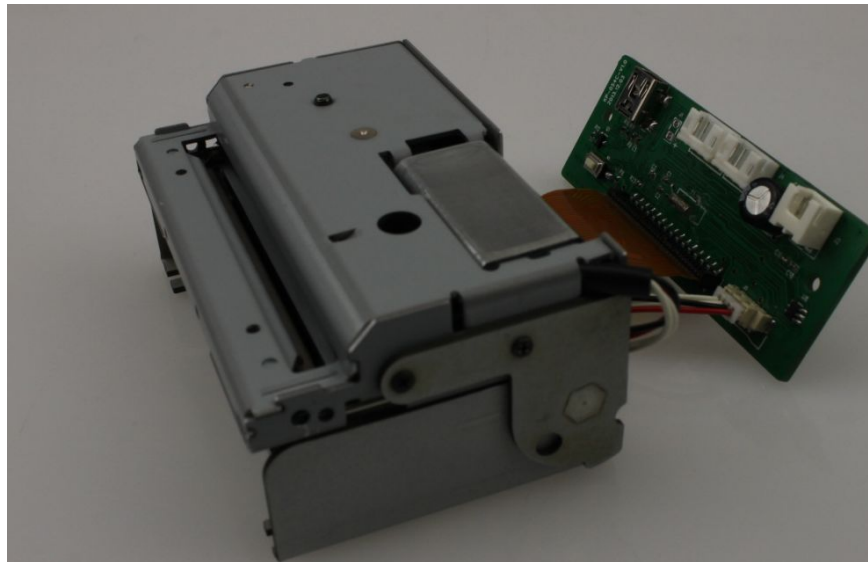


KP628C thermal printer module manual

edition V1.0



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This specification are to change without prior notice,

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1. Product description

KP628C is composed by thermal mechanism,cutter,control board. KP628C is two inches high speed printing module , The print module is suitable for multiple applications, Such as self-service terminal equipment, queuing machine, parking system, bank and other printing equipment.

2. Product feature

◆Compact structure design

86.5W x 52.0 D x36.0 H mm (without control board)

◆high print speed 80mm/s

◆auto-cutter, all cutting and half cutting

◆cutter can be up to 110 degrees, easy paper feed

◆easy paper loading

◆detection paper, auto paper feed

◆wide voltage (5V-9V)

◆long life : TPH:50km; 100 million pulses

◆cutter: 100 million times

◆front paper out, character up

3. Product specification

item	specification
model	KP-628C
Print method	Thermal dot line printing
Dot structure	384 dots/line
resolution	8 dots/mm
Dot pitch(horizontal)	0.125mm (8dot/mm) --dot density

Dot pitch(vertical)		0.125 mm (8dots/mm) --line feed pitch
Effective printing area		48 mm
Number of columns		ANK 32 columns/line (maximum12x24dot font)
Paper width		57.5±0.5mm
Paper thickness		60 to 85 μ m (some paper in this range may not be used because of paper characteristics)
interface		RS232+TTL+USB
Power supply	For Print head	4.2-8.5VDC ,average current1.8A(at 5V) 2.6A(at7.2V),2.8A(at8.0V)
	For motor	4.2 - 8.5 VDC. Maximum 0.46A
	For cutter motor	5-9 VDC, Maximum 1A
	For logic	2.7 - 5.25 VDC, Maximum 0.01A
	For module	5V-8.5VDC, Maximum 5A Rated voltage:7V.
Dimensions (W×D×H)	Module	86.5W x 52.0 D x36.0 H mm (without control board)
Weight	Module	0.25KG
Life	Head	100 million pulses or more(print ratio=12.5%)
		50 km or more
	Cutter	1,000,000 times
Environment	Operating Temp	0° C to 50° C
	Operating Humidity	20 to 85% relative humidity
	Storage Temp	-25° C to 70° C
	Storage Humidity	5 to 95% relative humidity
Detection function	Head Temp	Via thermistor
	Head temp detection	
	Head-up detection	Via photo interrupter
	Out-off paper detection	Via photo interrupter

4. Control Board Introduction

It sends data to the control board via serial port or USB port. And control board drive printer head to print.

4.1 Self-test print

Power on ,Press K1 key in the bottom board,the printer can print a self-test paper.

4.2 LED indicator light

Power on ,Indicator will be on 2 times,Interval of 1 second,start normal,Then light is showed as follows:

blink1 time: in working order （customed board :normal light）。

Blink2 time: mechanism not connected or temperature is too low

Blink3 time: out of paper

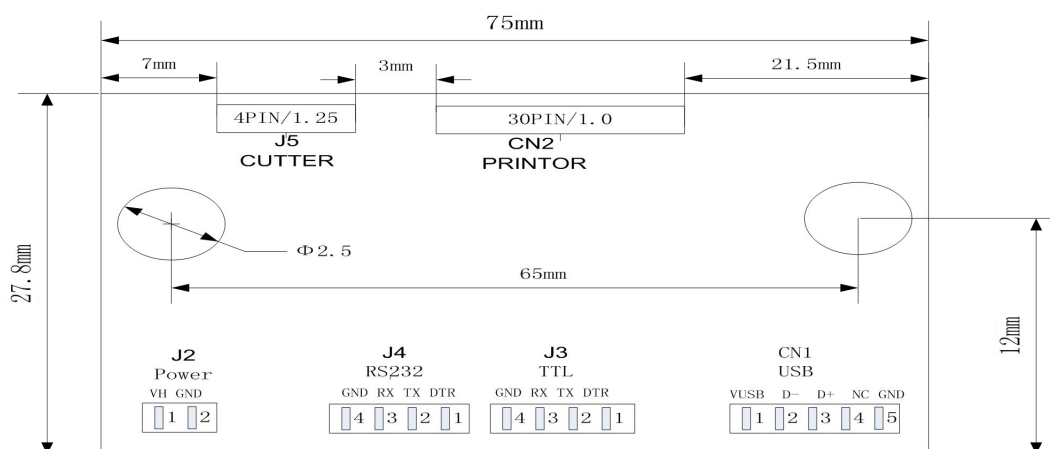
Blink4 time: cutter error （for cutter include）

Blink5 time: mechanism is overheated

Blink6 time: shaft unset （for shaft included）

blink10 time: Flash on board error

5. Interface function



J2 POWER XH02/2.54

Pin	NO	Direction	Type	Introduction
VH	1	Input		Voltage from 5-9V
GND	2			GND

J3 TTL

Pin	NO	Direction	Type	Introduction
RTS/DTR	1	Output		Flow Control

Transmit data	2	Output		TXD, printer output
Receive data	3	Input		RXD, printer input
GND	4			GND

