HS-25CH Micro panel printer
User Manual

Content

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1 General Specifications

ITEM	SPECIFICATION
Print method	thermal direct line printing
Paper loading method	easy paper loading
Paper width	57mm
Print width	48mm
Resolution ration	8dots/mm(384dots/line)
Life of printing head	50km
Printing speed	50mm/sec.; Max.:80MM/sec.(voltage 8.5V）
Character size	9x17,12×24
Chinese character fonts	GB18030: 12x24 or 24x24dots
Outline dimension	76.8 Wx77.4Dx47.6H mm
Installation:	72.8Wx73.4D mm
Embedded depth	34.65 mm
Paper roll specification	(width: 58mm, Max. diameter: 40mm)
Interface	Serial(RS232C,TTL)/ USB
Input power	DC5-9V or 12V
Operating temperature	0°C~55°C
Storage temperature	-25°C~70°C
Operating humidity	10°C~80°C
Storage humidity	10°C~90°C

2. Features

- λ   Low-noise direct thermal printing method
- λ   Fast printing speed, low noise
- λ   Can support Max.40MM (diameter) paper roll, around 16-20 meter.
- λ   Optional serial interface (RS-232C, TTL) / USB port
- λ   Rich of graphics / curves / characters print function
- λ   Easy paper loading structure.
- λ   Support 5V-9V wide power voltage, or 12V DC.

3 Printer outline pictures and dimension

3.1 Outline pictures

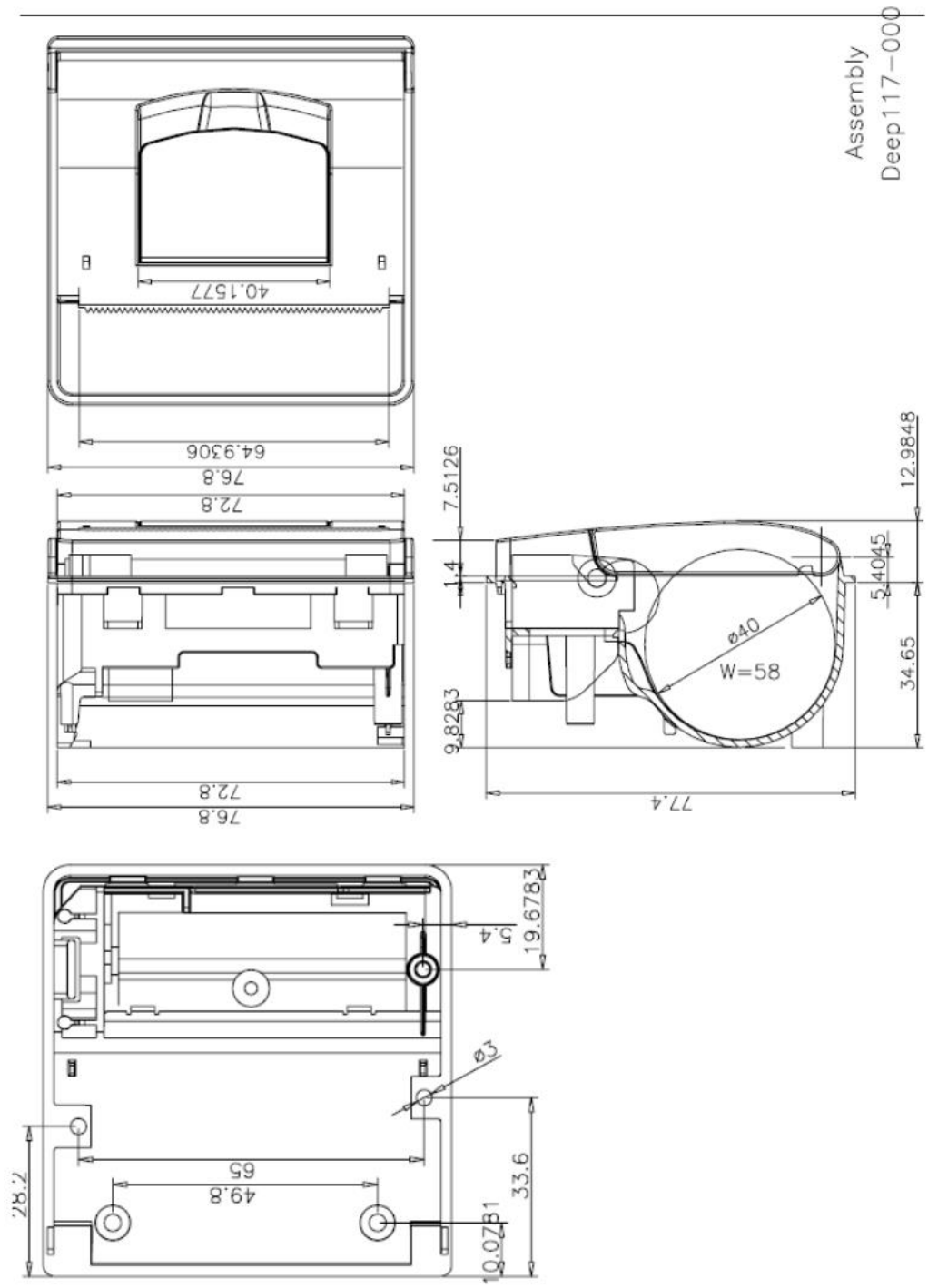- λ   Outline dimension: 76.8Wx77.4Dx47.6H mm
- λ   Embedded dimension: 72.8Wx73.4Dx34.65H mm
- λ   Front panel Size: 76.8Wx77.4D mm
- λ   Embedded depth: 34.65 mm
- λ   Max diameter of paper roll: 40 mm

3.2 Dimension

Outline is as follows:

Assembly
Deep117-000

40.1577

64.9306

76.8

72.8

7.5126

12.9848

5.4045

34.65

Ø40

W=58

9.8283

77.4

72.8

76.8

19.6783

5.4

Ø3

33.6

65

49.8

28.2

10.0731
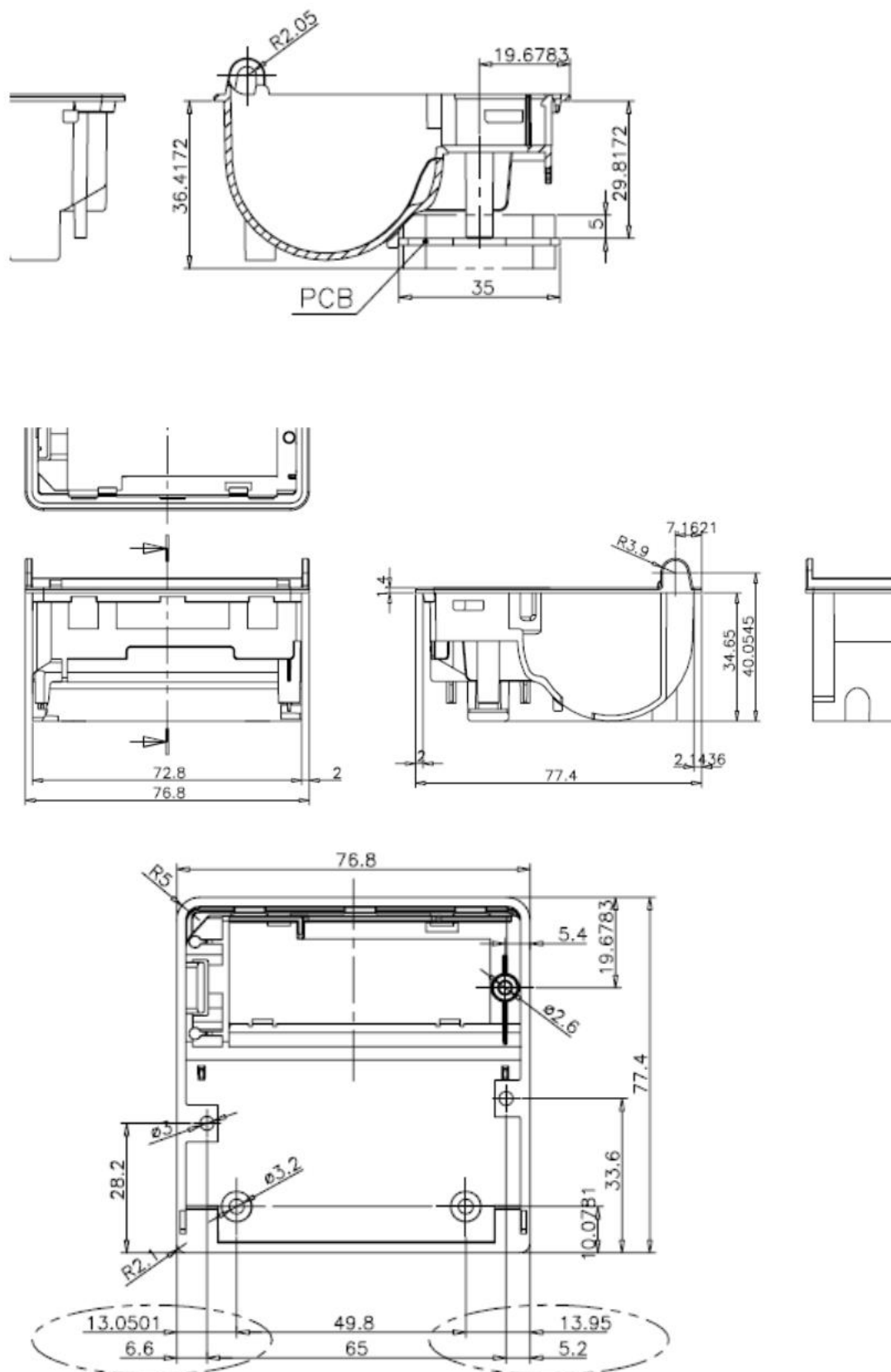
The installation method as below picture：

Diagram labels: 2.5, 6.4, Φ3.0, 60.0, Φ4.0*2, 接插件位置, 6.0, 10.1, 70.0
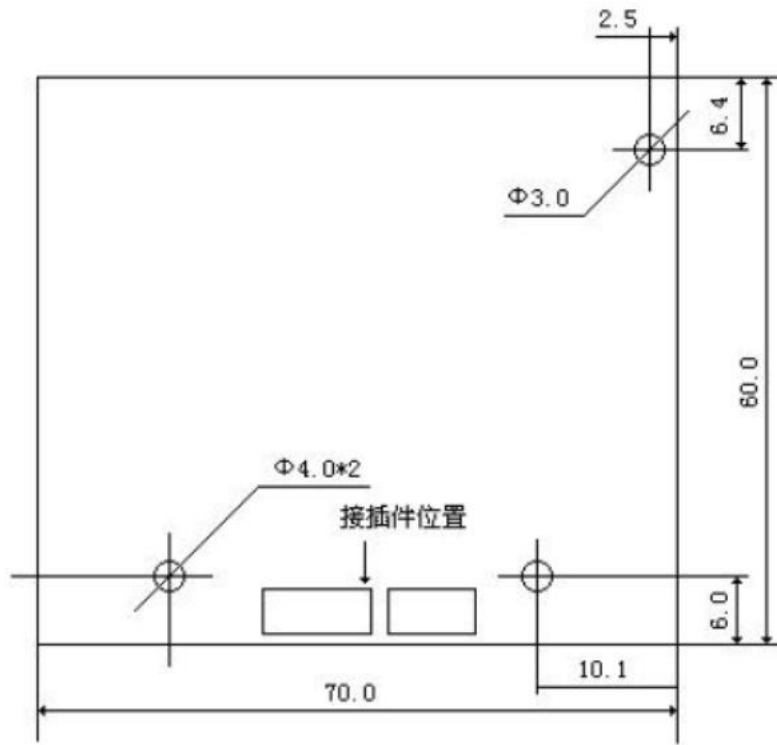
4 How to use

4.1 Printing test

After power up, press K1 button, or connect J1 and disconnect on the controller board, one test page will be printed.
Note: The name of short-circuit point is different from each board.

4.2 Panel LED Indicators

There is one LED on board to indicate the status of the board. The indicator is as follows:
- λ   Blink one times: Work well
- λ   Blink two times: No printer is detected
- λ   Blink three times: No paper is detected
- λ   Blink five times: Printer mechanism is overheating.
- λ   Blink ten times: No Chinese word stock IC is detected

5 Connector

Please refer to chart printing control board size and interface definition.
You can choose to use RS232, RS232 with TTL level or USB port before leaving factory.
RS232 with TTL level can get less cost.

5.1 Serial (RS232, TTL)
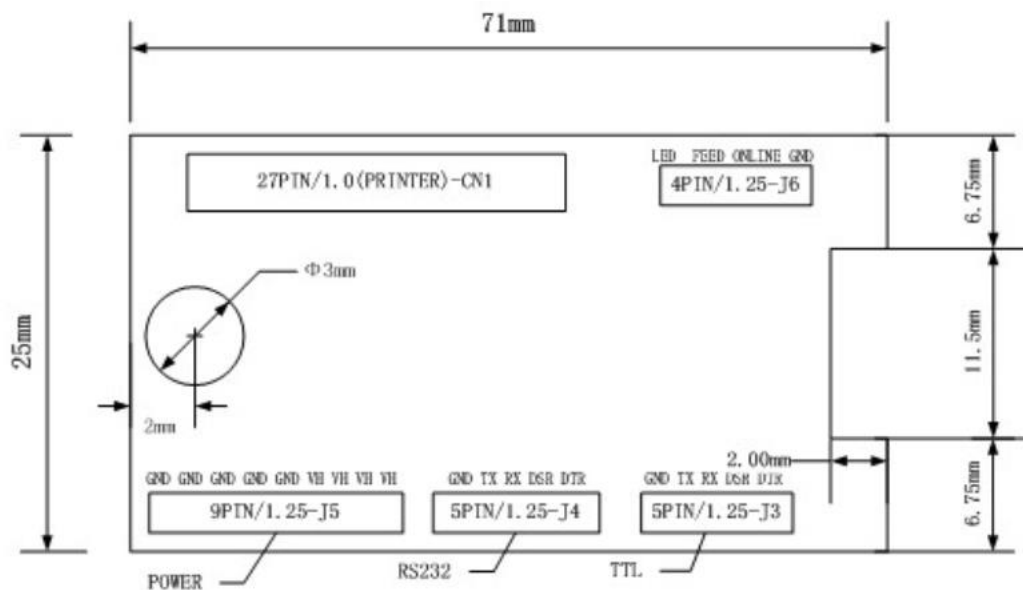
5.1.1 Power supply connector

J5	User side matching connector
Molex, 53047 Series 9 contacts（male）	Molex 51021 Series（female） Contacts: 50079/50058

Pin number	Signal name	Pin number	Signal name
1	GND	6	V bat
2	GND	7	V bat
3	GND	8	V bat
4	GND	9	V bat
5	GND		

5.1.2 RS232 connector

J4	User side matching connector
Molex, 53047 Series 5 contacts（male）	Molex 51021 Series（female） Contacts: 50079/50058

Pin number	Signal name
1	GND
2	Transmit data(Txd, printer output)
3	Receive data(Rxd, printer input)
4	CTS/DSR(printer input)
5	RTS/DTR(printer output)

5.1.3 TTL connector

J3	User side matching connector
Molex, 53047 Series 5 contacts（male）	Molex 51021 Series（female） Contacts: 50079/50058

Pin number	Signal name
1	GND
2	Transmit data(Txd, printer output)
3	Receive data(Rxd, printer input)
4	CTS/DSR(printer input)
5	RTS/DTR(printer output)

