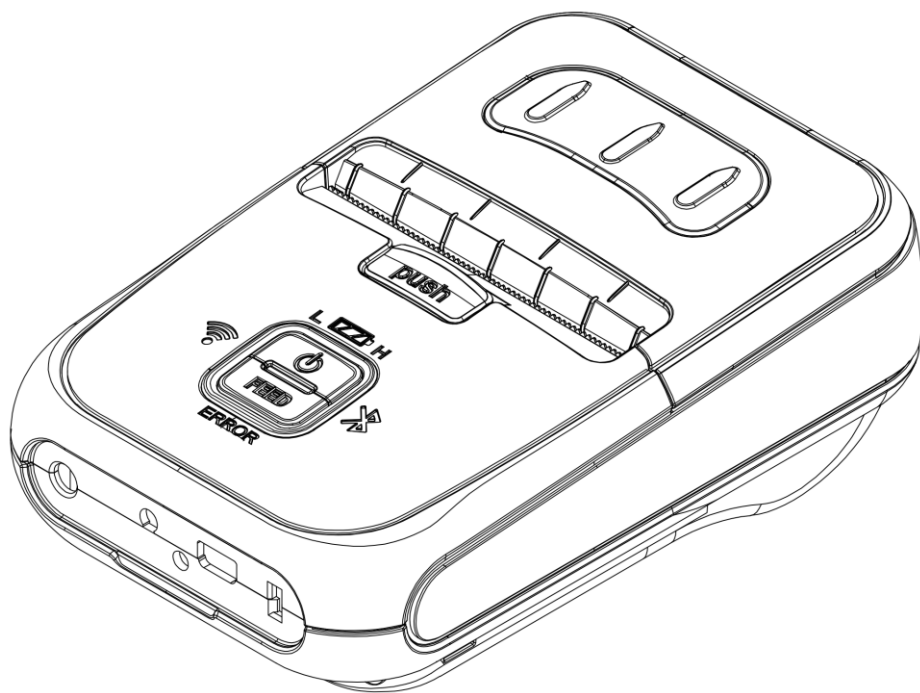


# Technical Manual

## HP-500



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## CAUTION




Warning: Warning Mark for the Product using. In case user does not follow the listed articles, it may result in Product Damage, Serious Injury or fatal result to Human body.

- Please do not disassemble / reorganize the product.
- Please do not exceed the standard power voltage.
- Please do not wash off the product.
- Please do not press / shock the product.
- Please do not put the product at the moist (humid) condition.



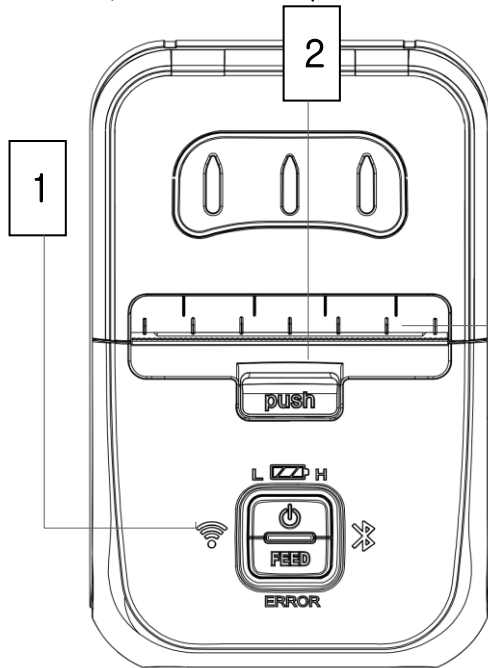
Caution: Caution Mark for the Product using. In case user does not follow the listed articles, it may result in Product Damage, Injury to Human body.

- Please contact us if there is any problem.
- Please power off when removing the paper jam.
- Please clear the air / open the disclosed place.
- Please set the product without damage environment.
- Please set the product at the stable place.
- Please keep the requires as necessary as general electrics.

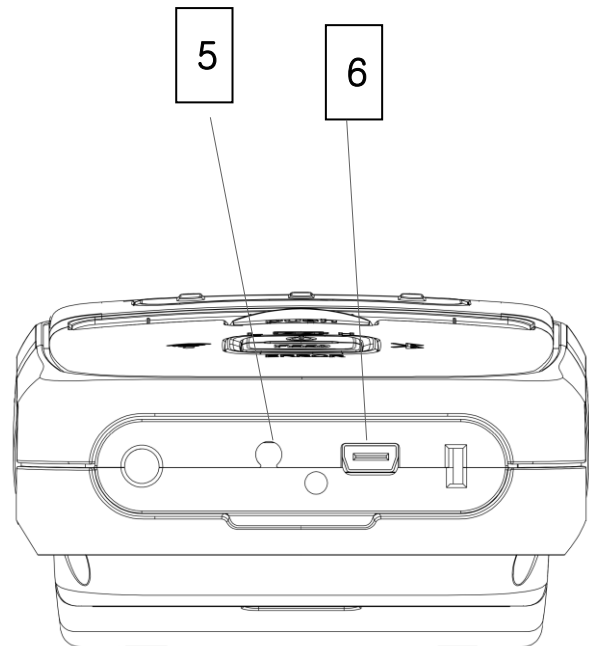
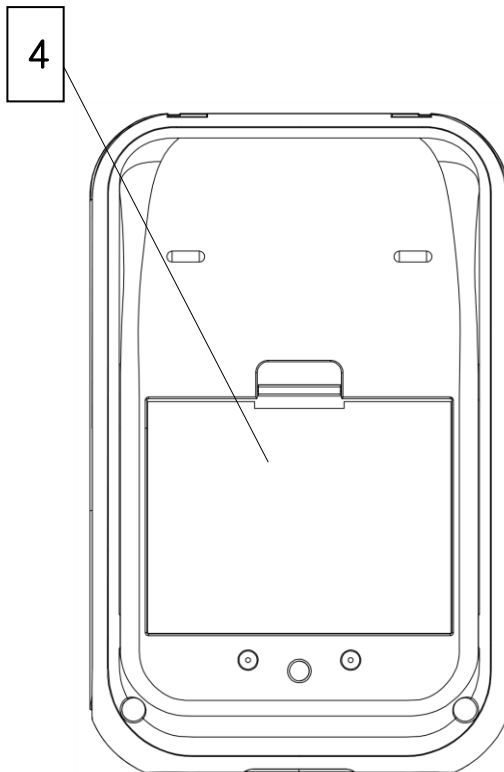
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## 1. Printer features & External dimension

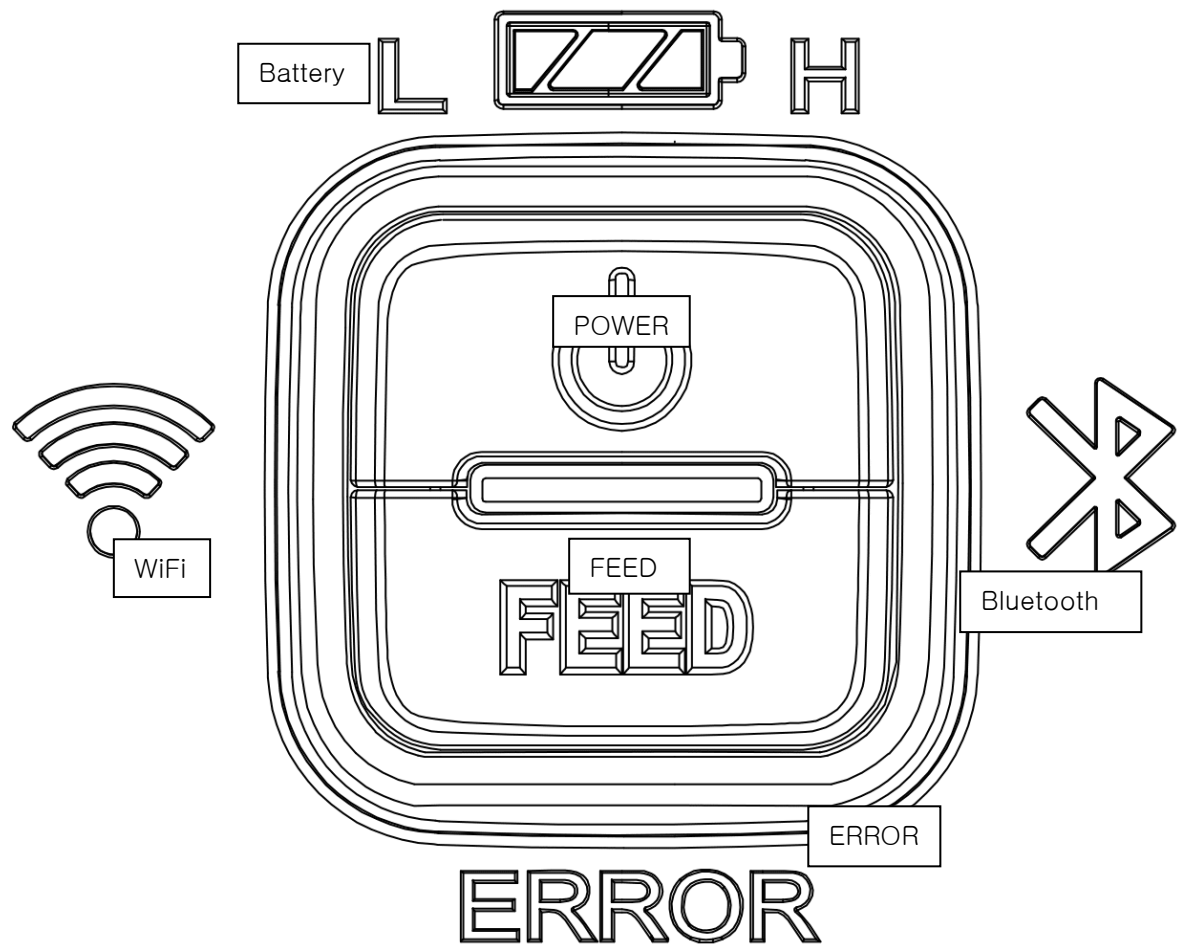
1-1) Name of each part



- 1. Button and LED
- 2. Open Lever
- 3. Manual Cutter
- 4. Battery
- 5. DC Jack
- 6. USB/RS232C



## 1-2) Control Panel



### 1. Battery Status

- 3 Blocks are ON : Fully recharged.
- 2 Blocks are ON : Half recharged .
- 1 Block is ON : Lowest Status .

### 2. Power

To turn ON : Press the Power Button for 1second, then the Power is turned ON.

To turn OFF : Press the Power Button for 1second, then the Power is turned OFF.

### 3. FEED

It is a button to feed the paper..

### 4. ERROR

It indicates by blinking Red Light that the printing cannot be done normally due to empty paper or low battery.

### 5. WiFi/ Bluetooth

It indicates by blinking Red Light that the printer is using either of these interfaces.


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### 1-3) Label Mode

Label Paper can be used by setting Label function.

- ① Turn of the power of Printer.
- ② Oopen the paper tray cover and press the FEED Button for 2 seconds.
- ③ If you hear the Melody, put the Label paper in and close the cover.

If you repeat the sequence above, the printer comes back to Receipt Mode.

