

# LCD Controller Manual

## MMS1264K Version 1.1

가 1 5-60 3

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[ 1.] MMS1264K

Special Font

1. MMS1264K

◆ MMS1264K

- ◆ LCD Resolution : FSTN Mono 128\*64 dots
- ◆ : KS5601
- ◆ Font : 16\*16 dots  
8\*16 dots  
16\*16

◆ MMS1264K

- ◆ CPU : Atmega128
- ◆ LCD Controller : KS0108B
- ◆ Display Type : FSTN Mono 128\*64 dots
- ◆ : DC 5[V]
- ◆ : RS-232C 9600, 19200, 57600 [bps]  
Default 57600 [bps]

◆ MMS1264K

- ◆ , : 가 2 , 2 , 가 2
- ◆ Graphic : , Line, Rectangle, ,
- ◆ / Font
- ◆ Cursor
- ◆ Clear : Block Clear , Clear
- ◆

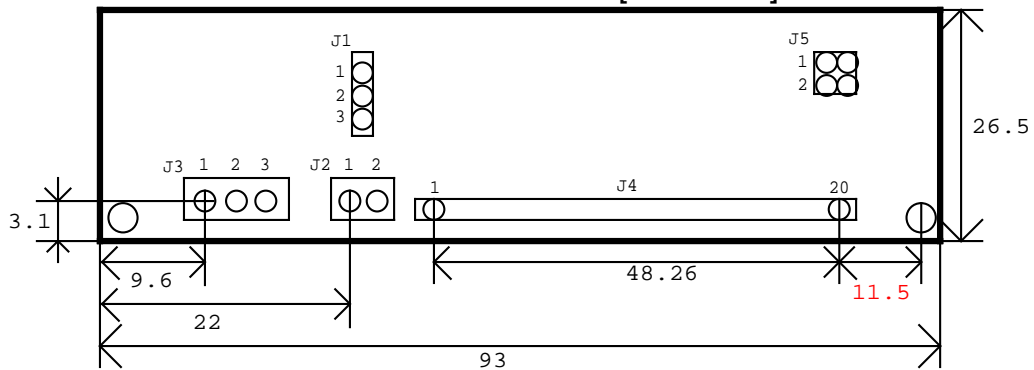
## 2. MMS1264K Connector

2 MMS1264K Dimensions Connector

### MMS1264K



MMS1264K-EBO Dimension [ :mm]



#### 2-1. RS-232C Connector : J3

Pin Number	Symbol	Description
1	RXD	Receive Data : LCD Controller
2	TXD	Transmit Data : LCD Controller
3	GND	Ground

#### 2-2. Power Connector : J2

Pin Number	Symbol	Description
1	VCC	+5[VDC]
2	GND	Ground

## 3.

'Esc' = 0x1b [hex]

			Parameter			
'Esc'	'K'	'0x01'		3-1-1		
		'0x02'	KS5601			
'Esc'	'E'	'0x01'		3-1-2		
		'0x02'				
'Esc'	'P'	'0x01'		ON	3-1-3	
		'0x02'		ON		
		'0x05'		Font	ON	3-1-4
		'0x06'		Font 가	ON	
		'0x07'		Font	ON	
		'0x08'		Font	OFF	3-1-5
		'0x0d'			ON	
'0x0e'			OFF			
'Esc'	'D'	'0x01'		clear	3-1-6	
		'0x03'	(X1,Y1,X2,Y2)	Graphic clear (X1, Y1, X2, Y2 hex 가 :0x000 ~ 0x7f :0x00 ~ 0x3f)		
'Esc'	'C'	'0x01'	(X,Y)	Text Layer X,Y cursor (X,Y hex 가 :0x00 ~ 0x0f :0x00 ~ 0x04)	3-1-7	
'Esc'	'L'	'0x01'		LED Power ON	3-1-8	
		'0x02'		LED Power OFF		
'Esc'	'G'	'0x01'	(X,Y)	Graphic X:0x000 ~ 0x7f Y:0x00 ~ 0x3f	3-1-9	
		'0x02'	(X,Y)	Graphic X:0x000 ~ 0x7f Y:0x00 ~ 0x3f		
		'0x03'	(X1,Y1,X2,Y2)	Graphic <u>Line</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f	3-1-10	
		'0x04'	(X1,Y1,X2,Y2)	Graphic <u>Line</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f		
		'0x05'	(X1,Y1,X2,Y2)	Graphic <u>Rectangle</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f	3-1-11	
		'0x06'	(X1,Y1,X2,Y2)	Graphic <u>Rectangle</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f		
		'0x07'	(X1,Y1,X2,Y2)	Graphic <u>Rectangle</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f		
		'0x08'	(X1,Y1,X2,Y2)	Graphic <u>Rectangle</u> X1,X2:0x000 ~ 0x7f Y1,Y2:0x00 ~ 0x3f	3-1-12	
		'0x09'	(X,Y,radius)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f Radius :0x00 ~ 0x1f		

