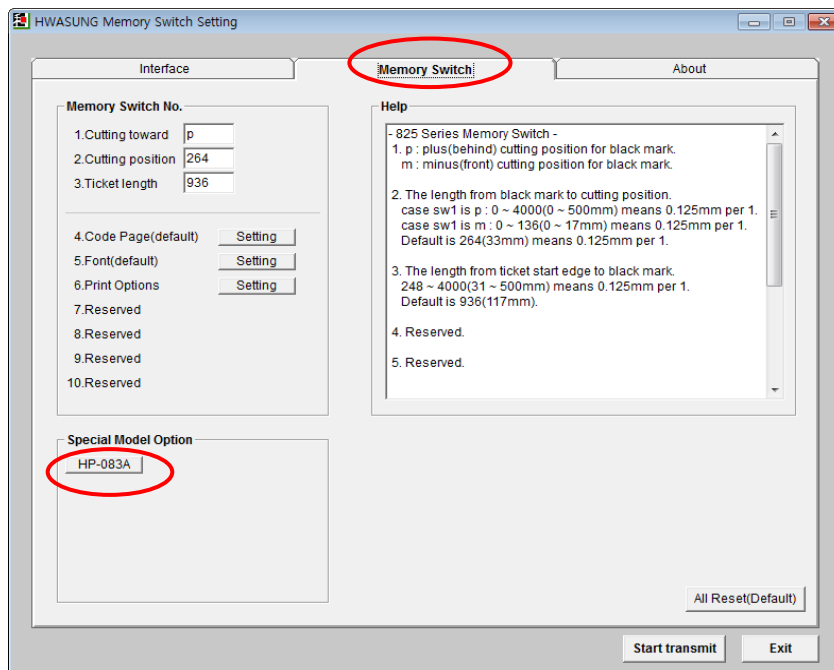
CAUTION When setting, all the contents of the memory switch are deleted, so please reset => set again items such as code page and print options.

- 1) Turn on the power after connecting the printer and the interface cable.
- 2) Open the utility program and select the current communication conditions. For communication conditions, refer to the self-test parameters.

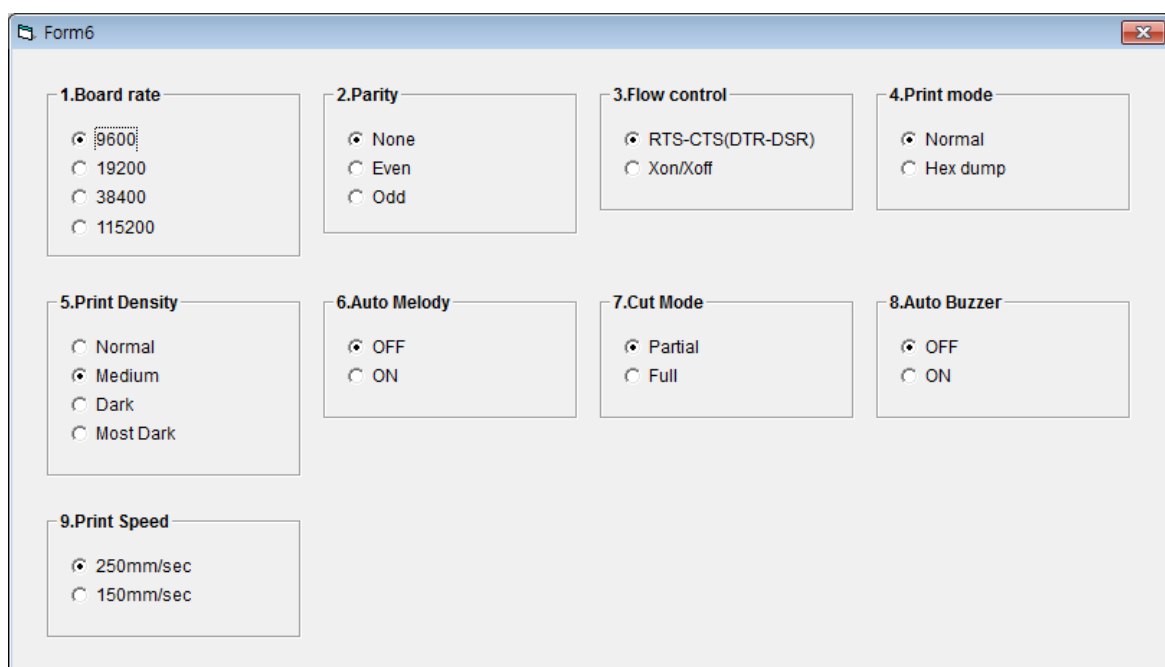


If communication is successful, the Start transmit button is activated.

3) After pressing the Memory Switch tab, click HMK-072 in Special Model Option.



4) You can set the required value when the following window appears. Note that after completing selection, you must press the 'Start transmit' button with the window open



After setting, turn the power off and on to apply the set values.

3. 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.

4. Ticket Paper Settings

It is possible to use the memory switch utility to save the ticket paper settings to the printer.

For detailed ticket setting instructions, please refer to the manual attached to the memory switch utility on the website.

VI. Product Specifications

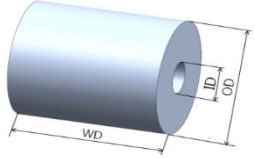
1. Printer Specifications

Item		Specifications				
Printing method		Thermal dot line printing				
Resolution (dot size)		203DPI				
Dots per line		640 dots				
Paper feed width (1 step)		0.125mm				
Paper thickness		50 μ m ~ 150 μ m				
Paper width		60mm, 77mm, 80mm				
Paper outer diameter size		Φ 80 or less, Φ 100~ Φ 120, Φ 150, Φ 200, Φ 250				
Paper width		80mm	80mm	72mm	60mm	58mm
Printing width		77mm	72mm	64mm	54mm	48mm
Number of characters per line	Font A(12x24)	51	48	42	36	32
	Font B(9x16)	68	64	56	48	42
	Korean A(24x24)	25	24	21	18	16
	Korean B(16x16)	38	36	32	27	24
Printing Speed	Receipt mode	Max 200mm/s				
	Ticket mode	Max 200mm/s				
Font size	Font A(12x24)	1.50 x 3.00mm				
	Font B(9x16)	1.13 x 2.00mm				
	Korean A(24x24)	3.00 x 3.00mm				
	Korean B(16x16)	2.00 x 2.00mm				
Number of characters		English 95				
		Extended characters(Code page) : 128 x 10				
Barcode	1D	UPC-E, EAN8, EAN13, ITF, CODABAR, CODE39, CODE93, CODE128				
	2D	PDF417, QR CODE				
Cutter		Guillotine method (complete cutting, partial cutting possible)				
Interface	Serial	RS232C				
	USB	USB2.0 Full Speed				

Receiving Buffer		4Kbyte
SMPS rating	Input voltage	100V ~ 240V(AC)
	Output voltage	24V(DC)
	Output current	2.5A 60W
Life (25°C, standard condition)		Head 100Km Cutter: 2,000,000 times(over 120 μ m 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.