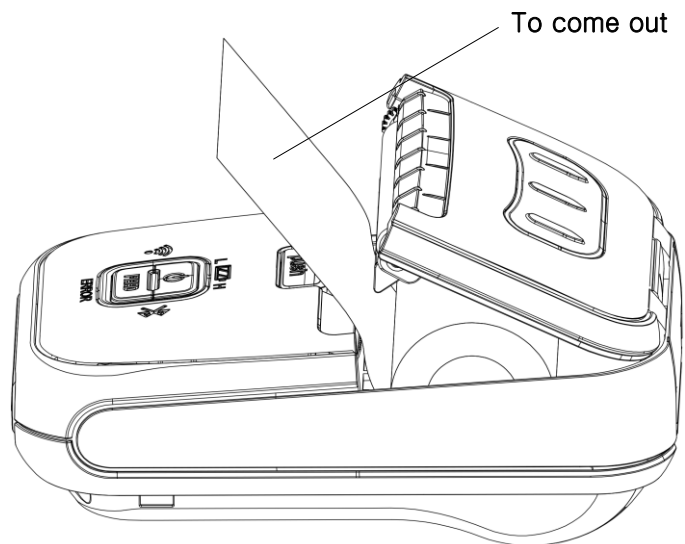
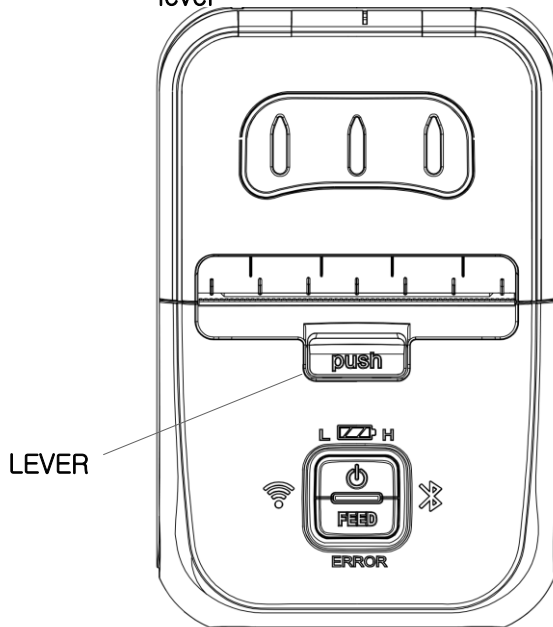
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## 2. Operation

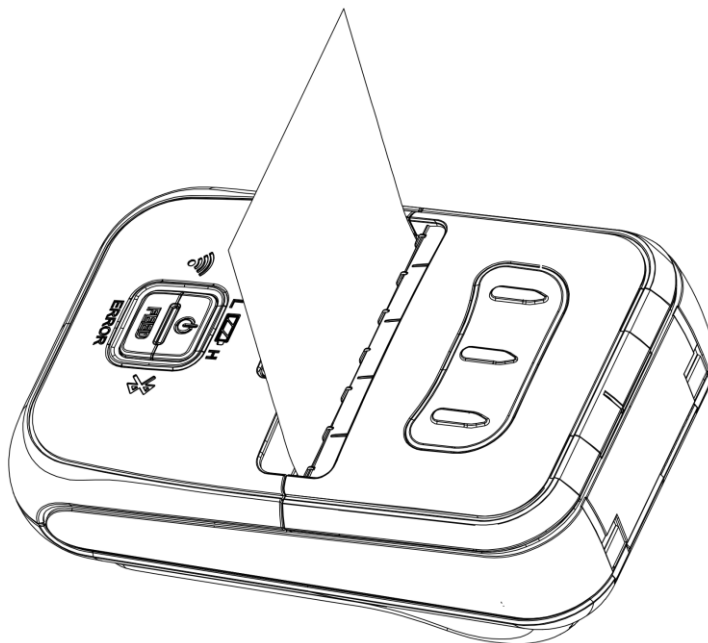
### 2-1) Setting Paper

Paper exchange is done as the sequence below.

- ① Open the cover by pushing up the lever
- ② Set the paper end come out enough with the paper direction as the picture below.



- ③ Close the cover and tear the paper by hand.



## 2-2) Self test

Power on while you are pressing the FEED Button, and release once the ERROR LED is turned on. Then, it starts the Self test. The contents of self test is like below.

```
*****
HPP-250 Control Board
Firmware   : R2.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
Drive Voltage(Vp) = 8.7(V)
=====

Dip1 Seitch Specifica
```

- Model
- Firmware ver. and Date of Create
- Interface
- Sample printing

※Factory Setting is 19200, 8 bit, None Parity mode.



## 2-3) Printer Setting

Set the printer configuration and the communication condition to the host with the memory switch utility program.

※Caution: All information on memory switch will be deleted during the Setting, so please set again the list of Code Page and Print Option.

1) Run the printer in initial Setting mode.

※How to run in Initial Setting Mode

When you turn the printer's power on while pressing down on the FEED button for more than 2 seconds, the ERROR LED will turn on / flash and run the initial Setting mode. (9600 BPS, PARITY NONE, HARDWARE HANDSHAKE). Since it is manual setting, communication condition does not have to be considered.

2) After running the initial Setting mode, it will print as the following

```
[Menu]
 1.Print Density
 2.Melody Sound
 3.Paper Type
 4.Hex Dump Mode
 5.Wireless Type
 6.WiFi Mode
 7.IP Mode
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.
```

Press the FEED button more than 1 seconds to confirm (Enter) less than 1 seconds to select menu. For example, if you'd like to change to WiFi Mode in the list number 6, press the FEED button less than 1 seconds 6 times, and more than 1 seconds 1 time. When terminating the Setting, just turn off and back on.

3) Continuing from the previous, you can confirm after selecting the category on the printed list.

```
Ex) [Wireless Type]
    1.WiFi
    -> 2.Bluetooth

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

Meaning, (->) indicates the current setting. When changing the settings, select from the list and if you want to move to the next menu without making any changes, then just confirm without selecting from the list.


4) Subsequently, you can then learn the results of the change in the printed paper.

It was changed successfully!

Indicates that the changes were made without a problem.

The value is invalid, try again!

Displayed when the selected item is invalid or moved to another menu without changing the

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5) You may find the Setting results by checking the position of the arrow character (->), after printing the test page or entering preferences mode, by selecting one of the list.

Set Hex Dump Mode in the Setting Mode. 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.

- [Print Sample]

16 hexadecimal indicator									ASCII indicator								
[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						

## 2-5) On-board Update

Printer program is easily updateable from PC with the Flash Memory equipped.  
When updating, you should be well informed of the following order before executing.

1) Turn the power off and back on.

2) Check the connectivity of Printer and the communication cable.  
(You can save time updating by using USB cable)

3) Run the update after configuring the model name and communication port through the provided update program.


The ERROR LED will turn off and it will turn back on few seconds later, and the update will start when the LED starts flashing rapidly.

Do not turn off the printer until the update is complete

4) Update Complete notification will display when the process is complete.

※ If the ERROR LED flashes slowly during the update, then the process is in error, so you need to terminate the update program, and repeat the process from the direction number 1) after checking the abnormalities on the device.

5) The printer will reset automatically after the update and will return to the ready to use status.

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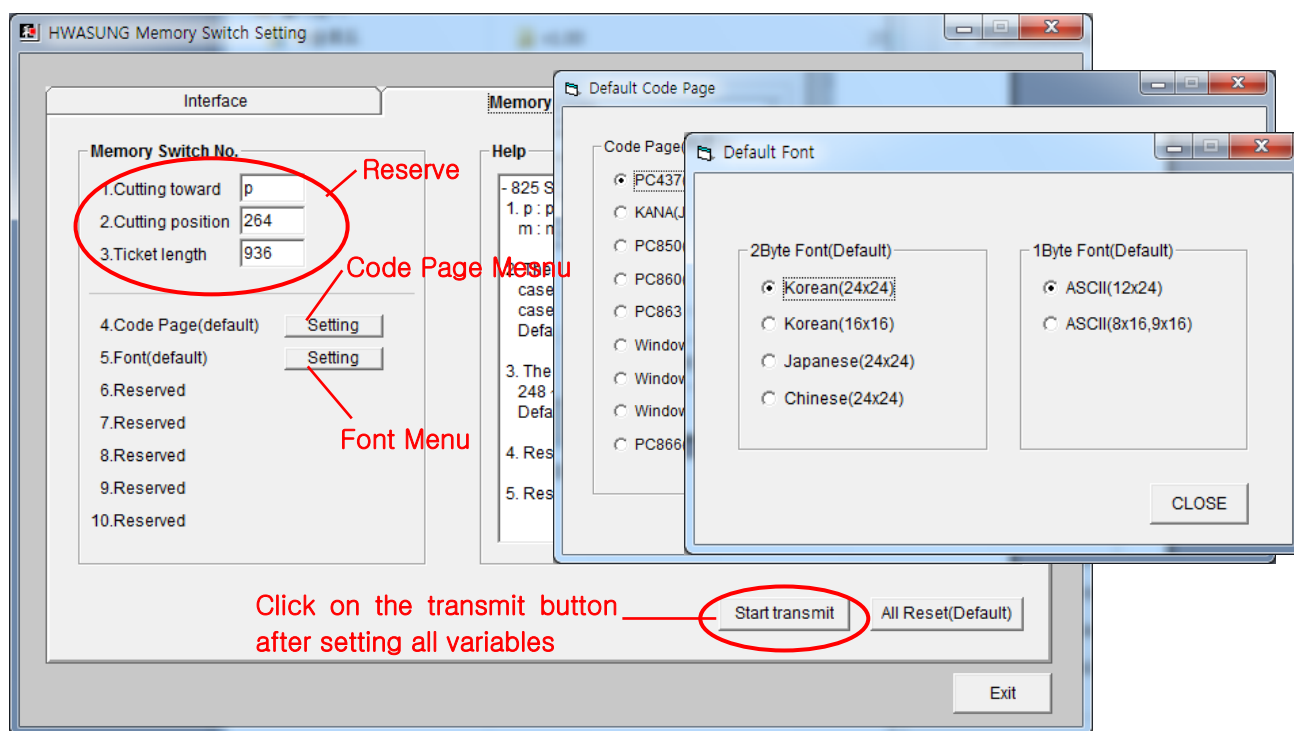
## 2-6) Memory Switch

Use non-volatile memory to set the function.

※Please use the provided 'Memory Switch Utility' for the setting.

※Once you've set the value, it will not reset even if you turn off the power so the value will maintain until you make the change.

Memory SW	Set Value	Description
SW1	Reserve	
SW2	Reserve	
SW3	Reserve	
SW4	Basic Code Page	Setting one of the Code Page out of the option to be a default
SW5	Basic Font	2byte code will set the default selecting one from Korean (24x24), Korean (16x16), Japanese(24x24), Chinese(24x24). 1byte code will set the default from ASCII(12x24), ASCII(8x16,9x16).
SW6	Reserve	
SW7	Reserve	
SW8	Reserve	



