

# Technical Manual

HMK(P)-825(U), HMC-825  
Release 2



<b>HWASUNG</b> POS.KIOSK PRINTER	Title	Rev.	Page
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## CAUTION



- Please do not disassemble / reorganize the product.
- Please do not the remove the paper jam during power on.
- Pleased 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.



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

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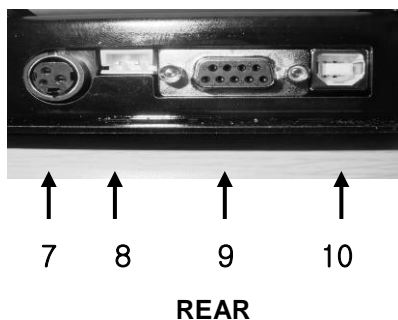
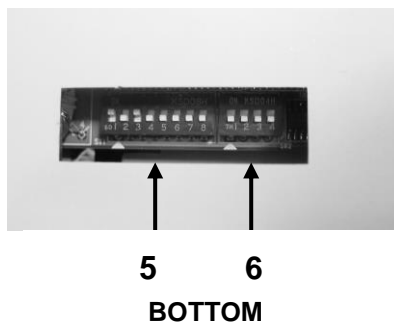
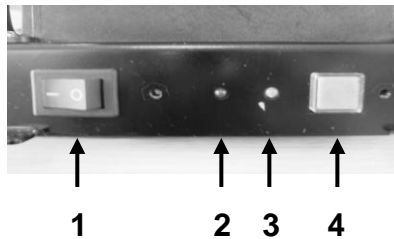
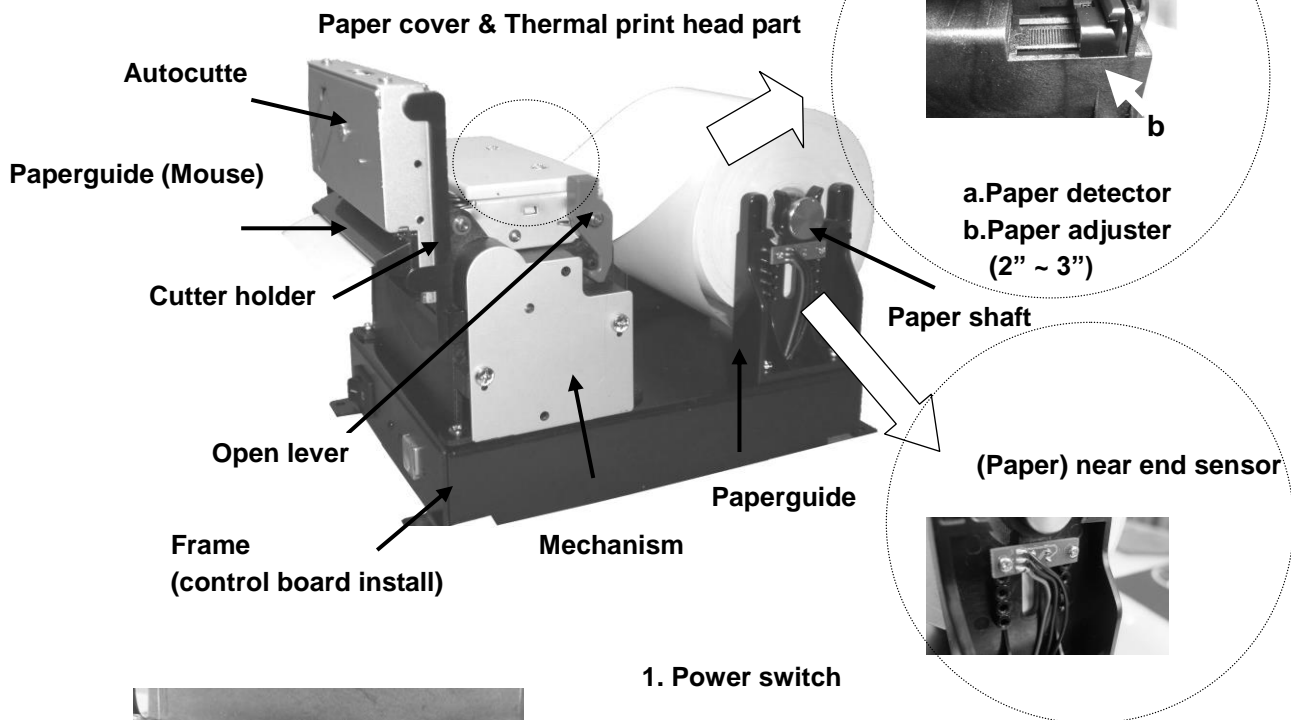
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## 1. Printer Features & External dimension

1-1) Name of each parts



1. Power switch

2. Error LED

3. Power LED

4. Feed switch

5. Dip switch 1

6. Dip switch 2

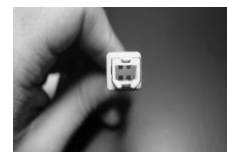
7. DC Jack (24VDC)

9. Interface connector (serial, female 9 pin)

10. Interface connector (USB, Type B)

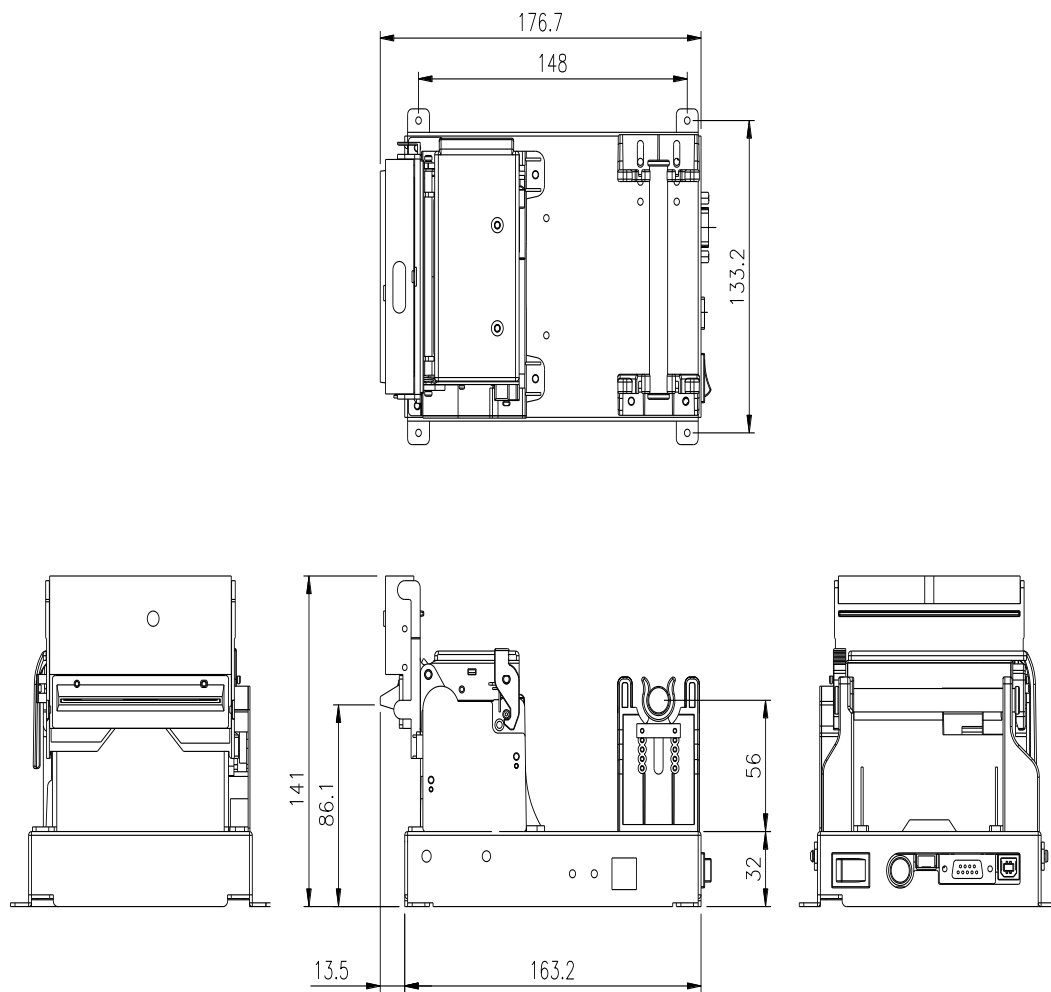


**PC**



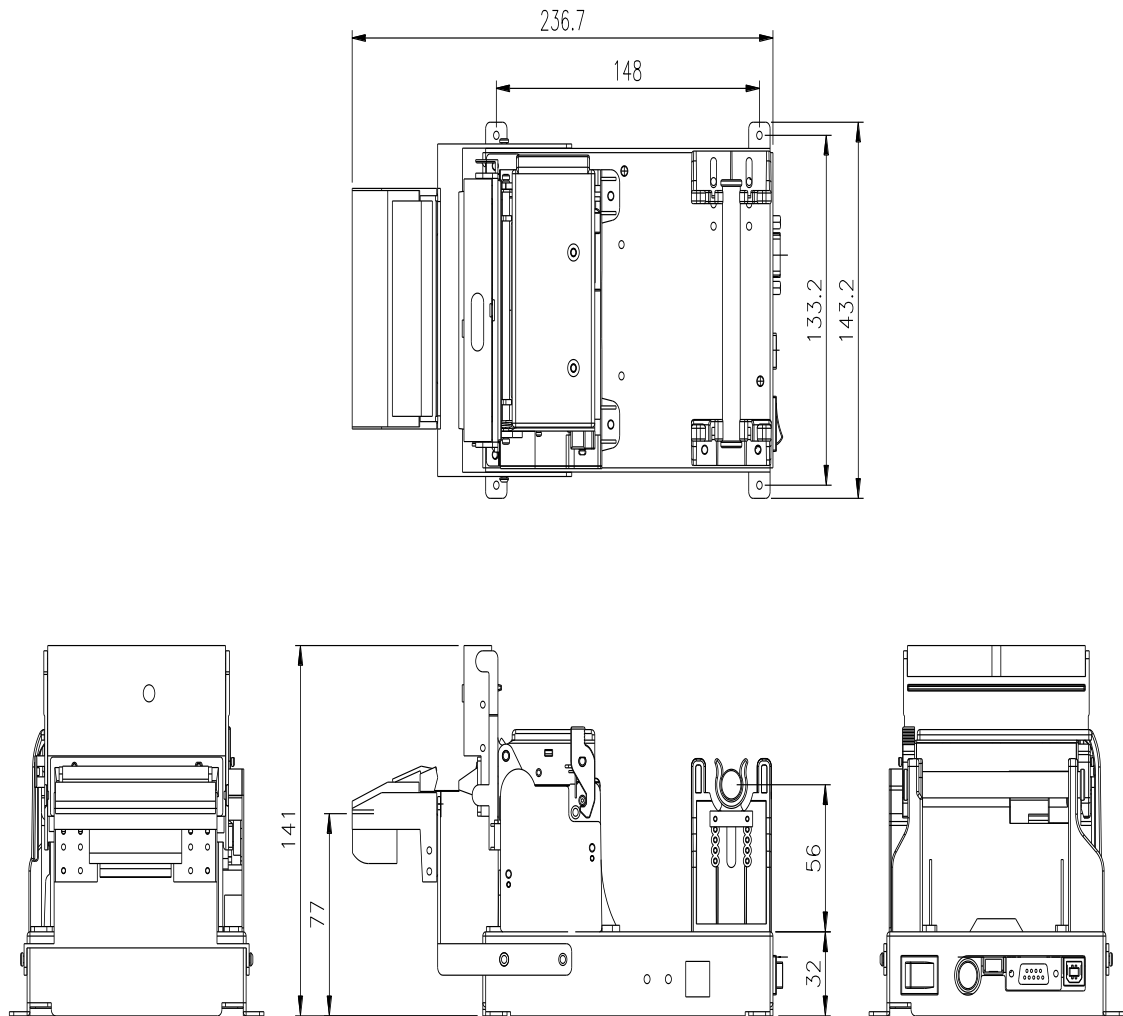
**PRINTER**

## 1-2) Dimension



**[HMK-825 TYPE]**

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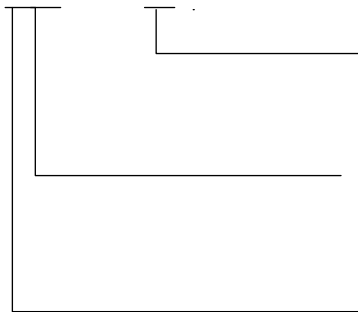


## [ HMKP-825 RETRACTOR TYPE ]

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### 1-3) Model Number

**HM□□-825□**



※ Interface

(blank) : RS-232C USB combo

U : USB combo

※ Presenter

(blank) : Standard type.

P : Presenter type.

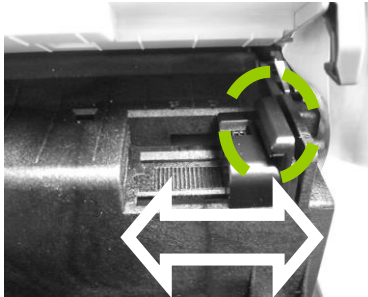
※ Frame

K : Frame type.

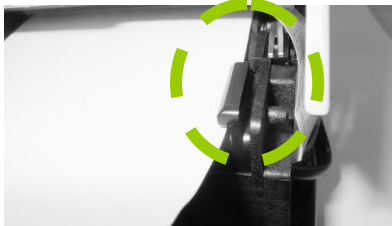
C : Board type.

## 2. Operation

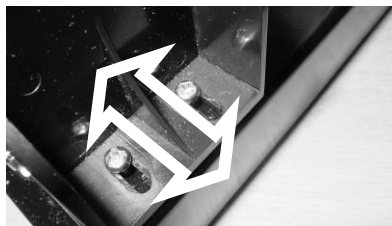
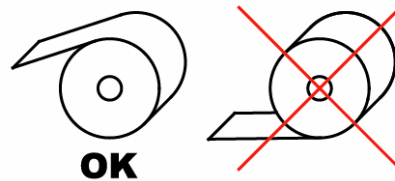
### 2-1) Setting a paper roll



\* It's the device (which) control the paper width (2~3").