2. Presenter Specifications

Item	Specification	
Paper Width (WD)	25mm - 82.5mm	
Core inner diameter (ID)	Min. $\Phi 25.4$	
Receipt/Ticket length	65mm - 500mm	
Thickness	50 μm - 80 μm	80 μm - 200 μm
Outer diameter (OD)	Up to 300mm	Folding recommended
Roll (wound) direction	Outer O, Inner X	
Ticket Retraction(Ticket collection)	Possible	Possible
Through Pass(Simultaneous pass)	Possible	Possible
Loop	Possible	Not possible
Ejection Speed	700 mm/s	
Retraction Speed	700 mm/s	
Retraction Wait time	Adjustable (Max. 60 sec)	

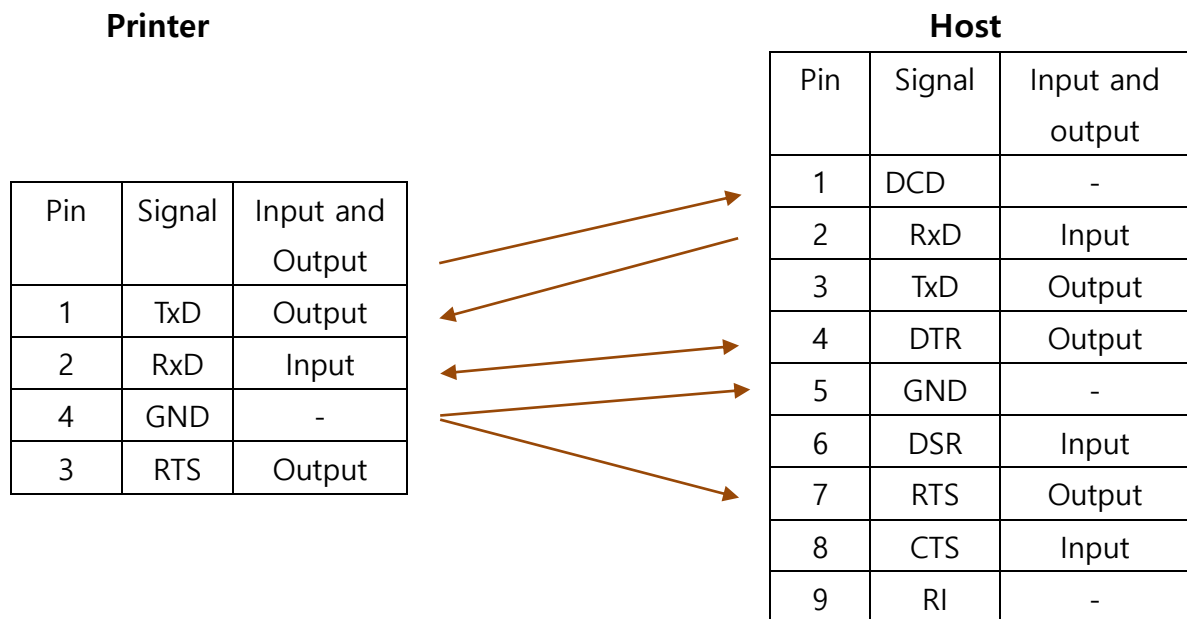
3. Interface Specifications

1) USB

- Specifications: USB 2.0 compatible, Full Speed (12Mb) compatible
- Connector: Type B
- Cable: USB2.0 cable
- - Data method: Bulk IN, Bulk OUT
- * Full Speed: Max Packet Size 64 Bytes (Bulk OUT), 64 Bytes (Bulk IN)

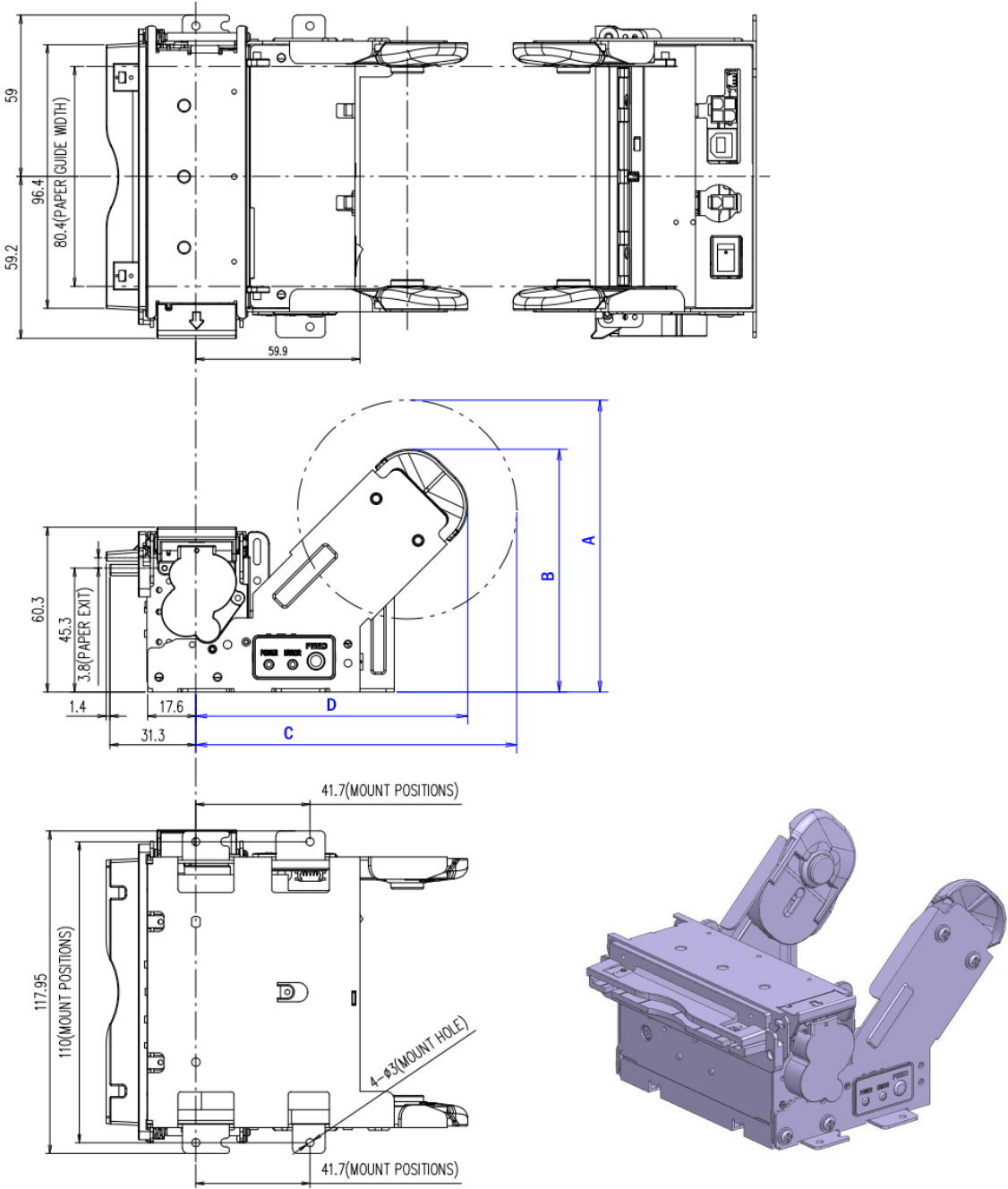
2) Serial(RS-232C)

- Data transmission method: Serial
- Hand shake: Hardware (RTS/CTS or DTR/DSR)
- Baud Rate: 9600, 19200, 38400, 57600, 115203., BPS
- Data bits: 8 bits
- Parity: None, Odd, Even
- Stop bits: 1, 2 bits
- Connector: HANLIM CHD1140-4
- Cable: DSUB9 (Female) - 4-pin exclusive cable