```

[Memory Switch information]
=====
Code Page = PC437(U.S)
2Byte Font = Korean(24x24)
1Byte Font = ASCII(12x24)
Mem1: FFh
Mem2: FFh, FFh
Mem3: FFh, FFh
Mem4: 00h
Mem5: 00h
Mem6: FFh
Mem7: FFh
Mem8: FFh
Mem9: FFh
Mem10: FFh

```

(Example of memory switch content checking Self test Printing)

## 2-7) Wireless Interface Connection Method

### 2-7-1) Bluetooth

The printer can be connected through Bluetooth by simple method.

- ① Referring to article 2-3 above, set the Wireless Mode as Bluetooth.
- ② After turn on the power, when the ERROR LED is not turned on, press Power Button and ERROR LED simultaneously for 1 second and then release.
- ③ Search the Bluetooth device in PC or Smartphone.
- ④ If a name like “HWASUNG\_XX:XX:XX” appears in search screen, select it for pairing.
- ⑤ If the pairing is done properly, Bluetooth LED of Printer stops the flashing.

### 2-7-2) WiFi

WiFi has two modes.


Station Mode : Printer connects to normal router directly.(SSID setting is needed)

AP Mode : Another device connects to Printer(Setting is not needed)

- ① Referring to article 2-3 above, set the Wireless Mode as WiFi.
- ② Referring to article 2-3 above, set as Station Mode or AP Mode according to the using condition.

Connection Method in AP Mode

- ③ 3 seconds after power is on, IP Address, SSID, and Password of the printer is printed.
- ④ In PC or Smartphone, connect using the SSID and Password.
- ⑤ If the connection is completed, use the printer with connecting to the printed IP Address.

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### 3. General Specification

#### 3-1) Specification

- 1) Printing method : Direct Thermal
- 2) Resolution & Dot/Line : 203dpi, 1dot=0.125mm, 8dot/mm, 384dots/Line
- 3) Printing Speed (Max) : 90mm/sec(Max)
- 4) Printing width : 48mm
- 5) Paper width : 58mm
- 6) Paper Roll Diameter(ø) : ø40(Max)
- 7) Maximum Characters per Line : 32Characters(12 x 24), 16Characters(24 x 24)

#### 3-2) FONT

- 1) Numerical value : FONT A(8 x 22) 95Characters, FONT B(8 x 20)95Characters
- 2) Extended graphic character : FONT A(8 x 22) 128Characters,  
FONT B(8 x 20)95Characters
- 3) International character : 14Kinds 37Characters (Korea, USA, France, Germany, UK,  
Denmark1, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, Latin America)
- 4) Korean : FONT A Gothic(24 x 24), FONT B Gothic(16 x 16, Option)

#### 3-3) Internal buffer

Receiving buffer : 4K Byte

#### 3-4) Electrical

- 1) Operation voltage

Input voltage	7.4V Li-ion Battery	
Drive	5V	Head, Motor Drive
Logic	3.3V±5%	Logic circuit

- 2) Current consumption

Average : 1.5A(Printing duty 12.5%)

Peak : 3.7A

#### 3-5) Operation environment

- 1) Temperature : 0~40℃
- 2) Humidity : 40~50%RH(in not dew condensation)
- ※ Print quality can be subjected to change according to conditions above.

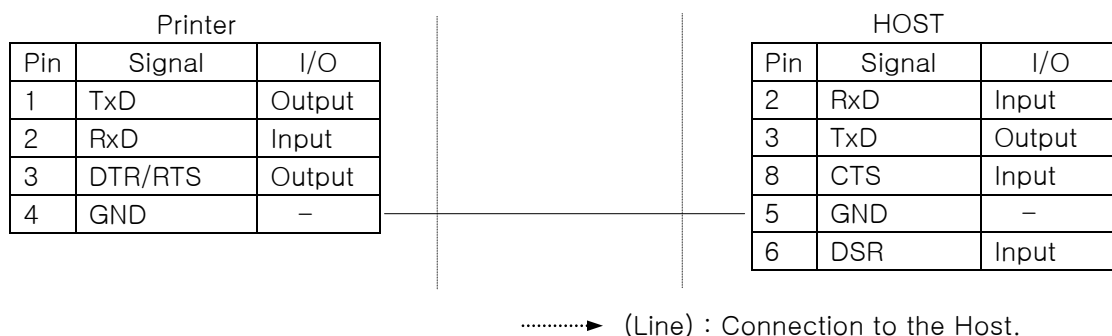
#### 3-6) MCBF

- 1) Mechanism : 15,000,000 Lines.
- 2) Thermal head : 50Km, 100million pulse.

## 4. Interface Specification

### 4-1) RS-232C

- 1) Data Transfer Method : Serial
- 2) Handshake : Hardware (RTS/CTS 또는 DTR/DSR)
- 3) Baud Rate : 9600, 19200, 38400, 57600 BPS
- 4) Data Bit : 8 bit
- 5) Parity : None, Odd, Even
- 6) Stop Bit : 1, 1.5, or 2 bit
- 7) Connector : 10 pin Mini-B(Customized Cable)



### 4-2) USB

- 1) Standard : USB 2.0 Compatible, Full Speed(12Mb) response
- 2) Connector : Type MINI-B
- 3) Cable : USB2.0 Standard Cable
- 4) Data Methods : 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)

### 4-3) WiFi

- 1) Standard : IEEE 802.11b/g/n,
- 2) Frequency : 2.400 GHz ~ 2.484 GHz
- 3) Channel : CH1 ~ CH14
- 4) Security : WEP, WPA/WPA2PSK
- 5) Output : 802.11b - 16.5dBm  
802.11g - 13~15dBm  
802.11n - 12~14.5dBm

### 4-4) : Bluetooth

- 1) Standard : Bluetooth 3.0 Class2



## 5. Command Specification

### 5-1) Command List

Category	Function	Page
CR	Print and Lineup	19
LF	Print and Lineup	19
CAN	Print Data Delete	19
HT	Horizontal Tab	19
FF	Printing the page mode & return to standard mode	19
SUB x	Extended Graphic Mode	20
SUB p	Off line printing according to paper detection	20
SUB R	Outline of character (Tetragon)	20
SUB B	2D Barcode	21
SUB 1	Select Line 1	22
SUB 2	Select Line 2	22
SUB W	Line Data WRITE	22
SUB C	Line Data CLEAR	22
SUB O	Line ON	22
SUB F	Line OFF	23
SUB P	Line 1 Dot line printing	23
ESC D	Horizontal Tab Location	24
ESC SP	Gap between ASCII Characters	24
ESC !	Designating ASCII Character Arrangement	24
ESC \$	Designating Absolute Path in Print	25
ESC *	Bit Image	26
ESC -	ASCII Character Underline	27
ESC 2	Initial Row Space	28
ESC 3	Line space	28
ESC @	Printer Reset	28
ESC E	Bold Format	28
ESC G	Double Print	28
ESC J	FEED	29
ESC j	BACK FEED	29
ESC M	Font	29
ESC R	International Character	30
ESC a	Align position	30
ESC d	Print and Row Unit FEED	31
ESC {	180° Rotation	31
ESC t	International code page	31
ESC S	STANDARD MODE Setting	32
ESC L	PAGE MODE Setting	32
ESC FF	Printing the PAGE MODE	32

구 분	기 능	페이지
ESC T	PAGE MODE Character Direction Setting	33
ESC W	PAGE MODE Character Field Setting	34
FS !	Collective Designation of Korean Character Mode	35
FS &	Set the Korean in extended graphic mode	35
FS .	Cancel the Korean in extended graphic mode	35
FS -	Korean Character Underline	36
FS S	Korean Character Spacing	36
FS W	Korean Character Size	36
FS q	Register NV Logo (Bit Image)	37
FS p	Print NV Logo	37
GS !	Extend Character size	38
GS (K (fn=49)	Printing density	39
GS (K (fn=97)	Operating in Low Power (Operating thermal head partially)	39
GS B	Printing Black & White in reverse	40
GS H	Barcode Text	40
GS L	Left Margin	41
GS W	Print Area Setting	41
GS h	Barcode Height	41
GS k	Barcode Character	42
GS w	Extension / Reduction of barcode size	43
GS r	Status Check	43
GS a	Status Check Auto Reply	44
GS v	Raster bit image	45
DLE ENQ	Real Time Buffer Clear	46
DLE EOT	Transmit Real Time Printer Status	46

## CR

[Function]	Print and carriage return	
[Code]	ASCII	CR
	Hex	0Dh
	Decimal	13
[Range]	-	
[Description]	Equal to LF.	

## LF

[Function]	Print and line feed	
[Code]	ASCII	LF
	Hex	0Ah
	Decimal	10
[Range]	-	
[Description]	①STANDARD MODE:	
	After printing the data and go to return accordingly to fixed data.	
	②PAGE MODE:	
[Caution]	Only the fixed data can be conducted, according to the fixed data.	
	The LF is ignored behind of CR	

## CAN

[Function]	Cancel print data in page mode	
[Code]	ASCII	CAN
	Hex	18h
	Decimal	24
[Range]	-	
[Description]	The print data will be deleted in print area	

## HT

[Function]	Horizontal tab	
[Code]	ASCII	HT
	Hex	09h
	Decimal	9
[Range]	-	
[Description]	Moves the print position to the next tab position	
[Caution]	Horizontal tab positions are to set in ESC+'D'+n.	

## FF

[Function]	Print and return to standard mode and page mode	
[Code]	ASCII	FF
	Hex	0Ch
	Decimal	12
[Range]	-	
[Description]	Print the data in the print buffer and returns to standard mode	