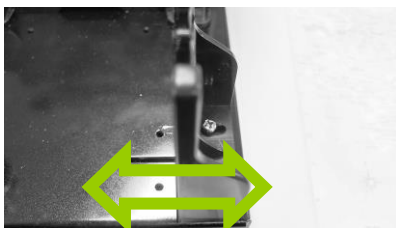
1. Please set the paper at the device as image left.



2. Please control the screw to set the paper width.

\* If the screw is fixed hard, it can't move left & right.

\* If the screw is fixed soft, it can move left & right.



3. Please control the paper width after the screw is fixed soft.

\* If the screw is fixed hard, it can't move left & right.

\* If the screw is fixed soft, it can move left & right.



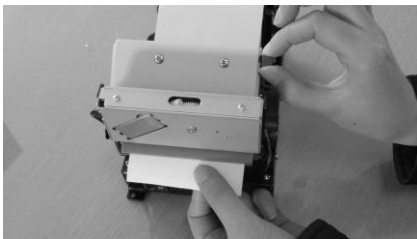
## 2-2) Replacing a paper roll

You can replace the paper in two types such as 'Clam shell' and 'Auto loading'.

### 2-2-1) Clam shell



1. Please feed out the remains.



2. Please open the cover with the violet lever.



3. Please open the cover and insert the paper,close the cover.



The paper set in the paper adjuster.

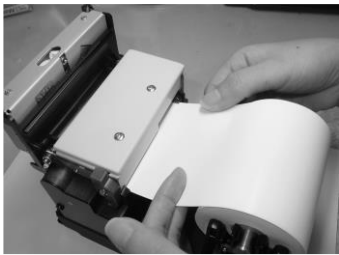


4. Please press the feedbutton,  
so that it check the paper printing as normal.

\* If the paper doesn't come out,  
please try to follow the step again (number 3).

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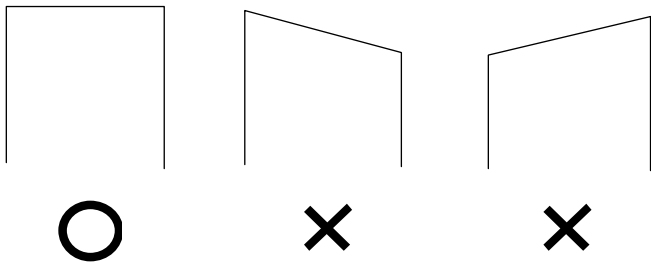
2-2-2) Auto Loading



It has the function of Auto loading.  
The paper can be insert without opening  
the paper cover.

- \* Please power on.
- \* Please use the adjuster to set the paper.
- \* Please Insert the paper as deep as you can.

!!! It's normal when you hear the motor sound.



※ If a printer is the Presenter type, before replacing the paper,  
Please remove the Strip in the printer mouse

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### 2-3) Removing a paper jam

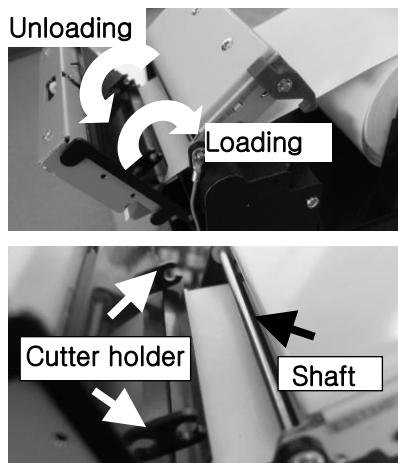
Please follow the steps as below, once it is a paper jam.

1. Please open the cover, and remove the paper jam.  
Please remember that the power should be off.

**Do not use a sharp tool. Because it can make a damage to the printer as Roller.**



- If there is the remains at the cutter, please open the cutter as first image.  
And please return the second image as below.



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## 2-4) Self-test

Please power on when the feed switch press down.  
Then you see the details as below.

```
*****
HMC-825 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
=====

Peripheral & Setting Information
=====
USB Status  : B
```

- Model Number
- Firmware version / create date.
- Interface.
- Dip switch.
- Sample.

Dip switch : Please refer the dip switch at 2-8) dipswitch.

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## 2-5) HEX Dump

Please power on after the dip switch 8 (up) of 1.  
Then it prints all data in hex character (16 antilogarithm),  
after [Hex Dump Mode] prints out as '[Printing sample]'.

It could know the printer status. It will be useful for the application development.

- It prints out if it receive twelve digits.
- If it receives less than twelve digits, it will be printed if you press down feed button.
- Control code ( 1F16 below) prints out as “.”.
- 8016 more prints out as “^”.

[Printing sample]

16 antilogarithm	ASCII
[HEX DUMP MODE]	
41 42 43 44 45 46 47 47 49 4A 4B 4C	A B C D E F G H I J K L
30 31 32 33 34 35 36 37 38 39 1B 4A	0 1 2 3 4 5 6 7 8 9
FF 1B 69	^ . i

## 2-6) Update (on Board)

Please conduct the updates, after refering the following steps.

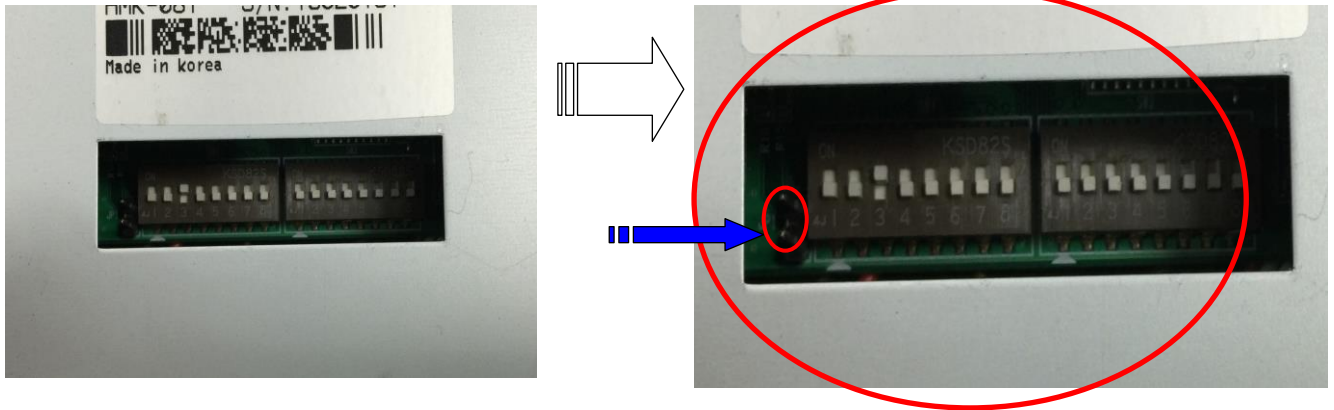
- 1) Please turn on power switch off and on(Do not need to control Dip Switch.
- 2) Please check the connection between the printer and the data cable.  
\* You can save the time to set up, if you use USB Cable.
- 3) Please conduct the given program, and Set up the model name with Interface port, then updating  
If the error LED is turned off and is lighted on slightly after 4 seconds, then the updated is being started.  
\* Please do not switch off the printer power.
- 4) The updated will be finished after the update indicates complete.  
\* If the error LED keeps the light goes in and out, it's error.  
Please stop the update program and check the cable and others.  
Please return the process "1." and follow the step again.
- 5) After updating completes, Automatically the printer will be ready to use  
As Reset.

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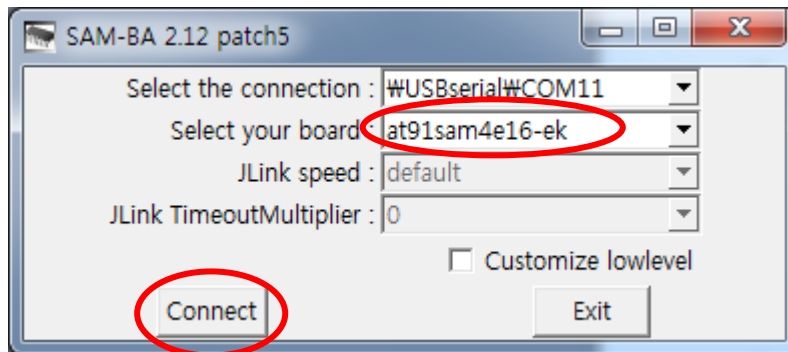
## 2-7) Rebooting Firmware

\* If the firmware was an error or damaged, not reset, please recover the firmware as following.

- 1) Check for the jumper which is beside Dip Switch on the bottom of printer
- 2) By using Pin Header(2.5mm), Connect between both of Pins



- 3) Connect the cable to printer, then turn on the power of printer
- 4) Using the provided Booting Program and setting the interface port.  
Then, Select board -> at91sam4e16-ek and click "Connect"  
(RS-232 and USBport Possible only, However, the cable is only one to connect)  
(If using the USB port, Save the time to set up)



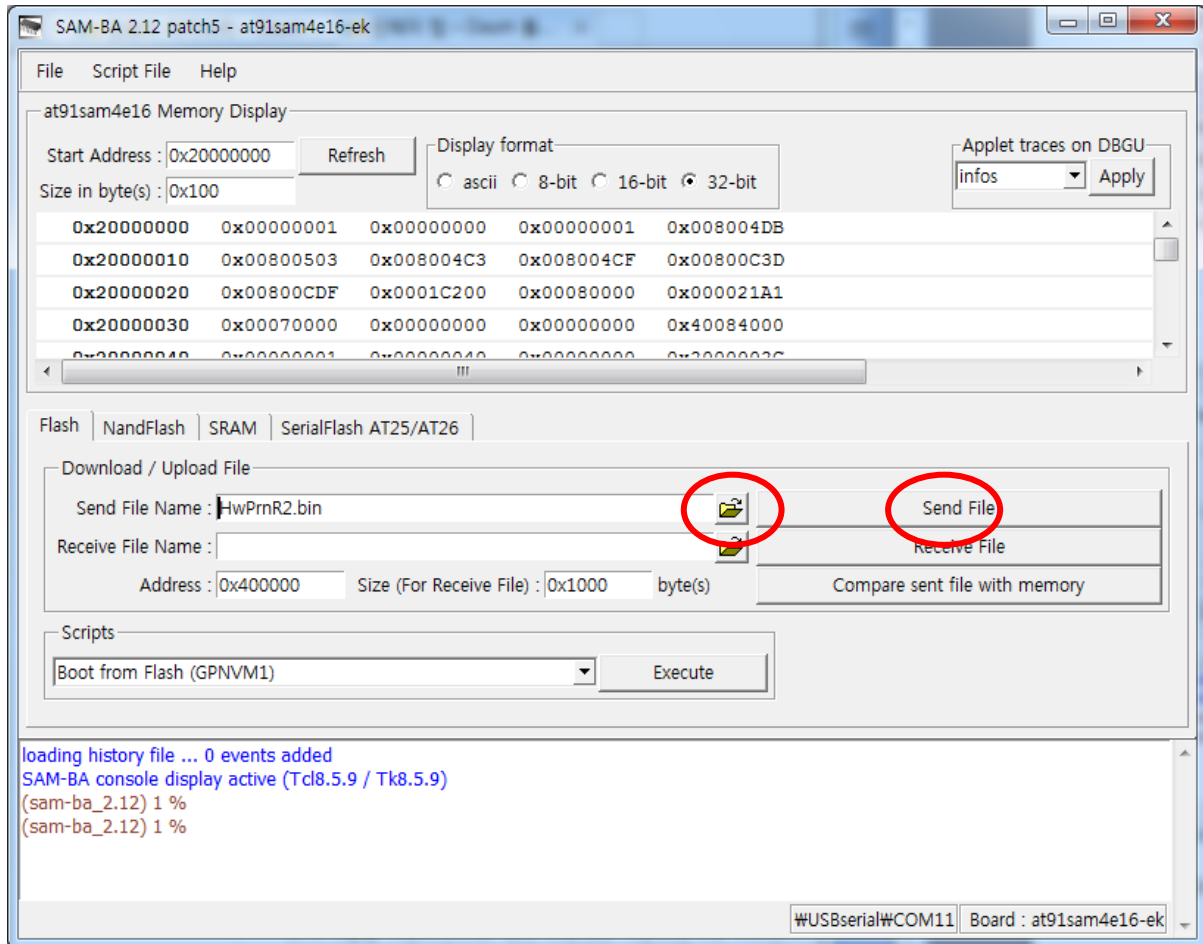
- 5) After rebooting, Please remove JP2(Jumper Pins)

\* If pass this step, it would not be rebooted after recover the firmware.

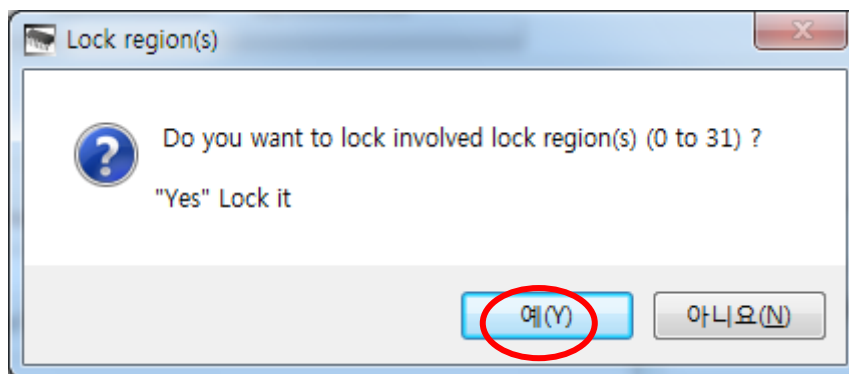
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- 6) Click the “ ICON “ in the Send file Name then after open the firmware file for Target model,  
Then, Click “Send File Button”

\*Notice : Do not revise the Parameter value.