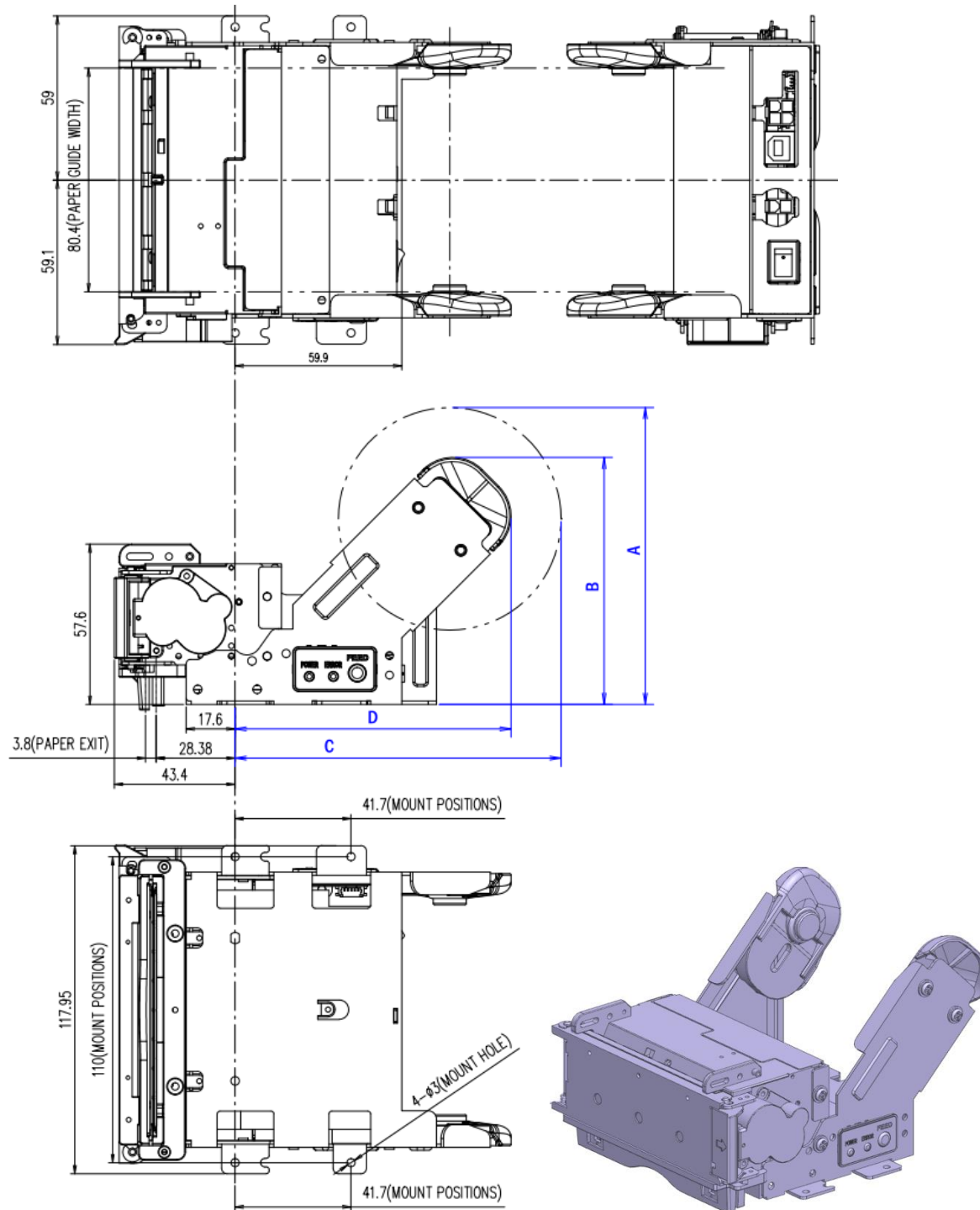
VII. Product appearance and dimensions

1. HMK-072



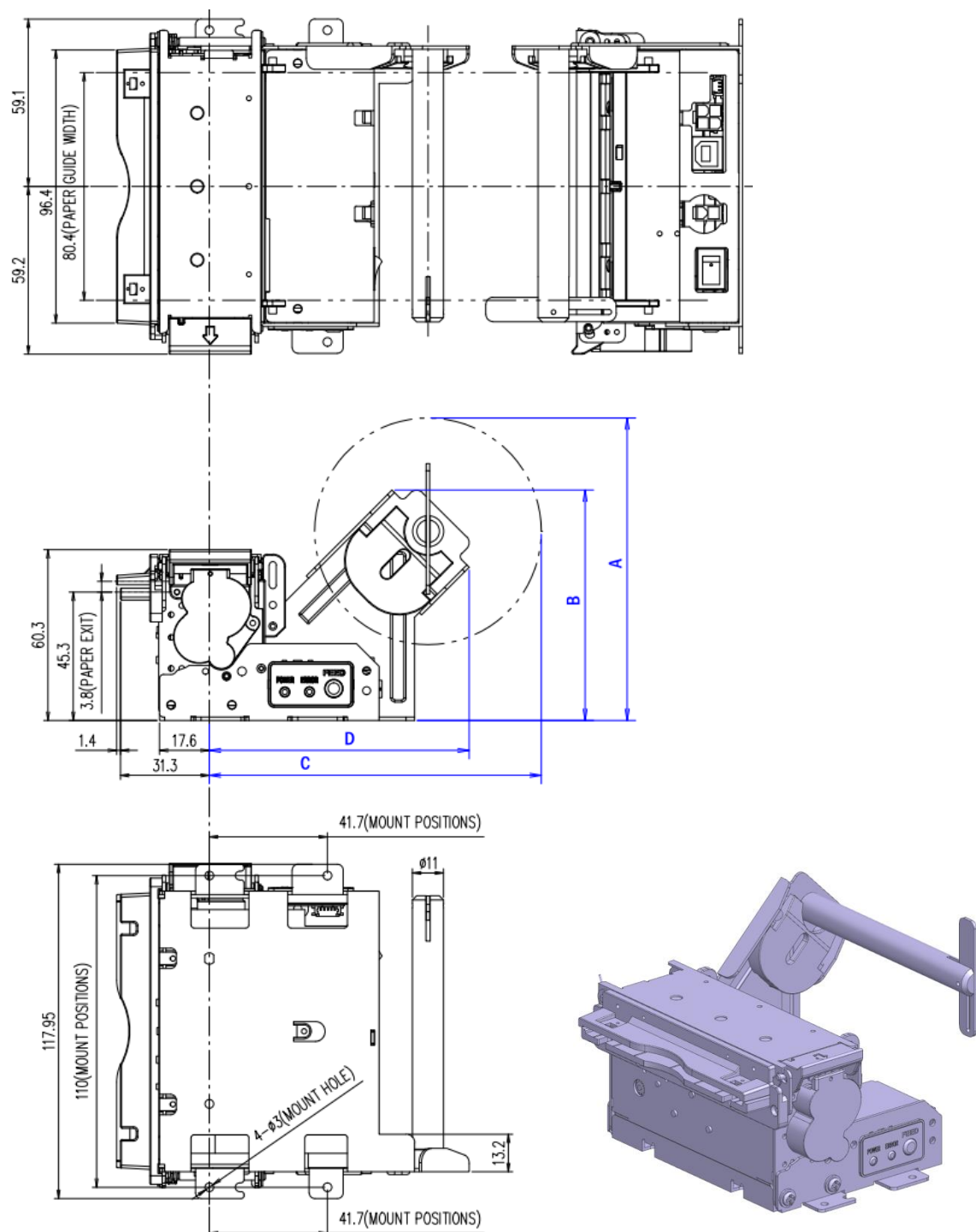
Model	A	B	C	D
HMK-072 (Ø80)	106.7	88.7	117.2	99.2
HMK-072 (Ø120)	145	107	155.41	117.5