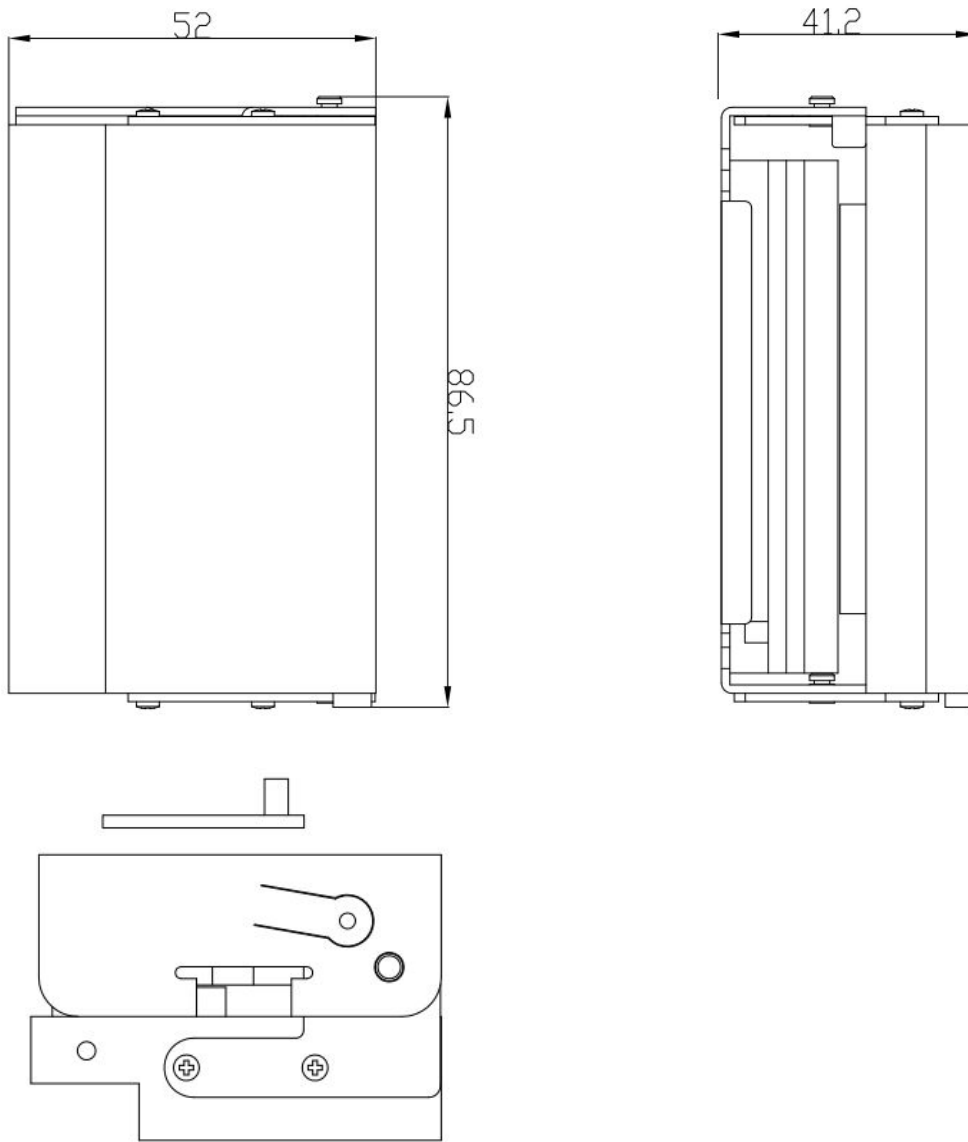
J4 RS232

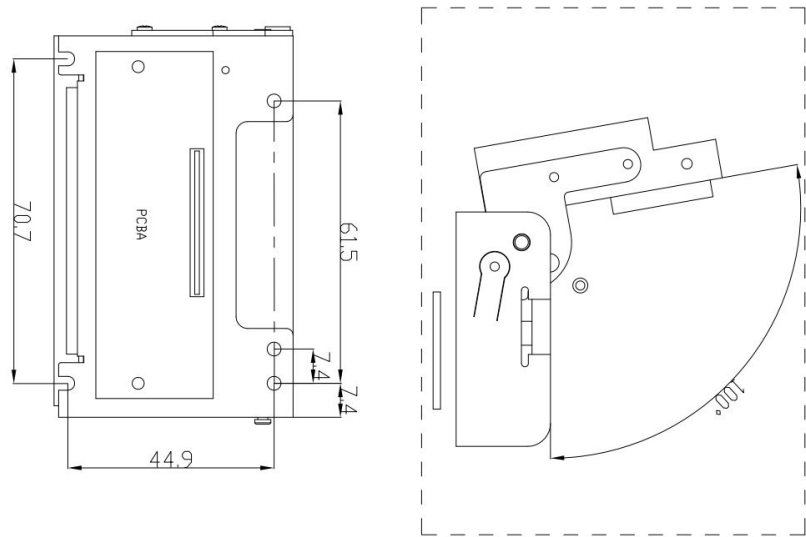
Pin	NO	Direction	Type	Introduction
RTS/DTR	1	Output		Flow Control
Transmit data	2	Output		TXD, printer output
Receive data	3	Input		RXD, printer input
GND	4			GND

CN1 USB connector

Pin	NO	Direction	Type	Introduction
VUSB	1			
D-	2			
D+	3			
NC	4			
GND	5			

6. Product demension





7、 commands

7.1 command list

LF	print and paper feed	print and paper feed commands
CR	carriage return	
ESC J	print and paper feed n dots	
ESC d	print and paper feed n lines	
ESC 3	n dot set line space n dots	print set commands
ESC 2	set default line space	
ESC \$	set absolute line position	
GS L nL nH	set left margin amount	
ESC !	set character printing method	
GS ! n	set character size	
GS B n	set and delete white printing	
ESC - n	set and delete underline	
ESC V n	set and delete 90° rotate printing	
ESC a	set justification	
FS &	set Chinese character mode	
FS .	delete Chinese character mode	
ESC % n	choose and delete customized characters	
ESC &	define customized characters	
ESC ? n	delete customized character	
ESC *	bitmap vertical modulus data fillings	bitmap print commands

GS v 0	bitmap horizontal modulus data print	
GS *	define download bitmap	
GS / m	print download bitmap	
FS q	define NV bitmap	
FS p n m	print NV bitmap	
HT	horizontal tabulation	tabulation commands
ESC D	set horizontal tabulation position	
GS H	set 1-D barcode readable character(HRI) print position	1-D barcode printing commands
GS h	set 1-D barcoe hight	
GS w	set 1-D barcode width	
GS k	1-D barcode	2-D barcode printing commands
GS (	2-D barcode printing commands	
GS r n	transmission status	status commands
DLE EOT n	real-time transmission status	
ESC @	initialize printer	other commands
GS V	choose paper cutting pattern and cut paper	
ESC i	full-cut	
ESC m	partial cut	

7.2 Commands details

①Print and paper feed commands

Print and paper feed

Name	print and paper feed
Code	ASCII : LF DEC : 10 HEX : 0A
Function	Print the buffer contest,and set the paper feed as per line space,then adjust print position to initial position at the next line
Parameter range	No
Default	No
Support types	All
Notes	No
Example	No

CR

Name	CR
Code	ASCII : CR DEC : 13 HEX : 0D
Function	Adjust print position to initial position of the same line.
Parameter range	no
Default	no
Support types	All
Notes	After executing CR command,the new printing data will cover old data in the printing buffer.
Example	No

Print and paper feed dots

Name	Print and paper feed n dots
Code	ASCII : ESC J n DEC : 27 74 n HEX : 1B 4A n
Function	Print the buffer content and paper feed
Parameter range	$0 \leq n \leq 255$
Default	No
Support types	All
Notes	Paper feed n dots when printing buffer is empty. After executing this command,printing position is moved to initial position in next line.
Example	1b 40 30 31 32 1b 4a 10

Print and paper feed n line

Name	Print and paper feed n lines
Code	ASCII : ESC d n DEC : 27 100 n HEX : 1B 64 n
Function	Print the contents in printing buffer and paper feed n lines.
Parameter range	$0 \leq n \leq 255$
Default	No
Support types	All
Notes	Print this command set as initial position of the same line
Example	1b 40 30 31 32 1b 64 01

② Print set commands

Set line space as n dots

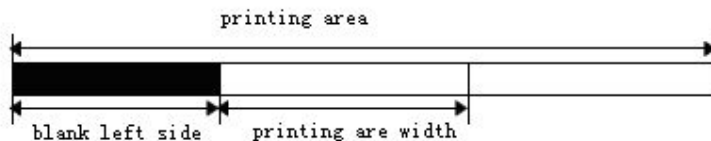
Name	Set line space as n dots
Code	ASCII : ESC 3 n DEC : 27 51 n HEX : 1B 33 n
Function	Set line space as n dots
Parameter range	$0 \leq n \leq 255$
Default	n = 33
Support types	All
Notes	Line space as below:  If the setted line space is less than the highest character in that line,then this line space is equal to the height of the highest character. If ESC2,ESC@,reset the printer, the printer blankout,and the line space turns to default.
example	<pre>1b 40 1b 33 30 30 31 32 0d 0a 30 31 32 0d 0a 1b 32 30 31 32 0d 0a</pre>

Set line space to default

Name	Set line space to default
Code	ASCII : ESC 2 DEC : 27 50 HEX : 1B 32
Function	Set line space to default 33 dots
Parameter range	No
Default	No
Support types	All
Notes	Line space in details pls check ESC 3 command. If the setted line space is less than the height character in the line,the line space of this line is equal to the height of the highest character. It can use ESC 3 to define line space.