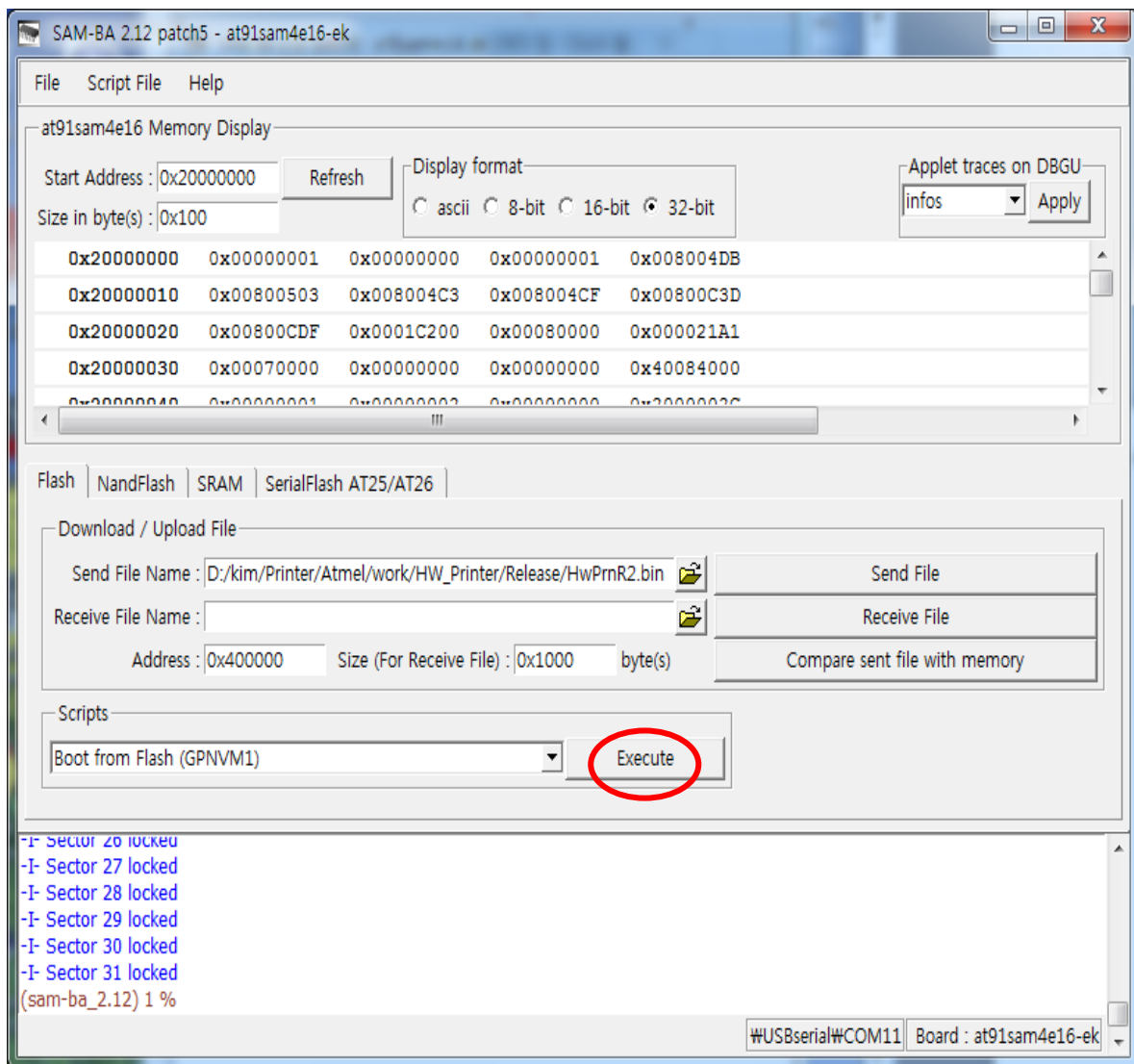
- 7) After the file is complete to transfer, Click “Yes “



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8) Click “Excute” button, after checking for stting up “Boot from Flash(GPNVM1) in Scripts.



9) To re-operate printer, Tune off and on

## 2-8) Dip switch

Please control the dip switch between the printer & the host for the protocol condition.

There are 1 and 2 of dip switch.

### 1) Dip switch 1

a) 1,2,3 : Baud rate

SW1	SW2	SW3	Baud Rate(BPS)
OFF	OFF	OFF	1200
ON	OFF	OFF	2400
OFF	ON	OFF	4800
ON	ON	OFF	9600
OFF	OFF	ON	19200
ON	OFF	ON	38400
OFF	ON	ON	57600
ON	ON	ON	115200

b) 4 : Paper Option

SW4	Paper withd
ON	60mm
OFF	80mm

c) 5,6 : Paraity

SW5	SW6	Paraity
OFF	-	None
ON	OFF	Even
ON	ON	Odd

d) 7 : Operation Mode Option

SW7	Operation Mode
OFF	Standard Mode
ON	Ticket Mode

e) 8 : Print Mode

SW8	Print Mode
ON	HEX DUMP Mode
OFF	NORMAL Mode

## 2) Dip Switch 2

### a) 1: DLE Command

SW1	DLE Command
ON	DLE Command on
OFF	DLE Command off

### b) 2 :

SW2	Black Mark valid / invalid	Description
ON	Black Mark valid	The initial set with black mark detection once power on.
OFF	Black Mark invalid	The initial set without black mark detection once power on.

\* When you use the valid,  
Please remember that you have to use the paper (included blackmark sensor).

\* Please remember that the paper you use should be same with the registered information,  
because the memory switch is working on the registered information.

\* Please refer the article 2-8).

### c) 3 :

SW3	First Page Mode	Description
ON	First Page No Cut	The first page remains to set the initial page.
OFF	First Page Cut	The first page doesn't remain to set the initial page.

\* Please remember that the paper you use should be same with the registered information,  
because the memory switch is working on the registered information.

\* Please refer the article 2-8).

### d) 4 : Label Mode (※ Only for Label Usage.)

SW4	Calibration	Description
ON	Calibration Mode	Automatically setting Label Paper
OFF	Standard Mode	Standard print mode

### e) 5 :

SW5	Label Operation Mode	Description
ON	Calibration Value Mode	Operating by Calibration Value.
OFF	Standard Value Mode	Operating by Firmware Standard Value

f) 6 :

SW6	Sensor Mode	Decription
ON	Transparent Sensor	When using Label Paper, Choose.
OFF	Reflection Sensor	When using Black Mark, Choose.

※ Transparent Sensor is optional.

※ If the printer has a reflaction sensor, when set up Transparent sensor mode in the printer, the black mark sensing will not be working.

g) 7 :

SW6	Reserved	Decription
ON	-	-
OFF	-	-

h) 8 : Printer Mode

SW8	Update/ Print	Decription
ON	Update Mode	Firmware Update Mode
OFF	Print Mode	Standard Print Mode

## 2-9) Memory Switch

Please set the function of internal memory.

- ※ Please use the given program - 'memory switch setting utility program'.
- ※ The value is not deleted until the next value is changed, even though power off.

Memory SW	Value
SW1	p or m
SW2	0~1200 or 0~136
SW3	248-4000
SW4	Reservation
SW5	Reservation
SW6	Reservation
SW7	Reservation
SW8	Reservation
SW9	Reservation

1) SW1 :

- \* p(70<sub>16</sub>) : After command the cutting DC3 + "i", it will be cut from the black mark starting point to the value in the SW2 (plus) as the image below.
- \* m(6D<sub>16</sub>) : After command the cutting DC3 + "i", it will be cut from the black mark starting point to the value in the SW2 (minus) as the image below.

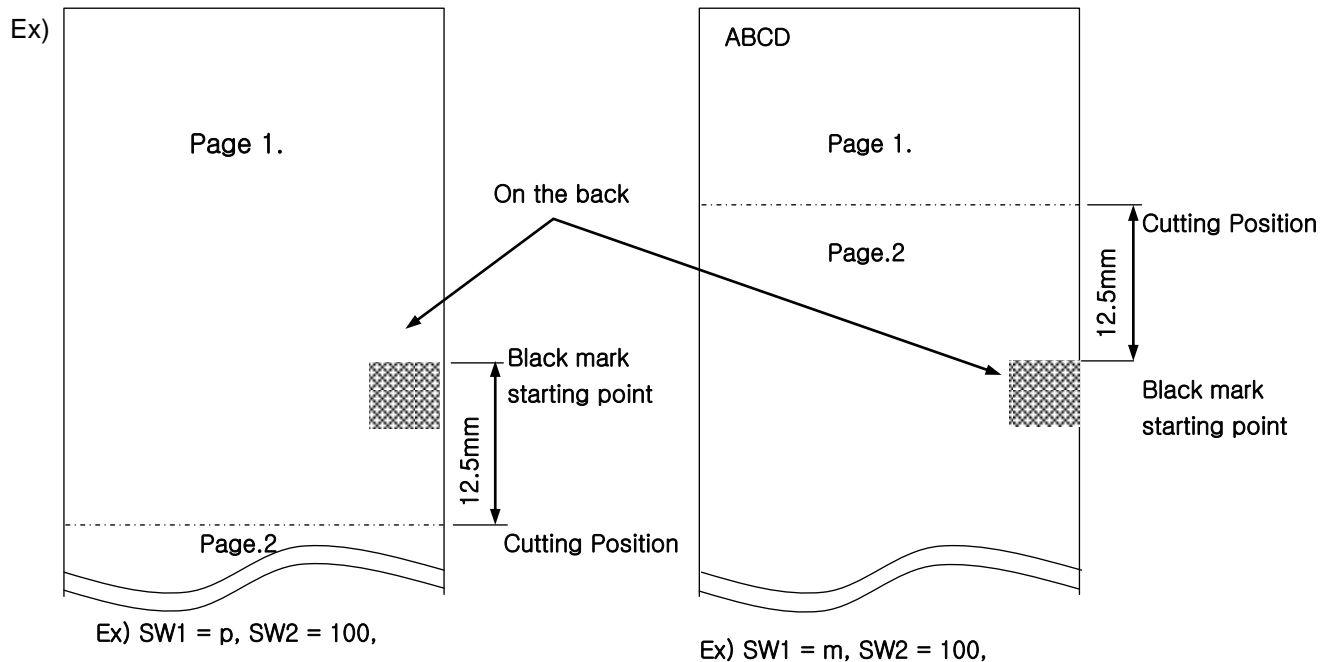
2) SW2 : The distance from the black mark starting point to the cutting position

\* SW1 / p : You can set the value as 0~1200(0 ~ 150mm).

\* SW1 / m : You can set the value as 0~136(0 ~ 17mm).

※ A value point indicates 0.125mm ex) In case of 100,  $100 \times 0.125 = 12.5\text{mm}$

※ SW1,SW2 is used to set the cutting option (Black mark search as Full) at the Window Driver (Window driver : DC3 + "i")



### 3) SW3 :

To set the distance between ticket starting point & black mark starting point

The switch is used the first page remains to set the initial page.

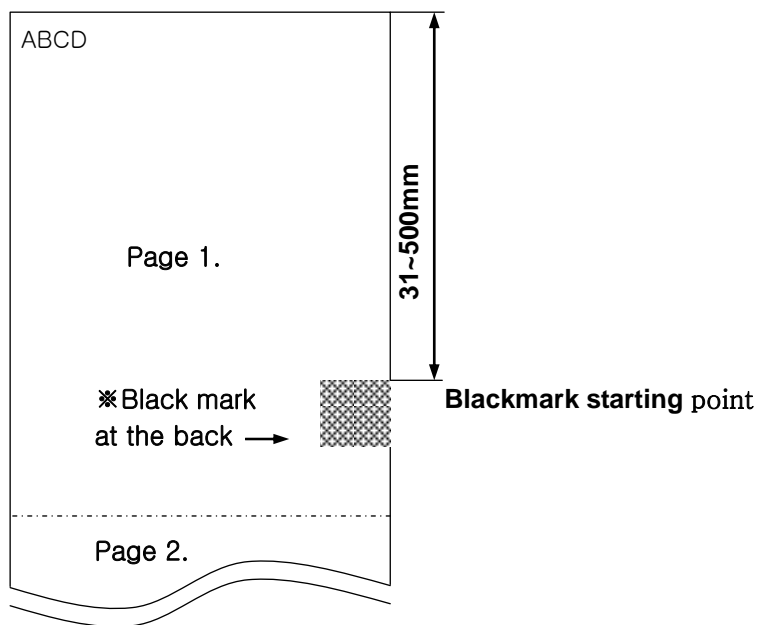
You can use the switch at the range of 248~4000(31~500mm).

\* The value '1' means 0.125mm.

For example )  $300 \times 0.125\text{mm} = 37.5\text{mm}$

\* The value is set 248 (31mm) when the printer releases at the factory.