5.2 USB port
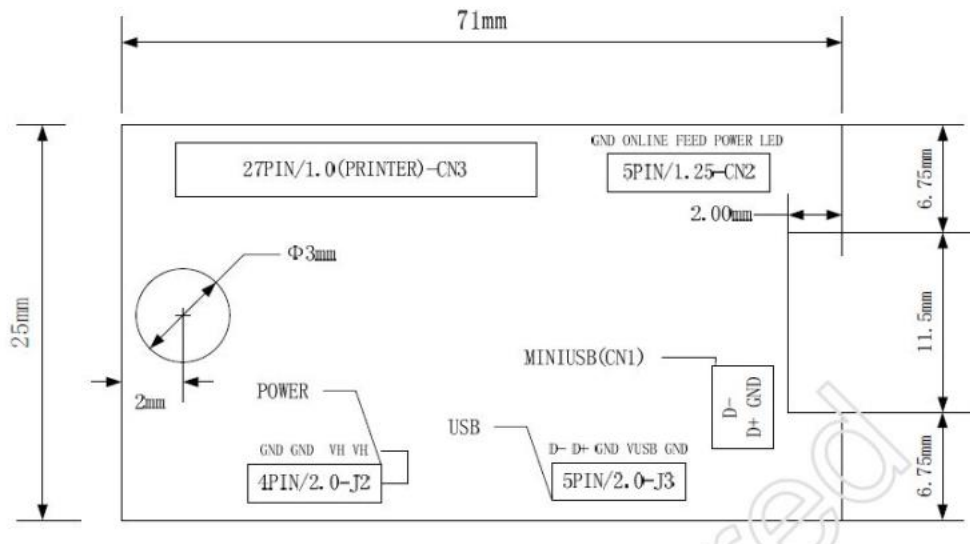
5.2.1 J2 Power supply connector

Pin number	Signal name
1	GND
2	GND
3	V bat
4	V bat

5.2.2 CN3 USB /MINID connector

Pin number	Signal name
1	VUSB
2	D-
3	D+
4	NC

5	GND

6 printer functions

CN1/CN3	FPC27/1.0

Pin number	Signal name	Function
1	CO	Collector of photo-transistor
2	VF	Anode of photo-sensor
3	L_GND	Gnd for logic
4	VH	Dotline voltage
5	VH	Dotline voltage
6	DI	Data input
7	STB6	Sixth strobe
8	STB5	Fifth strobe
9	STB4	Fourth strobe
10	P_GND	Gnd for logic
11	P_GND	Gnd for dotline
12	P_GND	Gnd for dotline
13	P_GND	Gnd for dotline
14	TM	Thermistor first terminal(second in Gnd)
15	STB3	Third strobe
16	STB2	Second strobe
17	STB1	First strobe
18	Vdd	Logic voltage
19	CLK	Serial clock
20	\LTA	Latch
21	DO	Data output
22	VH	Dotline voltage
23	VH	Dotline voltage
24	SM4	Fourth phase of stepper motor
25	SM3	Third phase of stepper motor
26	SM2	Second phase of stepper motor
27	SM1	First phase of stepper motor

7 Using attention

7.1 Please notice, the ESD wrist ring and the humidity manufactures ETC, when using the printer, to protect the inner electronic parts of the printer from the damage of ESD, because the TPH of the Printer and photoelectric sensor are ESD Sensitive parts.

7.2 For protecting plastic shaft, don't smear any oil or others on the rubber parts.

7.3 Don't touch the TPH, TPH having the palm oil, will induce the usage of the printer. If any oil or others in the TPH, pls using alcohol cotton stick clean the area between plastic shaft and printer head at once.PS, don't strike the TPH.

7.4 Due to the printer is easy-paper structure, you need pick up the rubber stick only push the rubber stick. So, if the paper jam, push harder will cause the rubber stick gearwheel damaged. So pls don't push the paper harder, pls do open the cover and re-fill the paper

7.5 The temperature of the TPH protection must be below 65℃, if you print continously, Because the exterior of the temperature of the IC protection & motor can′t not over 90℃ to protect the motor thread ring.

7.6 Pls use the good quality paper, because the sensitive of the paper will infuence print effect, meanwhile, rough paper will increase the excessive wear to the printer head, and reduce the life of the printer.

8 ESC/POS Printing Command Set

8.1 Command list

Type	Command	Name
Print Commands	LF	Print and line feed
	CR	Print and carriage return
	HT	Horizontal tab
	FF	Print the data in buffer
	ESC D	Set horizontal tab positions
	ESC J n	Print and Feed n dots paper
	ESC d n	Print and Feed n lines
	ESC = n	Set peripheral device
Line spacing setting Commands	ESC 2	Select default line spacing
	ESC 3 n	Set line spacing
	ESC a n	Select justification
	GS L nL nH	Set left margin
	ESC $ nL nH	Set absolute print position
	ESC B n	Set Left Space
Character Setting Commands	ESC! n	Select print mode(s)
	GS! n	Select character size
	GS B n	Turn white/black reverse printing mode
	ESC V n	Turn 90°clockwise rotation mode on/off
	ESC G n	Turn on/off double-strike mode
	ESC E n	Turn emphasized mode on/off
	ESC SP n	Set right-side character spacing
	ESC SO n	Select Double Width mode

	ESC DC4 n	Disable Double Width mode
	ESC { n	Turns on/off upside-down printing mode
	ESC - n	Set the underline dots(0,1,2)
	ESC % n	Select/Cancel user-defined characters
	FS &	Select Kanji character mode
	FS.	Cancel Kanji character mode
	FS! n	Set print mode for Kanji characters
	ESC &	Define user-defined characters
	ESC? n	Cancel user-defined characters
	ESC R n	Select and international character set
	ESC t n	Select character code table
Bit Image Commands	ESC *	Select bit-image mode
	GS *	Define downloaded bit image
	GS / n	Print downloaded bit image
	GS v	Print raster bit image
	DC2 *	Print the bitmap
	DC2 V	Print MSB bitmap
	DC2 v	Print LSB bitmap
	FS p n m	Print NV bitmap
	FS q n	Define NV bitmap
Init Commands	ESC @	Initialize printer
Status Commands	GS r n	Transmit status
	GS a n	Enable/Disable Automatic Status Back(ASB)
	ESC v n	Transmit paper sensor status
	ESC u n	Transmit peripheral device status (For drawer)
Bar Code Commands	GS H n	Select printing position for HRI characters
	GS h n	Set bar code height
	GS w n	Set bar code width
	GS k	Print bar code
	GS x n	Set barcode printing left space
Miscellaneous function commands	ESC 7 n1 n2 n3	Setting Control Parameter Command
	ESC 8 n1 n2	Select sleeping parameter
	ESC 9 n	Select Chinese code format
	DC2 # n	Set printing density
	DC2 T	Printing test page
	FS t n	Select Time out (for CB105B)
New commands	DC2 E	Feed Paper to Mark
	DC2 m d IL IH	Set Mark paper length
	ESC C n	Set BM Max (For BM)
	GS FF	Feed marked paper to print starting position (For BM)
	ESC i	Cut Paper (For cut)
	ESC m	Partial Cut Paper (For cut)

	GS V	Select cut mode and cut paper (For cut)
	ESC p m	Generate pulse (For drawer)
	ESC c 5	Enable/disable panel buttons (For button)
	GS (F	Set adjustment values(s) (For 701BM)
	FS C	Start receive buffer count (For cb65c)
	FS S	Send receive buffer count(For cb65c)
	FS s	save print parameter (for XBLY)
	FS d	Load default leaving factory set (for XBLY)

8.2 Command Detail

8.2.1 Print Commands

LF

[Name]	Print and line feed	
[Format]	ASCII:	LF
	Decimal:	10
	Hexadecimal:	0A
[Description]	Prints the data in the print buffer and feeds one line, based on the current line spacing.	
[Note]	This command sets the print position to the beginning of the line.	
[Reference]	**ESC 2**, **ESC 3**	

CR

[Name]	Print and carriage return	
[Format]	ASCII:	CR
	Decimal:	13
	Hexadecimal:	0D
[Description]	When automatic line feed is enabled, this command functions the same as **LF**; when automatic line feed is disabled, this command is ignored.	
[Notes]	λ This command line feed is ignored with a serial interface model.	
	λ Sets the print starting position to the beginning of the line.	
[Reference]	**LF**	

HT

[Name]	Horizontal tab	
[Format]	ASCII:	HT
	Decimal:	9
	Hexadecimal:	09
[Description]	Moves the print position to the next horizontal tab position.	
[Notes]	λ This command is ignored unless the next horizontal tab position has	

been set.

    λ   If the next horizontal tab position exceeds the printing area, the printer sets the printing position to [printing area width+1].

    λ   Horizontal tab positions are set with **ESC D**.

    λ   If this command is received when the printing position is at [printing area width+1], the printer executes print buffer-full printing of the current line and horizontal tab processing from the beginning of the next line.

[Reference]   **ESC D**

FF

[Name]   Print the data in buffer and locate to the next black mark

[Format]   ASCII: FF

    Decimal: 12

    Hexadecimal: 0c

[Description]   λ   Print the data in the buffer.

    λ   Locate to the black mark.

[Note]   Only board with black mark function support this command.

ESC D n1...nk NUL

[Name]   Set horizontal tab positions

[Format]   ASCII: ESC D n1...nk NUL

    Decimal: 27 68 n1…nk 00

    Hexadecimal: 1B 44 n1…nk 00

[Range]   1≤n≤255

    0≤k≤32

[Description]   Set horizontal tab positions.

    λ   n specifies the column number for setting a horizontal tab position from the beginning of the line.

    λ   k indicates the total number of horizontal tab positions to be set.

[Note]   λ   The horizontal tab position is stored as a value of [character width×n] measured from the beginning of the line. The character width includes the right-side character spacing, and double-width characters are set with twice the width of normal characters.

    λ   This command cancels the previous horizontal tab settings.

    λ   When setting n = 8, the print position is moved to column 9 by sending **HT**.

    λ   Up to 32 tab positions (k=32) can be set. Data exceeding 32 tab positions is processed as normal data.

    λ   Transmit [n]k in ascending order and place a NUL code 0 at the end.

    λ   When [n]k is less than or equal to the preceding value [n]k-1, tab setting is finished and the following data is processed as normal

data.

λ   **ESC D NUL** cancels all horizontal tab positions.

λ   The previously specified horizontal tab positions do not change, even if the character width changes.

λ   The character width is memorized for each standard mode.

[Default]   The default tab positions are at intervals of 8 characters (columns 9, 17, 25...) for Font A (12×24).

[Reference]   **HT**

ESC J n

[Name]	Print and feed paper		
[Format]	ASCII:	ESC J n	
	Decimal:	27 74 n	
	Hexadecimal:	1B 4A n	

[Range]   0≤n≤255

[Description]   Prints the data in the print buffer and feeds the paper [n×0.125 mm (0.0049")].

[Notes]   λ   After printing is completed, this command sets the print starting position to the beginning of the line.

λ   The paper feed amount set by this command does not affect the values set by **ESC 2** or **ESC 3**.

λ   In standard mode, the printer uses the vertical motion unit (y).

ESC d n

[Name]	Print and feed n lines		
[Format]	ASCII:	ESC d n	
	Decimal:	27 100 n	
	Hexadecimal:	1B 64 n	

[Range]   0≤n≤255

[Description]   Print the data in the buffer and feed paper n lines.

[Notes]   λ   This command sets the print starting position to the beginning of the line.

λ   This command does not affect the line spacing set by **ESC 2** or **ESC 3**.

λ   The maximum paper feed amount is 1016 mm (40 inches). If the paper feed amount (n×line spacing) of more than 1016 mm (40 inches) is specified, the printer feeds the paper only 1016 mm (40 inches).

[Reference]   **ESC 2**, **ESC 3**

ESC = n

[Name]   Set peripheral device

[Format]	ASCII:	ESC = n	
	Decimal:	27 61 n	
	Hexadecimal:	1B 3d n	

[Description]   Set peripheral device:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Printer offline, not receive print data.
	On	01	1	Printer online, receive print data.
1-7	-	-	-	Undefined.

8.2.2 Line spacing setting commands

ESC 2

[Name]   Select default line spacing

[Format]	ASCII:	ESC 2
	Decimal:	27 50
	Hexadecimal:	1B 32

[Description]   Selects 3.75 mm (30×0.125 mm) line spacing.

[Note]   The line spacing can be set independently in standard mode.

[Reference]   **ESC 3 n**

ESC 3 n

[Name]   Set line spacing

[Format]	ASCII:	ESC 3 n
	Decimal:	27 51 n
	Hexadecimal:	1B 33 n

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

[Description]   Sets the line spacing to [n×0.125 mm].

[Note] λ The line spacing can be set independently in standard mode.

                λ In standard mode, the vertical motion unit (y) is used.

[Default]   n=30

[Reference]   **ESC 2**

ESC a n

[Name]   Select justification

[Format]	ASCII:	ESC a n
	Decimal:	27 97 n
	Hexadecimal:	1B 61 n

[Range] $0 \leq n \leq 2$, $48 \leq n \leq 50$

[Description]   Aligns all the data in one line to the specified position.

n selects the justification as follows:

n	Justification
0,48	Left justification
1, 49	Centering
2, 50	Right justification

[Note]   λ   The command is enabled only when processed at the beginning of the line in standard mode.

λ   This command executes justification in the printing area.

λ   This command justifies the space area according to **HT**, **ESC $**.

[Default]   n=0

[Example]

Left justification	Centering	Right justification
ABC **ABCD** **ABCDE**	**ABC** **ABCD** **ABCDE**	**ABC** **ABCD** **ABCDE**

GS L nL nH

[Name]   Set left margin

[Format]   ASCII: GS L nL nH

Decimal: 29 76 nL nH

Hexadecimal: 1D 4c nL nH

[Range]   0≤nL≤255

0≤nH≤255

[Description]   Sets the left margin using nL and nH.

The left margin is set to [(nL+nH×256) ×0.125 mm].
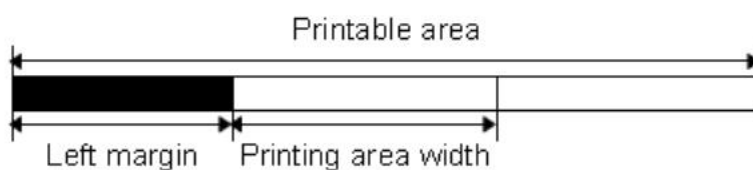
[Note]   λ   This command is effective only when processed at the beginning of the line in standard mode.

λ   If the setting exceeds the printable area, the maximum value of the printable area is used.

[Default]   nL=0, nH=0

ESC B n

[Name]   Set left blank char numbers

[Format]   ASCII: ESC B n

	Decimal:	27 66 n
	Hexadecimal:	1B 42 n
[Range]	Default is 0	
	0 ≤ m ≤ 47	

ESC $ nL nH

[Name]	Set absolute print positions	
[Format]	ASCII:	ESC $ nL nH
	Decimal:	27 36 nL nH
	Hexadecimal:	1B 24 nL nH
[Range]	0≤nL≤255	
	0≤nH≤255	

[Description] Set the distance from the beginning of the line to the position at which subsequent are to be printed.

The distance from the beginning of the line to the print position is[(nL+nH ×256)×0.125 mm]

[Note]   λ   Settings outside the specified printable area are ignored.

λ   In standard mode, the horizontal motion unit (x) is used.