Example	No
---------	----

Set print position

Name	Set print position
Code	ASCII : GS L nL nH DEC : 29 76 nL nH HEX : 1D 4C nL nH
Function	Set left side blank area as $(nL + nH \times 256)$ dots
Parameter range	$0 \leq nL \leq 255$, $0 \leq nH \leq 255$
Default	No
Support types	All
Notes	This command is only effective with the initial position of the line. Pls check the photo as below:  It can use the max. printing unit if it is set beyond the printing area.
Example	1b 40 1d 4c 08 00 30 31 32 0d 0a 30 31 32 0d 0a

Set character printing method

Name	Set character printing method																														
Code	ASCII : ESC ! n DEC : 27 33 n HEX: 1B 21 n																														
Function	Set character printing methods(font,highlight,inversion,bold,double hight,double width and underline),parameter n bit definition as below: <table><tr><th>Bit</th><th>Function</th><th>Value</th></tr><tr><th>0</th><th>1</th><th></th></tr><tr><td>0</td><td>Font</td><td>Normal Small character</td></tr><tr><td>1</td><td>Highlight</td><td>Cancel Setting</td></tr><tr><td>2</td><td>Inversion</td><td>Cancel Setting</td></tr><tr><td>3</td><td>Bold</td><td>Cancel Setting</td></tr><tr><td>4</td><td>Double hight</td><td>Cancel Setting</td></tr><tr><td>5</td><td>Double width</td><td>Cancel Setting</td></tr><tr><td>6</td><td>Underline</td><td>Cancel Setting</td></tr><tr><td>7</td><td>Undefined</td><td></td></tr></table>	Bit	Function	Value	0	1		0	Font	Normal Small character	1	Highlight	Cancel Setting	2	Inversion	Cancel Setting	3	Bold	Cancel Setting	4	Double hight	Cancel Setting	5	Double width	Cancel Setting	6	Underline	Cancel Setting	7	Undefined	
Bit	Function	Value																													
0	1																														
0	Font	Normal Small character																													
1	Highlight	Cancel Setting																													
2	Inversion	Cancel Setting																													
3	Bold	Cancel Setting																													
4	Double hight	Cancel Setting																													
5	Double width	Cancel Setting																													
6	Underline	Cancel Setting																													
7	Undefined																														
Parameter	No																														

range	
Default	n = 0
Support types	All
Notes	The command is effective with Chinese and foreign languages. The command is disabled when ESC@,printer reset or blank out.
Example	1B 40 1B 21 01 30 31 32 0D 0A 1B 40 1B 21 02 30 31 32 0D 0A 1B 40 1B 21 04 30 31 32 0D 0A 1B 40 1B 21 08 30 31 32 0D 0A 1B 40 1B 21 10 30 31 32 0D 0A 1B 40 1B 21 20 30 31 32 0D 0A 1B 40 1B 21 40 30 31 32 0D 0A 1B 40 1B 21 80 30 31 32 0D 0A

Set character size

Name	Set character size					
Code	ASCII : GS ! n DEC : 29 33 n HEX : 1d 21 n					
Function	Set character size as 1-8 times width,1-8 times height.Definition is as below:					
	Chart 1 Character width setting			Chart 2 Character height setting		
	HEX	DEC	width	HEX	DEC	width
	00	0	1 (normal)	00	0	1 (normal)
	10	16	2 (double width)	01	1	2 (double height)
	20	32	3	02	2	3
	30	48	4	03	3	4
	40	64	5	04	4	5
	50	80	6	05	5	6
	60	96	7	06	6	7
	70	112	8	07	7	8
	Parameter range	No				
Default	n = 0					
Support types	All					
Notes	This command is effective with Chinese and other foreign languages,except for HRI character. The command setting is disable when ESC@,printer reset or blankout.					
Example	1b 40 1d 21 11 30 31 32 0d 0a					

	30 31 32 0d 0a
--	----------------

Set and cancel white printing

Name	Set and cancel white printing
Code	ASCII : GS B n DEC : 29 66 n HEX : 1d 42 n
Function	Set or cancel white printing mode When the LSB is 0,white printing mode is off. When the LSB is 1,white printing mode is on.
Parameter range	No
Default	n = 0
Support types	All
Notes	It is only effective for LSB of n. This command is all effective with built-in characters and user-defined characters. It is effective with blank,which is setted by ESC CP,when white printing mode is on. This command is not effective with bitmap,user-defined bitmap,barcode,HRI character and vaulting space of HT,ESC \$. This command is not effective with line space. The white printing mode is prior to underline mode.When it is white printing mode,even underline mode is open,which can also be forbidden.(But it not be canceled). This command is disabled when ESC@,printer reset or blankout.
Example	1b 40 1d 42 01 30 31 32 0d 0a 30 31 32 0d 0a

Set and delete underline

Name	Set and delete underline								
Code	ASCII : ESC - n DEC : 27 45 n HEX : 1B 2D n								
Function	Set/delete underline mode,based on n value as below: <table border="1"> <thead> <tr> <th>n</th><th>function</th></tr> </thead> <tbody> <tr> <td>0, 48</td><td>Delete underline mode</td></tr> <tr> <td>1, 49</td><td>Set underline mode(1 dot coarse)</td></tr> <tr> <td>2, 50</td><td>Set underline mode(2 dot coarse)</td></tr> </tbody> </table>	n	function	0, 48	Delete underline mode	1, 49	Set underline mode(1 dot coarse)	2, 50	Set underline mode(2 dot coarse)
n	function								
0, 48	Delete underline mode								
1, 49	Set underline mode(1 dot coarse)								
2, 50	Set underline mode(2 dot coarse)								
Parameter range	$0 \leq n \leq 2, 48 \leq n \leq 50$								

Default	n = 0
Support types	All
Notes	. Printer can print underline for all characters(including spacing in characters left side),but expect for setted blank by HT. . Printer can not print underline for clockwise rotated 90° characters and white printing characters. . When n is setted as 0 or 48,delete underline mode.Other data is not printed as underline,and the setted underline coarseness does not change before deleting underline mode.The default underline coarseness is 1 dot. . It is not effective with underline coarseness to chang character size. . Using ESC! can also set and delete underline mode.But pls note the last received command must be effective.
Example	<pre>1b 40 1b 2d 01 30 31 32 0d 0a 1b 40 1b 2d 02 30 31 32 0d 0a 1b 40 1b 2d 00 30 31 32 0d 0a</pre>

Set and delete 90° revolving printing

Name	Set and delete clockwise 90° revolving printing
Code	ASCII : ESC V n DEC : 27 86 n HEX : 1B 56 n
Function	Set or delete 90° revolving printing. When n is equal to 0 or 48,delete 90° revolving printing. When n is equal to 1 or 49,set 90° revolving printing.
Parameter range	$0 \leq n \leq 1, 48 \leq n \leq 49$
Default	n = 0
Support types	All
Notes	When it is setted to underline mode.Printer does not add underline for clockwise 90° revolved characters. Under clockwise 90° revolving mode,double height and double width commands zoomed characters direction is the opposite of double width and double height zoomed characters direction in normal mode. The command setting is disabled after ESC@,resetting the printer and power off.
Example	<pre>1b 40 1b 56 01 30 31 32 0d 0a 30 31 32 0d 0a</pre>

Set printing alignment

Name	Set printing alignment(left,middle,right)
Code	ASCII : ESC a n DEC : 27 97 n HEX : 1B 61 n
Function	Set alignment to the whole line,n value is as below: n mode 0, 48 left 1, 49 middle 2, 50 right
Parameter range	$0 \leq n \leq 2$ or $48 \leq n \leq 50$
Default	n = 0
Support types	All
Notes	This command setting is disabled when ESC@,printer resets or power off.
Example	1B 40 1B 61 02 30 31 32 0D 0A 1B 40 1B 61 01 30 31 32 0D 0A 1B 40 1B 61 00 30 31 32 0D 0A

Set Chinese mode

Name	Cancel Chinese mode
Code	ASCII : FS . DEC : 28 46 HEX : 1C 2E
Function	Cancel Chinese mode
Parameter range	No
Default	No
Support types	All
Notes	When the Chinese mode is not selected,all characters are ASCII code,It deals with one character per time.
Example	No