2. HMV-072



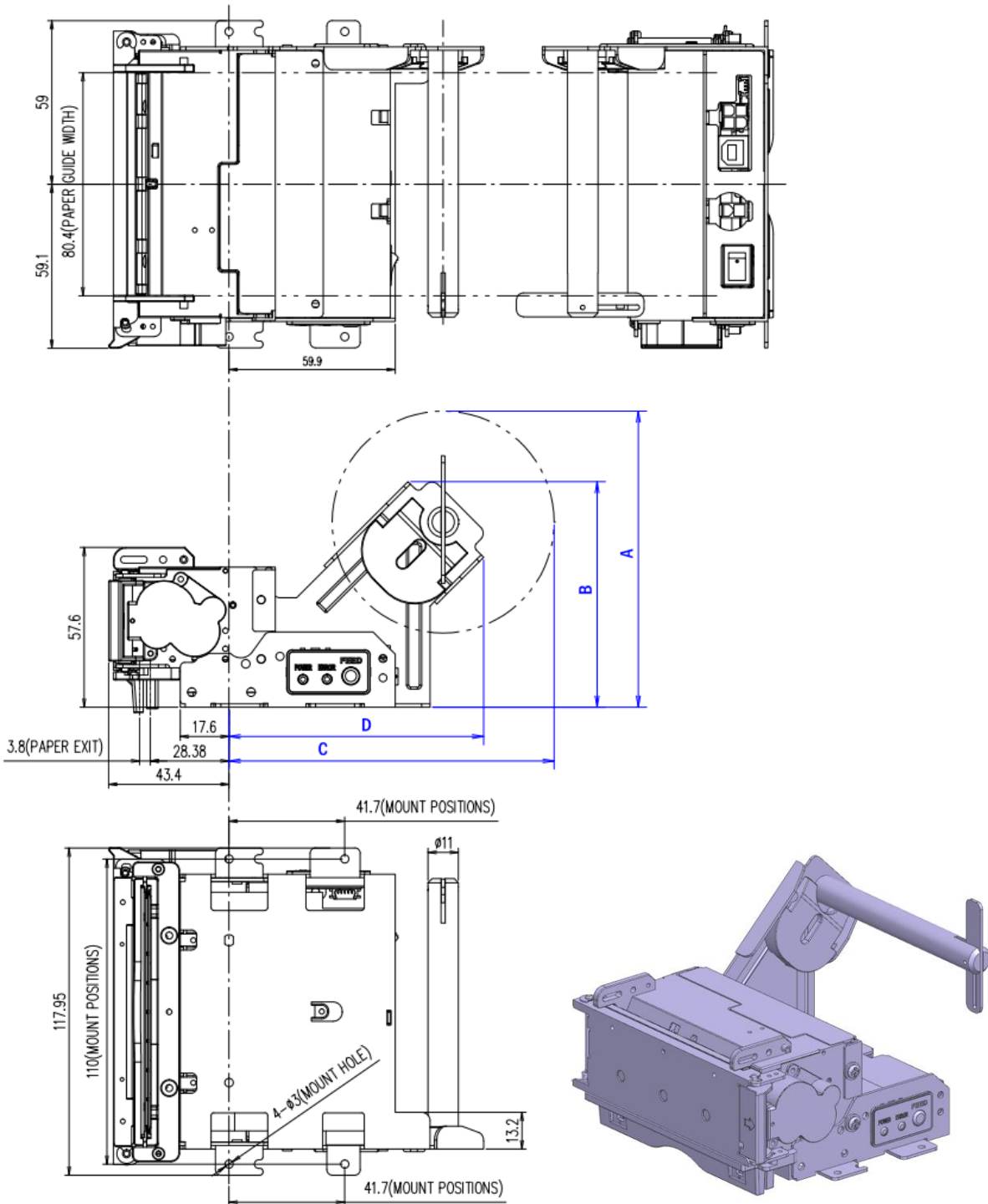
Model	A	B	C	D
HMV-072 (Ø80)	106.7	88.7	117.2	99.2
HMV-072 (Ø120)	145	107	155.41	117.5

3. HMK-072B



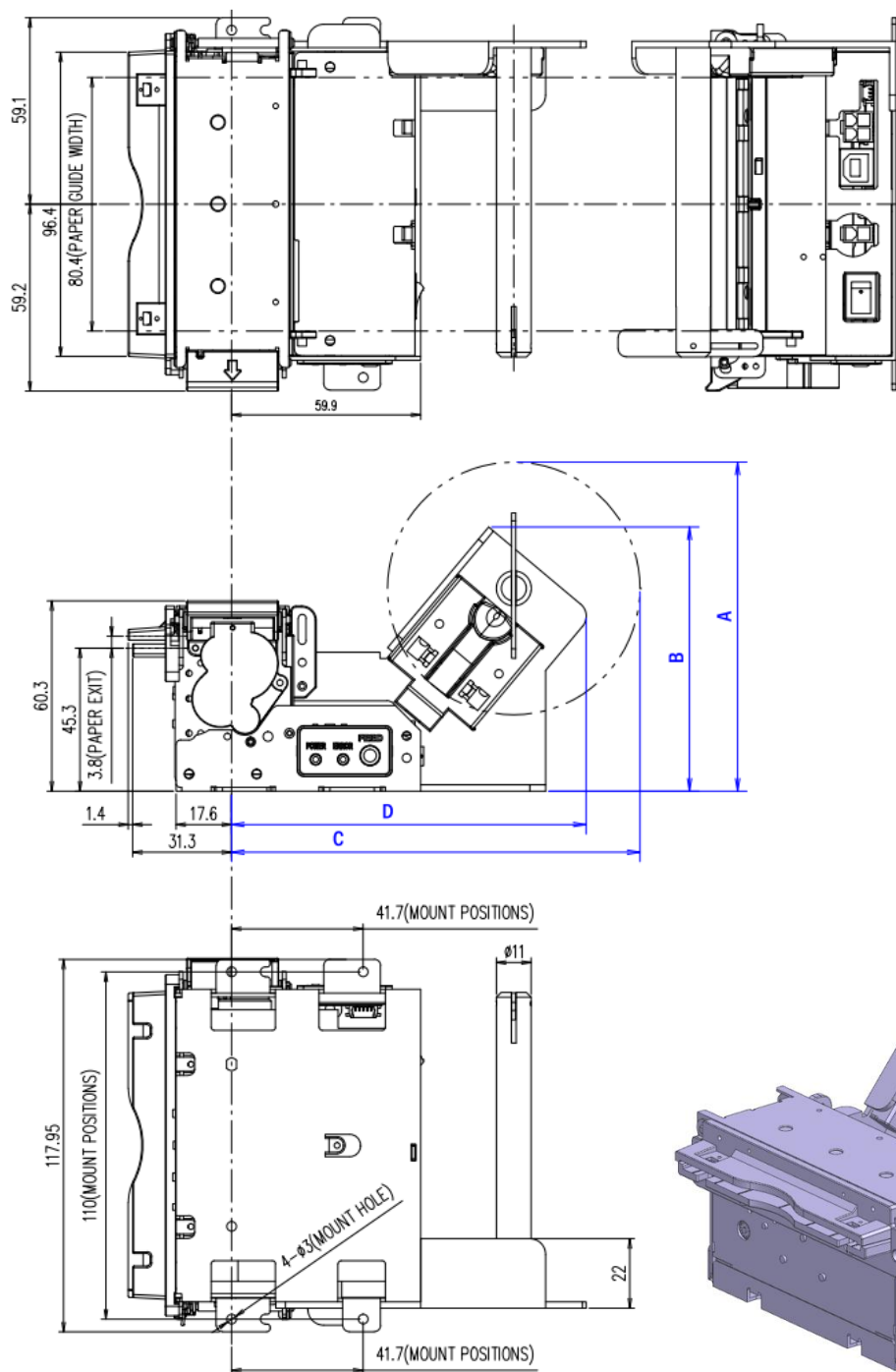
Model	A	B	C	D
HMK-072B (Ø80)	106.7	81.3	117.2	91.7
HMK-072B (Ø120)	144.5	100.4	154.7	110.7