[Reference] **ESC **, **GS $**, **GS **

8.2.3 Character Setting Commands

ESC ! n

[Name]	Select print mode	
[Format]	ASCII:	ESC ! n
	Decimal:	27 33 n
	Hexadecimal:	1B 21 n
[Range]	0≤n≤255	

[Description]   Selects print mode(s) using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Character Font A (12×24).
	On	01	1	Character Font B (9×17).
1	Off	00	0	Turn white/black reverse printing mode not selected.
	On	02	2	Turn white/black reverse printing mode selected.
2	Off	00	0	Turn on/off upside-down printing mode not selected.
	On	04	4	Turn on/off upside-down printing mode selected.
3	Off	00	0	Emphasized mode not selected.
	On	08	8	Emphasized mode selected.
4	Off	00	0	Double-height mode not selected.
	On	10	16	Double-height mode selected.
5	Off	00	0	Double-width mode not selected.

	On	20	32	Double-width mode selected.
6	Off	00	0	Turn Deleteline mode on/off not selected.
	On	40	64	Turn Deleteline mode on/off selected.
7	-	-	-	Undefined.

GS! n

[Name]	Select character size	
[Format]	ASCII:	GS ! n
	Decimal:	29 33 n
	Hexadecimal:	1D 21 n

[Range]   0≤n≤255

(1≤vertical number of times≤8, 1≤horizontal number of times≤8)

[Description]   Selects the character height using bits 0 to 2 and selects the character width using bits 4 to 7, as follows:

Bit	Off/On	Hex	Decimal	Function
0	Character height selection. See Table 2.			
1				
2				
3				
4	Character width selection. See Table 1.			
5				
6				
7				

Table 1
Character Width Selection

Hex	Decimal	Width
00	0	1(normal)
10	16	2(double-width)
20	32	3
30	48	4
40	64	5
50	80	6
60	96	7
70	112	8

Table 2
Character Height Selection

Hex	Decimal	Width
00	0	1(normal)
01	1	2(double-height)
02	2	3
03	3	4
04	4	5
05	5	6
06	6	7
07	7	8

[Note]   λ   This command is effective for all characters (alphanumeric and Kanji), except for HRI characters.

λ   If n is outside the defined range, this command is ignored.

λ   In standard mode, the vertical direction is the paper feed direction, and the horizontal direction is perpendicular to the paper feed direction. However, when character orientation changes in 90° clockwise-rotation mode, the relationship between vertical and

horizontal directions is reversed.

λ   When characters are enlarged with different sizes on one line, all the characters on the line are aligned at the baseline.

λ   The **ESC !** command can also turn double-width and double-height modes on or off. However, the setting of the last received command is effective.

[Default]   n=0

[Reference]   **ESC !**

GS B n

[Name]   Turn white/black reverse printing mode

[Format]   ASCII: GS B n

    Decimal: 29 66 n

    Hexadecimal: 1D 42 n

[Range]   0≤n≤255

[Description]   Turns on or off white/black reverse printing mode.

λ   When the LSB of n is 0, white/black reverse mode is turned off.

λ   When the LSB of n is 1, white/black reverse mode is turned on.

[Note]   λ   Only the lowest bit of n is valid.

λ   This command is available for built-in characters and user-defined characters.

λ   When white/black reverse printing mode is on, it also applies to character spacing set by **ESC SP**.

λ   This command does not affect bit images, user-defined bit images, bar codes,HRI characters, and spacing skipped by **HT**, **ESC $**.

λ   This command does not affect the space between lines.

λ   White/black reverse mode has a higher priority than underline mode. Even if underline mode is on, it is disabled (but not canceled) when white/black reverse mode is selected.

[Default]   n=0

ESC V n

[Name]   Turn 90° clockwise rotation mode on/off

[Format]   ASCII: ESC V n

    Decimal: 27 86 n

    Hexadecimal: 1B 56 n

[Range]   0≤n≤1, 48≤n≤49

[Description]   Turns 90° clockwise rotation mode on/off.

    n is used as follows:

n	Function
0,48	Turns off 90° clockwise rotation mode
1,49	Turns on 90° clockwise rotation mode

[Note]   λ   This command affects printing in standard mode. However, the setting is always effective.

λ   When underline mode is turned on, the printer does not underline 90° clockwise-rotated characters.

λ   Double-width and double-height commands in 90° rotation mode enlarge characters in the opposite directions from double-height and double- width commands in normal mode.

[Default]   n=0
[Reference]   **ESC !**, **ESC**

ESC G n

[Name]   Turn on/off double-strike mode
[Format]   ASCII: ESC G n

              Decimal: 27 71 n
              Hexadecimal: 1B 47 n
[Range]   0≤n≤255
[Description] Turns double-strike mode on or off.
              λ   When the LSB of n is 0, double-strike mode is turned off.
              λ   When the LSB of n is 1, double-strike mode is turned on.
[Note]   λ   Only the lowest bit of n is enabled.
              λ   Printer output is the same in double-strike mode and in emphasized mode.
[Default]   n=0
[Reference]   **ESC E n**

ESC E n

[Name]   Turn emphasized mode on/off
[Format]   ASCII: ESC E n

              Decimal: 27 69 n
              Hexadecimal: 1B 45 n
[Range]   0≤n≤255
[Description] Turns emphasized mode on or off
              λ   When the LSB of n is 0, emphasized mode is turned off.
              λ   When the LSB of n is 1, emphasized mode is turned on.
[Note]   λ   Only the least significant bit of n is enabled.
              λ   This command and **ESC !** turn on and off emphasized mode in the same way. Be careful when this command is used with **ESC !**
[Default]   n=0
[Reference]   **ESC !**

ESC SP n

[Name]	Set right-side character spacing	
[Format]	ASCII:	ESC SP n
	Decimal:	27 32 n
	Hexadecimal:	1B 20 n
[Range]	0≤n≤255	
[Description]	Sets the character spacing for the right side of the character to [n×0.125 mm (n×0.0049")].	
[Note]	λ The right-side character spacing for double-width mode is twice the normal value. When characters are enlarged, the right-side character spacing is n times normal value.	
	λ This command does not affect the setting of Kanji characters	
	λ This command sets values independently in standard mode.	
[Default]	n=0	

ESC SO n

[Name]	Select Double Width mode	
[Format]	ASCII:	ESC SO n
	Decimal:	27 14 n
	Hexadecimal:	1B 0E n
[Description]	Select Double Width mode	
	To turn double width off, use **LF** or **DC4** command.	

ESC DC4 n

[Name]	Disable Double Width mode	
[Format]	ASCII:	ESC DC4 n
	Decimal:	27 20 n
	Hexadecimal:	1B 14 n
[Description]	Disable Double Width mode	

ESC { n

[Name]	Turns on/off upside-down printing mode	
[Format]	ASCII:	ESC { n
	Decimal:	27 123 n
	Hexadecimal:	1B 7B n
[Range]	0≤n≤255	
[Description]	Turns upside-down printing mode on or off.	
	λ When the LSB of n is 0, upside-down printing mode is turned off.	
	λ When the LSB of n is 1, upside-down printing mode is turned on.	
[Note]	λ Only the lowest bit of n is valid.	

λ   This command is enabled only when processed at the beginning of a line in standard mode.

λ   In upside-down printing mode, the printer rotates the line to be printed by 180° and then prints it.

[Default]   n=0

[Example]

When upside-down printing mode is off.

When upside-down printing mode is on.

A B C D E F
0 1 2 3 4 5

Paper feed direction

ESC - n

[Name]   Turn underline mode on/off

[Format]   ASCII: ESC - n

                Decimal: 27 45 n

                Hexadecimal: 1B 2D n

[Range]   0≤n≤2, 48≤n≤50

[Description]   Turns underline mode on or off, based on the following values n：

n	Function
0, 48	Turns off underline mode
1, 49	Turns on underline mode (1 dot thick)
2, 50	Turns on underline mode (2 dots thick)

[Note]   λ   The printer can underline all characters (including right-side character spacing), but cannot underline the space set by **HT**.

          λ   The printer cannot underline 90° clockwise rotated characters and white/black inverted characters.

          λ   When underline mode is turned off by setting the value of n to 0 or 48, the following data is not underlined, and the underline thickness set before the mode is turned off does not change. The default underline thickness is 1 dot.

          λ   Changing the character size does not affect the current underline thickness.

          λ   Underline mode can also be turned on or off by using **ESC !.** Note, however, that the last received command is effective.

[Default]   n = 0

[Reference]   **ESC !**

ESC % n

[Name]   Enable/Disable User-defined Characters
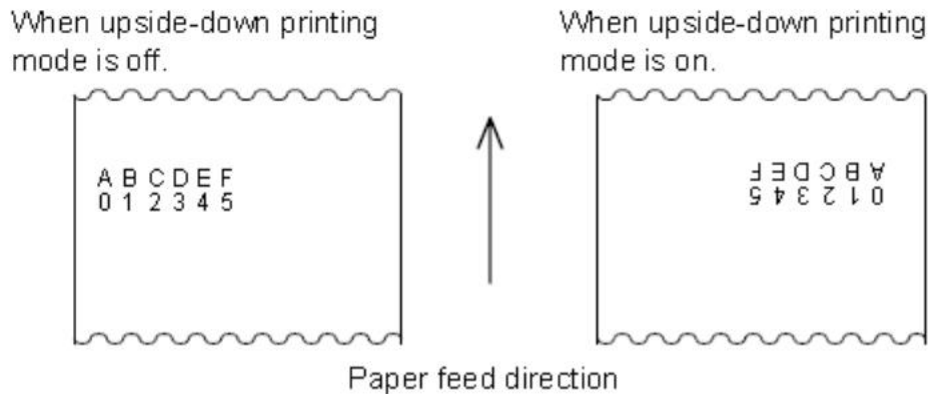[Format]   ASCII: ESC % n

               Decimal: 27 37 n
               Hexadecimal: 1B 25 n
[Range]   0≤n≤255
[Description] Selects or cancels the user-defined character set.
               λ   When the LSB of n is 0, the user-defined character set is canceled.
               λ   When the LSB of n is 1, the user-defined character set is selected.
[Note]   λ   When the user-defined character set is canceled, the built-in character set is automatically selected.
               λ   n is available only for the least significant bit.
[Default]   n=0
[Reference]   **ESC &**, **ESC ?**

FS &

[Name]   Select Kanji character mode
[Format]   ASCII: FS   &

               Decimal: 28   38
               Hexadecimal: 1C   26
[Description] Selects Kanji character mode
[Note]   For Kanji model:
               λ   When the Kanji character mode is selected, the printer processes all Kanji code as two bytes each.
               λ   Kanji codes are processed in the order of the first byte and second byte.
               λ   Kanji character mode is not selected when the power is turned on.
[Reference]   **FS .**

FS.

[Name]   Cancel Kanji character mode
[Format]   ASCII: FS   .

               Decimal: 28   46
               Hexadecimal: 1C   2E
[Description] Cancels Kanji character mode.
[Note]   For Kanji model:
               λ   When the Kanji character mode is not selected, all character codes are processed one byte at a time as ASCII code.
               λ   Kanji character mode is not selected when the power is turned on.

[Reference]   **FS &**

FS ! n

[Name]   Set print mode(s) for Kanji characters

[Format]   ASCII: FS   !   n

Decimal: 28   33   n

Hexadecimal: 1C   21   n

[Range]   0≤n≤255

[Description]   Sets the print mode for Kanji characters, using n as follows:

Bit	Off/On	Hex	Decimal	Function
0	—	—	—	Undefined.
1	—	—	—	Undefined.
2	Off	00	0	Double-width mode is OFF.
	On	04	4	Double-width mode is ON.
3	Off	00	0	Double-height mode is OFF.
	On	08		Double-height mode is ON.
4	—	—	—	Undefined.
5	—	—	—	Undefined.
6	—	—	—	Undefined.
7	Off	00	0	Underline mode is OFF.
	On	80	128	Underline mode is ON.

[Note]   λ   When both double-width and double-height modes are set (including right- and left-side character spacing), quadruple-size characters are printed.

λ   The printer can underline all characters (including right- and left-side character spacing), but cannot underline the space set by **HT** and 90° clockwise-rotated characters.

λ   When some of the characters in a line are double or more height, all the characters on the line are aligned at the baseline.

λ   It is possible to emphasize the Kanji character using **GS !**; the setting of the last received command is effective.

[Default]   n=0

[Reference]   **GS !**

ESC & y c1 c2 [x1 d1...d(y×x1)]...[xk d1...d(y×xk)]

[Name]   Define user-defined characters

[Format]   ASCII: ESC & y c1 c2[x1 d1...d(y×x1)]...[xk d1...d(y×xk)]

Decimal: 27 38 y c1 c2 [x1 d1...d(y×x1)]...[xk d1...d(y×xk)]

Hexadecimal: 1B 26 y c1 c2 [x1 d1...d(y×x1)]...[xk d1...d(y×xk)]

[Range]   y=3

32≤c1≤c2≤126

0≤x≤12 (when Font A (12×24) is selected)

0≤d1 … d(y×xk) ≤255

[Description] Defines user-defined characters.

- λ   y specifies the number of bytes in the vertical direction.
- λ   c1 specifies the beginning character code for the definition, and c2 specifies the final code.
- λ   x specifies the number of dots in the horizontal direction.

[Note]
- λ   The allowable character code range is from ASCII code <20>H to <7E>H (95 characters).
- λ   It is possible to define multiple characters for consecutive character codes. If only one character is desired, use c1=c2.
- λ   d is the dot data for the characters. The dot pattern is in the horizontal direction from the left side. Any remaining dots on the right side are blank.
- λ   The data to define user-defined characters is (y×x) bytes.
- λ   Set a corresponding bit to 1 to print a dot or 0 not to print a dot.
- λ   This command can define different user-defined character patterns for each font. To select a font, use ESC !
- λ   User-defined characters and a downloaded bit image cannot be defined simultaneously. When this command is executed, the downloaded bit image is cleared.
- λ   The user-defined character definition is cleared when:

1）**ESC @** is executed.

2）**GS *** is executed.

3）**ESC ?** is executed.

4）The power is turned off.