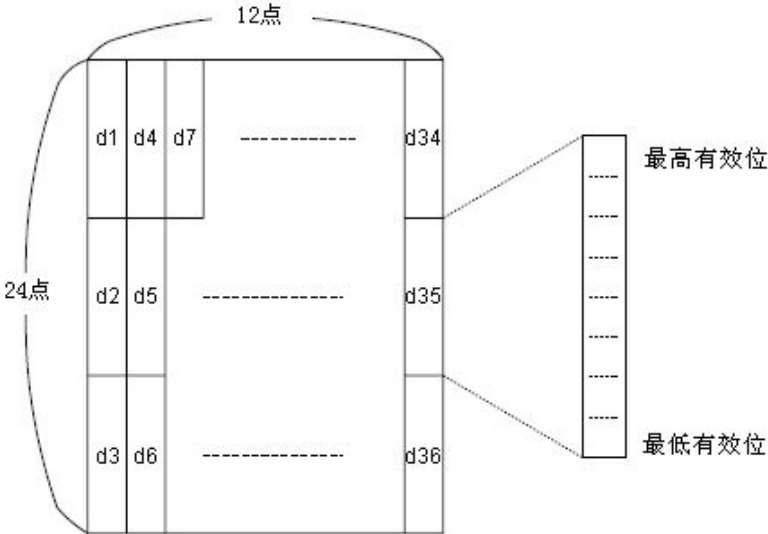
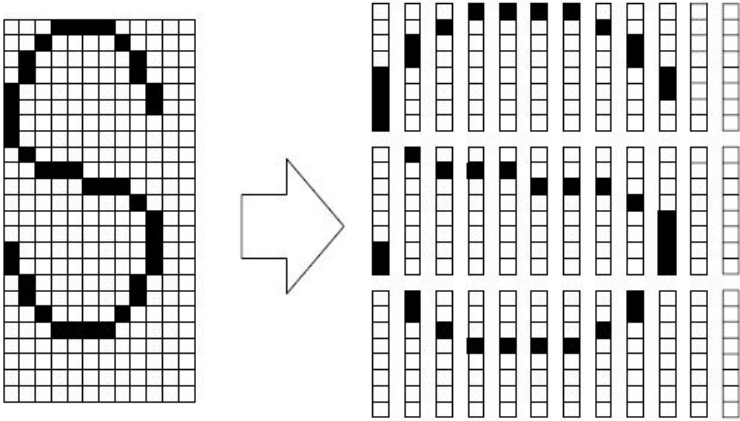
Select and delete user customize character sets

Name	Select and delete user customize character sets
Code	ASCII : ESC % n DEC : 27 37 n HEX : 1B 25 n
Function	Select and delete user customize character sets

	When n is 0,it cancels user customize character sets. When n is 1,it cancels user customize character sets.
Parameter range	$0 \leq n \leq 255$
Default	0
Support types	All
Notes	When cancel user customize character sets,it chooses internal character sets automatically.
Example	No

Define user customize character sets

Name	Define user customize character sets
Code	ASCII : ESC & y c1 c2 [x1 d1 ... d (yx1)] ... [xk d1 ... d(y x k)] DEC : 27 38 y c1 c2 [x1 d1 ... d(yx1)] ...[xk d1 ... d(yxk)] HEX : 1B 26 y c1 c2 [x1 d1...d(y x1)]...[xk d1...d(yxk)]
Function	Define user customize characters。 . y assigns vertical direction bytes. . c1 assigns initial character code,c2 assigns ending character code . xk assigns horizontal direction dots.
Parameter range	x y rang is correspond with internal fonts. If choosing 6*12 font,y= 2, $0 \leq x \leq 6$ If choosing 12*24 font,y= 3, $0 \leq x \leq 12$ $32 \leq c1 \leq c2 \leq 126$ $0 \leq d1 \dots d(y*xk) \leq 255$
Default	No
Support types	All
Notes	Definable character code range:from<20>H to <7E>H ASCII code(95 characters)。 It can define continuous character encoding for several characters.When it need one character,make c1=c2. d is character's dot data,dot mode starts from left side in the horizontal direction.It is blank for the rest dots in the right side. Defined user defines characters data is (y*x) byte. Set corresponding bit of printing dots is 1 or corresponding bit of no printing dots is 0. The command can define every font to different self-defined character modes.Use ESC! to set fonts. User can not define characters or download bitmap at the same time.Downloading bitmap will be eliminated. User defined characters will be eliminated as below situations: Execute ESC @。 Execute GS *。 Execute ESC ?。

	Printer reset or power off Diagram: When set font A(12 24).   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
Example	①y = 2 1B 40 1b 26 02 20 20 06 FF FF FF FF FF FF FF FF FF FF FF 1b 25 01 20 20 0D 0A 1b 3f 20 30 20 30 20 0d 0a ②y = 3 1B 40 1b 26 03 20 20 06 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

	FF 1b 25 01 20 20 0D 0A 1b 3f 20 30 20 30 20 0d 0a
--	--

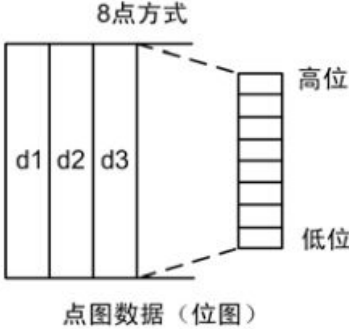
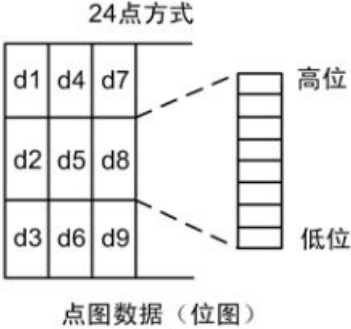
Cancel user defined characters

Name	Cancel user defined characters
Code	ASCII : ESC ? n DEC : 27 63 n HEX : 1B 3F n
Function	Cancel user defined characters of specified code n.
Parameter range	$32 \leq n \leq 126$
Default	No
Support types	All
Notes	The command stops to use character code defined types.Character codes is assigned by n.After canceling the user defined characters,it use internal character to print in the corresponding mode. In using ESC! Selective fonts,the command has canceled the specified code definition style.If one user defined character is not defined,the printer will ignore the command.
Example	No

③Graphic printing command

Graphic vertical module datd fill

Name	Graphics vertical module data fill																				
Code	ASCII : ESC * m Hl Hh [d]k DEC : 27 42 m Hl Hh [d]k HEX : 1B 2A m Hl Hh [d]k																				
Function	Print vertical module graphic data,the meanings as below: m is bit map format: <table><tr><td>m</td><td>mode</td><td>horizontal scale</td><td>vertical scale</td></tr><tr><td>0</td><td>8dots single density</td><td>×2</td><td>×3</td></tr><tr><td>1</td><td>8dots double density</td><td>×1</td><td>×3</td></tr><tr><td>32</td><td>24dots single density</td><td>×2</td><td>×1</td></tr><tr><td>33</td><td>24dots double density</td><td>×1</td><td>×1</td></tr></table> Hl、Hh is horizontal direction dots(Hl+256×Hh) [d]k is bit map data k is for indicating bit map data bytes,don't transfer.	m	mode	horizontal scale	vertical scale	0	8dots single density	×2	×3	1	8dots double density	×1	×3	32	24dots single density	×2	×1	33	24dots double density	×1	×1
m	mode	horizontal scale	vertical scale																		
0	8dots single density	×2	×3																		
1	8dots double density	×1	×3																		
32	24dots single density	×2	×1																		
33	24dots double density	×1	×1																		
Parameter	XX58:																				

range	$m = 0、1、32、33$ $1 \leq Hl + Hh \times 256 \leq 384$ $0 \leq d \leq 255$ $k = Hl + Hh \times 256$ (when $m = 0、1$) $k = (Hl + Hh \times 256) \times 3$ (when $m = 32、33$) XX80: $m = 0、1、32、33$ $1 \leq Hl + Hh \times 256 \leq 576$ $0 \leq d \leq 255$ $k = Hl + Hh \times 256$ (when $m = 0、1$) $k = (Hl + Hh \times 256) \times 3$ (when $m = 32、33$)
Default	No
Support types	All
Notes	[d]k corresponding bit is 1,which means this bit can print.While it is 0,it means this bit can not print. The printing area parts of exceeding graphics horizontal direction will be ignored. Bit map data and printing effects relations is as below: 8点方式  点图数据 (位图) 24点方式  点图数据 (位图) The command is only filled printing buffer,graphics printing can start only after receiving printing commands.Printing buffer will clear after graphic printing. If you need to print big graphics,you can divide it into several pieces 8 ($m = 0、1$) or 24 ($m = 32、33$) dots graphics to print. After filling graphic data,you can continue to fill other information to make graphic and other information to print simultaneously. After filling bitmap,you can use ESC J($n=24$)command to print,and also can use LF command to print.But LF command will make paper feed operation(according to line space to feed paper),and make graphic continuously between different lines.And can set line space to 0 to avoid to feed too much paper.(Dot matrix printer may drift when it starts,pls send data continuously if it breaks line.
Example	1B 40 1b 2a 00 0C 00 FF FF FF FF FF FF FF FF FF FF FF 1B 33 00