For example)



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## 2-10) Internal connector

- 1) CN1 : AC adapter plug (AC00093-12-03,TECHWIN)

Pin	Decript.
1	+24V
2	GND
3	N.C

- 2) CN2 : DC connector (YAW396-02,Yeonho)

Pin	Decript.
1	+24V
2	GND

- 3) CN3 : Power switch connector (YAW396-02,Yeonho)

Pin	Descript.	Remark
1	+24V	+24V output
2	+24V	+24V input

- 4) CN4 : Mechanism connector (SMW200-32C,Yeonho)

Pin	Descript	Remark	Pin	Descript	Remark
1	+24V	+24V	17	SI2	TPH Serial Input
2	GND	GND	18	TH	Thermoster
3	+24V	+24V	19	+24V	+24V
4	GND	GND	20	GND	GND
5	+24V	+24V	21	CUT_A	Cutter Control A
6	GND	GND	22	CUT_B	Cutter Control B
7	+24V	+24V	23	HM_SW	Cutter Home Switch
8	GND	GND	24	Paper_A	Paper sensor power
9	N.C		25	Paper_C	Paper sensor output
10	N.C		26	HD_UP	Cover open
11	/LATCH	TPH Latch	27	A	Motor A
12	VDD	+5V	28	B	Motor B
13	/STROBE1	TPH STROBE1	29	/A	Motor /A
14	/STROBE2	TPH STROBE2	30	/B	Motor /B
15	CLOCK	TPH CLOCK	31	MARK_A	Black mark sensor power
16	N.C		32	MARK_C	Black mark sensor output

- 5) CN5 : Extensive connector (GW200-07,Geoyong or 53014-0710,Molex)

Pin	Descript.	Remark
1	NEAR C	NEAR END detection
2	FEED IN	FEED switch input
3	NEAR_A	Near end sensor power (220Ω)
4	ERROR LED	ERROR LED output (680Ω)
5	N.C	-
6	GND	GND
7	VDD	Logic power (+5V)

※ Please connect Cathode at the pin 4 once ERROR LED fixes,  
Please connect Anode at the VDD(+5V) once ERROR LED fixes.

- 6) CN6 : USB connector (Type B)

Pin	Descript.	Remark
1	VBUS	VBUS input
2	D-	Data-
3	D+	Data+
4	GND	Signal GND
5	FG1	Frame GND1
6	FG2	Frame GND2

- 7) CN7 : RS232C (DSUB9, FEMALE)

Pin	Descript.	Remark
1	N.C	-
2	TxD	-
3	RxD	-
4	N.C	-
5	GND	-
6	DTR	-
7	CTS	-
8	RTS	-
9	N.C	-

- 8) CN8 : Sub-connector (GW200-03,Geoyoung or 53014-0310,Molex)

Pin	Descript.	Remark
1	A	Sensor power
2	C	Sensor output
3	GND	GND



## 2-11) Retractor (dispensor)

It is to prevent the paper jam from the user blocking the printing.

It is a device is pulling back the paper,once printed, UNLESS the printed paper is taken in time.

### 2-11-1) Operation

- 1) The printing is same with the function 'presenter' which is discharging the paper out all at once, after it printed.
- 2) The printing comes from the gate, once you direct the command the cutting, after it printed.

### 2-10-2) Activation vs Deactivation – paper collection

- 1) The paper could be collected, unless it is taken in time.
- 2) The paper could not be collected, unless you direct the command.
- 3) You can deactivate the function retractor, you can activate the function retractor,

※ Please refer to the command of retractor (dispensor).

※ Please make a space, or basket at the place where the printing is collected,so that the collected paper avoid the block.

### 2-11-3) Attention

- 1) You're not able to cut the paper partially. You're only able to full cut the paper.
- 2) Please use the length of paper which is printing as 30cm, when you print a paper a time.
- 3) Please do not use the length of paper which is printing less than 6cm.
- 4) We recommend the paper width 72mm-82.50mm.

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### 3. General specification

#### 3-1) Specification

- 1) Printing method : Thermal line printer
- 2) Resolution : 8dot/mm, 203dpi, 1dot=0.125mm
- 3) Total dots : 640dot/line
- 4) Printing speed : 200mm/sec,max (24V, 25℃)
- 5) Paper width : 60.5 and 82.50mm, max \* Thickness : 65~110 $\mu$ m
- 6) Heating resistance : 800 $\Omega$ ±3%

#### 3-2)Font

- 1) Numerical value : FONT A(12 x 24) 95 fonts, FONT B(8 x 16)95 fonts
- 2) Extended Graphic : FONT A(12 x 24) 128 fonts, FONT B(8 x 16)95 fonts
- 3) International : 14types 37fonts  
(Korean,English,France,Germany,England,Denmark1,Swden,Italy,  
Spain1,Japan,Norway,Denmark2,Spain2,Latin America)
- 4) Korean : FONT C Korean (24x24, Symbols and Chines Characters)  
(Times New Roman, Gothic, Bodoni of one choice)  
: FONT D Japanese (24x24)  
: FONT E Chinese (24x24)
- 5) International Font (CodePage) :  
PC437(US),KANA(JAPAN),GREEK,Windows1251,PC866(Cyllic #2),  
Windows1250(Poland),PC850((Multilingual),PC860(Portugal),  
Windows1252, PC864(ARAB)

#### 3-3) Power

Supply voltage	24V±10%	Motor, TPH
Logic voltage	5V±5%	Paper sensor, TPH control,Sensor for TPH

#### 3-4) Paper loading capacity

320 gf·cm more

#### 3-5) Weight

About 1.3kgs (HMK-825)

#### 3-6) Operation condition (temp./humid)

- 1) Temperature : 0 ~ 40℃
  - 2) Humidity : 40 ~ 80%RH (non frost)
- ※ The printing is subject to operation condition.

#### 3-7) Storage condition (temp./humid)

- 1) Temperature : -25 ~ 40℃
- 2) Humidity : 40 ~ 90%RH (non frost)

#### 3-8) MCBF

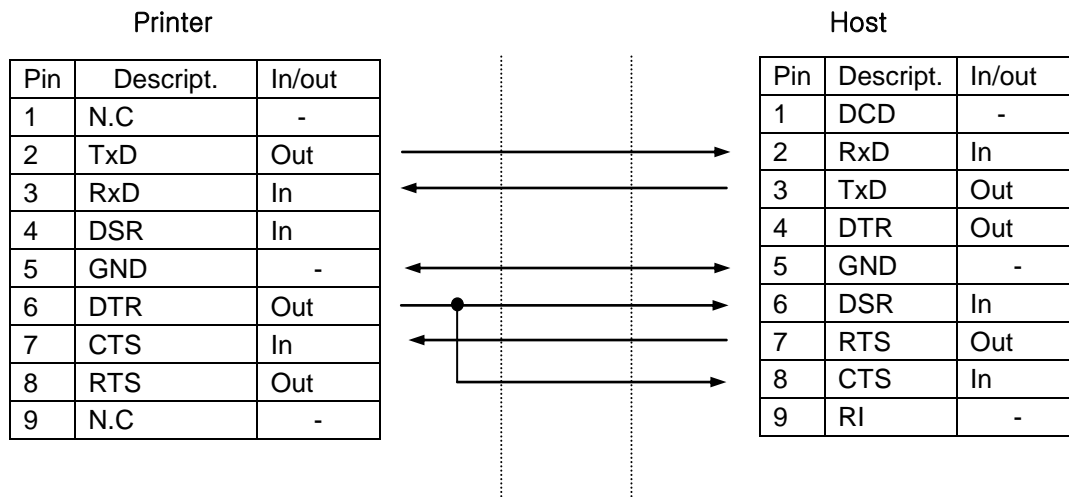
- 1) Thermal head : 100Km(100 million pulse)
- 2) Auto cutter : 1,000,000 cutting

<b>HWASUNG</b> POS.KIOSK PRINTER	Title	Rev.	Page
	HMK-825,HMC-825, HMKP-825	Ver2.0	P.25/70

## 4. Interface specification

### 4-1) RS232

- 1) Data transmission : Serial
- 2) Hand shake : Hardware (RTS/CTS 또는 DTR/DSR )
- 3) Baud Rate : 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 BPS
- 4) Data bit : 7, 8 bit
- 5) Parity : None, Odd, Even
- 6) Stop bit : 1, 2 bit
- 7) Connector : DSUB-9 Female
- 8) Cable : DSUB9(Male)-DSUB9(Female) straight (1:1) cable



### 4-2) USB

- 1) Spec : USB 2.0, Full Speed(12Mb) & High Speed(480Mb).
- 2) Connector : Type B
- 3) Cable : USB2.0 Standard
- 4) Transmission : 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)
  - High Speed : Max Packet Size 512 Byte(Bulk OUT), 512 Byte(Bulk IN)

※ Full Speed, High Speed mode is automatically set with host communication.

## 5. Command List

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## CR

[Name]	Print and carriage return	
[Format]	ASCII	CR
	Hex	0Dh
	Decimal	13
[Range]	-	
[Descript]	Equal LF	

## LF

[Name]	Print and line feed	
[Format]	ASCII	LF
	Hex	0Ah
	Decimal	10
[Range]	-	
[Descript]	① STANDARD MODE:	
	After printing the data and go to return according as the fixed data.	
	② PAGE MODE:	
[Caution]	The fixed data can be only conduted, according as the fixed data.	
	The LF is ignored behind of CR	

## CAN

[Name]	Cancel print data in page mode	
[Format]	ASCII	CAN
	Hex	18h
	Decimal	24
[Range]	-	
[Dsecirpt]	The print data will be deleted in print area	

## HT

[Name]	Horizontal tab	
[Format]	ASCII	HT
	Hex	09h
	Decimal	9
[Range]	-	
[Descript]	Moves the print position to the next tab poission	
[Caution]	Horizontal tab position are to set in ESC+'D'+n.	

**FF**

[Name]	Print and return to standard mode and page mode	
[Format]	ASCII	FF
	Hex	0Ch
	Decimal	12
[Range]	-	
[Descript]	Print the data in the print buffer and returns to standard mode	
[Caution]	Use ESC+FF once standard mode not to return	

**SUB+'x'+n**

[Name]	Extension Graphic Mode, Korean Mode			
[Format]	ASCII	SUB	x	n
	Hex	1A	78h	n
	Decimal	26	120	n
[Range]	0≤n≤1			
[Initial Value]	n=0			
[Descript]	n=0 : Korean Mode, First code is A1h more, automatically transfer Korean in 2 bytes			
	n=1 : Extension Graphic Mode, Every code is setting in 1 byte Extension Graphic font will be printed			

**SUB+'p'+n**

[Name]	Off line printing in paper detection			
[Format]	ASCII	SUB	p	n
	Hex	1A	70h	n
	Decimal	26	112	n
[Range]	0≤n≤1			
[Initial Value]	n=1			
[Descript]	n=0 : Not transition to offline once paper empty (data communication available)			
	n=1 : Transition to offline once paper empty (data communication not available)			

**SUB+'b'+n**

[Name]	Black mark detection			
[Format]	ASCII	SUB	b	n
	Hex	1A	62h	n
	Decimal	26	98	n
[Range]	0≤n≤3			
[Descript]	n=0 : the feeding in easy flow direction till black mark is out.			
	n=1 : the feeding in easy flow direction till black mark is detected.			
	n=2 : the feeding in reverse direction till black mark is out.			
	n=3 : the feeding in reverse directoin till black mark is detected.			
[Caution]	the feeding range is restricted in 30Cm. Once the detection distance is over in 30Cm, it could be jammed.			

**SUB+'R'+n**

[Name]	Set the character outline			
[Format]	ASCII	SUB	b	n
	Hex	1A	52h	n
	Decimal	26	82	n
[Range]	0≤n≤1			
[Descript]	n=0 : cancel outline (border) of character in tetragon			
	n=1 : Set outline (border) of charcater in tetragon			
[Caution]	the horizontal extension is valid as extended as eight times			
	the vertical extension is valid as extended as two times			

**SUB+'s'+n**

[Name]	Set the printing speed			
[Format]	ASCII	SUB	s	n
	Hex	1A	73h	n
	Decimal	26	82	n
[Range]	1≤n≤10			
[Initial Value]	n=10			
[Descipt]	n=1 :	Printing Speed 70mm/s	n=8 :	Printing Speed 140mm/s
	n=2 :	Printing Speed 80mm/s.	n=9 :	Printing Speed 150mm/s
	n=3 :	Printing Speed 90mm/s	n=10 :	Printing Speed 160mm/s
	n=4 :	Printing Speed 100mm/s	n=11 :	Printing Speed 170mm/s
	n=5 :	Printing Speed 110mm/s	n=12 :	Printing Speed 180mm/s
	n=6 :	Printing Speed 120mm/s	n=13 :	Printing Speed 190mm/s
	n=7 :	Printing Speed 130mm/s	n=14 :	Printing Speed 200mm/s
	n=15 :	Printing Speed 210mm/s	n=16 :	Printing Speed 220mm/s
	n=17 :	Printing Speed 230mm/s	n=18 :	Printing Speed 240mm/s
	n=19 :	Printing Speed 250mm/s		

[Caution] Control command density once the low speed makes printing density (be) unclear



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

[Name] Set the horizontal position

[Format] ASCII ESC D n1...nk NUL  
 Hex 1B 44h n1...nk 00  
 Decimal 27 68 n1...nk 0

[Range]  $1 \leq n \leq 255, 0 \leq k \leq 32$

[Descript] Set the horizontal tab position

[Caution] n : Indicating the figures from the start poistion of line to set position  
 K : indicating the total tabs per line

**ESC+SP+n**

[Name] Set the space amount on the right of ASCII character

[Format] ASCII ESC SP n  
 Hex 1B 20h n  
 Decimal 27 32 n

[Range]  $0 \leq n \leq 255$

[Initial Value] n=0

[Descript] Set in n x 0.125mm the space amount on the right of ASCII character

[Caution] Set the Korean space in FS+'S'+n

**ESC+'!' +n**

[Name] -

[Format] ASCII ESC ! n  
 Hex 1B 21h n  
 Decimal 27 33 n

[Range]  $0 \leq n \leq 255$

[Initial Value] n=0

[Descript] Set font & character in the same time

[Caution] If the character is Korean, it will be only for font and Stress.

Bit	Format	Hex	Decimal
0	0: Font 12x24, 24x24	00h	0
	1: Font 8x16, 16x16	01h	1
1	-	-	-
2	-	-	-
3	0: Cancel the stress	00h	0
	1: Set the stress	08h	8
4	0: Cancel the extension in Vertical	00h	0
	1: Set the extension in Vertical	10h	16
5	0: Cancel the extension in Horizontal	00h	0
	1: Set the extension in Horizontal	20h	32
6	-	-	-
7	0: Cancel the underline	00h	0
	1: Set the underline	80h	128

## ESC+'\$'+nL+nH

[Name]	Set absolute poision				
[Format]	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				
[Descript]					

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.