4. H MV-072B



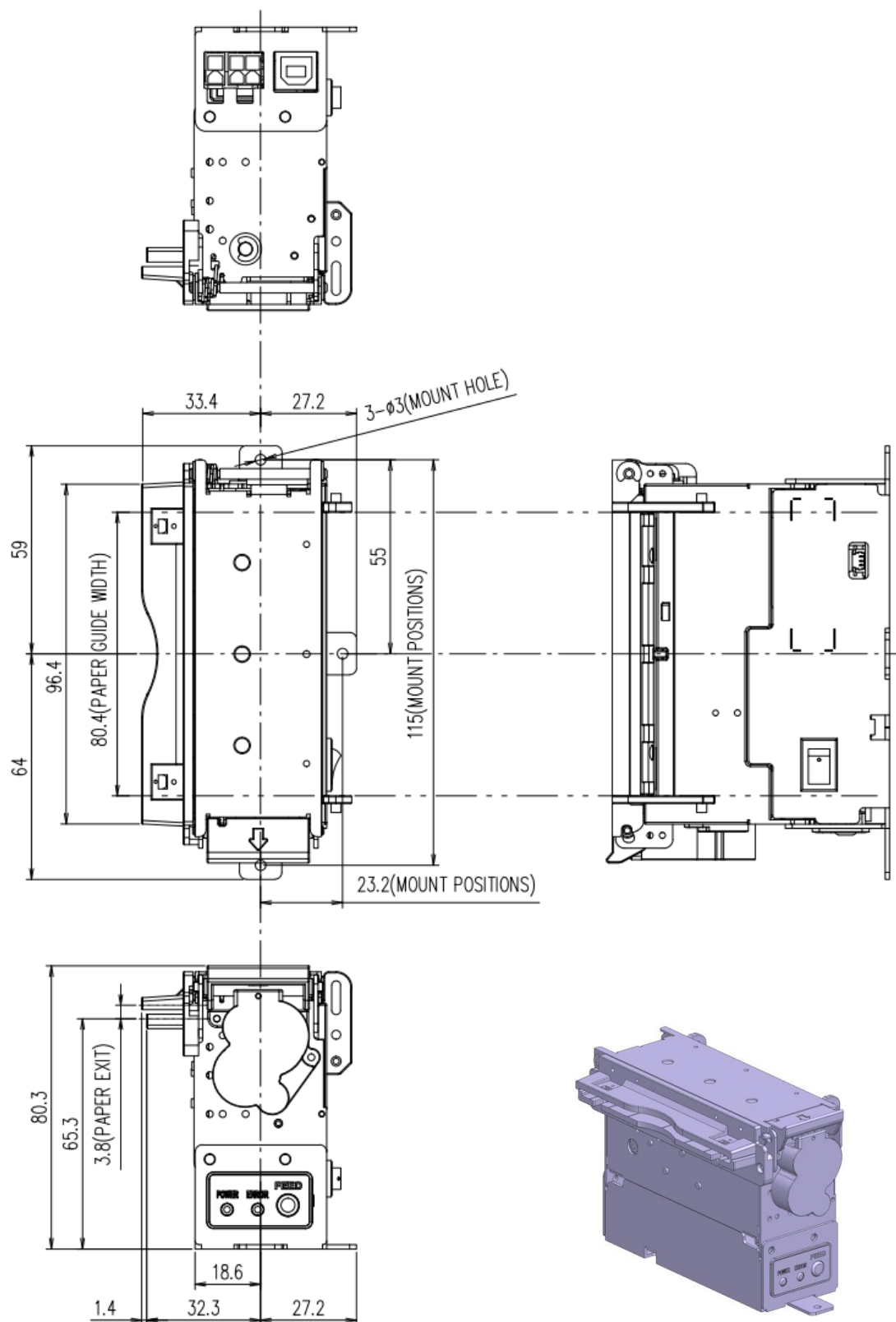
Model	A	B	C	D
HMV-072B (Ø80)	106.7	81.3	117.2	91.7
HMV-072B (Ø120)	144.5	100.4	154.7	110.7

5. HMK-072A

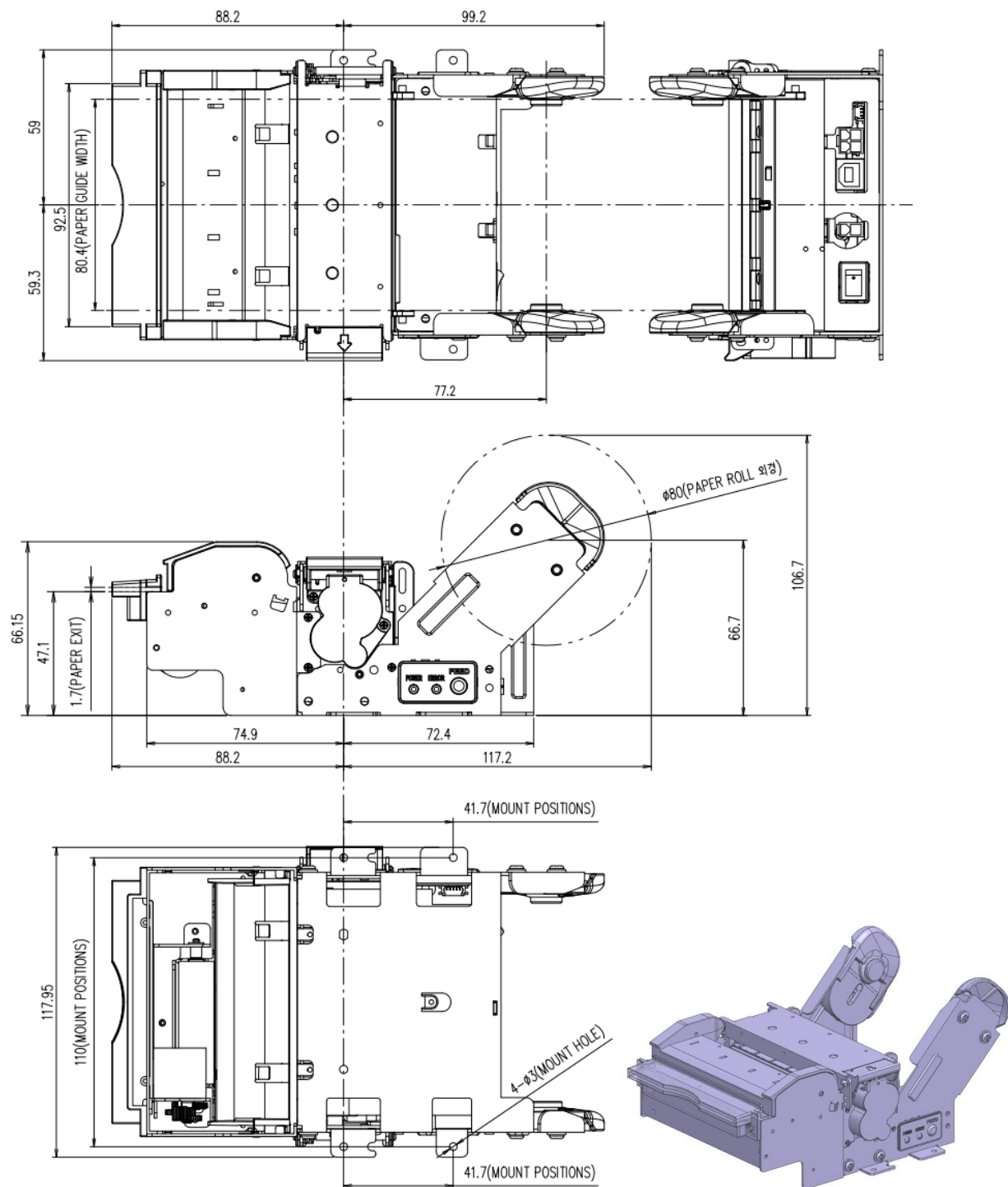


Model	A	B	C	D
HMK-072A (Ø80)	104.2	83.6	129.4	112.4
HMK-072AM (Ø150)	164.5	116.8	246	201.3
HMK-072AL (Ø200)	231.6	156.4	338.4	263.7

6. HMB-072U



7. HMKP-072



VIII. Command Specifications

Classification	Function	Page
CR	Print and line feed	43
LF	Print and line feed	43
CAN	Delete print data	43
HT	Horizontal tab	44
FF	Horizontal tab	44
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CR

Function Print and line feed

Code	ASCII	CR
	Hex	0Dh
	Decimal	13

Decription Same as LF

LF

Function Print and line feed

Code	ASCII	LF
	Hex	0Ah
	Decimal	10

Decription 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.	

FF

Function	Prints page mode and returns to STANDARD MODE.	
Code	ASCII	FF
	Hex	0Ch
	Decimal	12
Description	Returns to STANDARD mode after printing the data on the page.	
Caution	Use ESC+FF if you do not want to return to STANDARD MODE.	