	0A
--	----

Picture horizontal module data printing

Name	Define download bitmap
Code	ASCII : GS * x y d1...d(x×y×8) DEC : 29 42 x y d1 ...d(x×y×8) HEX : 1D 2A x y d1...d(x×y×8)
Function	Use x and y assigned dots to define download bitmap. x is assigned to horizontal direction 8*x。 y is assigned to vertical direction8*y。
Parameter range	$1 \leq x \leq 255$ $1 \leq y \leq 48$ $x*y \leq 1536$ $0 \leq d \leq 255$
Default	No
Support types	All
Notes	If x*y exceeds the assigned range,the command will be prohibited. d is bitmap data.data(d) assign printing bit 1,it wont print if it is 0. Eliminate download bitmap definition as below situations: Execute ESC @。 Execute ESC &。 Printer resets or power off. Download bitmap and printing data relations as below:
Example	1B 40 1D 2A 03 03 FF

	FF 1D 2F 00
--	--

Print download bitmap

Name	Print download bitmap										
Code	ASCII : GS / m DEC : 29 47 m HEX : 1D 2F m										
Function	Use m assigned mode to print download bitmap. <table border="1"> <tr> <th>m</th><th>mode</th></tr> <tr> <td>0, 48</td><td>normal</td></tr> <tr> <td>1, 49</td><td>Double width</td></tr> <tr> <td>2, 50</td><td>Double height</td></tr> <tr> <td>3, 51</td><td>Double width and height</td></tr> </table>	m	mode	0, 48	normal	1, 49	Double width	2, 50	Double height	3, 51	Double width and height
m	mode										
0, 48	normal										
1, 49	Double width										
2, 50	Double height										
3, 51	Double width and height										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$										
Default	No										
Support types	All										
Notes	The command is ignored if bitmap is not defined. The command is only effective when there is no data in printing buffer under standard mode. The command is invalid under printing mode (bold,overlap,underline,character size or white printing),except for overturn printing mode. The exceeded data don't print if the expected printing download bitmap exceeded the printing area.										
Example	No										

Define NV bitmap

Name	Define NV bitmap
Code	ASCII : FS q n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n DEC : 28 113 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n HEX : 1C 71 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n
Function	Use specified n value define NV bitmap. n assign to define NV bitmap qty. xL, xH is defined NV bitmap to assign horizontal direction dots: $(xL+xH*256)*8$. yL, yH is defined NV bitmap to assign vertical direction dots: $(yL+yH*256)*8$.
Parameter range	$1 \leq n \leq 255$ $0 \leq xL \leq 255$

	$0 \leq xH \leq 3$ $(1 \leq (xL+xH*256) \leq 1023)$ $0 \leq yL \leq 255$ $0 \leq yH \leq 1$ $(1 \leq (yL+yH*256) \leq 288)$ $0 \leq d \leq 255$ $k = (xL+xH*256)*(yL+yH*256)*8$ And defined data area=192K bytes.
Default	No
Support types	All
Notes	It may damage NV storage if executing commands continually. So pls don't execute storage more than 10 times per day. After putting one image to NV storage, printer will execute a hardware reest operation. So user defined characters, download bitmap before defining the command. Printer eliminate receiving and printing buffer area, and reset effective mode after power on. (Do not support hardware reset interface) The command cancels all occupied command defined NV bitmap. During start to execute the command to finish the hardware reset, you cannot execute mechanical operation (including initial printing head position is using paper feed when the cover is open.) During executing the command, printer is busy too busy to receive data when it writes user NV storage. So it is forbidden to send data during executing the command, which is including real-time commands. - NV bitmap is defined bitmap, which is in nonvolatile memory. And use FS q to define FS p to print. - Under standard mode, the command is only effective at the first line of the first beginning. - It is effective after handing 7 bytes of the command <FS yH> - When data size is exceeded the defined xL, x H, yL, yH in the left capacity. Printer will be beyond the range of defined xL, xH, yL, yH. - In the first bitmap, the command is forbidden when any of the parameter is exceeded in xL, xH, yL, yH - In one of group (not in the first group), when printer meets xL, xH, yL, yH, which is exceeded defined range, it will stop to handle ordering and start to write NV bitmap. Meanwhile, it is forbidden when there is no undefined NV bitmap, but the defined NV bitmap is still effective. d means defining data. In data(d), a 1 bit assigns one printing dot, while 0 means a no printing dot. - The command define n to NV bitmap qty. The qty is from bitmap bit 01H. So the first data group [xL xH yL yH d1...dk] is NV bitmap n. Total qty is consistent with FS p command setted NV bitmap qty. - A NV bitmap defined data is made up with [xL xH yL yH d1...dk]. So when there is only one NV bitmap n=1, printer only handles data group [xL xH yL yH d1...dk] one time. Printer uses NV storage ([data: (xL+xH

	256)(yL+yH*256)*8]+[header:4]) bytes. . The defined area of the printer is 192K bytes(Max).The command can define several bitmap,but can not define total data capacity[bitmap+head]is exceeded 192K bytes bitmap. Even if set ASB,printer does not send ASB status or execute status testing during when handling commands. Once define a NV bitmap,it can not execute ESC@ command,reset,power off to delete. . The command is only executing NV bitmap definition,do not execute printing.NV bitmap printing is executed via FS p command. . Diagram:when xL = 64, xH = 0, yL = 96, yH = 0
--	---

Example	1B 40 1C 71 01 03 00 03 00 FF FF FF 1C 70 01 00

Print NV bitmap

Name	Print NV bitmap
------	-----------------

Code	ASCII : FS p n m DEC : 28 112 n m HEX : 1C 70 n m										
Function	Use m assigned mode to print NV bitmap n <table border="1"> <thead> <tr> <th>m</th><th>mode</th></tr> </thead> <tbody> <tr> <td>0, 48</td><td>Normal</td></tr> <tr> <td>1, 49</td><td>Double width</td></tr> <tr> <td>2, 50</td><td>Double height</td></tr> <tr> <td>3, 51</td><td>Double width and height</td></tr> </tbody> </table>	m	mode	0, 48	Normal	1, 49	Double width	2, 50	Double height	3, 51	Double width and height
m	mode										
0, 48	Normal										
1, 49	Double width										
2, 50	Double height										
3, 51	Double width and height										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$ $1 \leq n \leq 255$										
Default	No										
Support types	All										
Notes	n is NV bitmap qty(use FS q command to define) - m assigned bitmap mode NV bitmap is a defined bitmap in nonvolatile memory.And use FS q definition FS q to print. The command is invalid when assigned NV does not exist. - Under standard mode,the command is effective only when there is no data in printing buffer area. - The command is not effective with printing mode(bold,overlap,underline,character size,white printing or character 90°),except for reverse print mode or rotating. - The data does not print if the printed download bitmap is exceeded one line. - Under normal and double width mode,the command feed paper n dots(n is NV bitmap height),under double height and quadruple mode,the command feed paper 2n dots,n is NV bitmap height),and has no effects with ESC 2 or ESC 3 setted line space - After printing bitmap,the command set the first position of the line to print,and handle the rest data as normal data.										
Example	No										

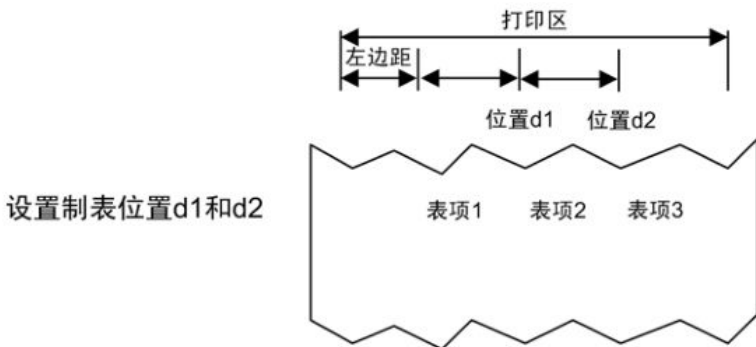
④TAB command

Horizontal tabulation

Name	Horizontal tabulation
Code	ASCII : HT DEC : 9 HEX : 09
Function	Move printing position to next tabulation position