[Caution]	When it does not return to STANDARD MODE then use ESC+FF.	

## SUB+'x'+n

[Function]	Extension 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, if the First code is A1h or more, automatically transfer Korean in 2 bytes			
	n=1 : Extension Graphic Mode, Every code setting is in 1 byte			
	Extension Graphic font will be printed			

## SUB+'p'+n

[Function]	Offline printing in paper detection			
[Code]	ASCII	SUB	p	n
	Hex	1A	70h	n
	Decimal	26	112	n
[Range]	$0 \leq n \leq 1$			
[Initial Value]	n=1			
[Description]	n=0 : Does not transition to offline when paper is empty (data communication available)			
	n=1 : Transition to offline when paper is empty (data communication not available)			

## SUB+'R'+n

[Function]	Set the character outline			
[Code]	ASCII	SUB	b	n
	Hex	1A	52h	n
	Decimal	26	82	n
[Range]	$0 \leq n \leq 1$			
[Description]	n=0 : cancel outline (border) of character in tetragon.			
	n=1 : Set outline (border) of character in tetragon.			
[Caution]	When expanding in horizontal it is effective up to 8 times, however It is only effective up to 2 times for vertical expansion.			

SUB+'B'+n1+n2+n3+d1.....dk

[Name] 2 dimension barcode (2D)  
 [Format] 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] Please refer to the following table.  
 [Descript] Please use the barcode according to the number of data.  
 n1 : Type of 2D barcode  
 n2 : Number of data  
 n3 : Size of barcode  
 d1... dk : Barcode data

n1	Type of 2D barcode
1	PDF417
2	QR code

#### 1) PDF417

n2	Number of data
	$1 < n2 \leq 255$

n3	Size of barcode
3	Horizontal 3
4	Horizontal 4
5	Horizontal 5
6	Horizontal 6
7	Horizontal 7
8	Horizontal 8
9	Horizontal 9

#### 2)QR code

n2	Number of 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	Size of barcode
1	Version 1
3	Version 3
5	Version 5
9	Version 9

※ Vertical size automatic setting.

## SUB+'1'

[Name] Choice of rule 1  
[Format]           ASCII           SUB    1  
                  Hex            1A     31h  
                  Decimal        26     49  
[Descript]        Choose the rule 1 of two rules (rule1 or rule2).

## SUB+'2'

[Name] Choice of rule 2  
[Format]           ASCII           SUB    1  
                  Hex            1A     32h  
                  Decimal        26     50  
[Descript]        Choose the rule 2 of two rules (rule1 or rule2).

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

[Name] Writing the rule data  
[Format]           ASCII           SUB    W    nL   nH   kL   kH  
                  Hex            1A     57h   nL   nH   kL   kH  
                  Decimal        26     87    nL   nH   kL   kH  
[Range]            $0 \leq nL + nH \times 256 \leq 640$ , ( $0 \leq nL \leq 255$ ,  $0 \leq nH \leq 3$ )  
                   $0 \leq kL + kH \times 256 \leq 640$ , ( $0 \leq kL \leq 255$ ,  $0 \leq kH \leq 3$ )  
[Descript]        It writes 1 from nL+nHx256 to kL+kHx256.  
[Caution]        If the range is exceed, the data will be ignored.  
                  If the writing is set up, the data is not erased, until you do power off  
                  or you receive the command (the rule clear).

## SUB+'C'

[Name] Rule CLEAR  
[Format]           ASCII           SUB    C  
                  Hex            1A     43h  
                  Decimal        26     67  
[Descript]        It clears all of data (as) zero you chose.  
[Caution]        Please use this command, once you do rewrite the rule data.  
                  If you need to speed up the processing, you use the command on/off.

## SUB+'O'

[Name] Rule ON  
[Format]           ASCII           SUB    O  
                  Hex            1A     4Fh  
                  Decimal        26     79  
[Descript]        Set the Rule as Valid(ON). Once you set up the command, the rule will be  
                  printed with the character or font.

## SUB+'F'

[Name] Rule OFF  
[Format] ASCII SUB O  
Hex 1A 46h  
Decimal 26 70  
[Descript] Set the Rule as invalid(OFF). Once you set up the command, the Rule will be preserved.

## SUB+'P'

[Name] Printing a dot of Rule.  
[Format] ASCII SUB P  
Hex 1A 50h  
Decimal 26 80  
[Descript] It's printing a dot of rule 1.  
[Caution] Please do not use this command if you print the character or the graphic.  
Please use the Rule ON if you print the character or the graphic.  
Please use this command if you print the rule between row and row at the space.

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

[Function]	Sets the horizontal position			
[Code]	ASCII	ESC	D	n1...nk NUL
	Hex	1B	44h	n1...nk 00
	Decimal	27	68	n1...nk 0
[Range]	$1 \leq n \leq 255, 0 \leq k \leq 32$			
[Description]	Sets the horizontal tab position.			
[Caution]	n: indicates the figures from the initial position of the line to the set position.			
	k: indicates the total tabs per line.			

## ESC+SP+n

[Function]	Set the space amount on the right of ASCII character			
[Code]	ASCII	ESC	SP	n
	Hex	1B	20h	n
	Decimal	27	32	n
[Range]	$0 \leq n \leq 255$			
[Initial Value]	n=0			
[Description]	Set in n x 0.125mm the space amount on the right side of ASCII character			
[Caution]	Set the Korean space in FS+'S'+n.			

## ESC+'!' +n

[Function]	Set character all at once			
[Code]	ASCII	ESC	!	n
	Hex	1B	21h	n
	Decimal	27	33	n
[Range]	$0 \leq n \leq 255$			
[Initial Value]	n=0			
[Description]	Set font & character in the same time.			
[Caution]	If it's Korean, the Font / the Stress is only valid.			

Bit	Function	Hex	Decimal
0	0: Font 12x24, 24x24	00h	0
	1: Font 8x16, 16x16	01h	1
1	–	–	–
2	–	–	–
3	0: Stress Cancel	00h	0
	1: Stress Setting	08h	8
4	0: Cancel Vertical Extension	00h	0
	1: Vertical Extension Setting	10h	16
5	0: Cancel Horizontal Extension	00h	0
	1: Horizontal Extension Setting	20h	32
6	–	–	–
7	0: Cancel Underline	00h	0
	1: Underline Setting	80h	128



# ESC+'\$'+nL+nH

[Function]	Absolute Position Settings				
[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 Value]	nL=0, nH=0				
[Description]	Move the position from the space of left ending to $(nL + nH \times 256) \times 0.125\text{mm}$ .				
	Move the position into the space of left ending if the area is over.				

[Function]        bitmap image setting

[Code]            ASCII            ESC        \*        m        nL        nH        d1...dk

                  Hex            1B        2Ah        m        nL        nH        d1...dk

                  Decimal        27        42        m        nL        nH        d1...dk

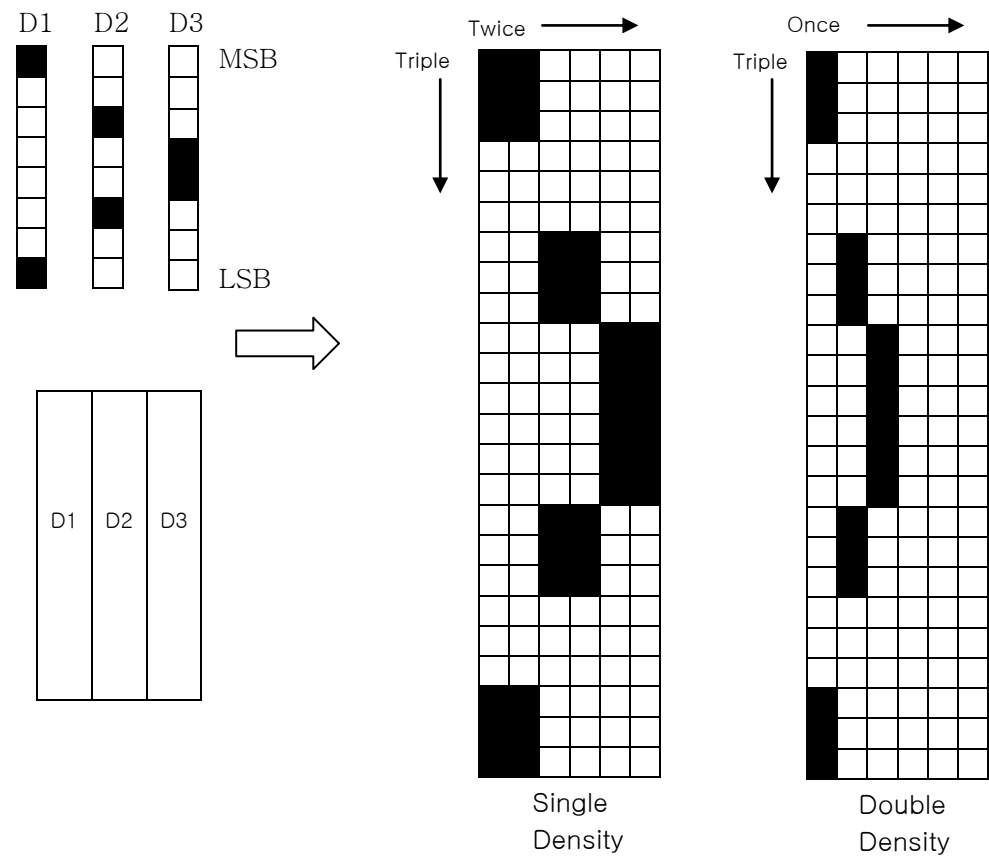
[Range]           m = 0, 1, 32, 33

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

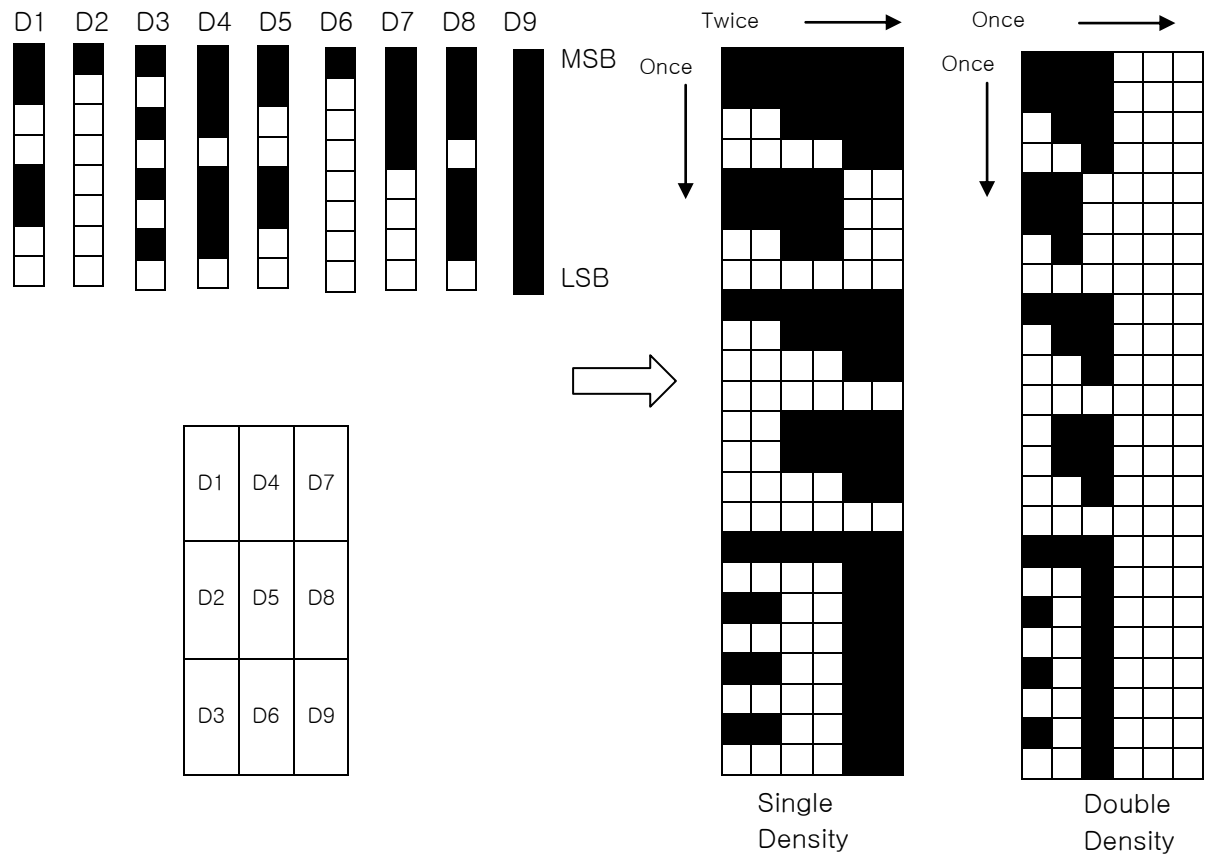
[Description]     Due to fixing nL + nH × 256, Printing from bit data to graphic data in Mode m

m	Mode	Dots in vertical	Dots in horizontal	Data (k)
0	8dots Single Density	8	224	nL+nH×256
1	8dots Double Density	8	448	nL+nH×256
