



M06

Development Guide

2010-07-13

REVISION SHEET

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Features

Features

- ◆ Stylish, delicate and elegant appearance; Ergonomic structure, convenient hand-held.
- ◆ Rich interface, strong expansion, Support 232/USB、Bluetooth/WI-FI、Infrared interface.
- ◆ Low-power design , Bulk battery support long time to print.
- ◆ Any dot matrix font download, equipment automatic identification.
- ◆ compatible with ESC / POS command set , more Character Style Set command.

Specifications

Item		Specification
	Printing method	Dot matrix printing method
	Printing speed	3 line/s
	Resolution ration	240 dots/line
	Paper loading way	Easy paper loading
	Character size	Depend on user
	Characters per line	Depend on user
Printing	Character sets	ASCII、GB2312
	Emulation	No
	Driver	Windows
	SDK	Windows
	Sensor	No paper sensor
	Paper cutter	Tear-Bar
	Language	Support user language
	Type	Plain paper
Paper	Width	58 ± 0.5mm
	Diameter	Max 40mm (1.57in)
	Thickness	0.067 ± 0.004 mm (0.003 ± 0.0001")
Communication	Interface	Serial/USB、Bluetooth/WIFI、IrDA
Battery	Type	Lithium battery
	Battery	Rechargeable up to 500 times
	Charging time	2.5hours
	Output	7.4 VDC (8.4 ~ 6.8VDC) capacity : 1800mAh
Battery charger	Input	100 ~ 240VAC 1.0A (max 110VA)
	Output	8.4 VDC 1.2A
Using	Temperature	Printer: -10~50°C (14~122°F) battery: 0~40°C (32~104°F)
	Humidity	Printer : 10~90% RH (non-condensing) battery : 20~70% RH (non-condensing)

General description of communication protocol

Infrared

There is a RF transceiver in line with IrDA specification, Compatible with IrDA Ver1.2, Maximum communication baud rate is 115200kbps。

Communication distance: ≤30cm Communication perspective: ≤30°

Bluetooth

Printer provide SPP service to other Bluetooth equipment.; receive the data through the SPP Agreement. For the equipment under windows、 windows mobile and symbian, distribute a virtual Bluetooth serial port number before established connection.

According to different equipment, allocate automatically by operation system or user does manual operation.

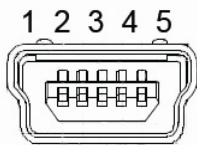
More information about Bluetooth and SPP, Pay a visit to Bluetooth Official Website: <http://www.bluetooth.org>

WIFI

Reference WIFI user's manual

232

- 1、 equipment communicates with the printer though serial port or USB.
 - 2、 The setting of serial port: the default baud rate:115200, 8 bits data, 1 bit stop bit.
- The interface is as the following shown.



The definition of the interface:

pin	signal	instruction
1	VBUS	USB VCC
2	D-	USB D-
3	D+	USB D+
4	RXD	RS232 RXD
5	GND	GND

USB

Full compliance with USB2.0 specification (full speed) .

Control Commands Details

Basic control command

【Initialize Printer】

Format: ASCII: ESC @
Dec: 27 64
Hex: 1B 40

Explanation:

This command is used to initialize the printer. There are two ways we can initialize the printer :

- (1) use the command ESC @
- (2) re-power the printer

【Carriage return】

Format: ASCII: CR
Dec: 13
Hex: 0D

Explanation:

If a “CR” command is sent to printer the total data in the print buffer will be printed out and paper will be fed for one line forwards.

【Print and line feed】

Format: ASCII: LF
Dec: 10
Hex: 0A

Explanation:

Content in the buffer will be carried out after this command. The paper feeds in for a new line. The length is the high of one character and the distance rows between.

【n Dot Line Feed】

Format: ASCII: ESC J n
Dec: 27 74 n
Hex: 1B 4A n

Explanation:

The printer feeds paper n dot lines. N=0~255. This command sends carriage return and feed line. It won" t influence the latter feed line command.

Select Character Commands

【select character】

Format: ASCII: ESC 8 n
Dec: 27 56 n
Hex: 1B 38 n

Explanation:

After the command, it will print out the download Chinese characters set “n”(from zero begin to count). The printer can download any dot matrix character set and Graphical user-defined font. The first address of user-defined font is 0x20. User can find the download character set in self-test.

【select Chinese character】

Format: ASCII: FS &
Dec: 28 38
Hex: 1C 26

Explanation:

After the command, it will print out the first download Chinese characters set

(GB2312 or GB18030).Printer accept standard internal code, and base on the code if find the characters, the printer print, otherwise not print. When printer power on, the default printing type is Chinese character.