Parameter range	No
Default	No
Support types	All
Notes	Tabulation position is setted ESC D If tabulation position is not setted(it defaults no horizontal tabulation position),the command is as LF command If tabulation position is exceeding printing area,the coordinate will move to initial position of next line(the data of that line is fill,print and change a line.)
Example	No

Set horizontal tabulation position

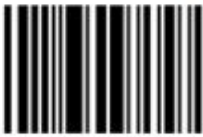
Name	Set horizontal tabulation position
Code	ASCII : ESC D [d]k NUL DEC : 27 68 [d]k 0 HEX : 1B 44 [d]k 00
Function	Set horizontal tabulation position,parameter meanings as below: d1 ... dk: horizontal tabulation position,is for the unit of 8 dots,NULL is the end mark.
Parameter range	XX58: $1 \leq d \leq 46$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$) XX80: $1 \leq d \leq 70$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$)
Default	[d]k = 0 (it defaults no horizontal tabulation position)
Support types	All
Notes	Tabulation position as below:  Max support 16 pcs of tabulation setting Use the command to cancel the setted tabulation k is for signal,not for transmitting Transmit [d]k to meet NULL,it is end. If $d_k \leq d_{k-1}$, it is end,the rest data is as normal data to handle. Tabulation position can shifted by HT. When changing left margin,tabulation position can be changed at the same time. When ESC@,printer resets,power off,the command setting is disabled.
Example	No

⑤1D barcode printing command

Set 1D barcode HRI printing setting

Name	Set barcode HRI printing setting
Code	ASCII : GS H n DEC : 29 72 n HEX : 1D 48 n
Function	Set barcode HRI printing position,n parameter meanings as below: n printing position 0, 48 dont print 1, 49 barcode upside 2, 50 barcode down side 3, 51 barcode upside and down side
Parameter range	$0 \leq n \leq 3$ or $48 \leq n \leq 51$
Default	n = 0
Support types	All
Notes	When ESC @,printer resets,power off,the command setting is disabled.
Example	No

Set 1D barcode width

Name	Set 1D barcode width
Code	ASCII : GS w n DEC : 29 119 n HEX : 1D 77 n
Function	Set barcode unit as n dots,parameter meanings is as below:  width is 3  width is 4
Parameter range	$1 \leq n \leq 6$
Default	n = 2
Support types	All
Notes	When ESC @,printer resets,power off,the command setting is disabled.
Example	No

Set 1D barcode width

Name	Print 1D barcode																																																								
Code	(A) ASCII : GS k m [d]k NUL DEC : 29 107 m [d]k NUL HEX : 1D 6B m [d]k NUL (B) ASCII : GS k m n [d]k DEC : 29 107 m n [d]k HEX : 1D 6B m n [d]k																																																								
Functions	Print 1D barcode,parameter meaning is as below: m is code way n is code data length ,only(B)method to use , the differences between (A)and(B)commands are (A) data is used NULL characters to be end.and (B) is use for assigning data length. [d]k is barcode data. k is length of barcode data,it is for signal,not for transmitting. Parameter meanings relations as below: (command A) <table> <tr> <th rowspan="2">m</th><th rowspan="2">Code system</th><th colspan="4">Barcode data(SP means blank)</th></tr> <tr> <th>Data length</th><th>k</th><th>characters</th><th>data (d)</th></tr> <tr> <td>0</td><td>UPC-A</td><td>fixed</td><td>k = 11, 12</td><td>0~9</td><td>$48 \leq d \leq 57$</td></tr> <tr> <td>1</td><td>UPC-E</td><td>fixed</td><td>$6 \leq k \leq 8$, k = 11, 12</td><td>0~9</td><td>$48 \leq d \leq 57$ [when k = 7,8,11,12, d1 = 48]</td></tr> <tr> <td>2</td><td>JAN13 (EAN13)</td><td>fixed</td><td>k = 12, 13</td><td>0~9</td><td>$48 \leq d \leq 57$</td></tr> <tr> <td>3</td><td>JAN8 (EAN8)</td><td>fixed</td><td>k = 7, 8</td><td>0~9</td><td>$48 \leq d \leq 57$</td></tr> <tr> <td>4</td><td>CODE39</td><td>fixed</td><td>$1 \leq k$</td><td>0~9, A~Z SP, \$, %, *, +, -, ., /</td><td>$48 \leq d \leq 57$, $65 \leq d \leq 90$, d = 32, 36, 37, 42, 43, 45, 46, 47</td></tr> <tr> <td>5</td><td>ITF (Interleaved 2 of 5)</td><td>fixed</td><td>$2 \leq k \leq 255$ (even number)</td><td>0~9</td><td>$48 \leq d \leq 57$</td></tr> <tr> <td>6</td><td>CODABAR (NW-7)</td><td>alterable</td><td>$1 \leq k$</td><td>0~9, A~D, a~d \$, +, -, ., /, :</td><td>$48 \leq d \leq 57$, $65 \leq d \leq 68$, $97 \leq d \leq 100$, d = 36, 43, 45, 46, 47, 58</td></tr> </table>					m	Code system	Barcode data(SP means blank)				Data length	k	characters	data (d)	0	UPC-A	fixed	k = 11, 12	0~9	$48 \leq d \leq 57$	1	UPC-E	fixed	$6 \leq k \leq 8$, k = 11, 12	0~9	$48 \leq d \leq 57$ [when k = 7,8,11,12, d1 = 48]	2	JAN13 (EAN13)	fixed	k = 12, 13	0~9	$48 \leq d \leq 57$	3	JAN8 (EAN8)	fixed	k = 7, 8	0~9	$48 \leq d \leq 57$	4	CODE39	fixed	$1 \leq k$	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57$, $65 \leq d \leq 90$, d = 32, 36, 37, 42, 43, 45, 46, 47	5	ITF (Interleaved 2 of 5)	fixed	$2 \leq k \leq 255$ (even number)	0~9	$48 \leq d \leq 57$	6	CODABAR (NW-7)	alterable	$1 \leq k$	0~9, A~D, a~d \$, +, -, ., /, :	$48 \leq d \leq 57$, $65 \leq d \leq 68$, $97 \leq d \leq 100$, d = 36, 43, 45, 46, 47, 58
m	Code system	Barcode data(SP means blank)																																																							
		Data length	k	characters	data (d)																																																				
0	UPC-A	fixed	k = 11, 12	0~9	$48 \leq d \leq 57$																																																				
1	UPC-E	fixed	$6 \leq k \leq 8$, k = 11, 12	0~9	$48 \leq d \leq 57$ [when k = 7,8,11,12, d1 = 48]																																																				
2	JAN13 (EAN13)	fixed	k = 12, 13	0~9	$48 \leq d \leq 57$																																																				
3	JAN8 (EAN8)	fixed	k = 7, 8	0~9	$48 \leq d \leq 57$																																																				
4	CODE39	fixed	$1 \leq k$	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57$, $65 \leq d \leq 90$, d = 32, 36, 37, 42, 43, 45, 46, 47																																																				
5	ITF (Interleaved 2 of 5)	fixed	$2 \leq k \leq 255$ (even number)	0~9	$48 \leq d \leq 57$																																																				
6	CODABAR (NW-7)	alterable	$1 \leq k$	0~9, A~D, a~d \$, +, -, ., /, :	$48 \leq d \leq 57$, $65 \leq d \leq 68$, $97 \leq d \leq 100$, d = 36, 43, 45, 46, 47, 58																																																				

					(65≤d1≤68, 65≤dk≤68, 97≤d1≤100, 97≤dk≤100)
(command B)					
m	Code system	Barcode data(SP means blank)			
		Data length	n	characters	data (d)
65	UPC-A	fixed	n = 11, 12	0~9	48≤d≤57
66	UPC-E	fixed	6≤n≤8, n = 11, 12	0~9	48≤d≤57 [当 n = 7,8,11,12, d1 = 48]
67	JAN13 (EAN13)	fixed	n = 12, 13	0~9	48≤d≤57
68	JAN8 (EAN8)	fixed	n = 7, 8	0~9	48≤d≤57
69	CODE39	alterable	1≤n	0~9, A~Z SP, \$, %, *, +, -, ., /	48≤d≤57, 65≤d≤90, d = 32, 36, 37, 42, 43, 45, 46, 47
70	ITF (Interleaved 2 of 5)	alterable	2≤n≤ 255 (even number)	0~9	48≤d≤57
71	CODAB AR (NW-7)	alterable	1≤n	0~9, A~D, a~d \$, +, -, ., /, :	48≤d≤57, 65≤d≤68, 97≤d≤100, d = 36, 43, 45, 46, 47, 58 (65≤d1≤68, 65≤dk≤68, 97≤d1≤100, 97≤dk≤100)
72	CODE93	alterable	1≤n≤ 255	00H~7FH	0≤d≤127
73	CODE12 8	alterable	1≤n≤ 255	00H~7FH C1H~C4H(FNC)	0≤d≤127 d = 193, 194,195,196
74	UCC/EA N128	alterable	1≤n≤ 255	00H~7FH C1H~C4H(FNC)	0≤d≤127 d = 193, 194,195,196

