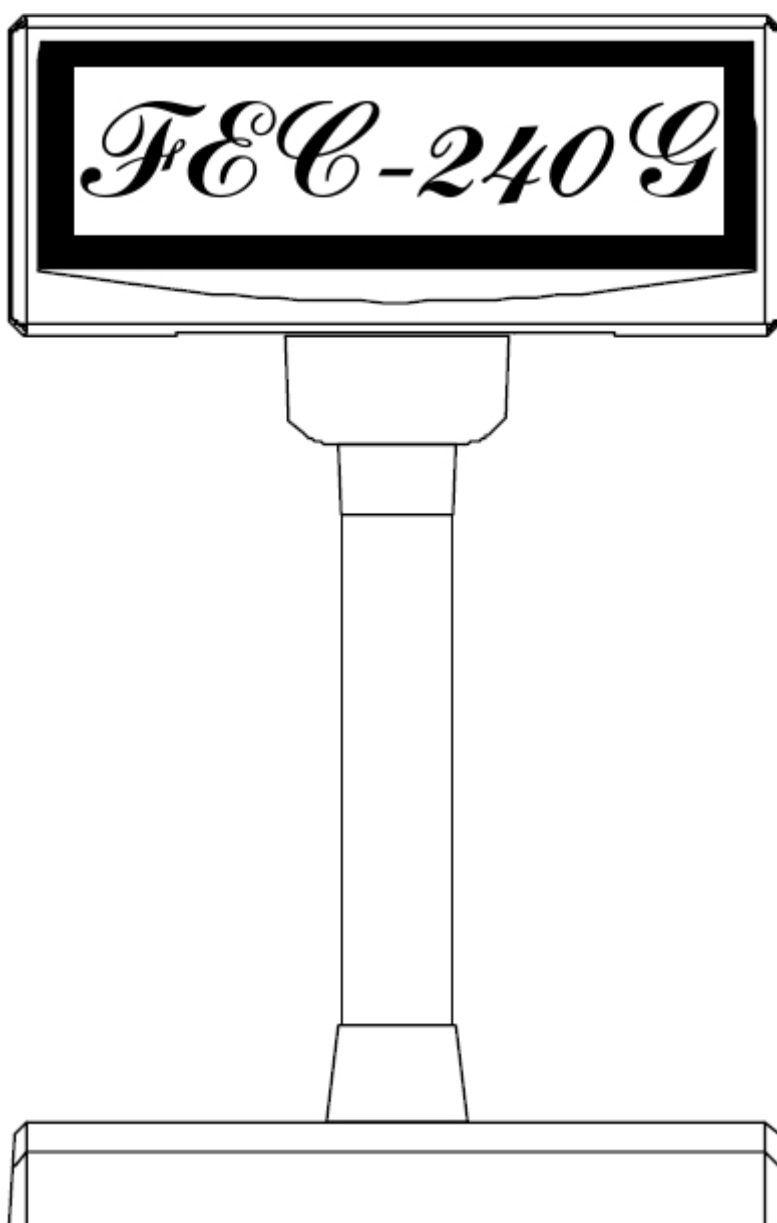


# Model FEC-240G

## User's Manual



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## Features

LED back-light liquid crystal display (LCD) provides wide viewing angle and high display brightness.

Uses standard RS-232 interface for data communication, and the baud rate can adjust by switching. (9000, 38400, 19200, 115200 bps)

Easy programming using Escape sequence commands.

Display can swivel and tilt to a wide range of angles.

Display height can be adjusted.

Data can be displayed on 4 modes.

User can define their boot screen.

Support three kinds of command mode and graphic mode.

## Type Model and Parts Number

Model Type	Parts Number	Descriptions
USB model	P8023511720	LCM FEC-240G USB Interface Traditional Chinese font (white color)
	P8023511520	LCM FEC-240G USB Interface Simplified Chinese font (white color)
	P8023511722	LCM FEC-240G USB Interface Traditional Chinese font (black color)
	P8023511522	LCM FEC-240G USB Interface Simplified Chinese font (black color)
RS232 model	P8021211720	LCM FEC-240G RS232 Interface Traditional Chinese font (white color)
	P8021211520	LCM FEC-240G RS232 Interface Simplified Chinese font (white color)
	P8021211722	LCM FEC-240G RS232 Interface Traditional Chinese font (black color)
	P8021211522	LCM FEC-240G RS232 Interface Simplified Chinese font (black color)