[Default]   The internal character set

[Reference] **ESC %**, **ESC ?**

[Example]   When Font A (12×24) is selected.

d1=<0F>H d4=<30>H d7=<40>H . . . .
d2=<03>H d5=<80>H d8=<40>H . . . .
d3=<00>H d6=<00>H d9=<20>H . . . .
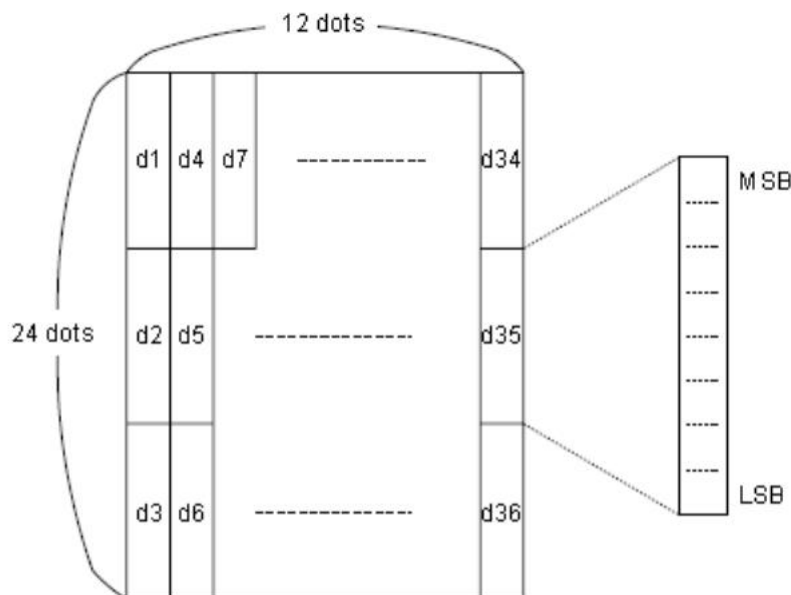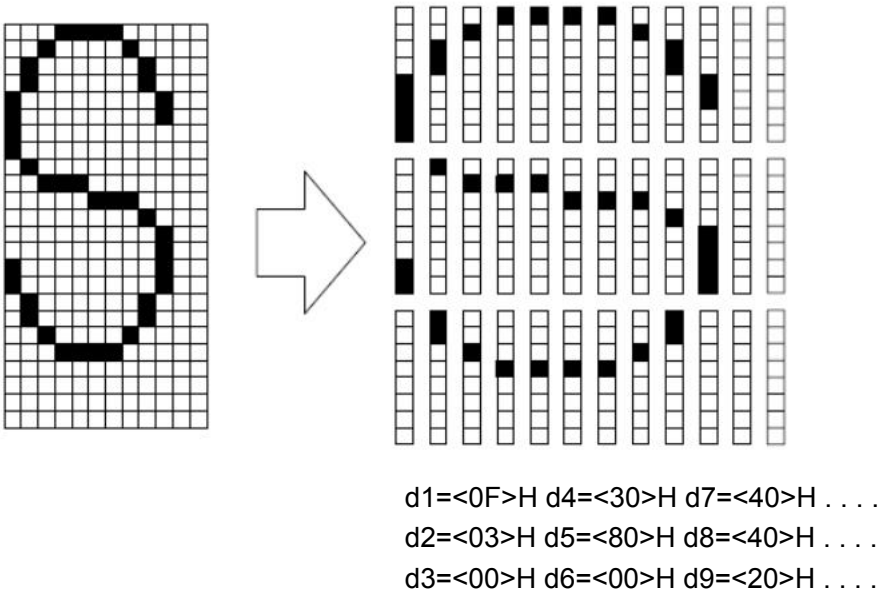
ESC? n

[Name]	Cancel user-defined characters			
[Format]	ASCII:	ESC	?	n
	Decimal:	27	37	n
	Hexadecimal:	1B	3F	n

[Range]   32≤n≤126

[Description] Cancels user-defined characters.

[Note]   λ   This command cancels the patterns defined for the character codes specified by n. After the user-defined characters are canceled, the corresponding patterns for the internal characters are printed.

λ   This command deletes the pattern defined for the specified code in the font selected by **ESC !**.

λ   If user-defined characters have not been defined, the printer ignores this command.

[Reference] **ESC &**, **ESC %**

ESC R n

[Name]   Select an internal character set

[Format]   ASCII: ESC R n

Decimal: 27 82 n

Hexadecimal: 1B 52 n

[Range]   0≤n≤13

[Description]   Select an internal character set n as follows:

n	Character set	n	Character set
0	U.S.A	8	Japan
1	France	9	Norway

2	Germany	10	Denmark II
3	U.K	11	Spain II
4	Denmark I	12	Latin America
5	Sweden	13	Korea
6	Italy	14	Slovenia/Croatia
7	Spain I	15	China

[Default]   n=0

ESC t n

[Name]   Select character code table

[Format]   ASCII: ESC t n

               Decimal: 27 116 n

               Hexadecimal: 1B 74 n

[Range]   0≤n≤5, 16≤n≤19, n=255

[Description]   Select page n from the character code table as follows:

N	Code Page	N	Code Page
0	CP437 [U.S.A., Standard Europe]	24	CP737 [Greek]
1	Katakana	25	WCP1257 [Baltic]
2	CP850 [Multilingual]	26	Thai
3	CP860 [Portuguese]	27	CP720[Arabic]
4	CP863 [Canadian-French]	28	CP855
5	CP865 [Nordic]	29	CP857[Turkish]
6	WCP1251 [Cyrillic]	30	WCP1250[Central Eurpoe]
7	CP866 Cyrilliec #2	31	CP775
8	MIK[Cyrillic /Bulgarian]	32	WCP1254[Turkish]
9	CP755 [East Europe，Latvian 2]	33	WCP1255[Hebrew]
10	Iran	34	WCP1256[Arabic]
11	reserve	35	WCP1258[Vietnam]
12	reserve	36	ISO-8859-2[Latin 2]
13	reserve	37	ISO-8859-3[Latin 3]
14	reserve	38	ISO-8859-4[Baltic]
15	CP862 [Hebrew]	39	ISO-8859-5[Cyrillic]
16	WCP1252 Latin I	40	ISO-8859-6[Arabic]
17	WCP1253 [Greek]	41	ISO-8859-7[Greek]
18	CP852 [Latina 2]	42	ISO-8859-8[Hebrew]
19	CP858 Multilingual Latin I +Euro)	43	ISO-8859-9[Turkish]
20	Iran II	44	ISO-8859-15 [Latin 3]
21	Latvian	45	Thai2
22	CP864 [Arabic]	46	CP856
23	ISO-8859-1 [West Europe]	47	Cp874

[Default]   n=0

[Reference]   Character Code Tables

ESC 9 n

[Name]	Select Chinese code format		
[Format]	ASCII:	ESC 9 n	
	Decimal:	27 57 n	
	Hexadecimal:	1B 39 n	

[Description] Select Chinese code format, n from the character code table as follows:
0: GBK code.
1: UTF-8 code.
3: BIG5 code.

[Note] This version is not support English.

[Reference]

8.2.4 Bit Image Command

ESC * m n1 n2 d1 d2…dk

[Name]	Select bit-image mode	
[Format]	ASCII:	ESC * m n1 n2 d1 d2 … dk
	Decimal:	27 42 m n1 n2 d1 d2 … dk
	Hexadecimal:	1B 2A m n1 n2 d1 d2 … dk
[Range]	m =0,1,32,33	
	nL=0-255	
	nH=0-3	
	dx=0-255	

[Description] Selects a bit-image mode using m for the number of dots specified by nL and nH, as follows:

m	Mode	Vertical Direction		Horizontal Direction	
		Number of Dots	Dot Density	Dot Density	Number of Data (K)
0	8-dot single-density	8	67.7 dpi	101.6 dpi	nL+nH×256
1	8-dot double-density	8	67.7 dpi	203.2 dpi	nL+nH×256
32	24-dot single-density	24	203.2 dpi	101.6 dpi	(nL+nH×256)×3
33	24-dot double-density	24	203.2 dpi	203.2 dpi	(nL+nH×256)×3

[Note] λ If the value of m is out of the specified range, nL and nH the data following are processed as normal data.

λ The nL and nH indicate the number of dots in the bit image in the horizontal direction. The number of dots is calculated by nL+ nH×256.

λ   If the bit-image data input exceeds the number of dots to be printed on a line, the excess data is ignored.

λ   d indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0 not to print a dot.

λ   After printing a bit image, the printer returns to normal data processing mode.

λ   This command is not affected by print modes (emphasized, double-strike, underline, character size, or white/black reverse printing), except upside-down printing mode.

λ   The relationship between the image data and the dots to be printed is described in Figure 3.11.3.

λ   When 8-dot bit image is selected:
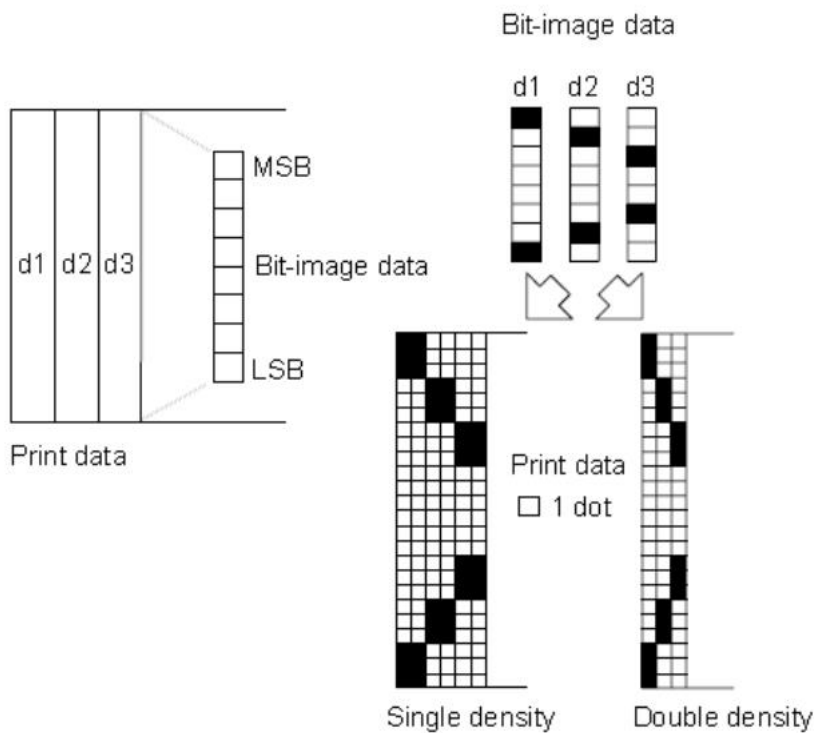
Figure 3.11.3.

λ   When 24-dot bit image is selected:

Bit-image data

d1　d2　d3　d4　d5　d6　d7　d8　d9

d1　d4　d7　　MSB

Bit-image data

d2　d5　d8

d3　d6　d9　　LSB

Print data

Print data
□ 1 dot

Single density　　Double density
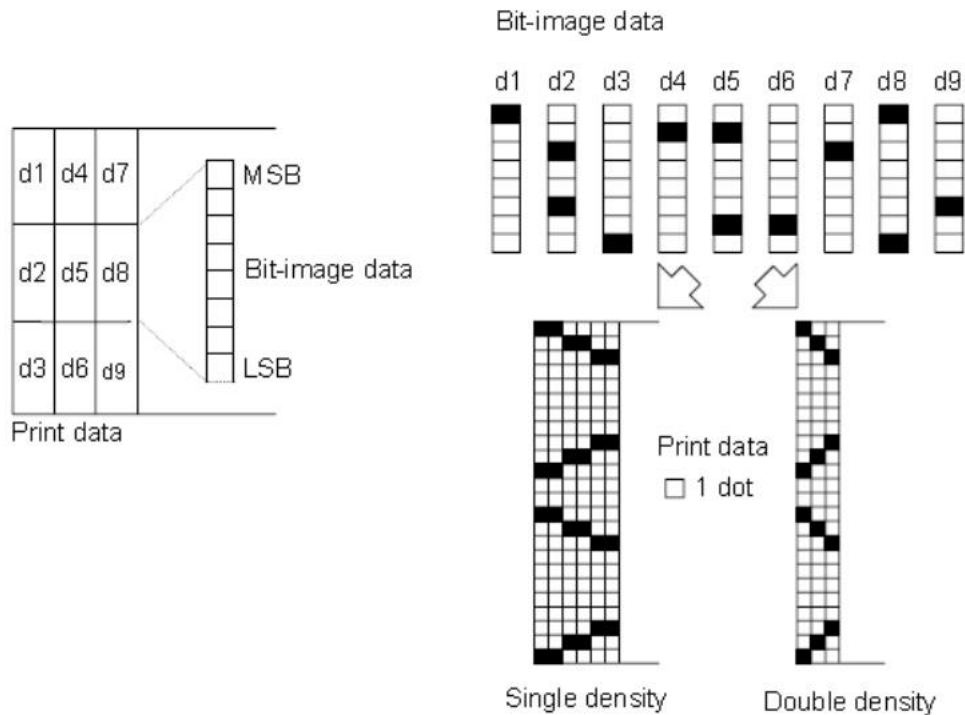
Figure 3.11.3.

GS * x y d1...d(x × y × 8)

[Name]	Define downloaded bit image	
[Format]	ASCII:	GS * x y d1 … d(x×y×8)
	Decimal:	29 42 x y d1 … d(x×y×8)
	Hexadecimal:	1D 2A x y d1 … d(x×y×8)
[Range]	1≤x≤255	
	1≤y≤48 (where x×y≤1536)	
	0≤d≤255	

[Description]　Defines a downloaded bit image using the number of dots specified by x and y.

　　λ　x specifies the number of dots in the horizontal direction.

　　λ　y specifies the number of dots in the vertical direction.

[Note]　　λ　The number of dots in the horizontal direction is x×8; in the vertical direction it is y×8.

　　λ　If x×y is out of the specified range, this command is disabled.

　　λ　The d indicates bit-image data. Data (d) specifies a bit printed as 1 and not printed as 0.

　　λ　The downloaded bit image definition is cleared when:

　　1)　ESC @ is executed.

　　2)　ESC & is executed.

　　3)　Printer is reset or the power is turned off.

　　λ　The following figure shows the relationship between the downloaded

bit image and the printed data.
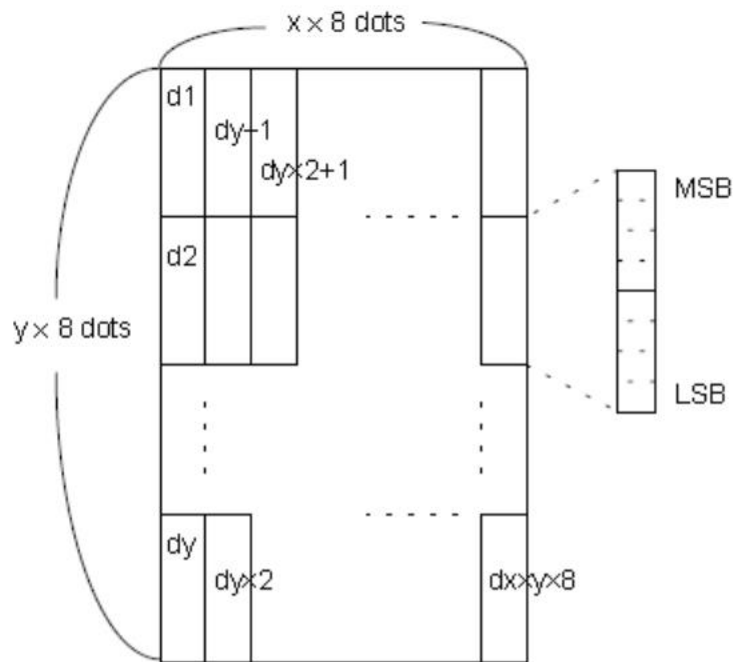
[Reference]   **GS /**

GS / n

[Name]   Print downloaded bit image

[Format]   ASCII: GS / n

Decimal: 29 47 n

Hexadecimal: 1D 2F n

[Range]   0≤n≤3, 48≤n≤51

[Description] Prints a downloaded bit image using the mode specified by n.

n selects a mode from the table below:

n	Mode	Vertical Dot Density	Horizontal Dot Density
0, 48	Normal	203.2 dpi	203.2 dpi
1, 49	Double-width	203.2 dpi	101.6 dpi
2, 50	Double-height	101.6 dpi	203.2 dpi
3, 51	Quadruple	101.6 dpi	101.6 dpi

[Note]   λ   This command is ignored if a downloaded bit image has not been defined.

λ   In standard mode, this command is effective only when there is no data in the print buffer.

λ   This command has no effect in the print modes (emphasized, double-strike, underline, character size, or white/black reverse printing), except for upsidedown printing mode.

λ   If the downloaded bit-image to be printed exceeds the printable area, the excess data is not printed.