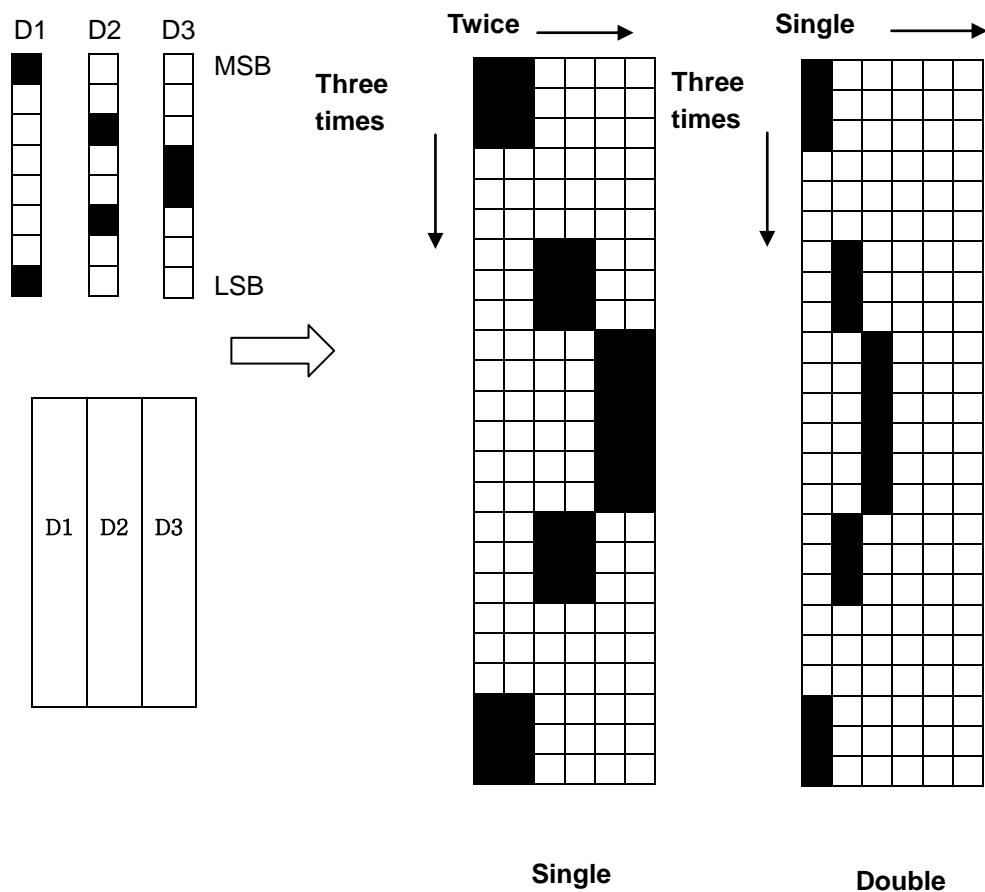
ESC+'\*'+m+nL+nH+d1+...+dk

[Name] Set the bitmap image  
 [Format] 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  
 $1 \leq nL + nH \times 256 \leq 1023$ ,  $0 \leq nL \leq 255$ ,  $0 \leq nH \leq 3$ ,  $0 \leq d \leq 255$

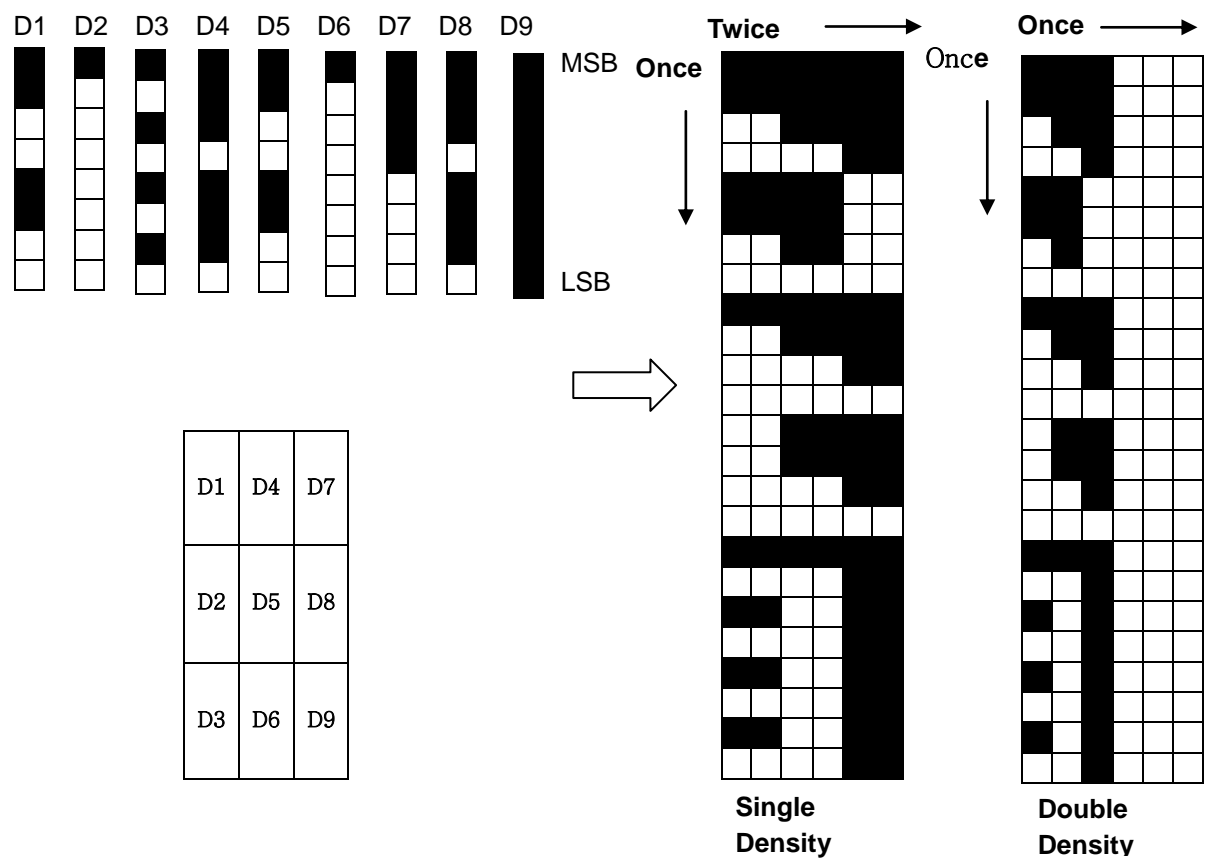
[Descrpt] Due to fixing  $nL + nH \times 256$ , Printing from bit data to graphic data in Mode m

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

#### •8 dots Mode



•24 dots Mode



ESC+'-' +n

[Name]	Set / Cancel underline			
[Format]	ASCII	ESC	-	n
	Hex	1B	2Dh	n
	Decimal	27	45	n
[Range]	0≤n≤255,			
[Initial Value]	n=0,			
[Descript]	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 interval of initial line		
[Format]	ASCII	ESC	2
	Hex	1B	32h
	Decimal	27	50
[Range]	0≤n≤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≤n≤255,			
[Initial Value]	n=0			
[Descript]	Set the interval of line in n x 0.125mm			

**ESC+'@'**

[Name]	Rest printer		
[Format]	ASCII	ESC	@
	Hex	1B	40h
	Decimal	27	64
[Range]	0≤n≤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≤n≤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≤n≤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≤n≤255			
[Descript]	Printing the data inner buffer, feeding in n x 0.125mm			

**ESC+'j'+n**

[Name]	Back Feeding			
[Format]	ASCII	ESC	j	n
	Hex	1B	6Ah	n
	Decimal	27	106	n
[Range]	0≤n≤255			
[Descript]	Printing the data inner buffer and back feeding in n x 0.125mm			

**ESC+'M'+n**

[Name]	Select font			
[Format]	ASCII	ESC	M	n
	Hex	1B	4Dh	n
	Decimal	27	77	n
[Range]	0≤n≤255			
[Initial Value]	n=0			
[Descript]	Select the printer font.			

**Notice** : If it's the large font 56x88, you are able to enlarge the font – the width up to twice / the height up to twice. And others, you are able to enlarge the fonts – the width up to eightfold font / the height up to eightfold font.

n			
Upper 4 bits (2 bytes font)		Lower 4 bits (ASCII, 1 byte font)	
0000	Korean 24x24	0000	12x24
0001	Not available.	0001	8x16
0010	Japanese 24x24 (OEM font)	0010	56x88 Large fonts, 0-9 only numbers.

\* 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 octuple

**ESC+'R'+n**

[Name] Select the International fonts  
 [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 fonts as follows:-

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]  $0 \leq n \leq 255$   
[Descript] Printing the date & feeding 'n' line

## ESC+'{' +n

[Name] Turning 180°  
[Format] ASCII ESC d n  
Hex 1B 7Bh n  
Decimal 27 123 n  
[Range]  $0 \leq n \leq 255$   
[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+'i'

[Name] Full Cutting  
[Format] ASCII ESC i  
Hex 1B 69h  
Decimal 27 105  
[Descript] Cutting the paper completely

## ESC+'m'

[Name] Partial Cutting  
[Format] ASCII ESC i  
Hex 1B 6Dh  
Decimal 27 109  
[Descript] Cutting the paper partially



**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 Koean

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

**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]  $0 \leq n1 \leq 255, 0 \leq n2 \leq 255$

[Initial Value] n=0

[Descript] Set the space between Korean characters  
 Set the left space in  $n1 \times 0.125\text{mm}$   
 Set the right space in  $n2 \times 0.125\text{mm}$

**FS+'W'+n**

[Name] Set the font size in Korean

[Format] ASCII FS W n  
 Hex 1C 57h n  
 Decimal 28 87 n

[Range]  $0 \leq n1 \leq 255$

[Initial Value] n=0

[Descript] Set the Korean font size twice (HorizontalxVertical) in Korean  
 n=0, Cancel the font size double.  
 n=1, Set the font size double.

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

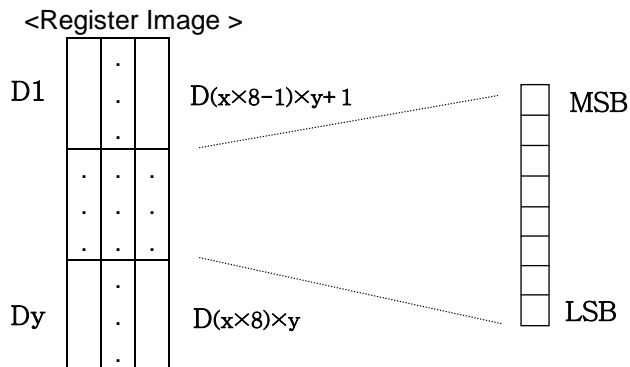
[Name] Register logo (bitmap image) non volatilization

[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  
Decimal 28 113 n (xL xH yL yH d1..dk)1...(xL xH yL yH d1..dk)n

[Range]  $1 \leq n \leq 255$   
 $0 \leq xL + xH \times 256 \leq 65535$  ( $0 \leq xL \leq 255$ ,  $0 \leq xH \leq 255$ )  
 $0 \leq yL + yH \times 256 \leq 65535$  ( $0 \leq yL \leq 255$ ,  $0 \leq yH \leq 255$ )  
 $0 \leq d \leq 255$   
 $k = (xL + xH \times 256) \times (yL + yH \times 256) \times 8$ , Capable register : 64kbytes

[Descript.] Register the logo non-volatilization  
n : Total unit of N/V logo  
xL,xH : Set the horizontal dot in  $(xL + xH \times 256) \times 8$   
yL,yH : Set the vertical dot in  $(xL + xH \times 256) \times 8$   
k : Bitmap image of a N/V logo

[Caution] Register various as much as NV's capa.  
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



FS+'p'+n+m

[Name] Printing N/ V logo

[Format] ASCII FS p n m  
Hex 1C 70h n m  
Decimal 28 112 n m

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

[Initial Value] n=0

[Descript.] m : printing the registered N/V in 'm' mode  
n : indicating the regisitered logo in the 'n'.

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

**GS+'!' +n**

[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] Caculate the numeric value if vertical & horizontal is extended in the same time

ex.) x3 (Horizontal Rate), x3(Vertical Rate) :  $n=32+2=34$

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  
 $0 \leq m \leq 5$ ,  $251 \leq m \leq 255$   
 [Initial Value] m=0  
 [Descript] Set the printing density

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

**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≤2							
[Initial Value]	m=0							
[Descript]	Set the operation of partial thermal head							
[Caution]	This function is effective in case of power capacity is short.							
	The Second division of electric current (ampere) will be half than first division.							

m	Partial operation
0	Initial setting (first division)
1	First Division
2	Second Division

**GS+'B'+n**

[Name]	Reverse printing in black			
[Format]	ASCII	GS	B	n
	Hex	1D	42h	n
	Decimal	29	66	n
[Range]	0≤n≤255			
[Initial Value]	n=0			
[Descript]	Reverse printing in black			
	n=0, standard printing			
	n=1, reverse printing in black			

**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≤n≤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+'V'+m**

[Name] Select cut mode and cut paper

[Format] ASCII GS V m  
Hex 1D 56h m  
Decimal 29 86 m

[Range]  $0 \leq m \leq 1$

[Initial Value]  $m=0$

[Descript] Select a mode for cutting paper

m	Function
0	Full Cutting
1	Partial Cutting

**GS+'W'+nL+nH**

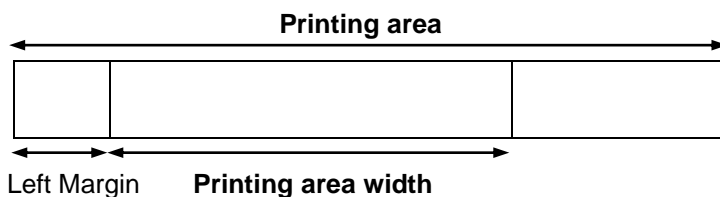
[Name] Set printing area width

[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 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 characteres 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, set additional "{" in 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

**Notice** : Also, you have to add the following initial code, when you start CODE A, CODE B, CODE C. It is to recognize CODE128.