Parameter range	(A) $0 \leq m \leq 6$ (B) $65 \leq m \leq 74$																																																																																																																																
Default	No																																																																																																																																
Support types	All																																																																																																																																
Notes	Printer does not execute barcode printing if the width is exceeding the printed area. The command feeds paper to execute and has no effected with ESC 2 ,ESC3 line space or has no effects with line space. The command is not effected with ESC ! Character type. After executing the command,printing position will recover to initial printing position. m when parameter is 0 ~ 6(A)and 65 ~ 71(B)choose same code system,the printing effects are the same. m when parameter is 0 ~ 6(A), barcode data is end up with NULL. m when parameter is 65 ~ 74(B), barcode data means data length. k is for signal,not for transmitting. When print UPCA (m = 0 or 65) ,pls note: No matter input data is 11 or 12,parity bit will insert or error correction automatically. Initial characters,central separating character,ending characters insert automatically. When print UPCE (m = 1 or 66) ,pls note: When data length is 6,system characters (NSC)0 insert automatically. When data length is 7、8、11and 12, the first bit system character (NSC)d1 has to be 0. No matter input data length is 6、7、8、11 and 12 , parity bit will insert automatically or error correction. No matter input data length is 6、7、8、11 or 12, barcode HRI only shows 6 as data,not including system characters(NSC) and parity code. Transmit data and printing data transformational relation as below: <table><tr><th colspan="10">传输的数据</th><th colspan="6">打印的数据</th></tr><tr><th>d2</th><th>d3</th><th>d4</th><th>d5</th><th>d6</th><th>d7</th><th>d8</th><th>d9</th><th>d10</th><th>d11</th><th>d1</th><th>d2</th><th>d3</th><th>d4</th><th>d5</th><th>d6</th></tr><tr><td>0~9</td><td>0~9</td><td>0</td><td>0</td><td>0</td><td>-</td><td>-</td><td>0~9</td><td>0~9</td><td>0~9</td><td>d2</td><td>d3</td><td>d9</td><td>d10</td><td>d11</td><td>0</td></tr><tr><td>0~9</td><td>0~9</td><td>1</td><td>0</td><td>0</td><td>-</td><td>-</td><td>0~9</td><td>0~9</td><td>0~9</td><td>d2</td><td>d3</td><td>d9</td><td>d10</td><td>d11</td><td>1</td></tr><tr><td>0~9</td><td>0~9</td><td>2</td><td>0</td><td>0</td><td>-</td><td>-</td><td>0~9</td><td>0~9</td><td>0~9</td><td>d2</td><td>d3</td><td>d9</td><td>d10</td><td>d11</td><td>2</td></tr><tr><td>0~9</td><td>0~9</td><td>3~9</td><td>0</td><td>0</td><td>-</td><td>-</td><td>-</td><td>0~9</td><td>0~9</td><td>d2</td><td>d3</td><td>d4</td><td>d10</td><td>d11</td><td>3</td></tr><tr><td>0~9</td><td>0~9</td><td>0~9</td><td>1~9</td><td>0</td><td>-</td><td>-</td><td>-</td><td>-</td><td>0~9</td><td>d2</td><td>d3</td><td>d4</td><td>d5</td><td>d11</td><td>4</td></tr><tr><td>0~9</td><td>0~9</td><td>0~9</td><td>0~9</td><td>1~9</td><td>-</td><td>-</td><td>-</td><td>-</td><td>5~9</td><td>d2</td><td>d3</td><td>d4</td><td>d5</td><td>d6</td><td>d11</td></tr></table> When d6 is 1-9,it should make sure d7,d8,d9,d10 is 0, d11 is 5~9 Initial characters,ending characters insert automatically	传输的数据										打印的数据						d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d1	d2	d3	d4	d5	d6	0~9	0~9	0	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	0	0~9	0~9	1	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	1	0~9	0~9	2	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	2	0~9	0~9	3~9	0	0	-	-	-	0~9	0~9	d2	d3	d4	d10	d11	3	0~9	0~9	0~9	1~9	0	-	-	-	-	0~9	d2	d3	d4	d5	d11	4	0~9	0~9	0~9	0~9	1~9	-	-	-	-	5~9	d2	d3	d4	d5	d6	d11
传输的数据										打印的数据																																																																																																																							
d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d1	d2	d3	d4	d5	d6																																																																																																																		
0~9	0~9	0	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	0																																																																																																																		
0~9	0~9	1	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	1																																																																																																																		
0~9	0~9	2	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	2																																																																																																																		
0~9	0~9	3~9	0	0	-	-	-	0~9	0~9	d2	d3	d4	d10	d11	3																																																																																																																		
0~9	0~9	0~9	1~9	0	-	-	-	-	0~9	d2	d3	d4	d5	d11	4																																																																																																																		
0~9	0~9	0~9	0~9	1~9	-	-	-	-	5~9	d2	d3	d4	d5	d6	d11																																																																																																																		

When print EAN13 (m = 2 or 67) ,pls note:

No matter input data length is 12 or 13,parity bit insert automatically or error correction.

When print EAN8 (m = 3 or 68) ,pls note:

No matter input data length is 7 or 8,parity bit insert automatically or error correction

When print CODE39 (m = 4 or 69) ,pls note:

When d1 or dn is not as the initial/end characters,encode insert automatically “*”

When there is “*” in the middle of the data,encode is as end characters.the rest data is as normal data to handle.

Parity bit wont calculate or add automatically.

Print ITF25 (m = 5 or 70) ,pls note:

Initial characters and ending character insert automatically.

Parity bit wont calculate or add automatically.

Print CODABAR (NW-7) (m = 6 or 71) ,pls note:

Initial character and ending character do not insert automatically,it needs user to add by hand,the range is “A” ~ “D” or “a” ~ “d”

Parity bit wont calculate and add automatically

Print CODE93 (m = 72) ,pls note:

Initial characters and ending characters insert automatically

Two parity codes calculate automatically and insert.

When it sets barcode to HRI printing,dont set any initial/ending HRI characters.

When set barcode HRI to print,it controls characters will be replace of spacing(blank)

When print CODE128 (m = 73) ,pls note:

Code system Intelligent identification data and release min. length code.no need user to set characters(including initial characters) or change characters.

Function character FNC1~FNC4 use C1H~C4H to input

Parity bit calculate and add automatically

When setting barcode to HRI printing,it controls characters and FNC1~FNC4 will replace by spacing.