32	24dots Single Density	24	224	(nL+nH×256)×3
33	24dots Double Density	24	448	(nL+nH×256)×3

•8 dots Mode



•24 Dot Mode



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	Cancel underline
1	Set underline in thick 0.125mm
2	Set underline in thick 0.25mm
3	Set underline in thick 0.375mm
4	Set underline in thick 0.5mm
5	Set underline in thick 0.625mm
6	Set underline in thick 0.75mm
7	Set underline in thick 0.875mm

## ESC+'2'

[Name]	Set the initial line spacing			
[Format]	ASCII	ESC	2	
	Hex	1B	32h	
	Decimal	27	50	
[Range]	$0 \leq n \leq 255$ ,			
[Initial Value]	n=0			
[Descript]	Set the interval of initial value in 4mm			

## ESC+'3'+n

[Name]	Set the interval of line			
[Format]	ASCII	ESC	3	n
	Hex	1B	33h	n
	Decimal	27	51	n
[Range]	$0 \leq n \leq 255$ ,			
[Initial Value]	n=0			
[Descript]	Set the interval of line in $n \times 0.125\text{mm}$			

## ESC+'@'

[Name]	Rest printer (Initialize the printer)			
[Format]	ASCII	ESC	@	
	Hex	1B	40h	
	Decimal	27	64	
[Range]	$0 \leq n \leq 255$ ,			
[Descript]	Clear buffer & Initialize all parameter			

## ESC+'E'+n

[Name]	Set the font in thick			
[Format]	ASCII	ESC	E	n
	Hex	1B	45h	n
	Decimal	27	69	n
[Range]	$0 \leq n \leq 255$ ,			
[Initial Value]	n=0			
[Descript]	n=0, cancel the font in thick n=1, set the font in thick			

## ESC+'G'+n

Name]	Set the printing double for font thickness			
[Format]	ASCII	ESC	G	n
	Hex	1B	47h	n
	Decimal	27	71	n
[Range]	$0 \leq n \leq 255$ ,			
[Initial Value]	n=0			
[Descript]	n=0, cancel the printing twice for font thickness n=1, set the printing twice for font thickness			

## ESC+'J'+n

[Name] Feeding  
 [Format] ASCII ESC J n  
 Hex 1B 4Ah n  
 Decimal 27 74 n  
 [Range]  $0 \leq n \leq 255$   
 [Descript] Printing the data inner buffer, feeding in  $n \times 0.125\text{mm}$

## ESC+'j'+n

[Name] Back Feeding  
 [Format] ASCII ESC j n  
 Hex 1B 6Ah n  
 Decimal 27 106 n  
 [Range]  $0 \leq n \leq 255$   
 [Descript] Printing the data inner buffer and back feeding in  $n \times 0.125\text{mm}$

## ESC+'M'+n

[Name] Select font  
 [Format] ASCII ESC M n  
 Hex 1B 4Dh n  
 Decimal 27 77 n  
 [Range]  $0 \leq n \leq 2$   
 [Initial Value]  $n=0$   
 [Descript] Select printer font

n			
Precedence 4bits (2 byte fonts)		Subordinate 4bits (ASCII, 1 byte fonts)	
0000	Korean 24x24 Gothic	0000	12x24
0001	Korean 16 x 16 General	0001	8x16(9x16)
0010	Japanese 24 x 24 Bodoni	0010	56x88 big fonts, only 0~9 numbers
0011	Chinese 24 x 24 Gothic	0011	Reservation

**Notice** : When you set up one of fonts, you can use “Memory Switch Setting program” without commend. If you need any more information, please refer to How to use Memory Switch Setting Program.

**\* Caution** : In case of Big Font as 56x88, it would be possible to extend font size as much as Double (Width and Length) and other fonts would be possible to extend the font size as 8 times

## ESC+'R'+n

[Name] Select the International character  
 [Format] ASCII ESC R n  
 Hex 1B 52h n  
 Decimal 27 82 n  
 [Range]  $0 \leq n \leq 13$   
 [Initial Value] n=13  
 [Descript] Select the international character as 14 units((#,\$,@,[,W,],^`,`{,|,},~)

n	Country Name
0	USA
1	France
2	Germany
3	England
4	Denmark1
5	Sweden
6	Italian
7	Spain1
8	Japanese
9	Norway
10	Denmark2
11	Spain2
12	Latin America
13	Korea

## ESC+'a'+n

[Name] Align the printing  
 [Format] ASCII ESC a n  
 Hex 1B 61h n  
 Decimal 27 97 n  
 [Range]  $0 \leq n \leq 2$   
 [Initial Value] n=0  
 [Descript] Align the printing position

n	Printing Position
0	Left
1	Middle
2	Right

## ESC+'d'+n

[Name]	Printing and feeding 'n' line				
[Format]	ASCII		ESC	d	n
	Hex	1B	64h	n	
	Decimal	27	100	n	
[Range]	0≤n≤255				
[Descript]	Printing the data & feeding 'n' line				

## ESC+'{' +n

[Name]	Turning 180°				
[Format]	ASCII		ESC	d	n
	Hex	1B	7Bh	n	
	Decimal	27	123	n	
[Range]	0≤n≤255				
[Initial Value]	n=0				
[Descript]	Set the reverse image				
[Caution]	Move the standard from the left to the right				

n	Function
0	Cancel 180°
1	Set 180°

## ESC+'t'+n

[Name]	International Code Page				
[Format]	ASCII		ESC	t	n
	Hex	1B	74h	n	
	Decimal	27	116	n	
[Range]	0≤n≤5, 14≤n≤17				
[Initial]	n=0				
[Descript]	You can set up the code page according to the following table.				
[Caution]	Valid if set as SUB + x command 1 byte mode. Invalid if 2 byte mode(Korean mode).				

n	Code Page
0	PC437(US)
1	KANA(JAPAN)
2	PC850(Multilingual)
3	PC860(Portugal),
4	PC863(Canadian-French)
5	PC865(Nordic)
14	Windows1250(Poland)
15	Windows1251
16	Windows1252
17	PC866(Cyrillic #2)

## ESC+'S'

[Name]	Set the Standard mode		
[Format]	ASCII	ESC	S
	Hex	1B	53h
	Decimal	27	83
[Descript]	Switches from page mode to standard mode, and deletes the Data in the Page.		

## ESC+'L'

[Name]	Select page mode		
[Format]	ASCII	ESC	L
	Hex	1B	4Ch
	Decimal	27	76
[Range]	$0 \leq n \leq 255$		
[Initial Value]	n=0		
[Descript]	Switches from standard mode to page mode		

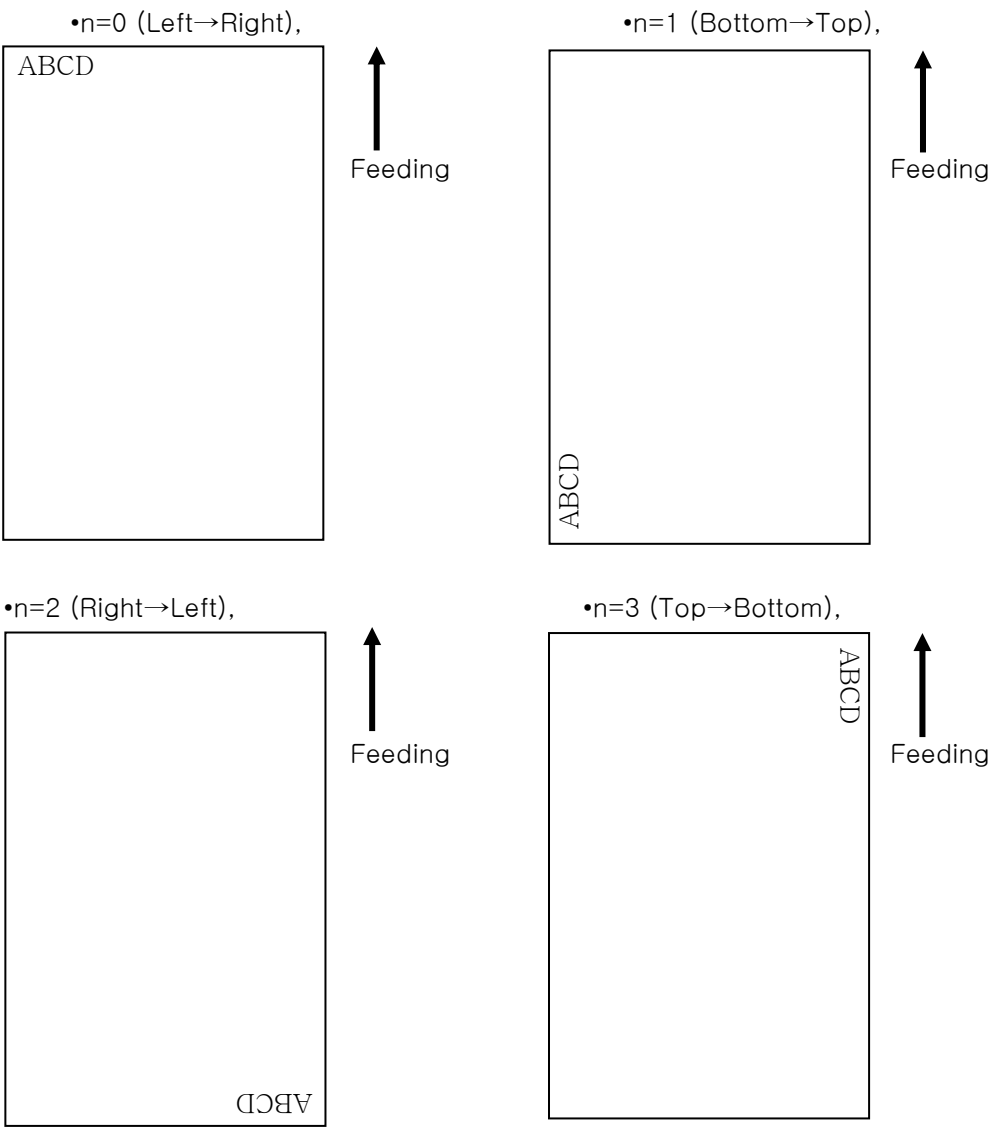
## ESC+FF

[Name]	Printing the page area		
[Format]	ASCII	ESC	FF
	Hex	1Bh	0Ch
	Decimal	27	12
[Range]	Please edit the received data at the page area. The page area will be printed all at once, when you use this command.		
[Descript]	The page area remains. Please use the command ESC+S, If you want all clear.		

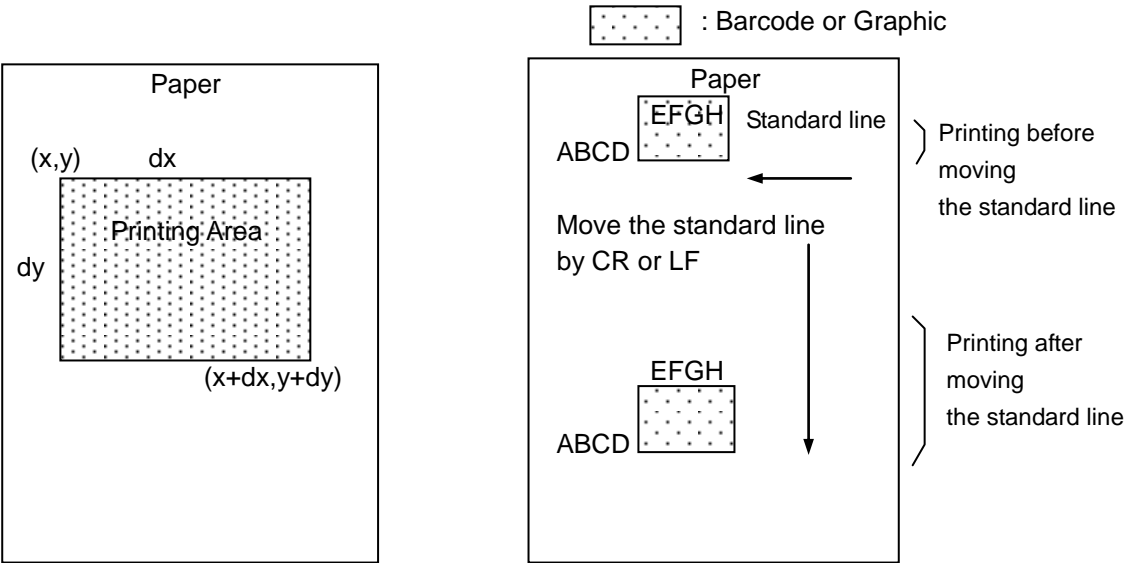


ESC+'T'+n

[Name]	Select print direction in page mode				
[Format]	ASCII	ESC	T	n	
	Hex	1B	54h	n	
	Decimal	27	84	n	
[Range]	0≤n≤3				
[Initial Value]	n=0				
[Descript]	Select the print direction & start position in page mode				



[Name]	Set printing area in page mode											
[Format]	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≤xL+xH×256≤65535 (0≤xL≤255, 0≤xL≤255) 0≤yL+yH×256≤65535 (0≤yL≤255, 0≤yL≤255) 1≤dxL+dxH×256≤65535 (0≤dxL≤255, 0≤dxL≤255) 1≤dyL+dyH×256≤65535 (0≤dyL≤255, 0≤dyL≤255)											
[Initial Value]	(xL+xH×256)=0 (0mm, xL=0, xH=0) (yL+yH×256)=0 (0mm, yL=0, yH=0) (dxL+dxH×256)=448 (56mm, dxL=C0h, dxH=01h) (dyL+dyH×256)=1200 (150mm, dyL=B0h, dyH=04h)											
[Descript]	Set printing area & starting point Horizontal starting point : (xL+xH×256) × 0.125mm Vertical starting point : (yL+yH×256) × 0.125mm Horizontal size : (dxL+dxH×256) × 0.125mm Vertical size : (dyL+dyH×256) × 0.125mm											
[Caution]	The maximum page width is available 56mm The maximum page length is available 150mm Barcode & graphic data is executed as per standard line, If the size exceed the standard line, move the standardline by CR or LF.											



## FS+'!' +n

[Name] Set the printing mode in Korean  
 [Format] ASCII FS ! n  
 Hex 1C 21h n  
 Decimal 28 33 n  
 [Range]  $0 \leq n \leq 255$   
 [Initial Value] n=0  
 [Descript] Set the printing mode in Korean  
 [Caution] Only valid in Korean

Bit	Function	Hex	Decimal
0	–	00h	0
1	–	00h	0
2	Cancel the horizontal extension	00h	0
	Set the horizontal extension	04h	4
3	Cancel the vertical extension	00h	0