CODE128	Initial code	For example, the barcode data ABCD.
CODE A	g	"gABCD"
CODE B	h	"hABCD"
CODE C	i	"iABCD"

## GS+'w'+n

[Name] Set the vertical size of barcode  
[Format] ASCII GS w n  
Hex 1D 77h n  
Decimal 29 119 n  
[Range]  $1 \leq n \leq 4$   
[Initial Value] n=2  
[Descript.] Set the vertical 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,  
The command is executed when the data in receive buffer is developed  
Therefore automatic status function (GS+'a'+n) is to use better,  
It is used for re-confirm in on-line after automatic status is received



[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

<Status transmission data >

Bit	Satus	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 jamm 1 : Paper with jamm	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 (jamm) 1 : Cutter error (jamm)	00h 20h	0 32
6	0 : Paper invalid Presenter printed 1 : Paper valid Presenter printed	00h 40h	0 64
7	0 : Paper invalid at sub sensor 1 : Paper valid at sub sensor	00h 80h	0 128

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

**ESC+'S'**

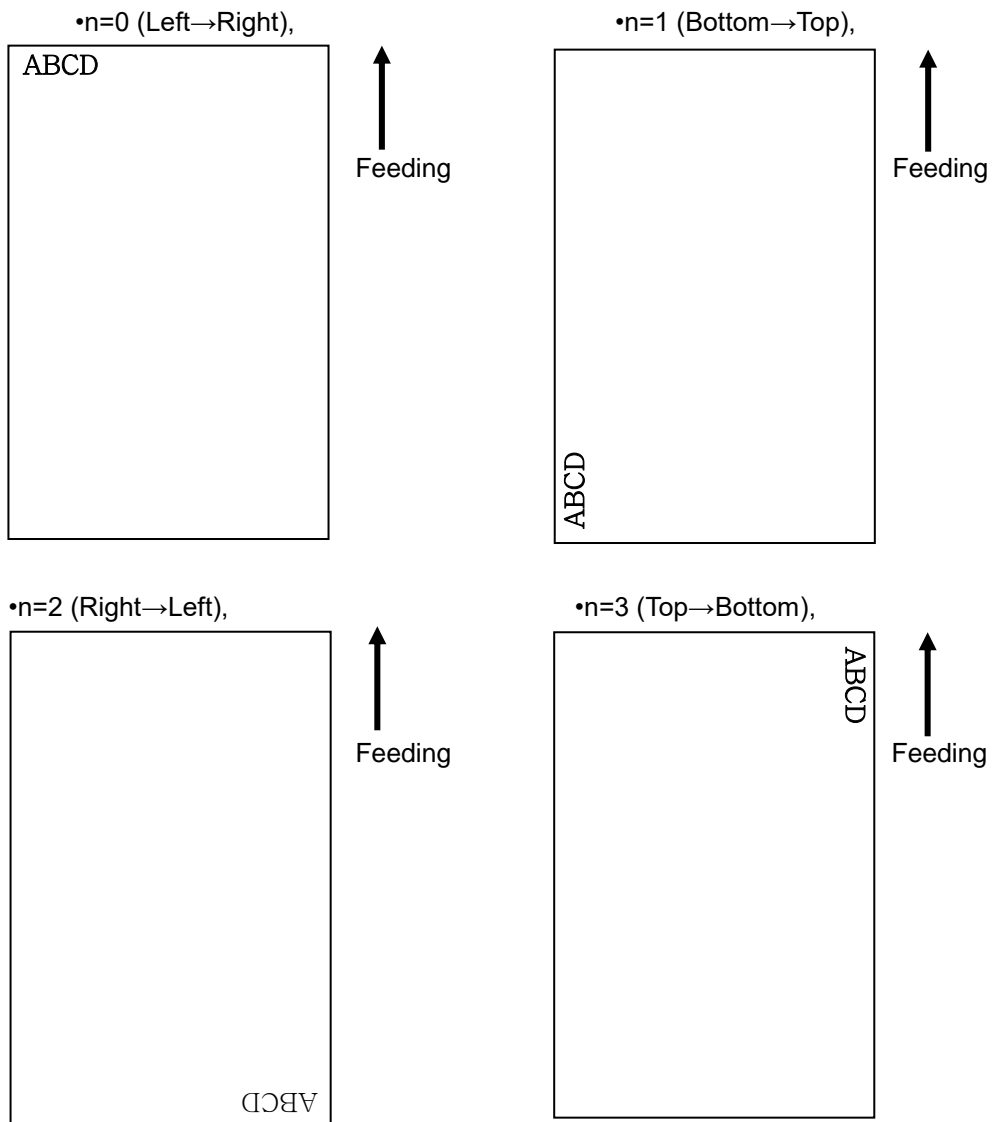
[Name]	Set the Standard mode		
[Format]	ASCII	ESC	S
	Hex	1B	53h
	Decimal	27	83
[Descript]	Switches from page mode to standard mode		

**ESC+'L'**

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

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			



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

[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]

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

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

$1 \leq dxL + dxH \times 256 \leq 65535$  ( $0 \leq dxL \leq 255$ ,  $0 \leq dxH \leq 255$ )

$1 \leq dyL + dyH \times 256 \leq 65535$  ( $0 \leq dyL \leq 255$ ,  $0 \leq dyH \leq 255$ )

[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,  $dyL = B0h$ ,  $dyH = 04h$ )

[Descript]

Set printing area & starting point

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

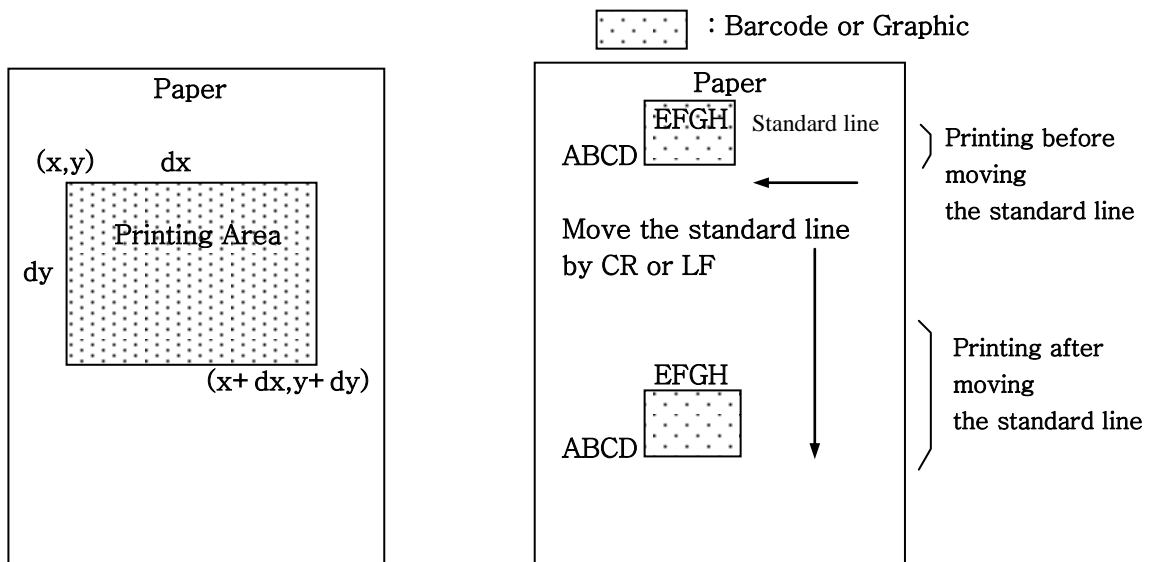
[Caution]

The maximum 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.



## ESC+FF

[Name]	Printing the page area.		
[Format]	ASCII	ESC	FF
	Hex	1Bh	0Ch
	Decimal	27	12
[Description]	It prints the page area all at once.		
[Caution]	Please use the command ESC+S to clear the data, Because the data is not deleted, after it printed.		

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## DLE+ENQ+n

[Name]	Realtime request the printer to be clear each buffer			
[Format]	ASCII	DLE	ENQ	n
	Hex	10h	05h	n
	Decimal	16	5	n
[Range]	n=2,3			
[Descript]	n=2 : Clear each buffer of the printer in realtime.			
	n=3 : Printer reset compulsory			
	It will be reset compulsory without printer status, such as error, buffer.			

## Esc+@ (Standard rest) :

It will not be operated until the buffer data will be remained in the printer.

[Caution]	This command is only effective when DIP SW1 is on at the SECOND SWITCH.			
	This command is excuted when the printer is offline.			
	If the command is received same data, it could be same operation			
	(Bit image data,etc)			

## DLE+EOT+n

[Name]	Realtime status transmission			
[Format]	ASCII	DLE	EOT	n
	Hex	10h	04h	n
	Decimal	16	4	n
[Range]	n=2			
[Descript]	The printer transmits the current data.			
	Each status item is represented by one-byte data			
[Caution]	This command is only effective if DIP SW1 is on.			
	Pls refer the status at the table, page 42.			
	If the command is received same data, it could be same operation			
	(Bit image data,etc)			

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

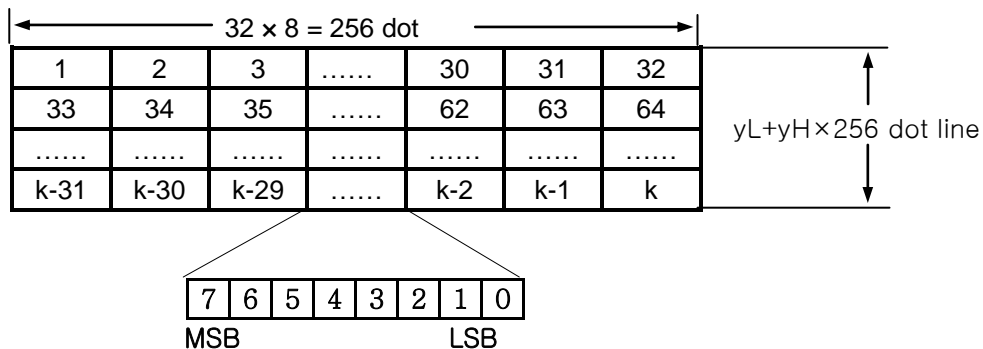
[Descript] The laster bit image will be recognized in mode m.  
xL,xH appoint the data (byte) of horizontal at image data.  
yL,yH appoint the dta (dot line) of vertical at image data.

\* d is a data for laster bit.

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,



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

[Name]	Barcode of two dimension						
[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 the table below.

[Descript] Please choose the barcode by the data of barcode.

n1 : two dimension of barcode  
n2 : the number of data of barcode  
n3 : size of barcode  
d1... dk : the data of barcode

n1	Barcode
1	PDF417
2	QR code

### 1) PDF417

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

n3	Size of data
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 data
1	Version 1
3	Version 3
5	Version 5
9	Version 9

※ Vertical is set automatically.

## SUB+'z'+n1+n2

[Name]	Buzzer setting				
[Format]	ASCII	SUB	z	n1	n2
	Hex	1A	7Ah	n1	n2
	Decimal	26	122	n1	n2
[Range]	$0 \leq n1 \leq 50$ or $0 \leq n2 \leq 50$ ,				
[Descript]	Bueezer length set as 100msec(0.1sec) (Max 5sec)				
	n1=0 (It's silent.) n1= the time length of Buzzer ON				
	n2= The time length of Buzzer OFF				

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### DC3+'i'

[Name] Cutting after it detects the black mark.

[Format]      ASCII          DC3      i  
Hex            13      69h  
Decimal        19      105

[Descript]    - The value is not deleted until the next value is changed, even though power off.  
If you register the information at SW1,SW2, the black mark detects automatically,  
Then it cuts the registered points.  
- Please use the given program - 'memory switch setting utility program'.

### SUB+'t'+n

[Name] Retractor - automatic collection time & valid / invalid

[Format]      ASCII                  SUB      t      n  
Hex                          1A      74h      n  
Decimal                      26      116      n

[Range]         $0 \leq n \leq 255$

[Initial]        n=10( It means it will be collected 10 seconds later.)

[Descript]      The collection time fixes according to the second time.  
The automatic collection will be invalid, once n is 0 (zero).

### SUB+'r'

[Name] Retractor – manual collection

[Format]      ASCII                  SUB      r  
Hex                          1A      72h  
Decimal                      26      114

[Descript]      It collects the printed paper.  
It doesn't collect the paper automatically.  
It is to collect the paper, when the user want the collection.

### SUB+'1'

[Name] Line 1 (Vertical, Horizontal)

[Format]      ASCII      SUB      1  
Hex          1A          31h  
Decimal 26          49

[Descript]      It chooses the line 1 of vertical, horizontal.

### SUB+'2'

[Name] Line 2 (Vertical, Horizontal)

[Format]      ASCII                  SUB      1  
Hex                          1A      32h  
Decimal                      26      50

[Descript]      It chooses the line 2 of vertical, horizontal.

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

[Name]	Write (Vertical, Horizontal)						
[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]	You can write 1 from nL+nH×256 to kL+kH×256.						
[Caution]	The range will be ignored, if the range is over.						
	The data will not be deleted, till you command the data to clear, or power off.						

**SUB+'C'**

[Name]	Clear (Vertical, Horizontal)		
[Format]	ASCII	SUB	C
	Hex	1A	43h
	Decimal	26	67
[Range]	The all of line will be clear as 0 (zero).		
[Caution]	Please direct ON/OFF to speed up the process.		
	It is to write again the data of line.		

**SUB+'O'**

[Name]	ON (Vertical, Horizontal)		
[Format]	ASCII	SUB	O
	Hex	1A	4Fh
	Decimal	26	79
[Descript]	It writes the character together.		

**SUB+'F'**

[Name]	OFF (Vertical, Horizontal)		
[Format]	ASCII	SUB	F
	Hex	1A	46h
	Decimal	26	70
[Descript]	The line will be invalid, and the data reserved.		