When print EAN128 (m = 74) ,pls note:

The constructions as below:

Initial characters	FNC1	AI	Data parts	Parity A	Parity B	Ending characters
Insert automatically		(d1...dk)			Insert automatically	

Connection constructions are as below:

Initial character s	FNC1	AI	Data parts	Parit y bit A	FN C1	A I	Data part	Parit y bit A	Pa rit y bit B	Ending character s
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	Insert automatically	(d1...dk)	Insert automatically
	Code system Intelligent identification data and release min. length code.no need user to set characters(including initial characters) or change characters. Function characters FNC1~FNC4 using C1H~C4H to input Users input data AI no need to use “ (” “) ” to show,code system insert automatically,or will make mistakes, as: GS k 74 18 "019501234567890*" , 01 is AI, it is wrong as below: GS k 74 18 "(01)9501234567890*" When using construction,it needs to insert FNC1 (C1H “Decimal = 193”) to input as below example GS k 74 18 "019501234567890*" 193 "029501234567890*" When setting barcode HRI printing,it controls characters in the replace of spacing.and delete FNC1~FNC4		
Example	No		

⑥QR code printing command

Set QR code module type

Name	Set QR code module type
Code	ASCII : GS (k pL pH cn fn n DEC : 29 40 107 pL pH cn fn n HEX : 1D 28 6b pL pH cn fn n
Function	Set QR code module type
Parameter range	pL=3, pH=0 cn=49 fn=67 $0 \leq n \leq 16$
Default	n=3
Support types	All
Notes	Set QR code graphic module type to (n dots x n dots).
Example	No

Set QR code mistakes correction level error

Name	Set QR code mistakes correction level error
Code	ASCII : GS (k pL pH cn fn n DEC : 29 40 107 pL pH cn fn n HEX : 1D 28 6b pL pH cn fn n
Function	Set QR code mistakes correction level error
Parameter range	pL=3, pH=0 cn=49 fn=69 $48 \leq n \leq 51$

Default	n=48		
Support types	All		
Notes	Set QR code mistakes correction level error		
	n	function	reference: Recovery probability(%)
	48	Error correction level error L	7
	49	Error correction level error m	15
	50	Error correction level error q	25
	51	Error correction level error h	30
Example	No		

Store QR code data to QR code buffer area

Name	Store QR code data to QR code buffer area.
Code	ASCII : GS (k pL pH cn fn m d1...dk DEC : 29 40 107 pL pH cn fn m d1...dk HEX : 1D 28 6b pL pH cn fn m d1...dk
Function	Store QR code data to QR code buffer area.
Parameter range	$4 \leq (pL + pH \times 256) \leq 7092$ ($0 \leq pL \leq 255, 0 \leq pH \leq 28$) cn=49 fn=80 m=48 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$
Default	No
Support types	All
Notes	Save QR code data(dl...dk) to QR code buffer area. ((pL + pH × 256) - 3) byte is dealt with graphic data after m(dl...dk).
Example	No

Print QR code

Name	Print QR code
Code	ASCII : GS (k pL pH cn fn m DEC : 29 40 107 pL pH cn fn m HEX : 1D 28 6b pL pH cn fn m
Function	Print QR code
Parameter range	pL=3, pH=0 cn=49 fn=81 m=48
Default	No
Support types	All

Notes	Print QR code. Users must consider QR code graphic space(QR code graphic vertical and horizontal space is assigned in the specification.)
Example	1b 40 1d 28 6b 03 00 31 43 03 1d 28 6b 03 00 31 45 30 1d 28 6b 06 00 31 50 30 41 42 43 1b 61 01 1d 28 6b 03 00 31 52 30 1d 28 6b 03 00 31 51 30

Set QR code graphic information

Name	Set QR code graphic information																																														
Code	ASCII : GS (k pL pH cn fn m DEC : 29 40 107 pL pH cn fn m HEX : 1D 28 6b pL pH cn fn m																																														
Function	Set QR code graphic information The graphic information details are as below: <table border="1"> <thead> <tr> <th>Sending data</th><th>HEX</th><th>DEC</th><th>Data types</th></tr> </thead> <tbody> <tr> <td>Header</td><td>37H</td><td>55</td><td>1byte</td></tr> <tr> <td>Flag</td><td>36H</td><td>54</td><td>1byte</td></tr> <tr> <td>Width</td><td>30H-39H</td><td>48-57</td><td>1-5byte</td></tr> <tr> <td>Separator</td><td>1FH</td><td>31</td><td>1byte</td></tr> <tr> <td>Height</td><td>30H-39H</td><td>48-57</td><td>1-5byte</td></tr> <tr> <td>Separator</td><td>1FH</td><td>31</td><td>1byte</td></tr> <tr> <td>Fixed Value</td><td>31H</td><td>49</td><td>1byte</td></tr> <tr> <td>Separator</td><td>1FH</td><td>31</td><td>1byte</td></tr> <tr> <td>Other Information</td><td>30H or 31H</td><td>48 or 49</td><td>1byte</td></tr> <tr> <td>NUL</td><td>00H</td><td>0</td><td>1byte</td></tr> </tbody> </table> hight and width value for graphic data is dot. Other data sending: “HEX=30H/DEC=48” means data is not printed. “HEX=31H/DEC=49” means data is not printed.			Sending data	HEX	DEC	Data types	Header	37H	55	1byte	Flag	36H	54	1byte	Width	30H-39H	48-57	1-5byte	Separator	1FH	31	1byte	Height	30H-39H	48-57	1-5byte	Separator	1FH	31	1byte	Fixed Value	31H	49	1byte	Separator	1FH	31	1byte	Other Information	30H or 31H	48 or 49	1byte	NUL	00H	0	1byte
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Parameter range	pL=3, pH=0 cn=49 fn=82 m=48																																														
Default	No																																														
Support types	All																																														
Notes	The commend is not printed to QR code graphic.(QR code graphic vertical space and horizontal space is assigned in the specification.)																																														

Example	No
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⑦Status query command

Transmission status

Name	Transmission status				
Code	ASCII : GS r n DEC : 29 114 n HEX : 1D 72 n				
Function	Transmission status as below:				
	n		status		
	1,49		Transmission paper end sensor status		
Parameter range	n = 1, 49				
Default	No				
Support types	All				
Notes	When using serial port interface: If setting DTR/DSR to control,printer only sends 1 byte after confirming the host receives data(DSR signal is SPACE).Printer will wait to the host is ready if it is not ready to receive data(DSR signal is MARK). If setting XON/XOFF to control,printer only sends 1 bytes and does not confirm DSR signal status. When data is generated in buffer area,it execute this command.So there may be a interval between receiving and transmitting this command,which depends on receiving status in buffer area. When using GS a activate auto-status to reply ASB,it must be separated from GS r status and ASB status. The transmission status as below: Printer paper sensor status(n = 1, 49):				
	Bit	On/off	HEX	DEC	ASB status
	0,1	-	-	-	No sense
	2,3	off	00	0	Paper sensor:paper is enough
		on	(0C)	(12)	Paper sensor missing paper
	4	off	00	0	Unused,fixation is off.
	5,6	-	-	-	Undefined
	7	off	00	0	Unused,fixation is off.
	Bit 2 and 3:Printer turns to be offline when paper sensor tested paper is out.And this commend does not execute.So bit 2 and 3 do not send paper out status.				
	Example	No			

Real-time transmission status

Name	Initialize printer
Code	ASCII : ESC @ DEC : 27 64 HEX : 1B 40
Function	Initialize printer: Eliminate printing buffer All data recover to default.
Parameter range	No
Default	No
Support types	All
Notes	No
Example	No

Choose cut mode and cut

Name	Choose cut mode and cut								
Code	① ASCII : GS V m DEC : 29 86 m HEX : 1D 56 m ② ASCII : GS V m n DEC : 29 86 m n HEX : 1D 56 m n								
Function	Choose a kind of cut mode and cut. The cut modes as below options: <table border="1"> <tr> <td>M</td><td>Cut mode</td></tr> <tr> <td>0, 48</td><td>All cut</td></tr> <tr> <td>1, 49</td><td>Partly cut</td></tr> <tr> <td>66</td><td>Cut and paper feed</td></tr> </table>	M	Cut mode	0, 48	All cut	1, 49	Partly cut	66	Cut and paper feed
M	Cut mode								
0, 48	All cut								
1, 49	Partly cut								
66	Cut and paper feed								
Parameter range	① m = 0, 48, 1, 49 ② m = 66, 0 ≤ n ≤ 255								
Default	No								
Support types	All								
Notes	This command is only effective with the head of line. - m = 0, 48, 1, 49, paper cut directly. - When n = 66, paper feed[the distance between printing position to cutter+n X longitudinal command increment. - Landscape command increment and longitudinal command increment are								

	setted as per GSP commands. • Paper feed qty is calculated as longitudinal command increment.
Example	1B 40 30 30 30 0D 0A 1D 56 00 30 30 30 0D 0A 1D 56 01 30 30 30 0D 0A 1D 56 42 00

All cuts (Only For Cut)

Name	All cuts
Code	ASCII : ESC i DEC : 27 105 HEX : 1B 69
Function	Choose all cuts or partly cuts
Parameter range	No
Default	No
Support types	All
Notes	No
Example	1B 40 30 30 30 0D 0A 1B 69

Partly cuts (Only For Cut)

Name	All cuts
Code	ASCII : ESC m DEC : 27 109 HEX : 1B 6D
Function	Choose all cuts or partly cuts
Parameter range	No
Default	No
Support types	All
Notes	No
Example	1B 40 30 30 30 0D 0A 1B 6D