GS *

[Reference]

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

[Name]	Print raster bit image	
[Format]	ASCII:	GS v 0 m xL xH yL yH d1...dk
	Decimal:	29 118 48 m xL xH yL yH d1...dk
	Hexadecimal:	1D 76 30 m xL xH yL yH d1...dk

[Range] $0 \le m \le 3$, $48 \le m \le 51$

$0 \le xL \le 255$

$0 \le xH \le 255$, where $1 \le (xL+xH \times 256) \le 48$

$0 \le yL \le 255$

$0 \le yH \le 8$, where $1 \le (yL+yH \times 256) \le 4095$

$0 \le d \le 255$

$k = (xL+xH \times 256) \times (yL+yH \times 256)$ $(k \ne 0)$

[Description]   Selects raster bit-image mode. The value of m selects the mode, as follows:

m	Mode	Vertical Dot Density	Horizontal Dot Density
0, 48	Normal	203.2 dpi	203.2 dpi
1, 49	Double-width	203.2 dpi	101.6 dpi
2, 50	Double-height	101.6 dpi	203.2 dpi
3, 51	Quadruple	101.6 dpi	101.6 dpi

λ   xL, xH, select the number of data bytes (xL+xH×256) in the horizontal direction for the bit image.

λ   yL, yH, select the number of data bits (yL+yH×256) in the vertical direction for the bit image.

[Note]   λ   In standard mode, this command is effective only when there is no data in the print buffer.

λ   This command is not affected by print modes (character size, emphasized, double-strike, upside-down, underline, white/black reverse printing, etc.) for raster bit image.

λ   Data outside the printing area is read in and discarded on a dot-by-dot basis.

λ   The position at which subsequent characters are to be printed for raster bit image is specified by **HT** (Horizontal Tab), **ESC $** (Set absolute print position), and **GS L** (Set left margin). If the position at which subsequent characters are to be printed is a multiple of 8.

λ   The **ESC a** (Select justification) setting is also effective on raster bit images.

λ   d indicates the bit-image data. Setting a bit to 1 print a dot and setting it to 0 does not print a dot.

[Example]   When xL+xH×256=64

| ← | (xL+xH×256)×8dots=512dots | → |

1	2	3	**** *	62	63	64
65	66	67	**** *	126	127	128
			**** *			
			**** *	K-2	K-1	K

↑

yL+yH×256dots

↓

7	6	5	4	3	2	1	0

MSB   LSB
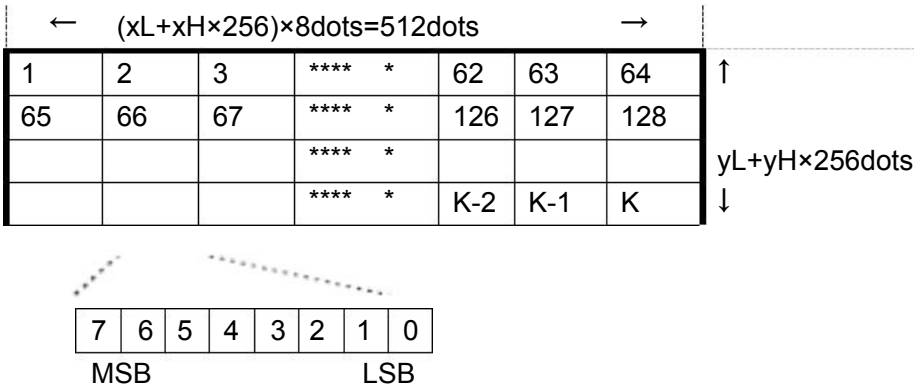
DC2 * r n [d1…dn]

[Name]   Print bitmap

[Format]   ASCII: DC2 * r n [d1 … dn]

Decimal: 18 42 r n [d1 … dn]

Hexadecimal: 12 2A r n [d1 … dn]

[Description]   Printing bitmap with width & height

r: Bitmap height

n: Bitmap width

Bitmap format:

MSB   LSB

| d1 | d2 | …. | d(n-1) | dn |

r

| d1 | d2 | …. | d(n-1) | dn |
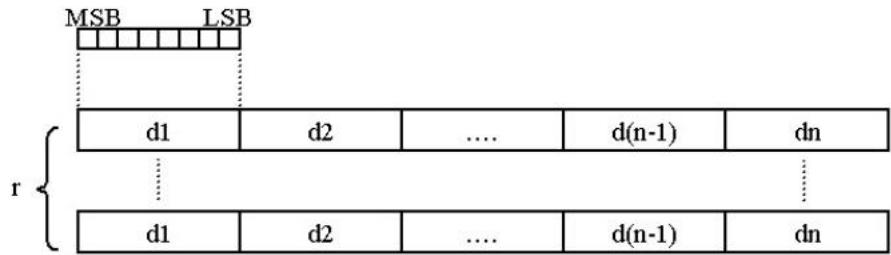
DC2 V nL nH [d1…dn]

[Name]   Print MSB Bitmap

[Format]   ASCII: DC2 V nL nH [d1 … d48]

Decimal: 18 86 nL nH [d1 … d48]

Hexadecimal: 12 56 nL nH [d1 … d48]

[Description]   This command use to print MSB format bitmap,

The width of bitmap must the same as the printer mechanism

Bitmap height: nL+nH*256

Bitmap format:

384 dots

| 1th byte | 2th byte | .... | 47th byte | 48th byte |

| n+1th byte | n+2th byte | .... | n+47th byte | n+48th byte |

$<< n = nL + nH*256 >>$

MSB   LSB
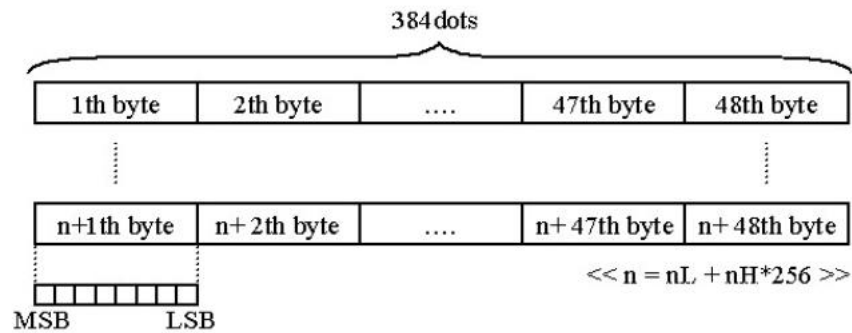
FS p n m

[Name]	Print NV bit image	
[Format]	ASCII:	FS p n m
	Decimal:	28 112 n m
	Hexadecimal:	1C 70 n m
[Range]	1≤n≤255	
	0≤m≤3 , 48≤m≤51	

[Description]   Prints NV bit image n using the mode specified by m.

m	Mode	Vertical Dot Density	Horizontal Dot Density
0，48	Normal	203.2 dpi	203.2 dpi
1，49	Double-width	203.2 dpi	101.6 dpi
2，50	Double-height	101.6 dpi	203.2 dpi
3，51	Quadruple	101.6 dpi	101.6 dpi

     λ   n is the number of the NV bit image (defined using the **FS q** command).

     λ   m specifies the bit image mode.

[Details]   λ   NV bit image is a bit image defined in non-volatile memory by **FS q** and printed by **FS p**.

     λ   This command is not effective when the specified NV bit image has not been defined.

     λ   In standard mode, this command is effective only when there is no data in the print buffer.

     λ   This command is not affected by print modes (emphasized, underline, character size, white/black reverse printing, or 90° rotated characters, etc.), except upside-down printing mode.

     λ   If the downloaded bit-image to be printed exceeds one line, the excess data is not printed.

     λ   This command feeds dots (for the height n of the NV bit image) in normal and double-width modes and (for the height n×2 of the NV bit image) in doubleheight and quadruple modes, regardless of the line spacing specified by **ESC 2** or **ESC 3**.

     λ   After printing the bit image, this command sets the print position to the beginning of the line and processes the data that follows as

normal data.

[Reference]   **ESC ***, **FS q**, **GS /**, **GS v**

FS q n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n

[Name]   Define NV bit image
[Format]   ASCII: FS q 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

                Hexadecimal: 1C 71 n m [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n

[Range]   1≤n≤255

                1≤xL≤255

                1≤xH≤3 (when 1≤(xL+xH×256)≤1023

                1≤yL≤255

                1≤yH≤1 (when 1≤(yL+yH×256)≤288

                1≤d≤255

                k=(xL+xH×256)×(yL+yH×256)×8

                Total defined data area=192K bytes.

[Description]   Define the NV bit image specified by n.

                λ   n specifies the number of the defined NV bit image.

                λ   xL, xH specifies (xL+xH×256)×8 dots in the horizontal direction for
                    the NV bit image you are defining.

                λ   yL, yH specifies (yL+yH×256)×8 dots in the vertical direction for the
                    NV bit image you are defining.

[Note]   λ   Frequent write command executions may damage the NV memory.

                λ   Therefore, it is recommended to write the NV memory 10 times or
                    less a day.

                λ   The printer performs a hardware reset after the procedure to place
                    the image into the NV memory. Therefore, user-defined characters,
                    downloaded bit images should be defined only after completing this
                    command. The printer clears the receiver and print buffers and
                    resets the mode to the mode that was in effect at power on. (this
                    version is not support hardware reset).

                λ   This command cancels all NV bit images that have already been
                    defined by this command.

                λ   From the beginning of the processing of this command till the finish
                    of hardware reset, mechanical operations (including initializing the
                    position of the print head when the cover is open, paper feeding
                    using the FEED button, etc.) cannot be performed.

                λ   During processing of this command, the printer is BUSY when writing
                    data to the user NV memory and stops receiving data. Therefore it is
                    prohibited to transmit the data, including real-time commands, during
                λ   the execution of this command.
                    NV bit image is a bit image defined in non-volatile memory by **FS q**
                    and printed by **FS p**.

λ   In standard mode, this command is effective only when processed at the beginning of the line.

λ   This command is effective when 7 bytes<FS yH> of the command are processed normally.

λ   When the amount of data exceeds the capacity left in the range defined by xL, xH, yL, yH, the printer processes xL, xH, yL, yH out of the defined range.

λ   In the first group of NV bit images, when any of the parameters xL, xH, yL, yH is out of the definition range, this command is disabled.

λ   In groups of NV bit images other than the first one, when the printer encounters xL, xH, yL, yH out of the defined range, it stops processing this command and starts writing into the NV images. At this time, NV bit images that haven't been defined are disabled (undefined), but any NV bit images before that are enabled.

λ   The d indicates the definition data. In data (d) a 1 bit specifies a dot to be printed and a 0 bit specifies a dot not to be printed.

λ   This command defines n as the number of a NV bit image. Numbers rise in order from NV bit image 01H. Therefore, the first data group [xL xH yL yH d1...dk] is NV bit image 01H, and the last data group [xL xH yL yH d1...dk] is NV bit image n. The total agrees with the number of NV bit images specified by the command **FS p**.

λ   The definition data for an NV bit image consists of [xL xH yL yH d1...dk]. Therefore, when only one NV bit image is defined n=1, the printer processes a data group [xL xH yL yH d1...dk] once. The printer uses ([data: $(xL+xH\times256)\times(yL+yH\times256)\times8$]+[header: 4])

λ   bytes of NV memory.

The definition area in this printer is a maximum of 192K bytes. This command can define several NV bit images, but cannot define bit image data whose total capacity [bit image data+header] exceeds 192K bytes.

λ   The printer does not transmit ASB status or perform status detection during processing of this command even when ASB is specified.

λ   Once an NV bit image is defined, it is not erased by performing **ESC @**, reset and power off.

λ   This command performs only definition of an NV bit image and does not perform printing. Printing of the NV bit image is performed by the **FS p** command.

[Reference]   **FS p**

[Example]   当 xL=64, xH=0, yL=96, yH=0

$(xL + xH \times 256) \times 8$ 点 = 512 点

d97

d1

d49057

最高有效位

最低有效位

d2

d3

d96

d49152

$(yL + yH \times 256) \times 8$ 点 = 768 点
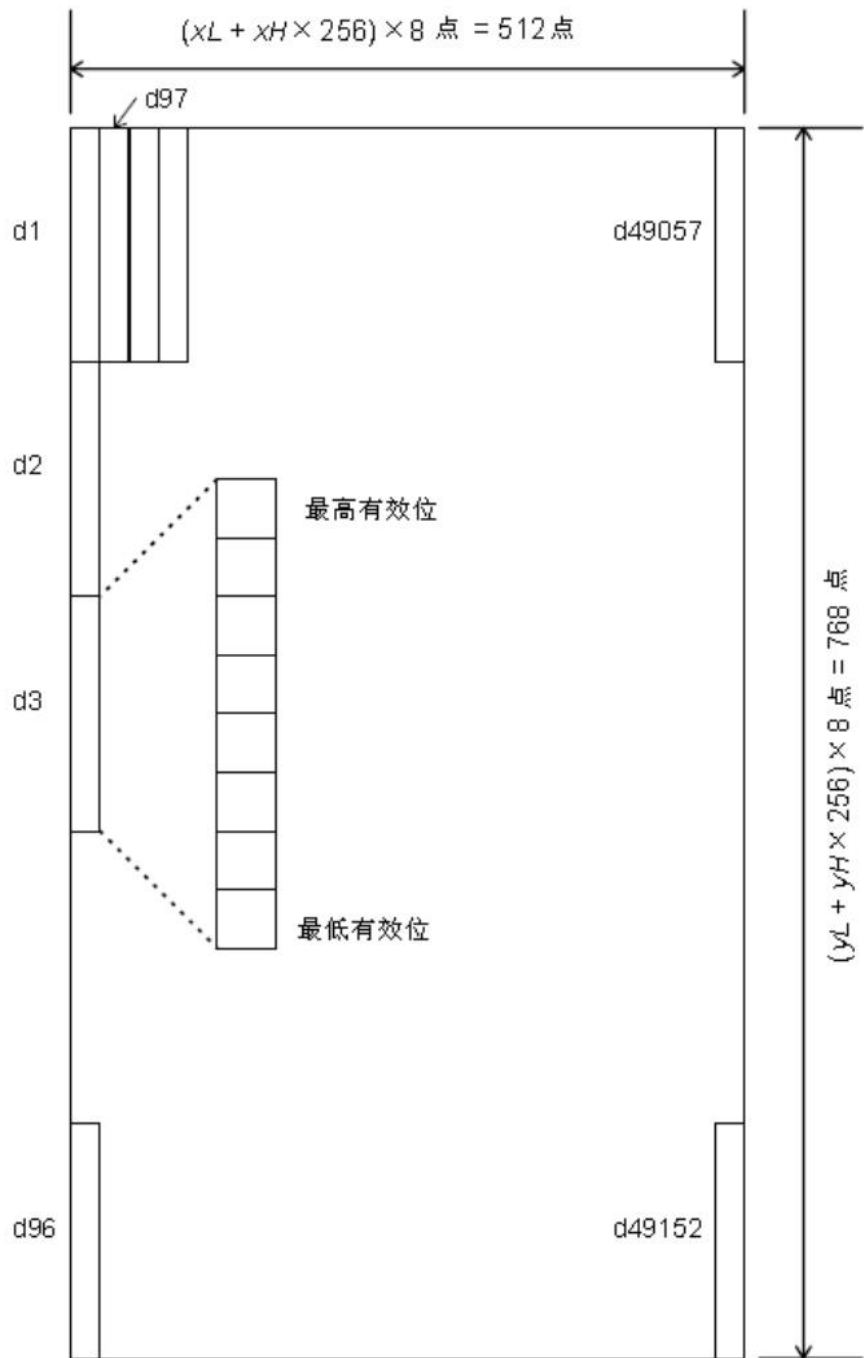
DC2 v nL nH [d1…dn]

[Name]   Print LSB Bitmap

[Format]   ASCII: DC2 v nL nH [d1 … d48]

                Decimal: 18 118 nL nH [d1 … d48]

                Hexadecimal: 12 76 nL nH [d1 … d48]

[Description]   This command use to print LSB format bitmap,

                The width of bitmap must the same as the printer mechanism

                Bitmap height: nL+nH*256

Bitmap format:

$$<< n = nL + nH*256 >>$$
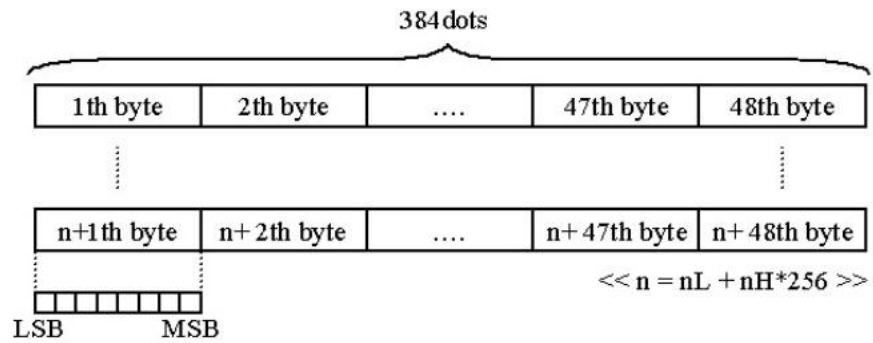
8.2.5 Init command

ESC @

[Name]   Initialize the printer

[Format]   ASCII: ESC @

Decimal: 27 64

Hexadecimal: 1B 40

[Description]   Initializes the printer.
- λ   The print buffer is cleared.
- λ   Reset the parametric to default value.
- λ   return to standard mode
- λ   Delete user-defined characters

[Note]   λ   The DIP switch settings are not checked again.
- λ   The data in the receive buffer is not cleared.