## General Specification

Item	Descriptions
Display Type	LCD, 240*64 dots Graphic mode
Display Color	Blue background, white dots (negative type)
Backlight	LED backlight 25~30 cd/m <sup>2</sup>
Display Area	127.16*33.88 mm
Dot Size	0.49*0.49 mm (Dot pitch=0.53*0.53)
Display Mode	30 columns*4 lines (double high is 2 lines) alphanumeric 15 columns*4 lines (double high is 2 lines) Chinese character 30 columns*3 lines alphanumeric 15 columns*3 lines Chinese character
Character Font	95 alphanumeric (8*16 dots) 6500 Traditional Chinese font (16*16 dots) 6700 Simplified Chinese font (16*16 dots)
Character Size	8.47mm*4.24mm( 16x8 dot matrix) 8.47mm*8.47mm( 16x16 dot matrix)
Power Supply	12VDC (RS-232) or 5VDC (USB)
Power Consumption	12V/200mA , 5V/300mA
MTBF	20000 hrs
Viewing angle	0 – 45 degrees.
Environment	Operating temperature: 0 ~ 50°C (Humidity: 30% - 85%) Storage Temperature: -10 ~ 55°C (Humidity: 10% - 85%)

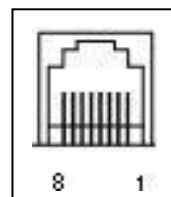
# Interface

## 1. Connector Location

NO.	Symbol	Function
1	CN1	Contrast/OSD Control
2	CN2	Test Pin
3	CN3	No Use
4	CN4	Power Switch
5	CN5	RJ45
6	CN6	USB wafer
7	CN7	No Use
8	CN8	Mini USB
9	LCD1	Connect to LCD

## 2. RJ45 Pin Define

Pin	Signal	Direction	Function
1,2	Vin	Power	Power Input
3,4	GND	Ground	Ground
5	DSR	PC to LCD	PC/Host ready signal
6	DTR	LCD to PC	Local ready signal
7	RXD	Pc to LCD	Send data to Display
8	TXD	LCD to PC	Receive data to PC



## 3. RS232 Specification

Data transmission:	Serial
Synchronization:	Asynchronous
Handshaking:	RTS / CTS
Signal level:	MARK = -3 to -15 V (logic "1") SPACE = +3 to +15 V (logic "0")
Baud rates:	115200,38400,19200,9600bps
Parity:	None
Bit length:	8 bits
Stop bits:	1

**4. USB Pin Define**

Pin	Signal	Direction	Function
1	Vcc	-	5V
2	D-	-	Data Pin
3	D+	-	Data Pin
4	GND	-	Ground

# DIP Switch Setting

## 1. Baud Rate Select

SW1	SW2	Baud rate (bps)
ON	ON	115200 (Default)
OFF	ON	38400
ON	OFF	19200
OFF	OFF	9600

## 2. Command Set Select

SW3	Command type
ON	SD-304/ SD-8240
OFF	ESC/POS (Default)

## 3. Logo Pattern Select

SW4	SW5	Logo type
ON	ON	Default logo (Default)
OFF	ON	User define pattern
ON	OFF	SPACE
OFF	OFF	No use