**SUB+'P'**

[Name]	Print one dot line (Vertical, Horizontal)		
[Format]	ASCII	SUB	P
	Hex	1A	50h
	Decimal	26	80
[Descript]	Print one dot line (Vertical, Horizontal)		
[Caution]	Please do not use the command, when you print the character, and the image.		
	Please use the command ON.		
	Please use this command, when you print the line at the space.		

**ESC+'t'+n**

[Name] International code page  
[Format] ASCII ESC t n  
Hex 1B 74h n  
Decimal 27 116 n  
[Range]  $0 \leq n \leq 8$   
[Initial] n=0  
[Descript] Please refer to the code page below.

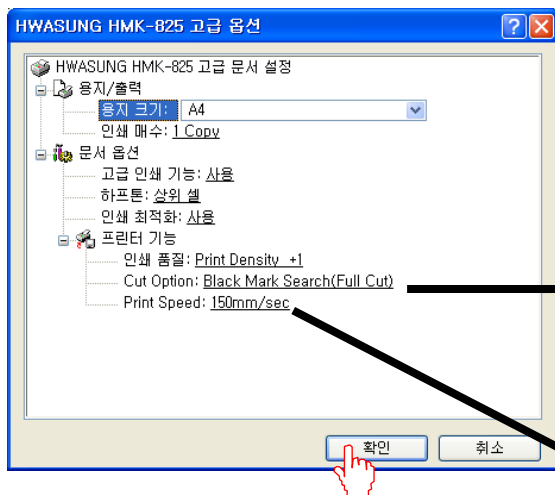
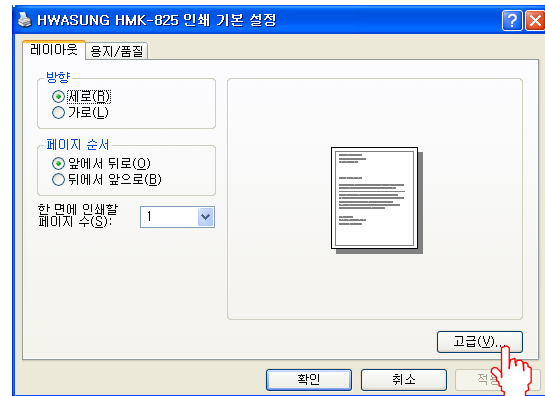
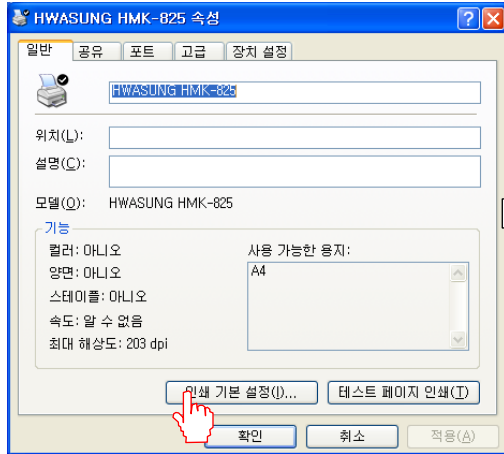
n	Code Page	n	Code Page
0	PC437(USA)	5	Windows1250(Poland)
1	KANA(JAPAN)	6	PC850(Multilingual)
2	Greece	7	PC860(Portuguese)
3	WPC1251	8	WPC1252
4	PC866(Cyrllic #2,Russian)	9	Iran System Encoding Standard

**[Caution]** 1 byte will be valid, if it's SUB + x, or FS+." 2 bytes will NOT be valid.

## 6. Widows Driver

### 6-1) Setting


- 1) Please open the screen of printer / fax, and click the basic setting (I) of the general tap.
- 2) Please click the button



- \* No Cut : No cutting & Printing.
- \* Full Cut : Full cutting after printing.
- \* Partial Cut : Partial cutting after printing.
- \* Black Mark Search (Full Cut) :  
The cutting position from the black mark will be set by the memory switch.

※ The quality of printing will be different, because it prints out as graphic. So pls try to print out as below.

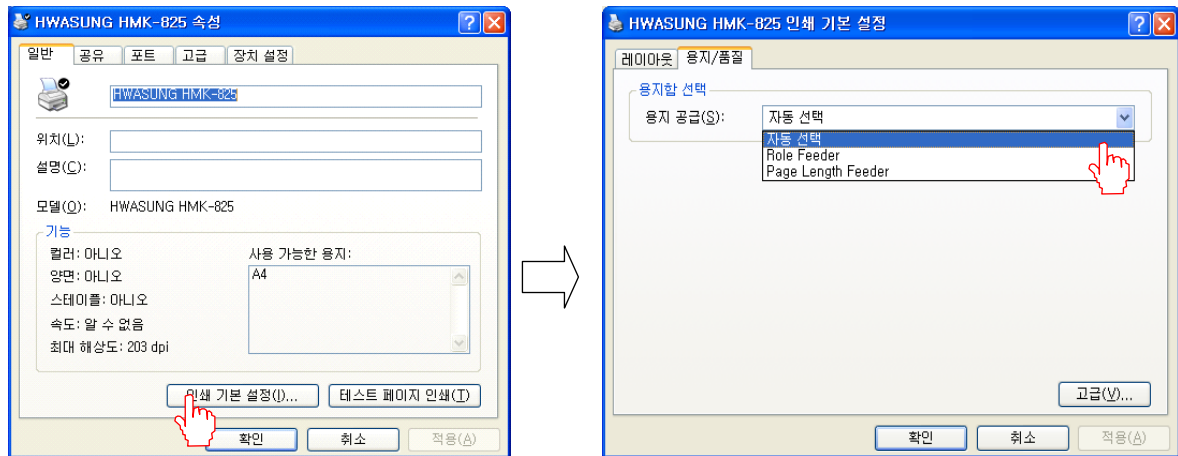
Printing width : 60mm -> Speed 150mm  
80mm -> Speed 130mm

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## 6-2) Paper feeding

Please set the form feeding after printing.

- 1) Please click the basic setting (I) of the general tap.
- 2) Please click the tap of paper /quality, and drop down paper providing.



- 3) Auto & Role Feeder : After printing, The form feeding is not conducted any more. Please set if the printing length is not regular.

자동선택 및 Role Feeder : 인쇄 후, 설정된 페이지 길이에 상관없이 인쇄가 끝나면 Form Feeding을 실행하지 않습니다. 인쇄길이가 일정하지 않을 때 이 설정으로 합니다.

이하와 같이 Visual Basic에서 공백을 지정해도 Feeding이 실행되지 않으므로 FontSize를 작게하여 “.”을 프린트하여 Dummy form feeding으로 Cutting위치를 조정하십시오.


Example)

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

```
Printer.Print " " & vbLf
Printer.Print " " & vbLf
Printer.Print " " & vbLf
```

```
Printer.FontSize = 2
Printer.Print "." ' dummy print for form feeding
Printer.EndDoc
```

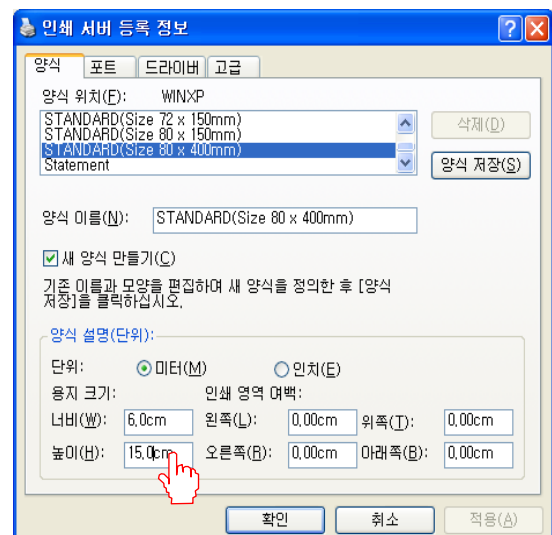
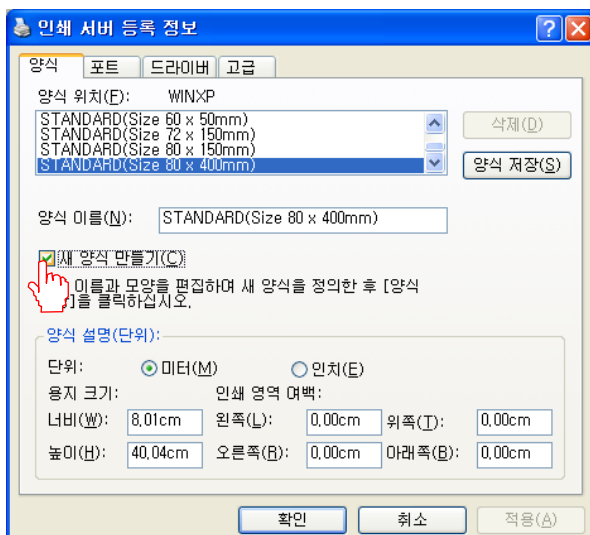
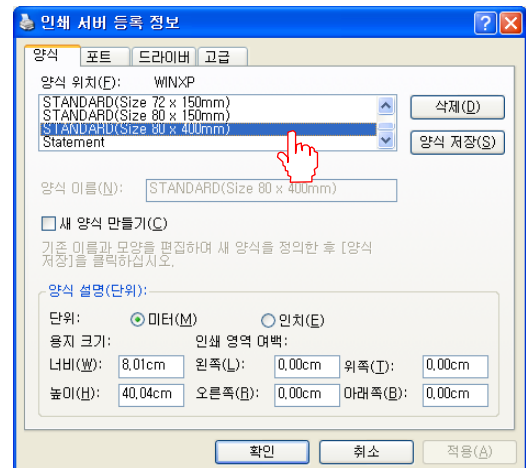
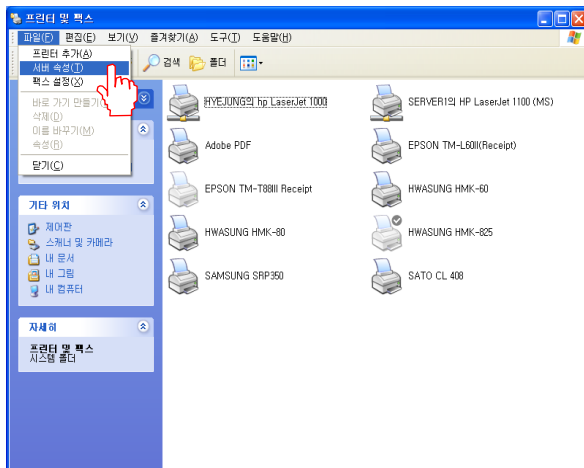
- 4) Page length Feeder : After printing, The form feeding will be conducted as long as the length is fixed. It is mostly used when the regular length is printed.

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### 6-3) Set a new size paper

You can make the size of paper you need.  
Please refer the example of 60mm x 150mm as below.

- 1) Please open the screen of printer & fax, and click the server on file / menu.
- 2) Please choose the STANDARD(Size 80 x 400mm) as image.
- 3) Please tick 'new documentation (C)' as image.
- 4) Please type the width 6.0 cm / the height 15.0 cm as image.
- 5) Please click the 'form install' Ticket (Size 60 x 150mm) as image.
- 6) Please click the tap 'advanced' and set the paper Ticket(Size 60 x 150mm).



**인쇄 서버 등록 정보**

양식   포트   드라이버   고급

양식 위치(E): WINXP

STANDARD(Size 72 x 150mm)  
STANDARD(Size 80 x 150mm)  
STANDARD(Size 80 x 400mm)  
Statement

삭제(D)

양식 저장(S)

양식 이름(N): Ticket(Size 60 x 150mm)

☒ 새 양식 만들기(C)

기존 이름과 모양을 편집하며 새 양식을 정의한 후 [양식 저장]을 클릭하십시오.

양식 설명(단위):

단위: ☒ 미터(M)   ☐ 인치(E)

용지 크기:   인쇄 영역 여백:

너비(W): 6.0cm   왼쪽(L): 0.00cm   위쪽(T): 0.00cm  
높이(H): 15.0cm   오른쪽(R): 0.00cm   아래쪽(B): 0.00cm

확인   취소   적용(A)