8.2.6 Status Command

ESC v n

[Name]   Transmit paper sensor status

[Format]   ASCII: ESC v n

Decimal: 27 118 n

Hexadecimal: 1B 76 n

[Description]   The return value is 1 bytes,It is a different on behalf of the status:

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Offline.
	On	01	1	Online.
1	-	-	-	Undefined.
2	Off	00	0	Paper has.
	On	04	4	Paper out.
3	Off	00	0	Voltage is normal.
	On	08	8	Voltage＞9.5V.
4	-	-	-	Undefined.

5	-	-	-	Undefined.
6	Off	00	0	Temperature is normal.
	On	40	64	Temperature＞60°.
7	-	-	-	Undefined.

For example：return "0x04" is means paper out.

GS a n

[Name]	Enable/Disable Automatic Status Back(ASB)	
[Format]	ASCII:	GS a n
	Decimal:	29 97 n
	Hexadecimal:	1D 61 n
[Range]	0≤n≤255	
[Description]	n definition as follows:	

When ASB is enabled, the printer will send the changed status to PC automatically.

Bit	Function	Value	
		0	1
0	-	-	-
1	-	-	-
2	Disable/Enable ASB	Disable	Enable
3-4	-	-	-
5	Disable/Enable RTS as flow control	Disable	Enable
6-7	-	-	-

ESC u n (for Drawer)

[Name]	Transmit peripheral devices status		
[Format]	ASCII:	ESC u n	
	Decimal:	27 117 n	
	Hexadecimal:	1B 75	n
[Range]	0=0, 48		
[Description]	Transmits the status of the drawer kick-out connector pin 3 as 1byte of data when n=0, 48.this allows the host to determine the status of a peripheral device.		

n is used as follows:

Bit	On/off	Hex	Decimal	Function
0	Off	00	0	Drawer kick out connector pin 3 is low
0	On	01	1	Drawer kick out connector pin 3 is high
1-3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to off
5-6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off

GS r n

[Name]   Transmit status

[Format]   ASCII: GS   r   n

                Decimal: 29 114 n

                Hexadecimal: 1D 72 n

[Range]   n=1, 49

[Description]   Transmits the status specified by n as follows:

n	Function
1, 49	Transmits paper sensor status

[Note]   λ   When using a serial interface

        1) When DTR/DSR control is selected, the printer transmits only 1 byte after confirming the host is ready to receive data (DSR signal is SPACE). If the host computer is not ready to receive data (DSR signal is MARK), the printer waits until the host is ready.

        2) When XON/XOFF control is selected, the printer transmits only 1 byte without confirming the condition of the DSR signal.

        λ   This command is executed when the data in the receive buffer is developed. Therefore, there may be a time lag between receiving this command and transmitting the status, depending on the receive buffer status.

        λ   When Auto Status Back (ASB) is enabled using GS a, the status transmitted by GS r and the ASB status must be differentiated using.

        λ   The status types to be transmitted are shown below:

Paper sensor status (n = 1, 49):

Bit	Off/On	Hex	Decimal	Status for ASB
0,1	-	-	-	Undefined.
2,3	Off	00	0	Paper roll end sensor: paper adequate.
	On	(0C)	(12)	Paper roll end sensor: paper near end.
4	Off	00	0	Not used. Fixed to Off.
5,6	-	-	-	Undefined.
7	Off	00	0	Not used. Fixed to Off.

Bits 2 and 3:   When the paper end sensor detects a paper end, the printer goes offline and does not execute this command. Therefore, bits 2 and 3 do not transmit the status of paper end.

[Reference]   **GS a**

8.2.7 Bar Code Command

GS H n

[Name]   Select printing position for HRI characters

[Format]   ASCII: GS H n

Decimal: 29 72 n

Hexadecimal: 1D 48 n

[Range]   0≤n≤3, 48≤n≤51

[Description]   Selects the printing position of HRI characters when printing a bar code. n
selects the printing position as follows:

n	Printing position
0, 48	Not printed
1, 49	Above the bar code
2, 50	Below the bar code
3, 51	Both above and below the bar code

HRI indicates Human Readable Interpretation.

[Note]   HRI characters are printed using the font specified by **GS f**.

[Default]   n=0

[Reference]   **GS f**, **GS k**

GS h n

[Name]   Set bar code height

[Format]   ASCII: GS h n

Decimal: 29 104 n

Hexadecimal: 1D 68 n

[Range]   0≤n≤255

[Description]   Selects the height of the bar code.

n specifies the number of dots in the vertical direction.

[Default]   n=162

[Reference]   **GS k**

GS w n

[Name]   Set bar code width

[Format]   ASCII: GS   w   n

Decimal: 29   119   n

Hexadecimal: 1D   77   n

[Range]   2≤n≤6

[Description]   Sets the horizontal size of the bar code.

n specifies the bar code width as follows:

n	Module Width (mm) for Multi-level Bar Code	Binary-level Bar Code	
		Thin Element Width (mm)	Thick Element Width(mm)
2	0.250	0.250	0.625
3	0.375	0.375	1.000
4	0.560	0.500	1.250
5	0.625	0.625	1.625

6	0.750	0.750	2.000

    λ   Multi-level bar codes are as follows:

    UPC-A, UPC-E, JAN13 (EAN13), JAN8 (EAN8), CODE93, CODE128

    λ   Binary-level bar codes are as follows:

    CODE39, ITF, CODABAR

[Default]   n=3

[Reference]   **GS k**

GS k m d1 d2 … dk NUL

GS k m n d1 d2 … dn

[Name]   Print bar code

[Format①]   ASCII: GS   k   m   d1 d2 … dk NUL

                  Decimal: 29 107   m   d1 d2 … dk 0

                  Hexadecimal: 1D   6B m   d1 d2 … dk 00

[Format②]   ASCII: GS   k   m   n   d1 d2 … dn

                  Decimal: 29 107   m   n   d1 d2 … dn

                  Hexadecimal: 1D   6B   m   n   d1 d2 … dn

[Range①]   0≤m≤6(k and d depend on the bar code system used)

[Range②]   65≤m≤73(n and d depend on the bar code system used)

[Description]   Selects a bar code system and prints the bar code.

               m selects a bar code system as follows:

m		Bar Code System	Number of Characters	Remarks
①	0	UPC-A	11≤k≤12	48≤d≤57
	1	UPC-E	11≤k≤12	48≤d≤57
	2	JAN13 (EAN13)	12≤k≤13	48≤d≤57
	3	JAN 8 (EAN8)	7≤k≤8	48≤d≤57
	4	CODE39	1≤k′	48≤d≤57, 65≤d≤90, 32, 36, 37, 43, 45, 46, 47
	5	ITF	1≤k (even number)	48≤d≤57
	6	CODABAR	1≤k′	48≤d≤57, 65≤d≤68, 36, 43, 45, 46, 47, 58
②	65	UPC-A	11≤k≤12	48≤d≤57
	66	UPC-E	11≤k≤12	48≤d≤57
	67	JAN13 (EAN13)	12≤k≤13	48≤d≤57
	68	JAN 8 (EAN8)	7≤k≤8	48≤d≤57
	69	CODE39	1≤n≤255	48≤d≤57, 65≤d≤90, 32, 36, 37, 43, 45, 46, 47
	70	ITF	1≤n≤255 (even number)	48≤d≤57
	71	CODABAR	1≤n≤255	48≤d≤57, 65≤d≤68 , 36, 43, 45, 46, 47, 58
	72	CODE93	1≤n≤255	0≤d≤127

[Notes for①]   λ   This command ends with a NUL code.

λ   When the bar code system used is UPC-A or UPC-E, the printer prints the bar code data after receiving 12 bytes of bar code data and processes the following data as normal data.

λ   When the bar code system used is JAN13 (EAN13), the printer prints the bar code after receiving 13 bytes of bar code data and processes the following data as normal data.

λ   When the bar code system used is JAN8 (EAN8), the printer prints the bar code after receiving 8 bytes of bar code data and processes the following data as normal data.

λ   The number of data for the ITF bar code must be even numbers. When an odd number of bytes of data is input, the printer ignores the last received data.

[Notes for②]   λ   n indicates the number of bar code data bytes, and the printer processes n bytes from the next character data as bar code data.

λ   If n is outside the specified range, the printer stops command processing and processes the following data as normal data.

[Notes in standard mode]

λ   If d is outside the specified range, the printer only feeds paper and processes the following data as normal data.

λ   If the horizontal size exceeds printing area, the printer only feeds the paper.

λ   This command feeds as much paper as is required to print the bar code, regardless of the line spacing specified by **ESC 2** or **ESC 3**.

λ   This command is enabled only when no data exists in the print buffer.When data exists in the print buffer, the printer processes the datafollowing m as normal data.

λ   After printing the bar code, this command sets the print position to thebeginning of the line.

λ   This command is not affected by print modes (emphasized, double-strike, underline, character size, white/black reverse printing, or 90° rotated character, etc.), except for upside-down printing mode.

Control character			HRI character	Control character			HRI character
ASCII	Hex	Decimal		ASCII	Hex	Decimal	
NUL	00	0	■U	DEL	10	16	■P
SOH	01	1	■A	DC1	11	17	■Q
STX	02	2	■B	DC2	12	18	■R
ETX	03	3	■C	DC3	13	19	■S
EOT	04	4	■D	DC4	14	20	■T
ENQ	05	5	■E	NAK	15	21	■U
ACK	06	6	■F	SYN	16	22	■V
BEL	07	7	■G	ETB	17	23	■W
BS	08	8	■H	CAN	18	24	■X
HT	09	9	■I	EM	19	25	■Y

LF	0A	10	■J	SUB	1A	26	■Z
VT	0B	11	■K	ESC	1B	27	■A
FF	0C	12	■L	FS	1C	28	■B
CR	0D	13	■M	GS	1D	29	■C
SO	0E	14	■N	RS	1E	30	■D
SI	0F	15	■O	US	1F	31	■E
				DEL	7F	127	■T

[Example]   Printing **GS k** 72 7 67 111 100 101 13 57 51

When CODE128 (m= 73) is used:

When using CODE128 in this printer, take the following points into account for data transmission:

①The top of the bar code data string must be the code set selection character (CODE A, CODE B, or CODE C), which selects the first code set.

②Special characters are defined by combining two characters "{" and one character. The ASCII character "{" is defined by transmitting "{" twice consecutively.

Specific character	Transmit data		
	ASCII	Hex	Decimal
SHIFT	{S	7B, 53	123,83
CODE A	{A	7B, 41	123,65
CODE B	{B	7B,42	123,66
CODE C	{C	7B,43	123,67
FNC1	{1	7B,31	123,49
FNC2	{2	7B,32	123,50
FNC3	{3	7B,33	123,51
FNC4	{4	7B,34	123,52
"{"	{{	7B,7B	123,123

[Example]   Example data for printing "No. 123456"

In this example, the printer first prints "No." using CODE B, then prints the following numbers using CODE C.

GS k 73 10 123 66 78 111 46 123 67 12 34 56

λ   If the top of the bar code data is not the code set selection character, the printer stops command processing and processes the following data as normal data.

λ   If the combination of "{" and the following character does not apply any special character, the printer stops command processing and processes the following data as normal data.

λ   If the printer receives characters that cannot be used in the special code set, the printer stops command processing and processes the following data as normal data.

λ   The printer does not print HRI characters that correspond to the shift characters or code set selection characters.

λ   HRI character for the function character is space.

λ   HRI characters for the control character (<00>H to <1F>H and <7F>H) are space.

[Others]   Be sure to keep spaces on both right and left sides of a bar code. (Spaces are different depending on the types of the bar code.)

[Reference]   **GS H**, **GS h**, **GS w**

GS x n

[Name]	Set bar code printing left space
[Format]	ASCII: GS x n
	Decimal: 29 120 n
	Hexadecimal: 1D 78 n
[Description]	The print bar code staring positions is: 0→255

8.2.8 Miscellaneous Function Command

ESC 7 n1 n2 n3

[Name]   Setting Control Parameter Command

[Format]   ASCII: ESC 7 n1 n2 n3

    Decimal: 27 55 n1 n2 n3

    Hexadecimal: 1B 37 n1 n2 n3

[Description]   λ   Set "max heating dots"," heating time", "heating interval"

n1=0-255 Max printing dots, Unit(8dots),Default:7(64 dots)

n2=3-255 Heating time, Unit(10us),Default:80(800us)

n3=0-255 Heating interval, Unit(10us),Default:2(20us)

λ   The more max heating dots, the more peak current will cost when printing, the faster printing speed. The max heating dots is 8*(n1+1)

λ   The more heating time, the more density, but the slower printing speed. If heating time is too short, blank page may occur.

λ   The more heating interval, the clearer, but the slower printing speed.

ESC 8 n1 n2

[Name]	Sleep parameter				
[Format]	ASCII:	ESC	8	n1	n2
	Decimal:	27	56	n1	n2
	Hexadecimal:	1B	38	n1	n2

[Description] Setting the time for control board to enter sleep mode.

n1+n2*256 The time waiting for sleep after printing finished, Unit (Second), Default: 0 (don't sleep).

When control board is in sleep mode, host must send one byte (0xff) to wake up control board. And waiting 50ms, then send printing command and data.

[Note] The command is useful when the system is powered by battery.

DC2 # n

[Name]	Set printing density	
[Format]	ASCII:	DC2 # n
	Decimal:	18 35 n
	Hexadecimal:	12 23 n

[Description] D4..D0 of n is used to set the printing density

Density is 50% + 5% * n(D4-D0)

D7..D5 of n is used to set the printing break time

Break time is n(D7-D5)*250us

DC2 T

[Name]	Printing test page		
[Format]	ASCII:	DC2	T
	Decimal:	18	84
	Hexadecimal:	12	54

[Description] Printing the test page

FS t n (for CB105B)

[Name]	Select Timeout			
[Format]	ASCII:	FS	t	n
	Decimal:	28	116	n
	Hexadecimal:	1C	74	n

[Description] Set Timeout for one byte, t= n×10 ms; so if There are 100 bytes needed for a command, the printer will wait 1000×n ms, when n=0, the printer will wait until all chars needed have received.