## 4. Code page select

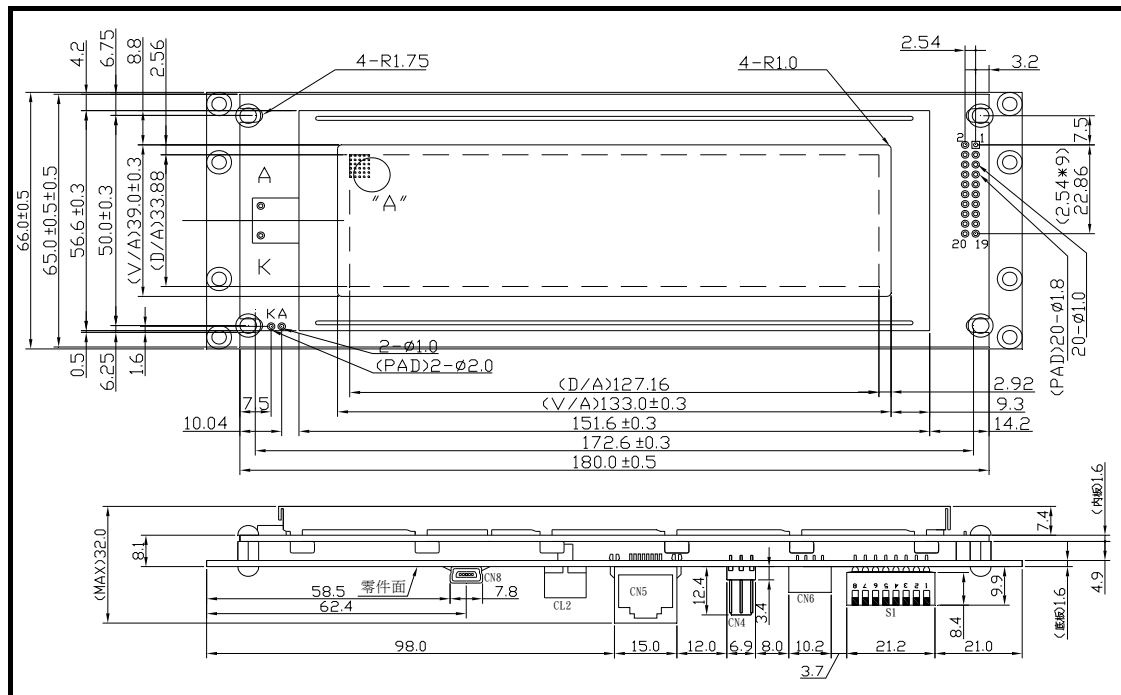
SW6	Language type
ON	PC850 (Default)
OFF	PC437

## 5. Initial Mode Select

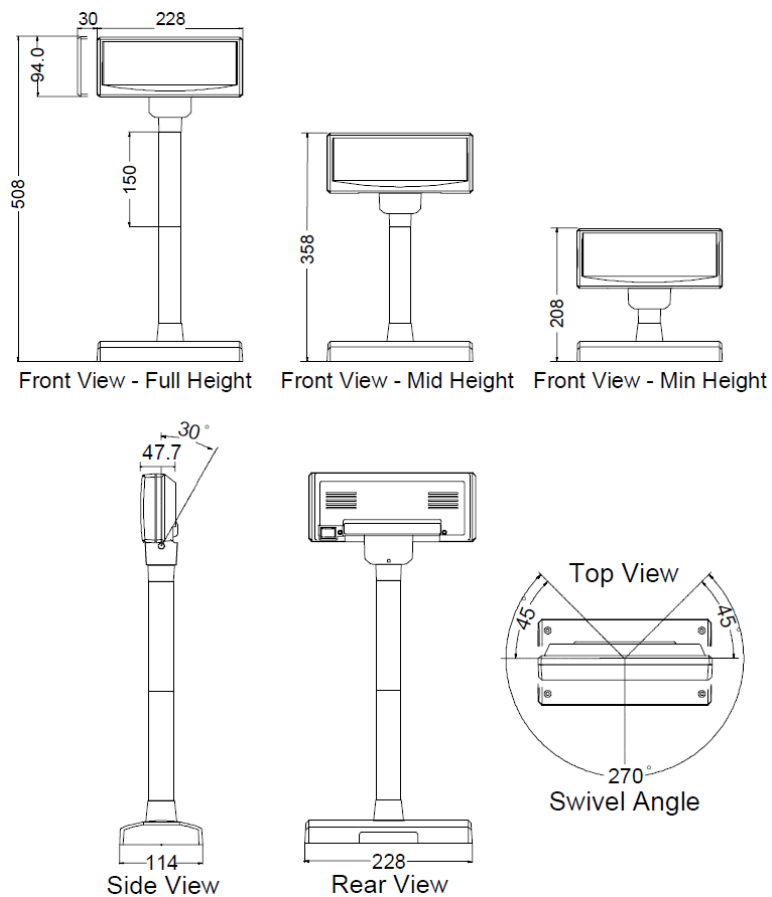
SW8	MODE
ON	OSD
OFF	DIP SWITCH (Default)