SUB+'x'+n

Function	Extended Graphic Mode, Korean mode			
Code	ASCII	SUB	x	n
	Hex	1A	78h	n
	Decimal	26	120	n
Range	$0 \leq n \leq 1$			
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 $0 \leq n \leq 1$

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
	Decimal	26	82	n

Range $1 \leq n \leq 14$

Initial value

Decription

- 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 $1 \leq n \leq 255$, $0 \leq k \leq 32$

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 $0 \leq n \leq 255$

Initial n=0

value

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 $0 \leq n \leq 255$

Initial n=0

value

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 $0 \leq nL + nH \times 256 \leq 65535$, $0 \leq nL \leq 255$, $0 \leq nH \leq 255$

Initial nL=0, nH=0

value

Description The print position is moved from the end of the left margin to the $(nL + nH \times 256) \times 0.125\text{mm}$ 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

$1 \leq nL + nH \times 256 \leq 1023$, $0 \leq nL \leq 255$, $0 \leq nH \leq 3$, $0 \leq d \leq 255$

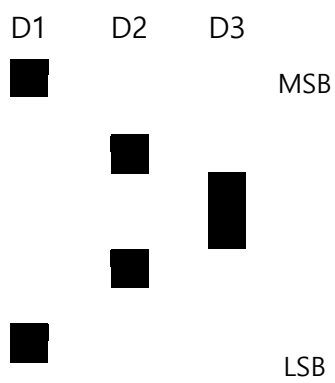
Initial

Value

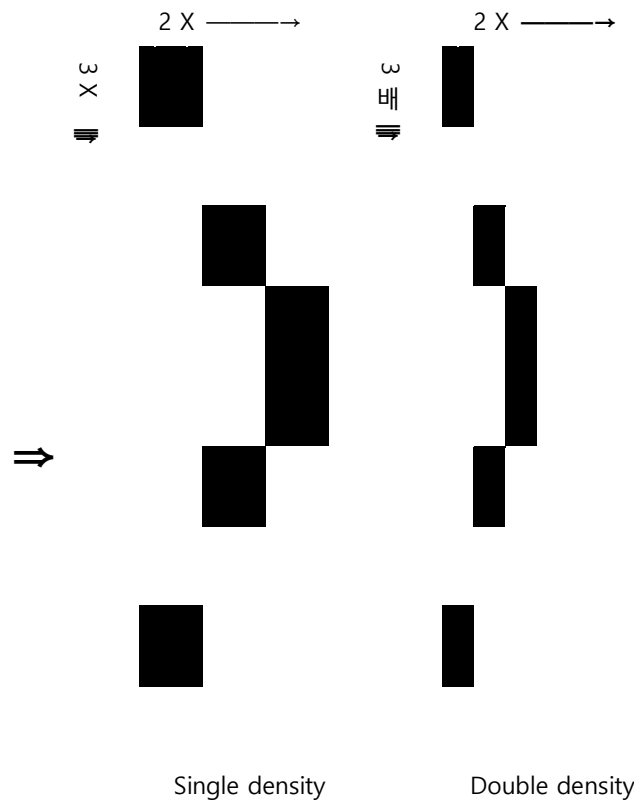
Description Bit data is printed as graphic data in mode m by the number of dots designated by nL+nH×256.

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	$nL + nH \times 256$
1	8 dots double density	8	448	$nL + nH \times 256$
32	24 dots single density	24	224	$(nL + nH \times 256) \times 3$
33	24 dots double density	24	448	$(nL + nH \times 256) \times 3$

8-dot mode



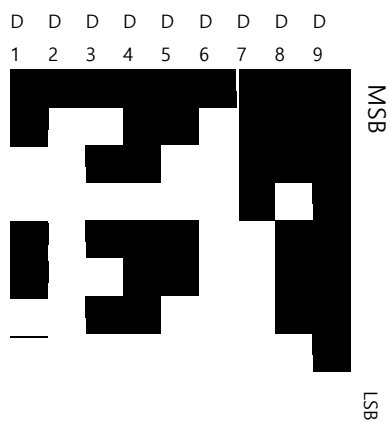
D1	D2	D3
----	----	----



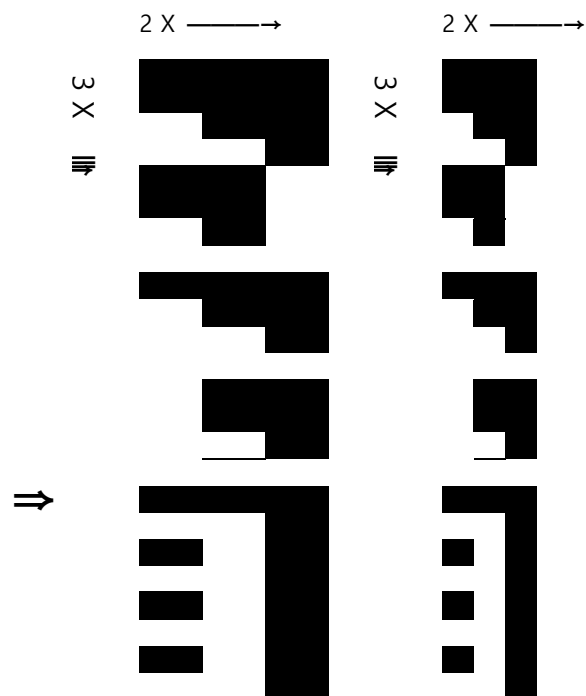
Single density

Double density

24-dot mode



D1	D4	D7
D2	D5	D8
D3	D6	D9



Single density

Double density

ESC+'-' + n

Function Set / Cancel underline

Code	ASCII	ESC	-	n
	Hex	1B	2Dh	n
	Decimal	27	45	n

Range $0 \leq n \leq 255$

Initial $n=0$

value

Description Set / Cancel underline.
on

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 $0 \leq n \leq 255$,

Initial $n=0$

value

Description Set the row spacing to the initial value 4mm.
on

ESC+'3'+n

Function	Set row spacing			
Code	ASCII	ESC	3	n
	Hex	1B	33h	n
	Decimal	27	51	n
Range	$0 \leq n \leq 255$,			
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	$0 \leq n \leq 255$			
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	$0 \leq n \leq 255$			
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 $0 \leq n \leq 255$

Initial n=0

value

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 $0 \leq n \leq 255$

Description After printing the data in the buffer, it is fed by $n \times 0.125\text{mm}$.

ESC+'j'+n

Function Back Feeding

Code	ASCII	ESC	j	n
	Hex	1B	6Ah	n
	Decimal	27	106	n

Range $0 \leq n \leq 255$

Description After printing the data in the buffer, it is back-fed by $n \times 0.125\text{mm}$.

ESC+'M'+n

Function Font selection

Code	ASCII	ESC	M	n
	Hex	1B	4Dh	n
	Decimal	27	77	n

Range $0 \leq n \leq 255$

Initial $n=0$

value

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 $0 \leq n \leq 13$

Initial n=13

value

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 $0 \leq n \leq 2$

Initial $n=0$

value

Description Align the printing position

n	Alignment position
0	Left
1	Center
2	Right

ESC+'d'+n

Right Right

Code	ASCII	ESC	d	n
	Hex	1B	64h	n
	Decimal	27	100	n

Range $0 \leq n \leq 255$

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 $0 \leq n \leq 255$

Initial n=0

value

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 $0 \leq n \leq 255$

Initial n=0

value

Description Set Korean printing mode character decoration collectively

Caution 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	$0 \leq n \leq 2$			
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
	Hex	1C	53h	n1	n2
	Decimal28	83	n1	n2	
Range	$0 \leq n1 \leq 255, 0 \leq n2 \leq 255$				
Initial value	n=0				
Description	Sets spacing between Korean characters.				

The left space between Korean characters is set to $n1 \times 0.125\text{mm}$.

The right space between Korean characters is set to $n2 \times 0.125\text{mm}$.

FS+'W'+n

Function Set Korean Character size

Code	ASCII	FS	W	n
	Hex	1C	57h	n
	Decimal	28	87	n

Range $0 \leq n \leq 255$

Initial n=0

value

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 $1 \leq n \leq 255$

$0 \leq xL + xH \times 256 \leq 65535$ ($0 \leq xL \leq 255$, $0 \leq xH \leq 255$)

$0 \leq yL + yH \times 256 \leq 65535$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 255$)

$0 \leq d \leq 255$

$k = (xL + xH \times 256) \times (yL + yH \times 256) \times 8$

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 $(xL + xH \times 256) \times 8$.

yL,yH sets the number of dots in the vertical direction of $(xL + xH \times 256) \times 8$.