8.2.9 New commands

DC2 E

[Name]	Feed paper to mark	
[Format]	ASCII:	DC2 E
	Decimal:	18 69
	Hexadecimal:	12 45
[Description]	Feed paper to the Mark position	

DC2 m d 1l 1h

[Name]	Set mark paper length	
[Format]	ASCII:	DC2 m d 1l 1h
	Decimal:	18 109 d 1l 1h
	Hexadecimal:	12 6d d 1l 1h

[Description]   d = 0,1

   1:stop at mark position

  0:go on 3 steps after mark position detected

$0 ≤ ll ≤ 255$

$0 ≤ lh ≤ 255$

Paper length is (ll+lh*256) steps, means (ll+lh*256)/8 mm

ESC C n (for BM)

[Name]	Set BM Max		
[Format]	ASCII:	ESC	C	n
	Decimal:	27	67	n
	Hexadecimal:	1B	43	n

[Description]   With the current row spacing of unit, the line number to define the scope of testing black mark, the default value is 4 inches.

GS FF (for BM)

[Name]	Feed marked paper to print starting position		
[Format]	ASCII:	GS	FF
	Decimal:	29	12
	Hexadecimal:	1D	0C

[Description]   Feeds the marked paper to the print starting position.

Locate to the black mark.

[Note]   λ   This command sets the next print position to the beginning of the line.

λ   Even if this command is executed at the print starting position of the marked paper, the printer does not feed the marked paper to the next

print starting position.

[Reference]   **GS (F**

ESC i (for cut)

[Name]   full cut paper
[Format]   ASCII: ESC   i

               Decimal: 27   105
               Hexadecimal: 1B   69
[Description]   ESC i select a paper cutting mode and then full cut the paper.

ESC m (for cut)

[Name]   partial cut paper
[Format]   ASCII: ESC   i

               Decimal: 27   105
               Hexadecimal: 1B   69
[Description]   ESC m selects a paper cutting mode and then partial cut the paper.

①GS V m② GS V m n(for cut)

[Name]   Select cut mode and cut paper
[Format]   ①ASCII: GS   V   m

               Decimal: 29 86   m
               Hexadecimal: 1D 56   m
               ②ASCII: GS   V   m   n
               Decimal: 29 86   m   n
               Hexadecimal: 1D 56   m   n
[Range]   ① m=1, 49
               ② m=66, 0≤n≤255
[Description]   Selects a mode for cutting paper and executes paper cutting. The value
               of m selects the mode as follows:

m	Print mode
1, 49	Partial cut (one point left uncut)
66	Feeds paper (cutting position + [n ×0.125 mm]), and cuts the paper partially (one point left uncut).

[Notes for ① and ②]
               λ   Cutting status is different, depending on the installed autocutter type.
               λ   This command is effective only when processed at the beginning of a
                    line.
[Note for ①]   Only the partial cut is available; there is no full cut.
[Notes for ②]   λ   When n=0, the printer feeds the paper to the cutting position and
                    cuts it.

     λ   When n≠0, the printer feeds the paper to (cutting position+[n×0.125 mm (0.0049")]) and cuts it.

ESC P m t1 t2 (for Drawer)

[Name]	Generate pulse					
[Format]	ASCII:		ESC	p	m	t1	t2
	Decimal:		27	112	m	t1	t2
	Hexadecimal:		1B	70	m	t1	t2
[Range]	m=0,1,48,49					
	0≤t1≤255, 0≤t2≤255					

[Description]   Outputs the pulse specified by t1 to connector pin m as follows:

m	Function
0,48	Drawer kick-out connector pin2.
1,49	Drawer kick-out connector pin5.

[Note]   λ   The pulse ON time is [t1×2ms] and the OFF time is [t2×2ms].
         λ   If t2<t1, the OFF time is [t1×2ms].

ESC c 5 n(for buttons)

[Name]	Enable/disable panel buttons				
[Format]	ASCII:		ESC	c	5	n
	Decimal:		27	99	53	n
	Hexadecimal:		1B	03	35	n
[Range]	0≤n≤255					

[Description]   Enable/disable panel buttons（support the panel buttons）
         λ   When the LSB of n is 0, the panel buttons are enabled.
         λ   When the LSB of n is 1, the panel buttons are disabled.
[Default]   n=0

GS (F pL pH a m nL nH (for 701BM)

[Name]

[Format]	ASCII:		GS	(	F	pL	pH	a	m	nL	nH
	Decimal:		29	40	70	pL	pH	a	m	nL	nH
	Hexadecimal:		1D	28	46	pL	pH	a	m	nL	nH

[Range]   (pL+(pH×256))=4 (where pL=4, pH=0)
            1≤a≤2
            m = 0, 48 or 1, 49
            0≤(nL+nH×256) ≤65535 (where 0≤nL≤255, 0≤nH≤255)

[Description]   This command is effective only when the BM sensor is enabled.
            Sets adjustment values(s) for the printer operations specified by a.
         λ   pL and pH specifies the number of the parameter such as a to

(pL+(pH×256))bytes.

    λ   a specifies setting values for the positions to start printing and cutting

a	Function
1	Setting value for the positions to start the printing.
2	Setting value for the positions to start the cutting.

    λ   m specifies the direction of the adjustment.

m	Function
0,48	Specifies a forward paper feeding direction
1,49	Specifies a backward paper feeding direction.

    λ   nL and nH specifies the setting value to [(nL+nH×256)×0.125 mm].

    λ   The adjustment value for the print starting position (a=1) is affected with the following commands: **GS FF**

    λ   The adjustment value for the paper cutting position (a=2) is affected with thefollowing commands:**GS V m n**

[Default]   All adjustment values are set to "0".

(At the factory setting, the print starting position and the cutting position are set to the head position and the cutter position respectively when the BM sensor detects the BM.)

[Reference]   **GS FF**, **GS V**

FS C (for CB65C)

[Name]   Start receive buffer count

[Format]   ASCII: FS   C

                Decimal: 28 67

                Hexadecimal: 1C 43

[Description]   Start receiving buffer count.

FS S (for CB65C)

[Name]   Start send buffer count

[Format]   ASCII: FS   S

                Decimal: 28 83

                Hexadecimal: 1C 53

[Description]   Send count of receive buffer, include this command's 2 bytes.

FS s (for XBLY)

[Name]   Save print parater

[Format]   ASCII: FS   s

                Decimal: 28 115

                Hexadecimal: 1C 73

[Description]   Save print parater. (only for XBLY)

FS d (for XBLY)

[Name]   Load default leaving factory set
[Format]   ASCII: FS   d

                Decimal: 28   100

                Hexadecimal: 1C   64
[Description]   Load default leaving factory set .(only for XBLY)

Appendix 1 Code page

Page0 PC437 Page3 CP860 [Portuguese]

Code page 437															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	¢	£	¥	Pts	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	

Page 1 Katakana

Page2 PC850 [Multilingual]

Code page 850															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
B_	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C_	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D_	ð	Ð	Ê	Ë	È	ı	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
E_	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F_		±	‗	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	

Page3 PC860 [Portuguese]

Code page 860																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
9_	É	À	È	ô	õ	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù	Pts	Ó
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	Ò	¬	½	¼	¡	«	»
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	

Page4 PC863 [Canadian-French]

Code page 863																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	Â	à	¶	ç	ê	ë	è	ï	î	‗	À	§
9_	É	È	Ê	ô	Ë	Ï	û	ù	¤	Ô	Ü	¢	£	Ù	Û	ƒ
A_	¦	´	ó	ú	¨	¸	³	¯	Î	⌐	¬	½	¼	¾	«	»
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	

Page5 pc865 [Nordic]

Code page 865																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pts	ƒ

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	¤
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²		NBSP

Page6 pc1251 [Cyrillic]

Code page 1251																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ђ	Ѓ	‚	ѓ	„	…	†	‡	€	‰	Љ	‹	Њ	Ќ	Ћ	Џ
9_	ђ	'	'	"	"	•	–	—		™	љ	›	њ	ќ	ћ	џ
A_	NBSP	Ў	ў	Ј	¤	Ґ	¦	§	Ё	©	Є	«	¬	SHY	®	Ї
B_	°	±	І	і	ґ	µ	¶	·	ё	№	є	»	ј	Ѕ	ѕ	ї
C_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
D_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
E_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
F_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я

Page7 pc866 Cyrilliec #2

Code page 866																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
9_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	
A_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F_	Ё	ё	Є	є	Ї	ї	Ў	ў	°	∙	·	√	№	¤	■	NBSP

Page8 MIK [Cyrillic /Bulgarian]

Code page MIK																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
9_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
A_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	░	▒	▓	│	┤	№	§	╗	╝	╜	╟	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP

Page9 CP755

Code page 755																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
9_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B_	░	▒	▓	│	┤	Ā	╣	╗	╗	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	ā	╠	╚	╔	╩	╦	═	╬	╧
D_	Š	╤	Č	č	╚	╔	ġ	Ī	ī	┘	┌	█	▄	ū	Ū	■
E_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
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Page10 Iran

Code page Iran																
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8_	۰	۱	۲	۳	۴	۵	۶	۷	۸	۹	،	-	؟F	آ	ئ	ء
9_	ا	ا	ب	ب	پ	پ	ت	ت	ث	ث	ج	*ج	چ C*	چ	ح	ح
A_	خ	خ	د	ذ	ر	ز	ژ	س	س	ش	ش	ص	ص	ض	ض	ط
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗		╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	ظ	ع	ع	ع	غ	غ	غ	غ	ف	ف	ق	ق	ك	ك	گ
F_	گ	ل	لا	لا	م	م	ن	ذ	و	ه	ه	ه	ى	ى	ي	ي

Page15 CP862 [Hebrew]

Code page 862																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
9_	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת	¢	£	¥	₧	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	»

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
B_	░	▒	▓	┐	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP

Page 16 PC1252 Latin 1

Code page 1252															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚	ƒ	„	…	†	‡	ˆ	‰	Š	‹	Œ		Ž	
9_		'	'	"	"	•	–	—	˜	™	š	›	œ		ž	Ÿ
A_	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
B_	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C_	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E_	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F_	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Page 17 WCP1253 [Greek]

Code page 1253															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚	ƒ	„	…	†	‡		‰		‹				
9_		'	'	"	"	•	–	—		™		›				
A_	NBSP	΅	Ά	£	¤	¥	¦	§	¨	©		«	¬	SHY	®	―
B_	°	±	²	³	΄	µ	¶	·	Έ	Ή	Ί	»	Ό	½	Ύ	Ώ
C_	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
D_	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
E_	ΰ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	µ	ν	ξ	ο
F_	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	

Page18 PC852

Code page 852															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	ů	ć	ç	ł	ë	Ő	ő	î	Ź	Ä	
9_	É	Ĺ	ĺ	ô	ö	Ľ	ľ	Ś	ś	Ö	Ü	Ť	ť	Ł	×	
A_	á	í	ó	ú	Ą	ą	Ž	ž	Ę	ę	¬	ź	Č	ş	«	»
B_	░	▒	▓	│	┤	Á	Â	Ě	Ş	╣	║	╗	╝	Ż	ż	Ω

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
C_	└	┴	┬	├	─	┼	Ă	ă	╚	╔	╩	╦	╠	═	╬	O
D_	đ	Đ	Ď	Ë	ď	Ň	Í	Î	ě	┘	┌	█	▄	Ţ	Ů	í
E_	Ó	ß	Ô	Ń	ń	ň	Š	š	Ŕ	Ú	ŕ	Ű	ý	Ý	ţ	o
F_	-	˝	˛	ˇ	˘	§	÷	¸	°	¨	·	ű	Ř	ř	■	

Page19 PC858 (Multilingual Latin I+Euro)

Code page 858															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	ƒ
A_	á	í	ó	ú	ñ	Ñ	ª	º	¿	®	¬	½	¼	¡	«	»
B_	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C_	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D_	ð	Ð	Ê	Ë	È	€	Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
E_	Ó	ß	Ô	Ò	õ	Õ	µ	þ	Þ	Ú	Û	Ù	ý	Ý	¯	´
F_	-	±	‗	¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	

Page20 Iran II

Code page Iran II															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	۰	۱	۲	۳	۴	۵	۶	۷	۸	۹	،	ـ	؟F	آ	أ	ء
9_	ا	ا	ب	ب	پ	پ	ت	ت	ث	ث	ج	*ج	C* چ	چ	ح	ح
A_	خ	خ	د	ذ	ر	ز	ژ	س	س	ش	ش	ص	ص	ض	ض	ط
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗		╜	╛	┐
C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	F	╒	╫	╪	┘	┌	█	▄	▌	▐	▀
E_	ظ	ع	ع	ع	ع	غ	غ	غ	غ	ف	ف	ق	ق	ک	ک	گ
F_	گ	ل	لا	ل	م	م	ن	ن	و	ه	ه	ه	ى	ى	ی	

Page21 Latvian

Code page Latvian															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
9_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
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E_	þ	c	ŧ	y	ф	x	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
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Page22 CP864 [Arabic]

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9_	ß	∞	φ	±	½	¼	≈	«	»	لآ	لأ			لا	لآ	
A_	NBSP	SHY	ی		£	¤	أ		€	ا	ب	ت	ث	،	ج	ح
B_	٠	١	٢	٣	٤	٥	٦	٧	٨	٩	ف	؛	س	ش	ص	ض
C_	¢	ء	آ	أ	ؤ	ع	ئ	ا	إ	ة	ت	ث	ج	ح	خ	د
D_	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ	ـ	ف	÷	×	ع
E_	ـ	ف	ق	ك	ل	م	ن	ه	و	ى	ي	ض	ع	غ	غ	م
F_	__	_	ن	ه	ه	ى	ى	غ	ق	لآ	لآ	ل	ك	ي	■	

Page23 ISO-8859-1 [West Europe]

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
Code page 8859-1																
8_																
9_																
A_	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
B_	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C_	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E_	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F_	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Page24 CP737 [Greek]

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
Code page 737																
8_	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π
9_	Ρ	Σ	Τ	Υ	Φ	Χ	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
A_	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	υ	φ	χ	ψ
B_	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐

C_	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D_	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	■	▄	▌	▐	▀
E_	ω	ά	έ	ή	ϊ	ί	ό	ύ	ϋ	ώ	Ά	Έ	Ή	Ί	Ό	Ύ
F_	Ω	±	≥	≤	Ϊ	Ÿ	÷	≈	°	∙	·	√	ⁿ	²	■	NBSP

Page25 WCP1257 [Baltic]

Code page 1257															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚		„	…	†	‡		‰		‹		¨	ˇ	¸
9_		'	'	"	"	•	–	—		™		›		¯	˛	
A_	NBSP		¢	£	¤		¦	§	Ø	©	R	«	¬	SHY	®	Æ
B_	°	±	²	³	´	µ	¶	·	ø	¹	ŗ	»	¼	½	¾	æ
C_	Ą	Į	Ā	Ć	Ä	Å	Ę	Ē	Č	É	Ź	Ė	Ģ	Ķ	Ī	Ļ
D_	Š	Ń	Ņ	Ó	Ō	Õ	Ö	×	Ų	Ł	Ś	Ū	Ü	Ż	Ž	ß
E_	ą	į	ā	ć	ä	å	ę	ē	č	é	ź	ė	ģ	ķ	ī	ļ
F_	š	ń	ņ	ó	ō	õ	ö	÷	ų	ł	ś	ū	ü	ż	ž	˙