# Dimension

## LCD Diagram



## Display Diagram





# COMMAND SET TABLE

## Esc/pos Command List

Command	Code (hex)	Function description
ESC n	1B 5F n n=1,0	Select/cancel display cursor.
HT	09	Move cursor right.
BS	08	Move cursor left.
US LF	1F 0A	Move cursor up.
LF	0A	Move cursor down.
ESC [ C	1B 5B 43	Move cursor right.
ESC [ D	1B 5B 44	Move cursor left.
ESC [ A	1B 5B 41	Move cursor up.
ESC [ B	1B 5B 42	Move cursor down.
HOM	0B	Move cursor to home position.
US CR	1F 0D	Move cursor to right-most position.
CR	0D	Move cursor to left-most position.
US B	1F 42	Move cursor to bottom position.
ESC [ H	1B 5B 48	Move cursor to home position.
ESC [ R	1B 5B 52	Move cursor to right-most position.
ESC [ L	1B 5B 4C	Move cursor to left-most position.
ESC [ K	1B 5B 4B	Move cursor to bottom position.
US \$ x y	1F 24 x y 1<x<30,1<y<4	Move cursor to specified position.
ESC l x y	1B 6C x y 1<x<30,1<y<4	Move cursor to specified position.
CLR	0C	Clear display screen.
ESC @	1B 40	Initialize display.
US r n	1F 72 n n=1,0	Select/cancel reverse character.
US T h m	1F 54 h m 0<=h<=17 0<=m<=3b	Set time h=hour ,m=minute
US U	1F 55	Display time continuously
SO	0E	Set double-width character mode.
DC4	14	Cancel double-width character mode.

**Extra command:**

GS q A	1D 71 41 [datax30] 0D	Show string data 30 bytes to display line 1.
GS q B	1D 71 42 [datax30] 0D	Show string data 30 bytes to display line 2.
GS q C	1D 71 43 [datax30] 0D	Show string data 30 bytes to display line 3.
GS q D	1D 71 44 [datax30] 0D	Show string data 30 bytes to display line 4.
GS q E	1D 71 45 [datax30] 0D	Show double-height string data 30 bytes to display line 1 and line 2.
GS q F	1D 71 46 [datax30] 0D	Show double-height string data 30 bytes to display line 3 and line 4.
GS r A	1D 72 41 [datax46] 0D	Marquee on line 1.
GS r B	1D 72 42 [datax46] 0D	Marquee on line 2.
GS r C	1D 72 43 [datax46] 0D	Marquee on line 3.
GS r D	1D 72 44 [datax46] 0D	Marquee on line 4.
GS r E	1D 72 45 [datax46] 0D	Double-width marquee on line 1 and line 2.
GS r F	1D 72 46 [datax46] 0D	Double-width marquee on line 3 and line 4.
ESC s	1B 73	Store current bitmap as user define pattern.
ESC r	1B 72 n ,n = 1~8	Store current bitmap to n.
ESC t	1B 74 n ,n = 1~8	Show stored bitmap to LCD.
ESC y	1B 79	Send stored bitmap status to PC.
ESC u	1B 70	Enter ISP mode.
ESC v	1B 76 X1 X2 X3	Set unique ID.
ESC w	1B 77	Send unique ID to PC.
ESC x	1B 78 X1 X2 Y1 Y2	Clear area. X = 0~29, Y = 0~63.
ESC ENQ	1B 05	Tune up contrast.
ESC ACK	1B 06	Tune down contrast.

ESC BELL 00	1B 07 00	Tune off brightness.
ESC BELL 01	1B 07 01	Tune on brightness.
ESC 81	1B 81	Show firmware checksum.
ESC DC4	1B 14 n s	Scroll current bitmap. N=0 stop scrolling N=1 scroll up direction, N=2 scroll down direction, N=3 scroll left direction, N=4 scroll right direction, N=5 marquee. S= 1~4 define speed.