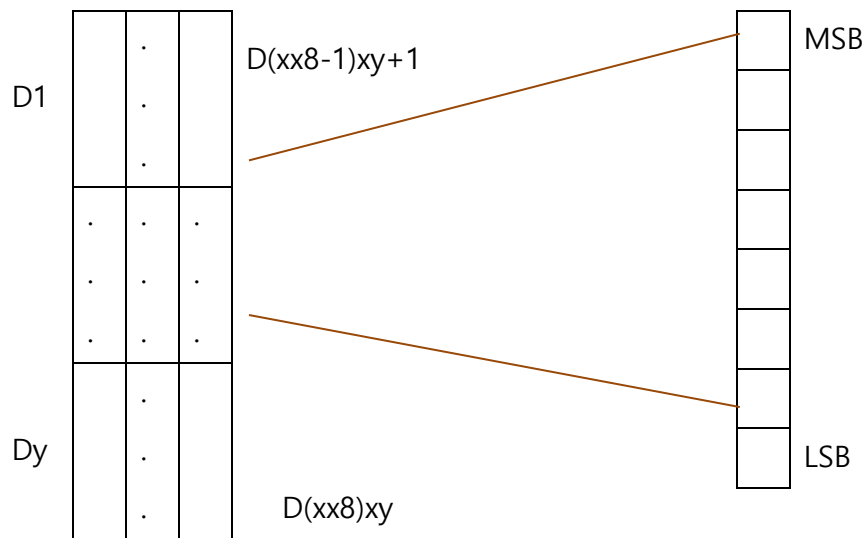
k means the number of bit images of one NV logo.



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
	Hex	1C	70h	n	m
	Decimal28	112	n	m	

Range $1 \leq n \leq 255, 0 \leq m \leq 3$

Initial value $n=0$

value

Decription 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

Decimal 29 33 n

Range $0 \leq n \leq 255$ (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
 $0 \leq m \leq 5, 251 \leq m \leq 255$

Initial m=0

value

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 $0 \leq n \leq 255$

Initial n=0

value

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 $0 \leq n \leq 3$

Initial n=0

value

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
	Hex	1D	4Ch	nL	nH
	Decimal29	76	nL	nH	
Range	$0 \leq nL \leq 255, 0 \leq nH \leq 255$				
Initial value	$nL + nH \times 256 = 0$ ($nL=0, nH=0$)				
Description	Sets the left margin to $(nL + nH \times 256) \times 0.125\text{mm}$.				

GS+'V'+m

Function	Paper cutting			
Code	ASCII	GS	V	m
	Hex	1D	56h	m
	Decimal29	86	m	
Range	$0 \leq m \leq 1$			
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
	Decimal	29	87	nL	nH

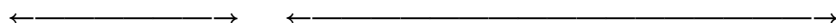
Range $0 \leq nL \leq 255, 0 \leq nH \leq 255$

Initial value $nL+nH \times 256 = 448$ (56mm, $nL=0, nH=0$)

Description Sets the printing area to $(nL+nH \times 256) \times 0.125\text{mm}$ in the left margin.

n

Printable area



Left margin

Print area

GS+'h'+n

Function Sets the barcode height.

Code	ASCII	GS	h	n
	Hex	1D	68h	n
	Decimal29	104	n	

Range $1 \leq n \leq 255$

Initial n=162 (20.25mm)

value

Description The barcode height is set to $n \times 0.125\text{mm}$.

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

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 $1 \leq n \leq 4$

Initial value $n=2$

Description Sets the horizontal size of the barcode.

n	Multi-level barcode Module width	2-level barcode	
		Narrow 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
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* 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).

Function

Function Enabling and disabling status check automatic response

Code	ASCII	GS	a	n
	Hex	1D	61h	n
	Decimal29	97	n	

Range $0 \leq n \leq 1$

Initial n=1

value

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.

ESC+'S'

Function	STANDARD mode designation		
Code	ASCII	ESC	S
	Hex	1B	53h
	Decimal	27	83
Description	Change from Page mode to STANDARD mode.		

ESC+'L'

Function	Set Page mode		
Code	ASCII	ESC	L
	Hex	1B	4Ch
	Decimal	27	76
Range	$0 \leq n \leq 255$		
Initial value	n=0		
Description	Switch from STANDARD mode to Page mode.		

ESC+'T'+n

Function Set the printing direction of page mode.

Code	ASCII	ESC	T	n
	Hex	1B	54h	n
	Decimal	27	84	n

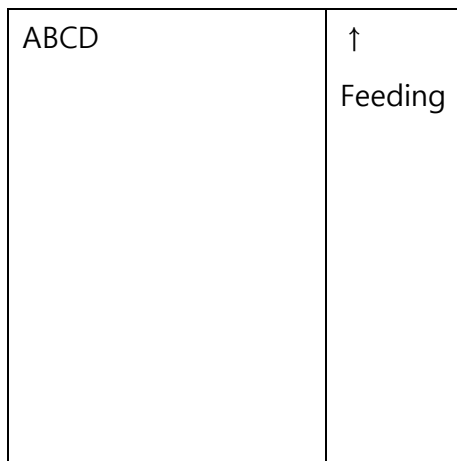
Range $0 \leq n \leq 3$

Initial $n=0$

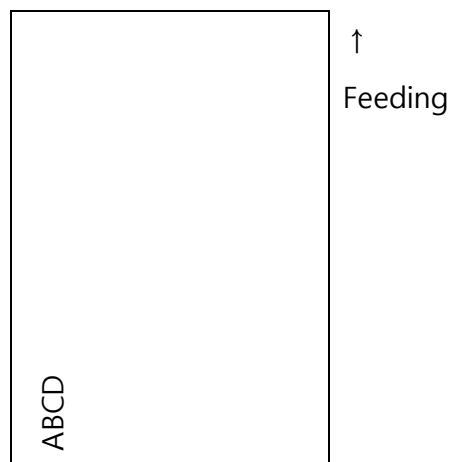
value

Description Sets the printing direction and starting point of page mode.

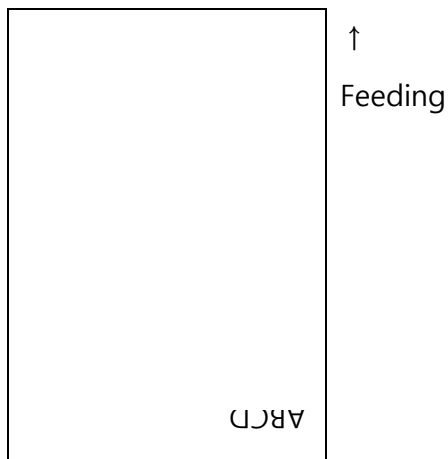
When N=0 (left → right),



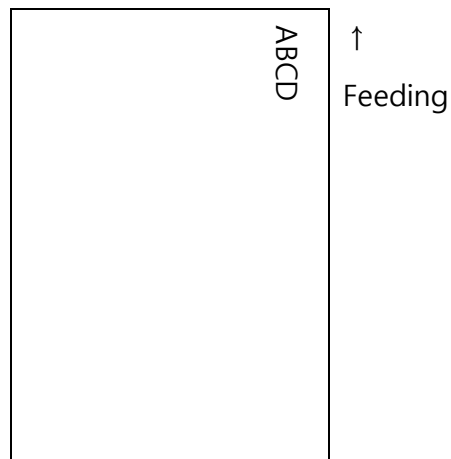
When N=1 (bottom → top),



When N=2 (top → bottom),



When N=3 (top → bottom),



ESC+'W'+xL+xH+yL+yH+dxL+dxH+dyL+dyH

Function	Set Page mode print area										
Code	ASCII	ESC	W	xL	xH	yL	yH	dxL	dxH	dyL	dyH
	Hex	1B	57h	xL	xH	yL	yH	dxL	dxH	dyL	dyH
	Decimal	27	87	xL	xH	yL	yH	dxL	dxH	dyL	dyH
Range	$0 \leq xL + xH \times 256 \leq 65535$ ($0 \leq xL \leq 255$, $0 \leq xH \leq 255$)										
	$0 \leq yL + yH \times 256 \leq 65535$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 255$)										
	$1 \leq dxL + dxH \times 256 \leq 65535$ ($0 \leq dxL \leq 255$, $0 \leq dxH \leq 255$)										
	$1 \leq dyL + dyH \times 256 \leq 65535$ ($0 \leq dyL \leq 255$, $0 \leq dyH \leq 255$)										
Initial value	$(xL + xH \times 256) = 0$ (0mm, $xL = 0$, $xH = 0$)										
	$(yL + yH \times 256) = 0$ (0mm, $yL = 0$, $yH = 0$)										
	$(dxL + dxH \times 256) = 448$ (56mm, $dxL = C0h$, $dxH = 01h$)										
	$(dyL + dyH \times 256) = 1200$ (150mm, $dyL = B0h$, $dyH = 04h$)										
Description	Sets the starting point and size of the printing area.										