Page26 Thai

Page27 CP720 [Arabic]

Code page 720															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_			é	â		à		ç	ê	ë	è	ï	î			

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
9_				ô	¤		û	ù	ء	آ	أ	ؤ	£	إ	ئ	ا
A_		ة	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ص	«	»
B_																
C_																
D_													■	■		■
E_	ض	ط	ظ	ع	غ	ف	µ	ق	ك	ل	م	ن	ه	و	ى	ي
F_	≡							≈	°	∙	∙	√	ⁿ	²	■	NBSP

Page28 CP855

Code page 855																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	ђ	Ђ	ѓ	Ѓ	ё	Ё	є	Є	ѕ	Ѕ	і	І	ї	Ї	ј	Ј
9_	љ	Љ	њ	Њ	ћ	Ћ	ќ	Ќ	ў	Ў	џ	Џ	ю	Ю	ъ	Ъ
A_	а	А	б	Б	ц	Ц	д	Д	е	Е	ф	Ф	г	Г	«	»
B_							х	Х	и	И					й	Й
C_							к	К								¤
D_	л	Л	м	М	н	Н	о	О	п			■	■		П	я	■
E_	Я	р	Р	с	С	т	Т	у	У	ж	Ж	в	В	ь	Ь	№
F_	SHY	ы	Ы	з	З	ш	Ш	э	Э	щ	Щ	ч	Ч	§	■	NBSP

Page29 PC857 [Turkish]

Code page 857																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ı	Ä	Å
9_	É	æ	Æ	ô	ö	ò	û	ù	İ	Ö	Ü	ø	£	Ø	Ş	ş
A_	á	í	ó	ú	ñ	Ñ	Ğ	ğ	¿	®	¬	½	¼	¡	«	»
B_						Á	Â	À	©					¢	¥	
C_							ã	Ã								¤
D_	º	ª	Ê	Ë	È	ç	Í	Î	Ï		┌	■	■	¦	Ì	■
E_	Ó	ß	Ô	Ò	õ	Õ	µ	Ç	×	Ú	Û	Ù	ì	ÿ	¯	´
F_		±	Ç	¾	¶	§	÷	¸	º	¨	∙	¹	³	²	■	

Page30 WCP1250 [Central Eurpoe]

Code page-1250																
	—0	—1	—2	—3	—4	—5	—6	—7	—8	—9	—A	—B	—C	—D	—E	—F
8_	€		‚		„	…	†	‡		‰	Š	‹	Ś	Ť	Ž	Ź
9_		'	'	"	"	•	–	—		™	š	›	ś	ť	ž	ź

A_	NBSP	˘	˛	Ł	¤	Ą	¦	§	¨	©	Ş	«	¬	SHY	®	Ż
B_	°	±	˛	ł	´	µ	¶	·	¸	a	ş	»	Ľ	˝	ľ	ż
C_	Ŕ	Á	Â	Ă	Ä	Ĺ	Ć	Ç	Č	É	Ę	Ë	Ě	Í	Î	Ď
D_	Đ	Ń	Ň	Ó	Ô	Ő	Ö	×	Ř	Ů	Ú	Ű	Ü	Ý	Ţ	ß
E_	ŕ	á	â	ă	ä	ĺ	ć	ç	č	é	ę	ë	ě	í	î	ď
F_	đ	ń	ň	ó	ô	ő	ö	÷	ř	ů	ú	ű	ü	ý	ţ	˙

Page31 CP775

Code page 775																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	Ć	ü	é	ā	ä	ģ	å	ć	ł	ē	Ŗ	ŗ	ī	Ź	Ä	Å
9_	É	æ	Æ	ō	ö	Ģ	¢	Ś	ś	Ö	Ü	ø	£	Ø	×	¤
A_	Ā	Ī	ó	Ż	ż	ź	"	¦	©	®	¬	½	¼	Ł	«	»
B_	▒	▒	▒	│	┤	Ą	Č	Ę	Ė	╣	║	╗	╝	Į	Š	┐
C_	└	┴	┬	├	─	┼	Ų	Ū	╚	╔	╩	╦	╠	═	╬	Ž
D_	ą	č	ę	ė	į	š	ų	ū	ž	┘	┌	█	▄	▌	▐	▀
E_	Ó	ß	Ō	Ń	õ	Õ	µ	ń	Ķ	ķ	Ļ	ļ	ņ	Ē	Ņ	’
F_	SHY	±	"	¾	¶	§	÷	„	°	∙	·	¹	³	²	■	NBSP

Page32 WCP1254 [Turkish]

Code page-1254																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚	ƒ	„	…	†	‡	ˆ	‰	Š	‹	Œ			
9_		‘	’	“	”	•	–	—	˜	™	š	›	œ			Ÿ
A_	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
B_	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C_	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_	Ğ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
E_	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F_	ğ	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ı	ş	ÿ

Page33 WCP1255 [Hebrew]

Code page-1255																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚	ƒ	„	…	†	‡		‰		‹				
9_		‘	’	“	”	•	–	—	˜	™		›				¯
A_	NBSP	¡	¢	£	₪	¥	¦	§	¨	©	×	«	¬	SHY	®	¯

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
B_	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	¿
C_	○	○	○	○	○	○	○	○				○	○	○	○	○
D_	׀	○	○	:1	װ	ױ	ײ	׳	״6							
E_	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
F_	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת			LRM	RLM	

Page34 WCP1256 [Arabic]

Code page-1256															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€	پ	‚	ƒ	„	…	†	‡	ˆ	‰	ٹ	‹	Œ	چ	ژ	ڈ
9_	گ	‘	’	“	”	•	–	—	ک	™	ڑ	›	œ	ZWNJ	ZWJ	ں
A_	NBSP	،	¢	£	¤	¥	¦	§	¨	©	ھ	«	¬	SHY	®	¯
B_	°	±	²	³	´	µ	¶	·	¸	¹	؛	»	¼	½	¾	؟
C_	ہ	ء	آ	أ	ؤ	إ	ئ	ا	ب	ة	ت	ث	ج	ح	خ	د
D_	ذ	ر	ز	س	ش	ص	ض	×	ط	ظ	ع	غ	ـ	ف	ق	ك
E_	à	ل	â	م	ن	ه	و	ç	è	é	ê	ë	ى	ي	î	ï
F_				ô	○	○	÷	○	ù	○	û	ü	LRM	RLM	ے	

Page35 WCP1258 [Vietnam]

Code page-1258															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€		‚	ƒ	„	…	†	‡	ˆ	‰		‹	Œ			
9_		‘	’	“	”	•	–	—	˜	™		›	œ			Ÿ
A_	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
B_	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C_	À	Á	Â	Ă	Ä	Å	Æ	Ç	È	É	Ê	Ë		Í	Î	Ï
D_	Đ	Ñ		Ó	Ô	Ơ	Ö	×	Ø	Ù	Ú	Û	Ü	Ư		ß
E_	à	á	â	ă	ä	å	æ	ç	è	é	ê	ë		í	î	ï
F_	đ	ñ		ó	ô	ơ	ö	÷	ø	ù	ú	û	ü	ư	đ	ÿ

Page36 ISO-8859-2[Latin 2]

Code page-8859-2															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	Ą	˘	Ł	¤	Ľ	Ś	§	¨	Š	Ş	Ť	Ź	SHY	Ž	Ż
B_	°	ą	˛	ł	´	ľ	ś	ˇ	¸	š	ş	ť	ź	˝	ž	ż

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
C_	Ŕ	Á	Â	Ă	Ä	Ĺ	Ć	Ç	Č	É	Ę	Ë	Ě	Í	Î	Ď
D_	Đ	Ń	Ň	Ó	Ô	Ő	Ö	×	Ř	Ů	Ú	Ű	Ü	Ý	Ţ	ß
E_	ŕ	á	â	ă	ä	ĺ	ć	ç	č	é	ę	ë	ě	í	î	ď
F_	đ	ń	ň	ó	ô	ő	ö	÷	ř	ů	ú	ű	ü	ý	ţ	˙

Page37 ISO-8859-3[Latin 3]

Code page-8859-3																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	Ħ	˘	£	¤		Ĥ	§	¨	İ	Ş	Ğ	Ĵ	SHY		Ż
B_	°	ħ	²	³	´	µ	ĥ	·	¸	ı	ş	ğ	ĵ	½		ż
C_	À	Á	Â		Ä	Ċ	Ĉ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_		Ñ	Ò	Ó	Ô	Ġ	Ö	×	Ĝ	Ù	Ú	Û	Ü	Ŭ	Ŝ	ß
E_	à	á	â		ä	ċ	ĉ	ç	è	é	ê	ë	ì	í	î	ï
F_		ñ	ò	ó	ô	ġ	ö	÷	ĝ	ù	ú	û	ü	ŭ	ŝ	˙

Page38 ISO-8859-4[Baltic]

Code page-8859-4																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	Ą	ĸ	Ŗ	¤	Ĩ	Ļ	§	¨	Š	Ē	Ģ	Ŧ	SHY	Ž	¯
B_	°	ą	˛	ŗ	´	ĩ	ļ	ˇ	¸	š	ē	ģ	ŧ	Ŋ	ž	ŋ
C_	Ā	Á	Â	Ã	Ä	Å	Æ	Į	Č	É	Ę	Ë	Ė	Í	Î	Ī
D_	Đ	Ņ	Ō	Ķ	Ô	Õ	Ö	×	Ø	Ų	Ú	Û	Ü	Ũ	Ū	ß
E_	ā	á	â	ã	ä	å	æ	į	č	é	ę	ë	ė	í	î	ī
F_	đ	ņ	ō	ķ	ô	õ	ö	÷	ø	ų	ú	û	ü	ũ	ū	˙

Page39 ISO-8859-5[Cyrillic]

Code page-8859-5																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	Ё	Ђ	Ѓ	Є	S	I	Ї	J	Љ	Њ	Ћ	Ќ	SHY	Ў	Џ

B_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
C_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
D_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
E_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F_	№	ё	ђ	ѓ	є	ѕ	і	ї	ј	Љ	Њ	ћ	ќ	§	ў	џ

Page40 ISO-8859-6[Arabic]

Code page-8859-6																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP				¤								،	SHY		
B_												؛				؟
C_		ء	آ	أ	ؤ	إ	ئ	ا	ب	ة	ت	ث	ج	ح	خ	د
D_	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ					
E_	ـ	ف	ق	ك	ل	م	ن	ه	و	ى	ي	○	○	○	○	○
F_	○	○	○													

Page41 ISO-8859-7[Greek]

Code page-8859-7																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	ʼ	£	€	₯	¦	§	¨	©		«	¬		SHY		―
B_	°	±	²	³	΄	΅	Ά	·	Έ	Ή	Ί	»	Ό	½	Ύ	Ώ
C_	ΐ	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
D_	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϊ	Ϋ	ά	έ	ή	ί
E_	ΰ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
F_	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϊ	ϋ	ό	ύ	ώ	

Page42 ISO-8859-8[Hebrew]

Code page-8859-8																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																

	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
A_	NBSP		¢	£	¤	¥	¦	§	¨	©	×	«	¬	SHY	®	‾
B_	°	±	²	³	´	µ	¶	·	¸	¹	÷	»	¼	½	¾	
C_																
D_																
E_	א	ב	ג	ד	ה	ו	ז	ח	ט	י	ך	כ	ל	ם	מ	ן
F_	נ	ס	ע	ף	פ	ץ	צ	ק	ר	ש	ת			LRM	RLM	

Page43 ISO-8859-9[Turkish]

Code page-8859-9																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	‾
B_	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C_	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_	Ğ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
E_	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F_	ğ	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ı	ş	ÿ

Page44 ISO-8859-15 [Latin 3]

Code page-8859-15																
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_																
9_																
A_	NBSP	¡	¢	£	€	¥	Š	§	š	©	ª	«	¬	SHY	®	‾
B_	°	±	²	³	Ž	µ	¶	·	ž	¹	º	»	Œ	œ	Ÿ	¿
C_	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D_	Đ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E_	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F_	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Page45 Thai2

Page46 CP856 ()

Code page 856															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
9_	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A_	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B_	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
C_	└	┴	┬	├	─	┼	╡	╢	╖	╕	╣	║	╗	╝	╜	┐
D_	░	▒	▓	┤	┘	№	§	╛	╚	╔	╩	█	▄	▌	▐	▀
E_	α	ß	Γ	π	Σ	σ	µ	τ	Φ	Θ	Ω	δ	∞	φ	ε	∩
F_	≡	±	≥	≤	⌠	⌡	÷	≈	°	·	·	√	ⁿ	²	■	NBSP

Page47 Cp874

Code page 874															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B	_C	_D	_E	_F
8_	€					…										
9_		'	'	"	"	•	–	—								
A_		ก	ข	ฃ	ค	ฅ	ฆ	ง	จ	ฉ	ช	ซ	ฌ	ญ	ฎ	ฏ
B_	ฐ	ฑ	ฒ	ณ	ด	ต	ถ	ท	ธ	น	บ	ป	ผ	ฝ	พ	ฟ

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
C_	ก	ม	ย	ร	ฤ	ล	ฦ	ว	ศ	ษ	ส	ห	ฬ	อ	ฮ	ๆ
D_	ะ		า	◌ำ												฿
E_	เ	แ	โ	ใ	ไ	ๅ	ๆ								◌	◌
F_	๐	๑	๒	๓		๔	๕	๖	๗	๘	๙	๚				NBSP

Appendix 2 International character set:

County	ASCII Code(Hex)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
U.K.	£	$	@	[	\	]	^	`	{	|	}	~
Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
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6 Unicode	0660	0661	0662	0663	0664	0665	0666	0667	0668	0669	0020	0640	002c	060c	066d	061F
7 Unicode	FB92	FB93	FB94	FB95	FE80	FE81	FE83	FE84	FE85	FE86	FE89	FE8A	FE8b	FE8C	FE8D	FE8E
8 Unicode	FE8F	FE90	FE91	FE92	FE93	FE94	FE95	FE96	FE97	FE98	FE99	FE9A	FE9B	FE9C	FE9D	FE9E
9 Unicode	FE9F	FEA0	FEA1	FEA2	FEA3	FEA4	FEA5	FEA6	FEA7	FEA8	FEA9	FEAA	FEAB	FEAC	FEAD	FEAE
A Unicode	FEAF	FEB0	FEB1	FEB2	FEB3	FEB4	FEB5	FEB6	FEB7	FEB8	FEB9	FEBA	FEBB	FEBC	FEBD	FEBE
B Unicode	FEBF	FEC0	FEC1	FEC2	FEC3	FEC4	FEC5	FEC6	FEC7	FEC8	FEC9	FECA	FECB	FECC	FECD	FECE
C Unicode	FECF	FED0	FED1	FED2	FED3	FED4	FED5	FED6	FED7	FED8	FED9	FEDA	FEDB	FEDC	FEDD	FEDE
D Unicode	FEDF	FEE0	FEE1	FEE2	FEE3	FEE4	FEE5	FEE6	FEE7	FEE8	FEE9	FEEA	FEEB	FEEC	FEED	FEEE
E Unicode	FEEF	FEF0	FEF3	FEF4	FEFB	FEFC	FB56	FB57	FB58	FB59	FB7A	FB7B	FB7C	FB7D	FB8A	FB8B
F Unicode	00AF	005F	2595	258F	2502	E83A	2588									