	Set the vertical extension	08h	8
4	–	00h	0
5	–	00h	0
6	–	00h	0
7	Cancel the underline	00h	0
	Set the underline	80h	128

## FS+'&'

[Name] Set to print Korean mode (2bytes Mode)  
 [Format] ASCII FS &  
 Hex 1C 26h  
 Decimal 28 38  
 [Descript] Set to print Korean mode (2bytes Mode)  
 [Caution] Set to print Korean mode in extended graphic mode  
 Appointment is not required in Korean mode, due to auto detection  
 (Pls refer the command of SUB+'x'+n)

## FS+'.'

[Name] Cancel Korean mode (2Bytes mode)  
 [Format] ASCII FS .  
 Hex 1C 2Eh  
 Decimal 28 46  
 [Descript] Cancel Korean mode (2Bytes mode)  
 [Caution] In case of cancel 2 bytes mode in extended graphic mode  
 Appointment is not required due to auto detection in Korean mode  
 (Ref.SUB+'x'+n command)

## FS+'-'+n

[Name]	Set the underline of Korean				
[Format]	ASCII	FS	-	n	
	Hex	1C	2Dh	n	
	Decimal	28	45	n	
[Range]	$0 \leq n \leq 2$				
[Initial Value]	n=0				
[Descript]	Set the underline of Korean				

n	Function
0	Cancel the underline of Korean
1	Set the thickness of underline in 0.125mm
2	Set the thickness of underline in 0.25mm

## FS+'S'+n1+n2

[Name]	Set the space between Korean characters					
[Format]	ASCII		FS	S	n1	n2
	Hex	1C	53h	n1	n2	
	Decimal	28	83	n1	n2	
[Range]	0≤n1≤255, 0≤n2≤255					
[Initial Value]	n=0					
[Descript]	Set the space between Korean characters					
	Set the left space in n1×0.125mm					
	Set the right space in n2×0.125mm					

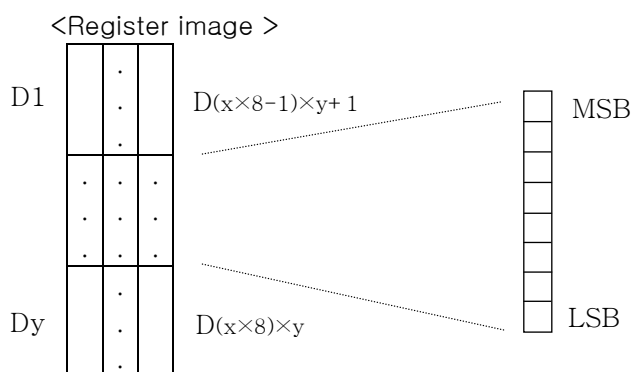
## FS+'W'+n

[Name]	Set the font size in Korean				
[Format]	ASCII	FS	W	n	
	Hex	1C	57h	n	
	Decimal	28	87	n	
[Range]	0≤n1≤255				
[Initial Value]	n=0				
[Descript]	Set the Korean font as twice size (Horizontal x Vertical) in Korean				
	n=0, Cancel the twice sized font				
	n=1, Set the font as twice size				

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

[[Name]	Register logo (bitmap image) non volatilization				
	[Format]	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
[Range]	Decimal 28 113 n (xL xH yL yH d1..dk)1...(xL xH yL yH d1..dk)n				
	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 Capable register : 64kbytes				
[Descript.]	Register the logo in non-volatilization memory				
	n : Total unit of N/V logo				
	xL,xH : Set the horizontal dot in (xL+xH×256)×8				
	yL,yH : Set the vertical dot in (xL+xH×256)×8				
[Caution]	k : Bitmap image of a N/V logo				
	Register various as much as NV's capacity.				
	Required to delete all if (it is) registered again.				
	Renewable registration / deletion at 100000 cycles, It's not recommended frequent registration / deletion, due to memory damage				

You can register very easily, if you download the program of logo registration.



FS+'p'+n+m

[[Name]	Printing N/ V logo				
	[Format]	ASCII	FS	p	n m
		Hex	1C	70h	n m
[Range]	Decimal 28 112 n m				
	1≤n≤255, 0≤m≤3				
[Initial Value]		n=0			
[Descript.]		m : printing the registered N/V in 'm' mode n : indicating the registered logo in the 'n'.			

m	Printing mode
0	Standard
1	Horizontal extension
2	Vertical extension
3	Horizontal, vertical extension in the same time

[Name] Set the proportion of character extension  
 [Format] ASCII GS ! n  
 Hex 1D 21h n  
 Decimal 29 33 n  
 [Range]  $0 \leq n \leq 255$  (horizontal / vertical portions is restricted maxim value 8)  
 [Initial Value] n=0  
 [Descript.] Set the proportion of character extension  
 [Caution] Calculate the numeric value if vertical & horizontal is extended in the same time  
 ex.) x3 (Horizontal Rate), x3 (Vertical Rate) :  $n=3 \times 2 = 6$

Bit	Function
0-3	Set the extension proportion in vertical
4-7	Set the extension proportion in horizontal

Extension in Horizontal

n(Hex)	n(Decimal)	Rate
00h	0	x1
10h	16	x2
20h	32	x3
30h	48	x4
40h	64	x5
50h	80	x6
60h	96	x7
70h	112	X8

Extension in Vertical

n(Hex)	n(DecimaL)	Rate
00h	0	x1
01h	1	x2
02h	2	x3
03h	3	x4
04h	4	x5
05h	5	x6
06h	6	x7
07h	7	X8

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

[Name]	Set the printing density							
[Format]	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 1≤m≤30							
[Initial Value]	Set automatically according to the Voltage(Refer to the chart below)							
[Descript]	Set the printing density							

Driving Voltage(Vp)	m
5 ~ 5.4V	26
5.5 ~ 5.9V	16
6 ~ 6.4V	10
6.5 ~ 6.9V	8
7.0 ~ 7.4V	7
7.5 ~ 7.9V	6
8.0 ~ 8.3V	5
8.4V ~ 8.5V	4

[Caution] Although the printing density is set automatically as the printer detects the Driving Voltage at the Power On reset, the printing density can be selected for using according to System power capacity and paper tone/printing contents.

# GS+'('+'K'+pL+pH+fn+m (fn=97)

[Name]	Operating thermal head partially							
[Format]	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=97 0≤m≤4							
[Initial Value]	m=2(3 <sup>rd</sup> Division)							
[Descript]	Set the operation of partial thermal head							
[Caution]	This function will be effective once the power capacity is short. As the division number is bigger, consuming current is reduced. The Second division of electric current (ampere) will be half than the first							

division.

m	Partial operation
0	Initial setting (first division)
1	First Division
2	Second Division
3	Third Division
4	Fourth Division
5	Fifth Division



# GS+'B'+n

[Name] Reverse printing in Black & White  
[Format] ASCII GS B n  
Hex 1D 42h n  
Decimal 29 66 n  
[Range]  $0 \leq n \leq 255$   
[Initial Value] n=0  
[Descript] Reverse printing in Black & White  
n=0, standard printing  
n=1, reverse printing in Black & White

# GS+'H'+n

[Name] Select the printing position of HRI characters (Barcode)  
[Format] ASCII GS H n  
Hex 1D 48h n  
Decimal 29 72 n  
[Range]  $0 \leq n \leq 3$   
[Initial Value] n=0  
[Descript] Select the printing positions of numerical value & characters

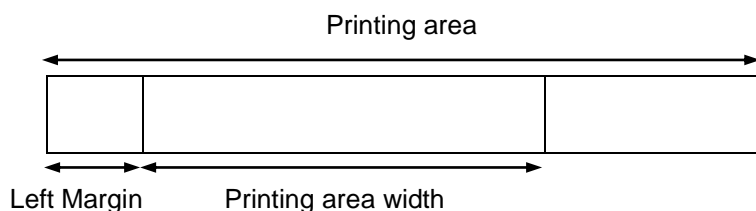
n	Printing Position
0	Non printing
1	Above the barcode
2	Below the barcode
3	Both above & below barcode

# GS+'L'+nL+nH

[Name]	Select the left margin				
[Format]	ASCII	GS	L	nL	nH
	Hex	1D	4Ch	nL	nH
	Decimal	29	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)				
[Descript]	The left margin is set in $(nL + nH \times 256) \times 0.125\text{mm}$ .				

# GS+'W'+nL+nH

[Name]	Set printing area width				
[Format]	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)				
[Descript]	Set printing area width from the left margin in $(nL + nH \times 256) \times 0.125\text{mm}$				



# GS+'h'+n

[Name]	Select barcode height			
[Format]	ASCII	GS	h	n
	Hex	1D	68h	n
	Decimal	29	104	n
[Range]	$1 \leq n \leq 255$			
[Initial Value]	$n = 162$ (20.25mm)			
[Descript]	Select barcode height by $n \times 0.125\text{mm}$			

GS+'k'+m+d1...dn+NUL

[Name] Print barcode  
 [Format] ASCII GS k m d1...dn NUL  
 Hex 1D 6Bh m d1...dn 00h  
 Decimal 29 107 m d1...dn 0  
 [Range]  $1 \leq m \leq 7$ , n & d depend on barcode system used  