【exit the Chinese character】

Format: ASCII: FS & .
Dec: 28 46
Hex: 1C 2E

Explanation:

After the command, it will exit the Chinese character, and it will select the first ASCII set in ASCII sets. If user want to select other character, use the command

【select character】 ..

。

Character Setting Commands

【set the gray degree】

Format: ASCII: ESC m n
Dec: 27 109 n
Hex: 1B 6D n

Explanation:

N ranges from 1 to 12 the larger of the n value, the darker the dot it is . The initial n=7. It is used to modify the final expression of different thermal paper roll.

【Enlarge Width】

Format: ASCII: ESC U n

Dec: 27 85 n

Hex: 1B 55 n

Explanation:

The characters and graphics following this command are printed at n times of normal width, n=1~4, default n=,that means normal width, no width enlarging.

【Enlarge Height】

Format: ASCII: ESC V n

Dec: 27 86 n

Hex: 1B 56 n

Explanation:

The characters and graphics following this command are printed at n times of normal height, n= 1~4, default n=1.

【Enlarge Width and Height】

Format: ASCII: ESC W n

Dec: 27 87 n

Hex: 1B 57 n

Explanation:

The characters and graphics following this command are printed at n times of normal width and height, n=1~4, default n=1.

【Select/cancel Underline Print】

Format: ASCII: ESC - n

Dec: 27 45 n

Hex: 1B 2D n

Explanation:

When n=1, select underline print; when n=0, cancel underline print.

All characters including spaces will be printed out with underline after selecting underline print command. Default n=0.

【Select/cancel Up-line Print】

Format: ASCII: ESC + n

Dec: 27 43 n

Hex: 1B 2B n

Explanation:

When n=1, select up-line print ; when n=0, cancel up-line after selecting up-line print command, unless cancel the up-line print command. Default n=0.

【Turn emphasized mode on / off】

Format: ASCII: ESC I n

Dec: 27 105 n

Hex: 1B 69 n

Explanation:

- When the LSB of n is 0, emphasized mode is turned off.
- When the LSB of n is 1, emphasized mode is turned on.

【Select/cancel Reverse Print】

Format: ASCII: ESC c n
 Dec: 27 99 n
 Hex: 1B 63 n

Explanation:

When n=0, select reverse print, printing from right to left. When n=1, cancel reverse print, printing from left to right.

When the printer is assembled vertically, it is convenient to read the word reversely so its initial value is 1.

【Set Character Rotational Print】

Format: ASCII: FS l n
 Dec: 28 73 n
 Hex: 1C 49 n

Explanation:

This command is to rotate characters, the values of n are as following:

n	Characters rotated widdershins
0	0°
1	90°
2	180°
3	270°

Parameter setting Command for print typeset

【Set n Dot-line Spacing】

Format: ASCII: ESC 1 n
 Dec: 27 49 n
 Hex: 1B 31 n

Explanation:

The space between lines are n dots after this command (The dot number is unconditional and can't be affected by enlarging command.) $1 \leq n \leq 255$. The original setting: n=3.

【set the space between characters】

Format: ASCII: ESC p n
 Dec: 27 112 n
 Hex: 1B 70 n

Explanation:

This command sets the space between characters n dots (The dot number is unconditional and can't be affected by enlarging

command.) $1 \leq n \leq 255$. The original setting: $n=0$.

1.1.1.1 【Select justification】

Format: ASCII: ESC a n
 Dec: 27 97 n
 Hex: 1B 61 n

$0 \leq n \leq 2$, $48 \leq n \leq 50$

$n=0$

Aligns all the data in one line to the specified position.:

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

【Set Vertical Tab Value】

Format: ASCII: ESC B n1 n2...NUL
 Dec: 27 66 n1 n2...0
 Hex: 1B 42 n1 n2...00

Explanation:

The vertical tab positions are entered as $n1$, $n2$ and so on, The total number of position is 8, all of these should be within the page length set by ESC C command.

For example, when $n1 = 3$, $n2=6$, the printer executes "VT" command and paper will feed in to the 3rd and print, then the printer executes "VT" command again and paper will feed in to the 6th. The height of unit line is the sum of 8 dots add dots characters between, and is unconditional. Command NUL added at the end indicates the command is over.

All vertical tab positions that input can be deleted by using this command in ESC B NUL format. VT command is to carry out vertical tab, the paper fed to the next vertical position.

【Carry out Vertical Tab Value】

Format: ASCII: VT
 Dec: 11
 Hex: 0B

Explanation:

Feed paper to the next vertical tab position which is set by ESC B command.