### SD-304 Standard Mode Command List

Command	Code (hex)	Name and description
ESC q A	1B 71 41 [datax30] 0D	Show string data 30 bytes to display line 1.
ESC q B	1B 71 42 [datax30] 0D	Show string data 30 bytes to display line 2.
ESC q C	1B 71 43 [datax30] 0D	Show string data 30 bytes to display line 3.
ESC q D	1B 71 44 [datax30] 0D	Show string data 30 bytes to display line 4.
ESC q E	1B 71 45 [datax30] 0D	Show double-height string data 30 bytes to display line 1 and line 2.
ESC q F	1B 71 46 [datax30] 0D	Show double-height string data 30 bytes to display line 3 and line 4.
ESC q G	1B 71 47 [datax46] 0D	Marquee on line 1.
ESC q H	1B 71 48 [datax46] 0D	Marquee on line 2.
ESC q I	1B 71 49 [datax46] 0D	Marquee on line 3.
ESC q J	1B 71 4A [datax46] 0D	Marquee on line 4.
ESC q K	1B 71 4B [datax46] 0D	Double-width marquee on line 1 and line 2.
ESC q L	1B 71 4C [datax46] 0D	Double-width marquee on line 3 and line 4.
FS	1C	Select reverse character.
GS	1D	Cancel reverse character.
US	1F	Clear display screen.

FF	0C	Clear display screen.
SO	0E	Set double-width character mode.
DC4	14	Cancel double-width character mode.
ESC s	1B 73	Store the use define pattern
ESC @	1B 40	Initialize display.
ESC q t	1B 71 74 h m 0<=h<=17 0<=m<=3b	Set time h=hour ,m=minute.

**Extra command**

ESC r	1B 72 n ,n = 1~8	Store current bitmap to n.
ESC t	1B 74 n ,n = 1~8	Show stored bitmap to LCD.
ESC x	1B 78 X1 X2 Y1 Y2	Clear area. X = 0~29, Y = 0~63.
ESC y	1B 79	Send stored bitmap status to PC.
ESC u	1B 70	Enter ISP mode.
ESC v	1B 76 X1 X2 X3	Set unique ID.
ESC w	1B 77	Send unique ID to PC.
ESC x	1B 78 X1 X2 Y1 Y2	Clear area. X = 0~29, Y = 0~63.
ESC ENQ	1B 05	Tune up contrast.
ESC ACK	1B 06	Tune down contrast.
ESC BELL 00	1B 07 00	Tune off brightness.
ESC BELL 01	1B 07 01	Tune on brightness.
ESC 81	1B 81	Show firmware checksum.
ESC DC4	1B 14 n s	Scroll current bitmap. N=0 stop scrolling N=1 scroll up direction, N=2 scroll down direction, N=3 scroll left direction, N=4 scroll right direction, N=5 marquee. S= 1~4 define speed.

**SD-8240 Mode Command List**

<b>Command</b>	<b>Code (hex)</b>	<b>Name and description</b>
ESC Q A	1B 51 41 [datax30] 0D	Show string data 30 bytes to display line 1.
ESC Q B	1B 51 42 [datax30] 0D	Show string data 30 bytes to display line 2.
ESC Q C	1B 51 43 [datax30] 0D	Show string data 30 bytes to display line 3.
ESC u A	1B 75 41 [datax30] 0D	Show string data 30 bytes to display line 1.
ESC u B	1B 75 42 [datax30] 0D	Show string data 30 bytes to display line 2.
ESC u C	1B 75 43 [datax30] 0D	Show string data 30 bytes to display line 3.
ESC u D	1B 75 44 [datax46] 0D	Marquee on line 1.
ESC u J	1B 75 4A [datax46] 0D	Marquee on line 2.
ESC u K	1B 75 4B [datax46] 0D	Marquee on line 3.
CLR	0C	Clear display screen.
US T h m	1B 75 45 h m 0<=h<=17 , 0<=m<=3b	Set time h=hour, m=minute.

# FONT TABLE

ASCII (20H – 7EH)

	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
0	SP	0	@	P	`	p	Chinese character							
1	!	1	A	Q	a	q								
2	“	2	B	R	b	r								
3	#	3	C	S	c	s								
4	\$	4	D	T	d	t								
5	%	5	E	U	e	u								
6	&	6	F	V	f	v								
7	‘	7	G	W	g	w								
8	(	8	H	X	h	x								
9	)	9	I	Y	I	y								
A	†	:	J	Z	j	z								
B	+	;	K	[	k	{								
C	,	<	L	\	l									
D	-	=	M	]	m	}								
E	.	>	N	^	n	~								
F	/	?	O	_	o	SP								