 [Descript] Refer to the table as below

m	Barcode system	n (Barcode data numbers)	d (barcode data )
1	UPC-E	n=7 (check digit is automatically added )	$48 \leq d \leq 57$
2	EAN13	n=12 (check digit is automatically added)	$48 \leq d \leq 57$
3	EAN8	n=7 (check digit is automatically added)	$48 \leq d \leq 57$
4	CODE39	$1 \leq n$ (Start & Stop character is automatically added)	$48 \leq d \leq 57$ , $65 \leq d \leq 90$ d=32,36,37,43,45,46,47
5	ITF(I of 2/5)	$1 \leq n$ (Only even number)	$48 \leq d \leq 57$
6	CODABAR	$1 \leq n$	$48 \leq d \leq 57$ , $65 \leq d \leq 68$ d=36,43,45,46,47,58
7	CODE128	$2 \leq n \leq 255$ (Check digit , Stop character is automatically added)	$0 \leq d \leq 127$

[Caution] In CODE128, add "{", set as 2bytes when the special character as below

Special character	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

Please add up the initial character of CODE A, CODE B, CODE C at the first, so that you could know the kind of CODE128.

CODE128	Initial character	Example of barcode
CODE A	g	"gABCD"
CODE B	h	"hABCD"
CODE C	i	"iABCD"

## GS+'w'+n

[Name]	Set the horizontal size of barcode				
[Format]	ASCII		GS	w	n
	Hex	1D	77h	n	
	Decimal	29	119	n	
[Range]	1≤n≤4				
[Initial Value]	n=2				
[Descript.]	Set the horizontal size of barcode				

n	Module width	Two level barcode	
		Narrow	Wide
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

[Name]	Transmit status				
[Format]	ASCII		GS	r	n
	Hex	1D	72h	n	
	Decimal	29	114	n	
[Range]	n=1				
[Descript]	Transmit current status of printer				
[Caution]	The status is not ready till the printer is offline,				
	If the receiver buffer is full at the printer offline, this command is not able to receive, and is not able to respond to the status.				
	Therefore we recommend the real time command (DLE+EOT). When using it, you can avoid confusion of automatic status back and status back of this command after the automatic status back function disabled in GS+'a'+n				

[Name] Enable / Disable automatic status back (ASB)  
 [Format] ASCII GS a n  
 Hex 1D 61h n  
 Decimal 29 97 n  
 [Range]  $0 \leq n \leq 1$   
 [Initial Value] n=1  
 [Descript] Enable / Disable ASB  
 If the status is changed after checking the printer status,  
 the status is automatically executed.  
 This command is executed to enable or disable.

n	Function
0	Disable automatic status back
1	Enable automatic status back

&lt;Status transmission data &gt;

Bit	Status	Hex	Decimal
0	0 : Paper 1 : No paper	00h 01h	0 1
1	0 : Printer head down 1 : Printer head up	00h 02h	0 2
2	0 : Paper w/o jam 1 : Paper with jam	00h 04h	0 4
3	0 : Paper adequate 1 : Paper Near End	00h 08h	0 8
4	0 : Print complete 1 : Print or Feeding	00h 10h	0 16
5	0 : Cutter no- error (jam) 1 : Cutter error (jam)	00h 20h	0 32
6	0 (unused)	00h	0
7	0: No paper in the Support Sensor 1: Paper in the Support Sensor	00h 80h	0 128

※ the status of bit 4 will be effective when the realtime command DLE + EOT + n,  
 The others are fixed '0'.

GS+'v'+ '0'+m+xL+xH+yL+yH+d1+...+dk

[Name] Raster bit image

[Format] 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]  $0 \leq m \leq 3$  or  $48 \leq m \leq 51$ ,  
 $1 \leq (xL + xH \times 256) \leq 150$  ( $0 \leq xL \leq 150$ ,  $xH = 0$ )  
 $1 \leq (yL + yH \times 256) \leq 436$  ( $0 \leq yL \leq 255$ ,  $0 \leq yH \leq 1$ )  
 $0 \leq d \leq 255$  ( $yL + yH \times 256$ )  
 $K$  (All data) =  $(xL + xH \times 256) \times (yL + yH \times 256)$

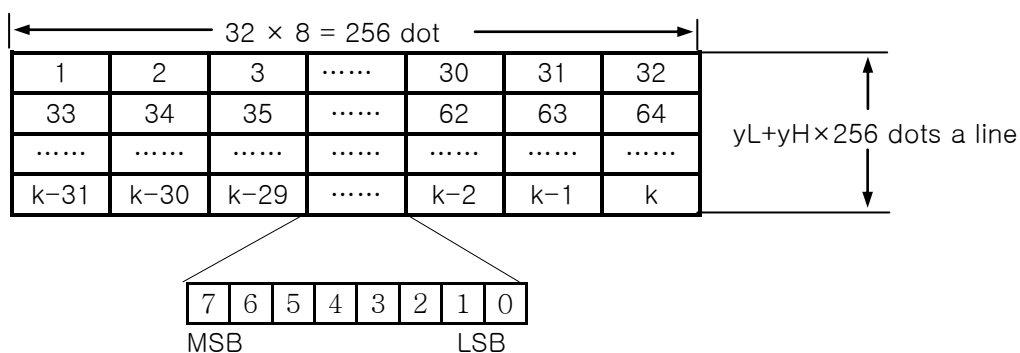
[Descript] The raster bit image will be recognized in mode m.  
xL,xH appoint the data (byte) of horizontal at image data.  
yL,yH appoint the data (dot line) of vertical at image data.

\* d is a data for raster bit image.

m	Mode	Expansion
0, 48	Normal	X1
1, 49	Horizontal expansion	X2
2, 50	Vertical expansion	X2
3, 51	Horizontal,Vertical expansion	X2 (Horizontal & Vertical)

Ex) Expansion image

$xL + xH \times 256 = 32$  byte,



## DLE+ENQ+n

[Name] Realtime buffer clear, or reset.

[Format]

ASCII	DLE	ENQ	n
Hex	10h	05h	n
Decimal	16	5	n

[Range] n=2

[Descript] n=2 : It clears each buffer of the printer in realtime.

[Caution] It is only valid when the Printer is offline.  
If a corresponding data is received as this command, the printer will run the identical operation to this command, so it requires caution. (Like bit image data).

## DLE+EOT+n

[Name] Realtime status transmission

[Format]

ASCII	DLE	EOT	n
Hex	10h	04h	n
Decimal	16	4	n

[Range] n=2

[Descript] It transmits 1 byte of printer status value upon receiving this command.

[Caution] If a corresponding data is received as this command, the printer will run the identical operation to this command, so it requires caution. (Like bit image data).

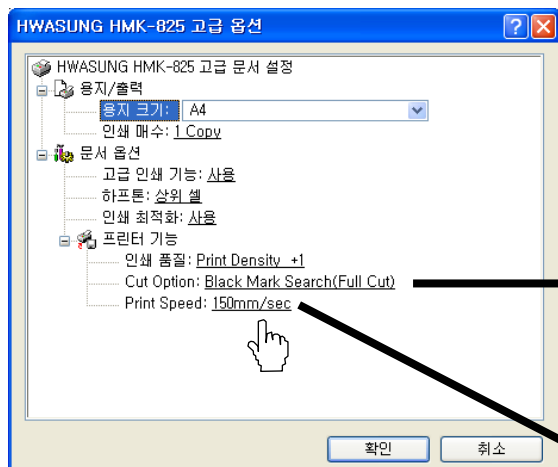
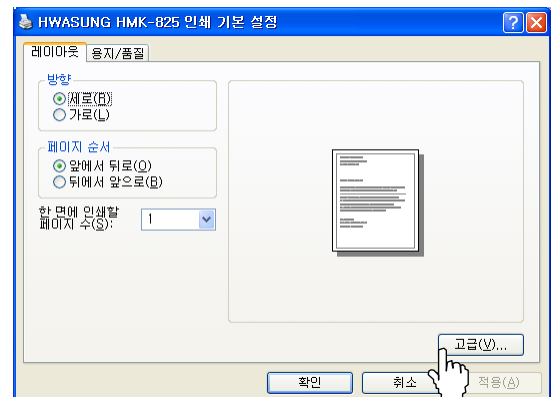
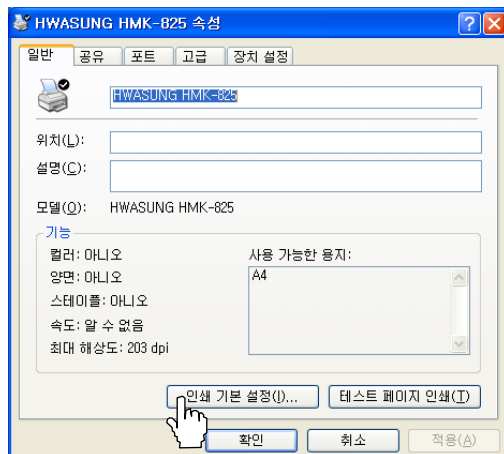
<data 1 byte of status transmission>

Bit	Status	Hex	Decimal
0	0 : Paper	00h	0
	1 : No paper	01h	1
1	0 : Printer head down	00h	0
	1 : Printer head up	02h	2
2	0 : Paper w/o jam	00h	0
	1 : Paper with jam	04h	4
3	0 : Fixed Data	00h	0
4	0 : Print complete	00h	0
	1 : Print or Feeding	10h	16
5	0 : Fixed Data	00h	0
6	0 (unused)	00h	0
7	0: Fixed Data	00h	0

## 6. Windows Driver

### 6-1) Printer Configuration Settings

- 1) Please open the screen of printer / fax, and click the basic setting (I) of the general tap.
- 2) Please click Advanced Tab(V).
- 3) Please refer to the following images, and set up each details. You can select on each dropdown list to set the Density, Cutting Option, and Print Speed Setting.



No Cut : No Cut, just Print.  
 Full Cut : Full Cut after print.  
 Partial Cut : Partial Cut after print.  
 Black Mark Search(Full Cut) :  
 The cutting position from the black mark  
 will be set by the memory switch.

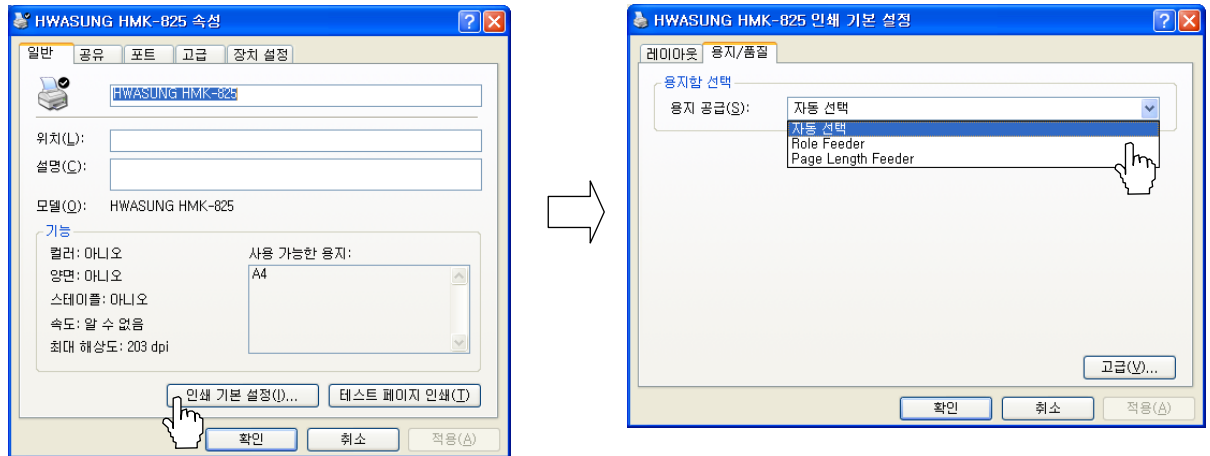
※All printed materials would be different  
 depending on the print data size due to  
 printing in graphic, so by fixing the setting  
 to the below set may provide a smoother  
 quality.  
 Print Width 60mm: Set the speed to 150mm.  
 80mm: Set the speed to 130mm.



## 6-2) Paper Feed Setting

Please set the form feeding after printing.

- 1) Open the Printer and Fax folder, then click on the Basic Setting (I) under General tab.
- 2) Please click the paper /quality tab, and select from the Paper Feed dropdown list.



- 3) Auto Select / Role Feeder : : After printing, the form feeding is not conducted any more regardless of the paper length. This setting is used when the printed material length is irregular.

As you can see from the example below, the feeding will not happen even if you set the margin through the Visual Basic, so you'd have to set the FontSize smaller and print "." to set the cutting position through Dummy Form Feeding.

Example)

'----- Example Dummy form feeding to cutting position -----'