Horizontal starting point: $(xL + xH \times 256) \times 0.125\text{mm}$

Vertical starting point: $(yL + yH \times 256) \times 0.125\text{mm}$

Horizontal size: $(dxL + dxH \times 256) \times 0.125\text{mm}$

Vertical size: $(dyL + dyH \times 256) \times 0.125\text{mm}$

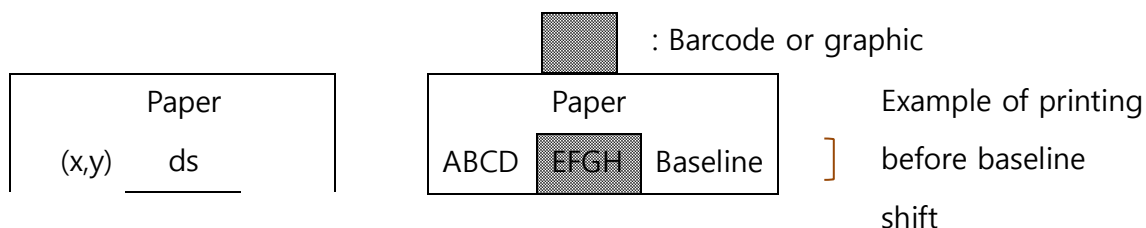


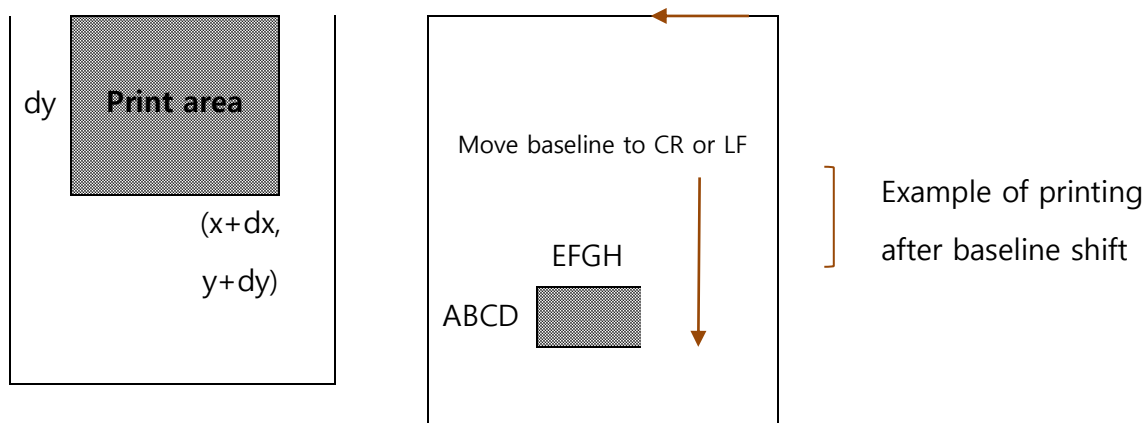
CAUTION

The maximum configurable page width is limited to 56mm.

The maximum page length that can be set is limited to 150mm.

Since barcode and graphic data are also edited based on the baseline, when the size exceeds the baseline, move the baseline to CR or LF to avoid overlapping.





ESC+FF

Function Printing of the page area.

Code	ASCII	ESC	FF
	Hex	1Bh	0Ch
	Decimal	27	12

Description After editing the received data in the page area, when this command is received, the page area is collectively printed.



Even after printing, the content of the page area is not erased, so when clearing the page area, use the ESC+S command.

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	Status	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 $0 \leq m \leq 3$ 또는 $48 \leq m \leq 51$,
 $1 \leq (xL + xH \times 256) \leq 150$ ($0 \leq xL \leq 150$, $xH = 0$)
 $1 \leq (yL + yH \times 256) \leq 436$ ($0 \leq yL \leq 255$, $0 \leq yH \leq 1$)
 $0 \leq d \leq 255$ ($yL + yH \times 256$)
 k (total number of data) = $(xL + xH \times 256) \times (yL + yH \times 256)$

Descripti Prints raster bit image in mode m.

on

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

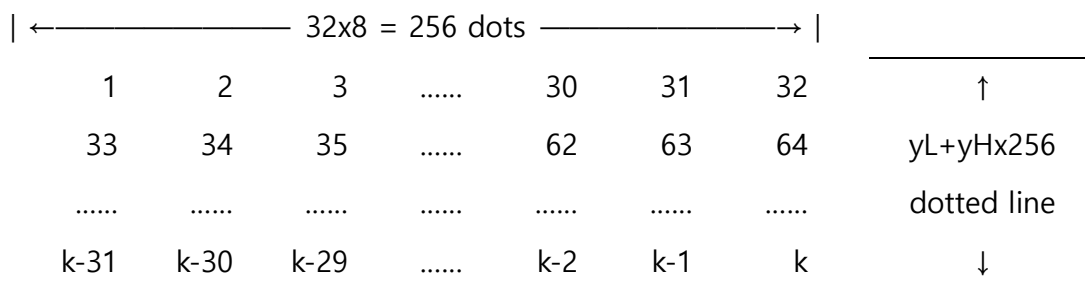
yL,yH sets the number of dotted lines in the vertical direction of the image data.

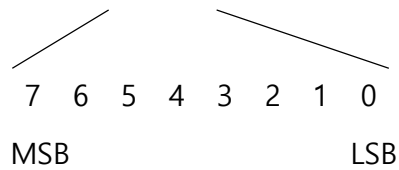
d indicates raster bit image data.

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

$xL + xH \times 256 = 32$ 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
	$1 < n2 \leq 255$

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 코드

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

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

※ Vertical size is set automatically.

Descripti on 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

DC3+'i'

Function Cutting after Blackmark Auto-detection

Code	ASCII	DC3	i
	Hex	13	69h
	Decimal	19	105

Description When printing, the printer will automatically detect the blackmark and store the information in the internal memory switch and then reads the information registered in SW1, SW2 to cut the paper at the designated position.

※Refer to "5-2) Memory Switch for the detailed information.

※ Please use the provided **Memory Switch Utility Program** to register data on the Memory Switch.

SUB+'1'

Function Select rule line 1


Code	ASCII	SUB	1
	Hex	1A	31h
	Decimal	26	49

Description Rule line 1 is selected among rule lines 1 and 2.


SUB+'2'

Function	Select rule line 2		
Code	ASCII	SUB	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	W	nL	nH	kL	kH
	Hex	1A	57h	nL	nH	kL	kH
	Decimal26		87	nL	nH	kL	kH
Range	$0 \leq nL + nH \times 256 \leq 640$, ($0 \leq nL \leq 255$, $0 \leq nH \leq 3$)						
	$0 \leq kL + kH \times 256 \leq 640$, ($0 \leq kL \leq 255$, $0 \leq kH \leq 3$)						
Description	Writes 1 from $nL + nH \times 256$ to $kL + kH \times 256$ on the selected rule line.						
 CAUTION	It is ignored if the defined range is exceeded.						
	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
	Decimal26	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
	Decimal26	79	

Function Rule line ON

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
	Decimal	27	116	n

Range $0 \leq n \leq 8$

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)