Notice: if there is no vertical tab value setting, or the current position equals or is beyond the last vertical tab position, VT command is to feed paper one line only (same to LF command).

【Set Horizontal Tab Value】

Format: ASCII: ESC D n1 n2...NUL

Dec: 27 68 n1 n2...0
Hex: 1B 44 n1 n2...00

Explanation:

The tab positions are entered as n1,n2 and so on, the total number of position is 8, and

all of these should be within the line width of this model printer.

For example, when n1 = 3, the printer executes "HT" command paper will feed in to the 3rd unit length (unit length:0.25mm) then print. The width of each step is the sum of width of character matrix and dots characters between horizontal. Command NUL added at the end indicates the command is over.

All horizontal tab positions that set can be deleted by using this command in ESC D NUL format.

【Carry out Horizontal Tab Value】

Format: ASCII: HT
Dec: 9
Hex: 09

Explanation:

The print position is advanced to the next horizontal tab position which is set by ESC D command.

If there is no horizontal tab value setting, or the current position equals or is beyond the last horizontal tab position, HT command won't be carried out.

【Set Right Margin】

Format: ASCII: ESC Q n
Dec: 27 81 n
Hex: 1B 51 n

Explanation:

N value means n-characters blank space on the right side will be left. Each character space is the sum of width of the character matrix and the horizontal space between. The value of n should be in the range from 0 to the line width of this model printer.

Default n = 0, that means no right margin.

【Set Left Margin】

Format: ASCII: ESC 1 n
Dec: 27 108 n
Hex: 1B 6C n

Explanation:

N value means n-characters blank space on the left side will be left. Each character space is the sum of width of the character matrix and the horizontal space between. The command is relative to the enlarging command.

Default $n = 0$, that means no left margin.

Graphic/image printing command

【Print bit-map graphics】

Format: ASCII: ESC K ml mh n1 n2...ni...

Dec: 27 75 ml mh n1 n2...ni...

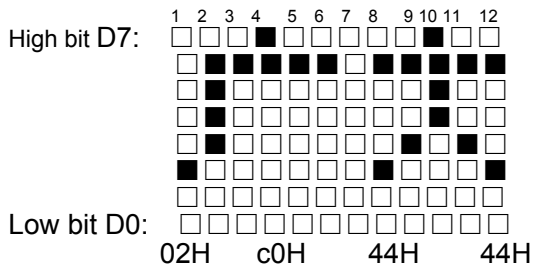
Hex: 1B 4B ml mh n1 n2...ni...

Explanation:

ml mh stand for a 16 bits binary datum . ml is the low 8 bits and mh is the high 8 bits. The number of graph data is $mh \times 256 + ml$. The size of graph depends on the enlarging command.

The command will print a $i \times 8$ dots graph unit . Its width is i dots and height is 8 dots. A 8-bit binary datum express row structure and the high bit is on the top.

If your graph is larger than one graph unit, you can divide the graph to different unit, set and print them separately.



Appendix

International escape character set

The character after 0x80 code in this set can print only after using the command [exit Chinese character], About Chinese characters ,user can refer to GB-2312 and CP936。

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	<u>NUL</u> 0000	<u>STX</u> 0001	<u>SOT</u> 0002	<u>ETX</u> 0003	<u>EOT</u> 0004	<u>ENQ</u> 0005	<u>ACK</u> 0006	<u>BEL</u> 0007	<u>BS</u> 0008	<u>HT</u> 0009	<u>LF</u> 000A	<u>VT</u> 000B	<u>FF</u> 000C	<u>CR</u> 000D	<u>SO</u> 000E	<u>SI</u> 000F
10	<u>DLE</u> 0010	<u>DC1</u> 0011	<u>DC2</u> 0012	<u>DC3</u> 0013	<u>DC4</u> 0014	<u>NAK</u> 0015	<u>SYN</u> 0016	<u>ETB</u> 0017	<u>CAN</u> 0018	<u>EM</u> 0019	<u>SUB</u> 001A	<u>ESC</u> 001B	<u>FS</u> 001C	<u>GS</u> 001D	<u>RS</u> 001E	<u>US</u> 001F
20	<u>SP</u> 0020	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	<u>DEL</u> 007F
80	€ 20AC		/	f	"	...	†	‡	^	%	Š	<	Œ		Ž	
90		\	/	"	•	—	—	~	™	Š	>	œ			Ž	Ÿ
A0	<u>NBSP</u> 00A0	¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	­	®	¯
B0	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E0	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

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