**HWASUNG HMK-60 고급 옵션**

HWASUNG HMK-60 고급 문서 설정

용지/출력

용지 크기: A4

인쇄 매수: 1

문서 옵션

고급 인쇄 기

하프톤: 삼원

인쇄 최적화

프린터 기능

인쇄 품질: Print Density Default

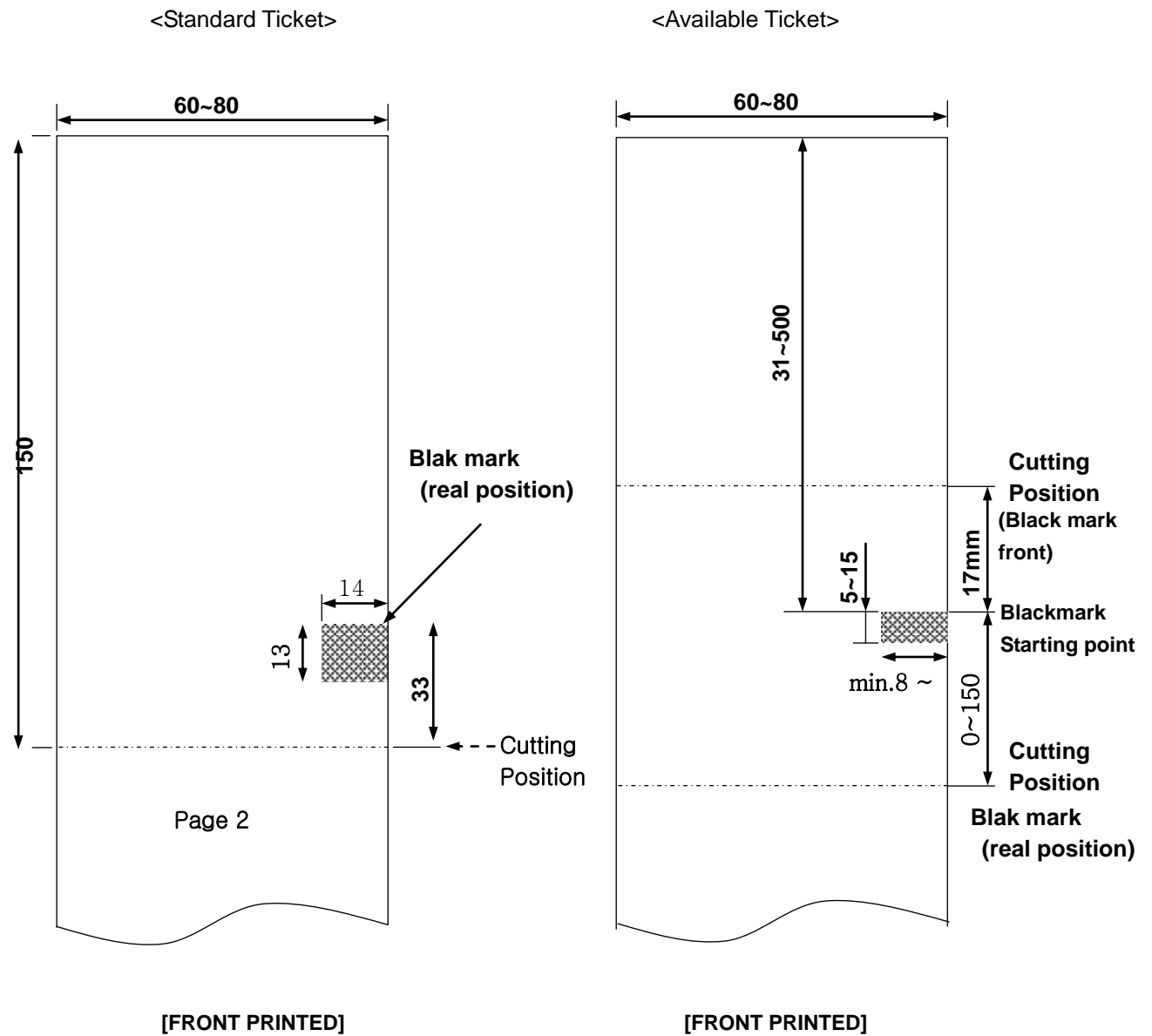
이미지 조절: Full Cut

Power Consumption: Printing of no division(Normal mode)

확인   취소

## 7. Ticket Recommended

The ticket size will be available under standard Size



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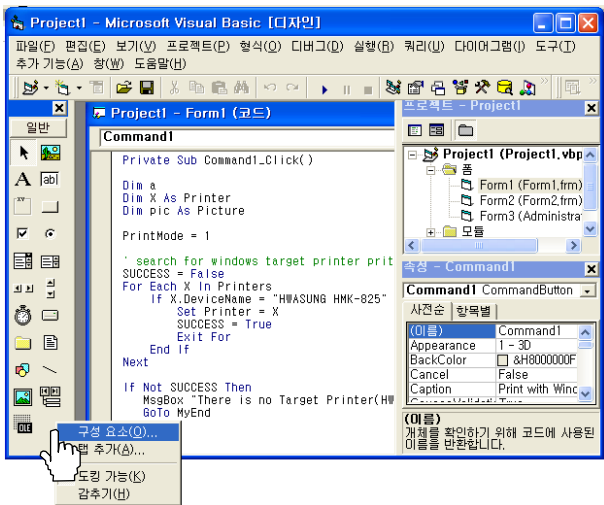
## 8. OCX driver (USB)

You can check the printer status, and transfer / receive the data without Window driver, since that we provide the USB interface OCX driver (HwasUSB.OCX)

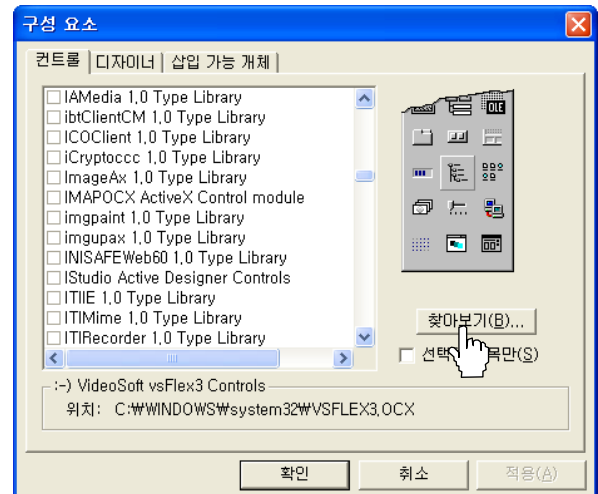
### 8-1) How to use

Please follow the image steps of visual basic as below.

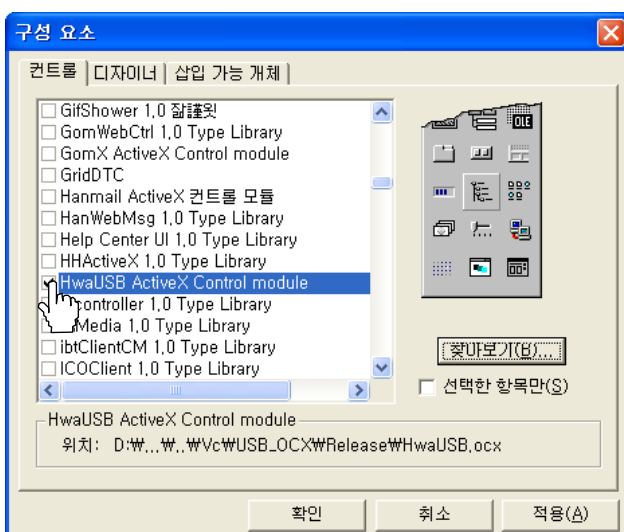
1



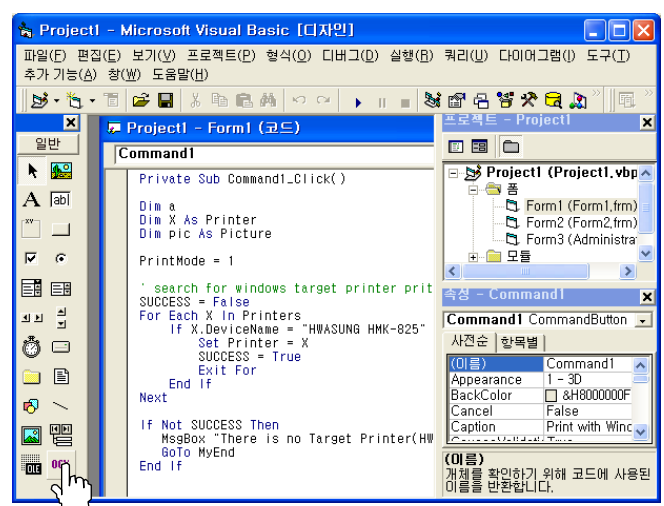
2

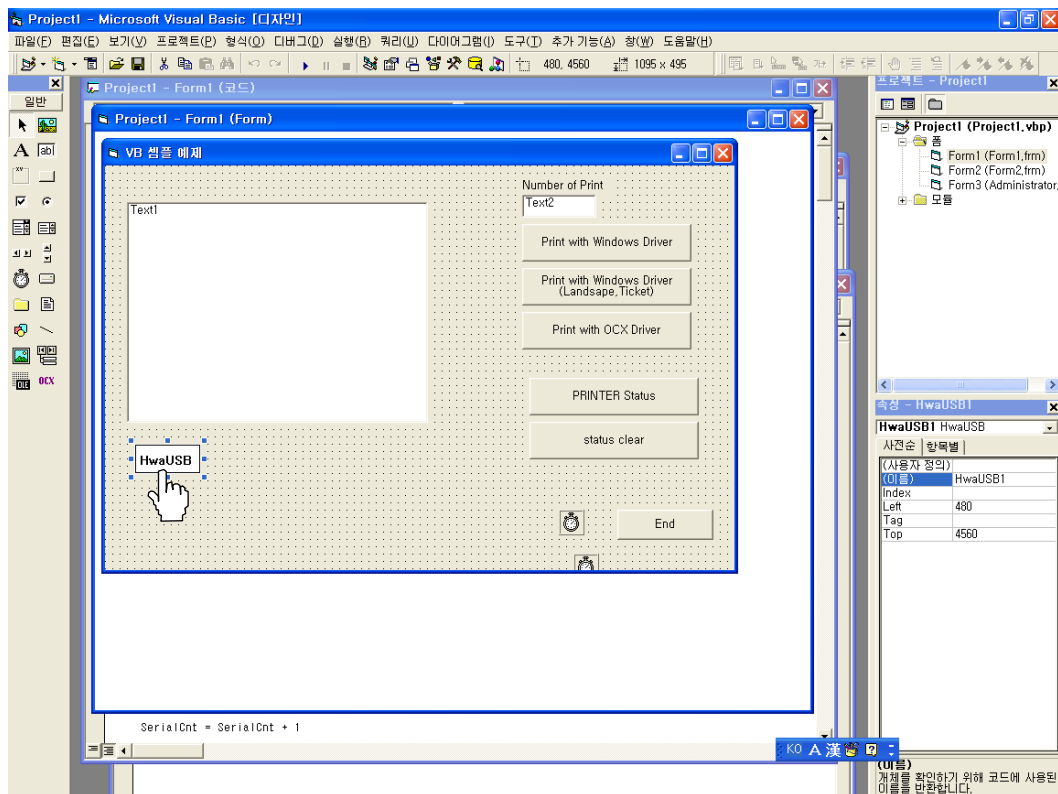


3



4





※ You can have the sample program if you ask the person in charge.

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## 8-2) Functions

### 8-2-1) long HwaUSB1.Open (LPCTSTR SelPrinter);

Please open USB port by Printer Model ("HMK-825").

- Parameters :  
SelPrinter : Printer Model Name
- Return :  
Open normal : 0  
Open error : -3 (minus)

### 8-2-2) void HwaUSB1.Close (void);

Please close USB port by Printer Model ("HMK-825").

- Parameters :  
None
- Return :  
None

### 8-2-3) long HwaUSB1.PrintStr (LPCTSTR data);

It prints the character line.

- Parameters :  
Data : String datas
- Return :  
Printing normal : 1  
Printing error : 0

※출력타임아웃에 의한 데이터 유실을 방지하기 위해 반드시 RealRead함수로 프린터 상태 값을 검출한 후에 정상일 때만 출력해 주십시오.

### 8-2-4) long HwaUSB1.PrintCmd (unsigned char data);


It prints a byte (data).

- Parameters :  
Data : 1 byte data (0~255)
- Return :  
Printing normal : 1  
Printing error : 0

### 8-2-5) long HwaUSB1.RealRead (void);

It reads the data status a byte by USB port.

- Parameters :  
None
- Return :  
Reading normal : The value of printer status  
Reading error : -1 (minus)

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[ **Caution** ]

It is a function of OCX version V1.x.x.x.

We recommend a function of OCX version V2.0.0.0.

Because we improved 'timeout' or 'reading delayed', when it is the function access at the version V2.0.0.0.

Please refer to the NewRealRead as below.

8-2-6) long HwaUSB1.NewRealRead(void);

The printer status read one byte USB port.

\* Parameter:

None

\* Return :

Reading o.k : printer status value

Reading error : -1 (negative number)

[ **Caution** ]

Please do not use the function we don't provide, because it causes the function damage.

Please contact us for the sample program.

[ **Caution** ]

Please do not use the version earlier than v2.0.0.0.

[ **Caution** ]

This firmware is not operating in old firmware, Please ask to Hwasung system for Firmware.

[ **Caution** ]

To check the status of USB ocx driver, the receive buffer of printer will be clear, and the data of next printing will be clear, when it's offline.

[ **Caution** ]

We do not recommend very strong you transmit the data, before you check the status of printer, when it's offline.

We recommend you transmit the data, after you check the status of printer, when it's offline.


Because the data will be lost, if you don't check the status of printer, and transmit the data when it's offline.

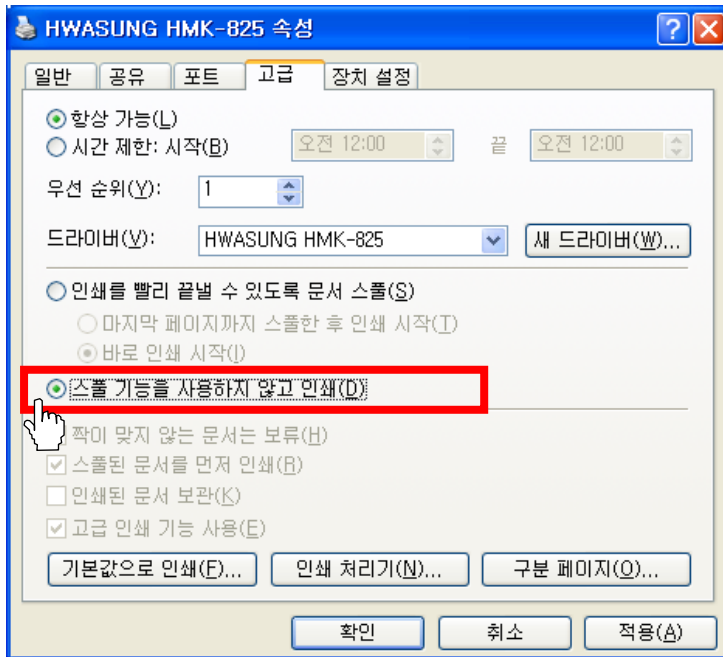
[ **Caution** ]

8-3) OCX driver

The data transmission will not be made if you use the Windows driver together, when you use the OCX driver.

We recommend you tick the image as below.

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## 9. Revision Reference

It is a page for the technician to know what is the revision updated.

This page is written in Korea.

[illegible]