```
Printer.Print " " & vbCrLf
```

```
Printer.Print " " & vbCrLf
```

```
Printer.Print " " & vbCrLf
```

```
Printer.FontSize = 2
```

```
Printer.Print "."
```

```
Printer.EndDoc
```

' dummy print for form feeding

- 4) page length Feeder : After print, execute form feeding up to the set page length.  
Set when the printed materials are fixed to a certain length.

### 6-3) New Paper Settings

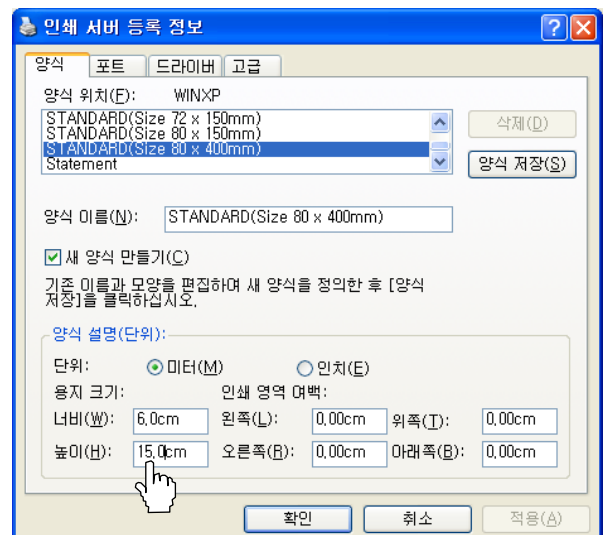
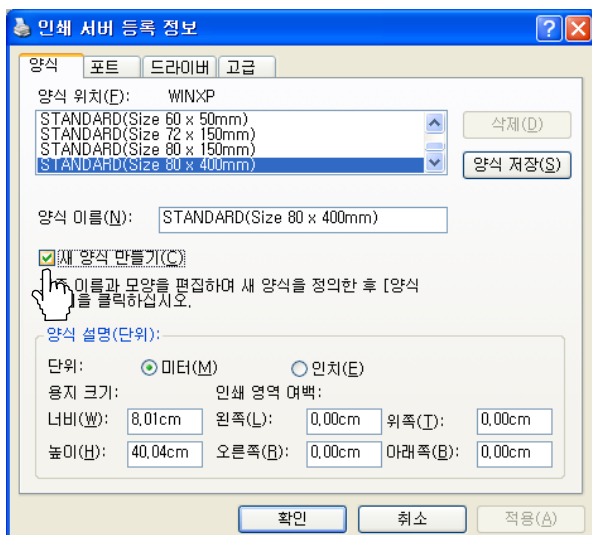
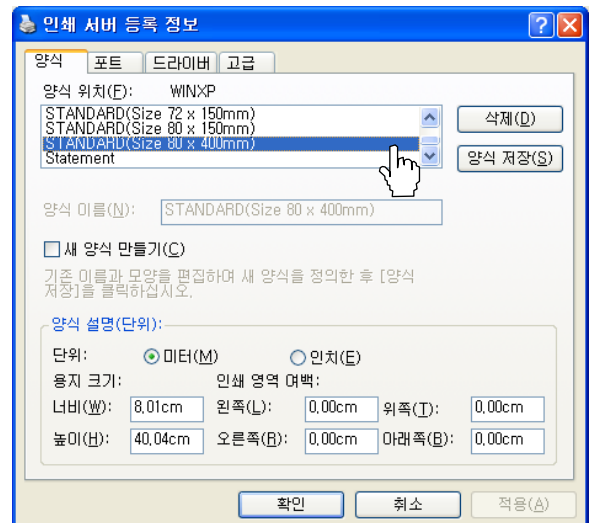
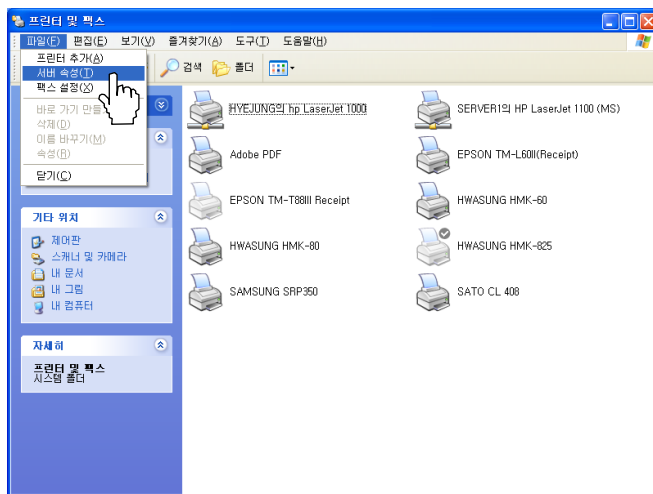
You can use the custom user paper size.

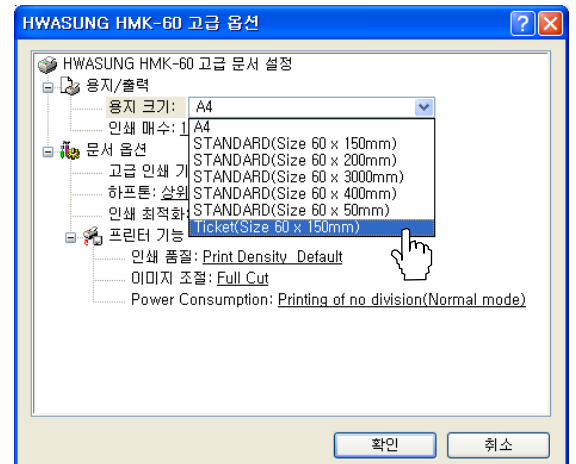
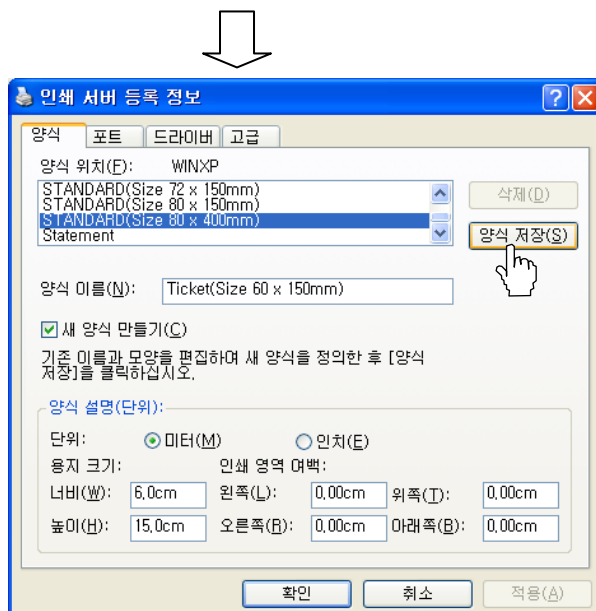
Below is the example of making 60mm x 150mm sized paper.

- 1) Open the Printer and Fax Screen, then click on the server property under File Menu.
- 2) Select the STANDARD(Size 80 x 400mm) from Form Location.
- 3) Check the "Create New Form" box.
- 4) Click the paper size field and input 6.0cm (W), 15.0cm(H).

Make sure to make no changes in the print area margin.

- 5) Save the form after creating a custom name for the size. (i.e, Ticket(Size 60 x 150mm)).
- 6) Go to Basic Print Setting -> Advance then Select the newly created Ticket(Size 60 x 150mm)





## 7. USB (User Interface)

Without using the Windows driver, you are able to check the printer status, and transmit / receive the data, by using USB Interface DLL (HwaUSB.DLL) and OCX driver (HwaUSB.OCX).

### 7-1) DLL Interface

Place the HwaUSB.DLL into the System32 folder or SysWow64 folder depending on your Operating System's bit version.

#### 7-1-1) DLL (Functions)

1) long UsbOpen(LPCTSTR SelPrinter);

Open the USB port to Printer Model "HMK-081".

- Parameters:  
SelPrinter : Printer Model Name
- Return :  
Open Normal: 0  
Open Error: -3(negative)

2) long PrintStr(LPCTSTR data);

Prints String.

- Parameters:  
data : String data
- Return :  
Print Normal : 1  
Print Error : 0

※ To prevent the loss of data for the print timeout, please use the function 'NewRealRead' to check the status, and go to the next step, when it's normal.

3) long PrintCmd(unsigned char data);

Prints 1 byte of data. When printing big data spool, use the following PrintPacket Value to increase the transfer Speed.

- Parameters:  
data : 1 byte data (0~255)
- Return :  
Print Normal : 1  
Print Error : 0

4) long NewRealRead(void);


Reads 1 byte of print status data using USB port.

- Parameters:  
None
- Return :  
Read Normal : Print Status Value  
Read Error : -1(Negative)

5) long PrintPacket(unsigned char \*PacketBuf, unsigned long PacketLength);

The sending data buffer outputs a USB port for the specified data length.

- Parameters:

	Title	Rev.	Page
	HP-500	Ver1.0	P.51

PacketBuf : TransmitDataBuffer Pointer

PacketLength : Transmit data length (not to exceed up to 64 bytes)

■ Return :

Normal Output : 1

Output Error : 0

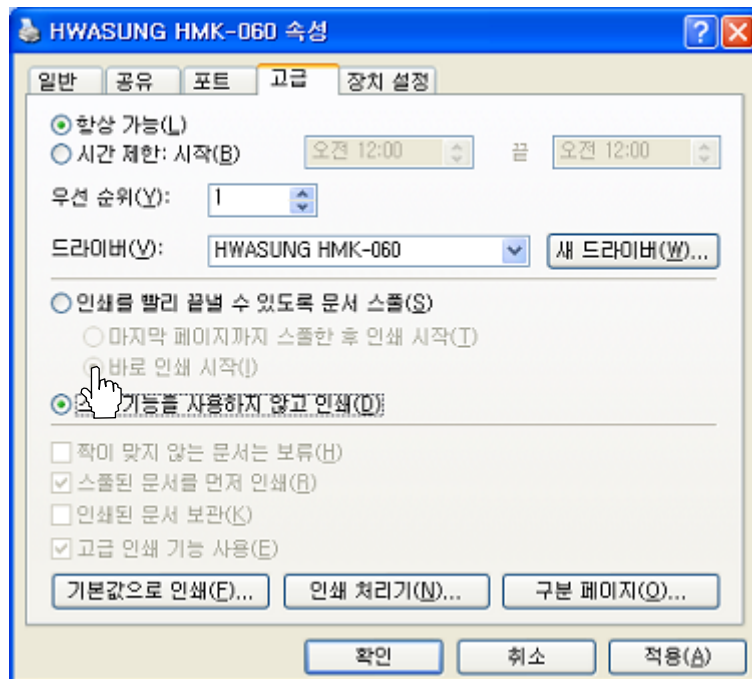
※ Do not use functions other than those listed above as they are for debug.

※ For more information, download the sample program from our website.

## 7-2) Cautionary Points when using the USB interface

When transmitting jointly with Windows driver with the USB interface, there are cases of data transmission does not complete in order due to the mixed signal from the windows driver data and the USB interface data. In this case, set it to 'without using Printer SpoolFunction' under the printer's property.

There won't be an error during the receiving because it would only work through USB interface when receiving.



## ※ Windows Application Data Flow Chart