			Parameter		
		'0x0a'	(X,Y,radius)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f Radius :0x00 ~ 0x1f	3-1-13
		'0x0b'	(X,Y,radius)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f Radius :0x00 ~ 0x1f	
		'0x0c'	(X,Y,radius)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f Radius :0x00 ~ 0x1f	
		'0x0d'	(X,Y,a,b)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f a :128/2 b :64/2	
		'0x0e'	(X,Y,a,b)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f a :128/2 b :64/2	
		'0x0f'	(X,Y,a,b)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f a :128/2 b :64/2	
		'0x10'	(X,Y,a,b)	Graphic X Y X:0x000 ~ 0x7f Y:0x00 ~ 0x3f a :128/2 b :64/2	

## 3-1.

Parameter	'+'	.
'Esc' = 0x1b (Hex)		
Graphic	X	MMS1264K
		byte(Hex)

## 3-1-1.

	'ESC'+ 'K'
	'0x01' or '0x02'
Parameter	
	'ESC'+ 'K'+ '0x01' => 'ESC'+ 'K'+ '0x02' => KS5601

## 3-1-2.

	'ESC'+ 'E'
	'0x01' or '0x02'
Parameter	
	'ESC'+ 'E'+ '0x01' => ASCII 256 'ESC'+ 'E'+ '0x02' =>

## 3-1-3.

	'ESC'+ 'P'
	'0x01' or '0x02'
Parameter	
	'ESC'+ 'P'+ '0x01' => 'ESC'+ 'P'+ '0x02' =>

## 3-1-4.

	'ESC'+ 'P'
	'0x04' or '0x05' or '0x06' or '0x07'
Parameter	
	'ESC'+ 'P'+ '0x04' => Text Layer    Font 8*16 dots => 16*32 dots    16*16 dots => 32*32 dots
	'ESC'+ 'P'+ '0x05' => Text Layer    Font 가 8*16 dots => 16*16 dots    16*16 dots => 32*16 dots
	'ESC'+ 'P'+ '0x06' => Text Layer    Font 8*16 dots => 8*32 dots    16*16 dots => 16*32 dots
	'ESC'+ 'P'+ '0x07' => Text Layer    Font                    OFF

## 3-1-5.                    ON/OFF

	'ESC'+ 'P'
	'0x0d' or '0xe'
Parameter	
	'ESC'+ 'P'+ '0x0d' =>                    ON 'ESC'+ 'P'+ '0x0e' =>                    OFF

**3-1-6. Clear**

	'ESC'+ 'D'
	'0x01' or '0x03'
<b>Parameter</b>	'X1'+ 'Y1'+ 'X2'+ 'Y2'
	'ESC'+ 'D'+ '0x01' => Clear (10, 25, 200, 110) Clear =>'ESC'+ 'D'+ '0x03'+ ' <u>0x0a</u> '+'0x19'+ ' <u>0xc8</u> '+'0x6e' : Clear X1 X2

**3-1-7. Cursor**

	'ESC'+ 'C'
	'0x01'
<b>Parameter</b>	'X'+ 'Y'
	'ESC'+ 'C'+ '0x01'+ 'X'+ 'Y' => Text Layer (X, Y) Cursor _____ (Text Layer) : X 0x00 ~ 0x1d, Y 0x00 ~ 0x07

**3-1-8. LED Power ON/OFF**

	'ESC'+ 'L'
	'0x01' or '0x02'
<b>Parameter</b>	
	'ESC'+ 'L'+ '0x01' => LED Power ON 'ESC'+ 'L'+ '0x02' => LED Power OFF

**3-1-9. Graphic /**

	'ESC'+ 'G'
	'0x01' or '0x02'
<b>Parameter</b>	'X'+ 'Y'
	'ESC'+ 'G'+ '0x01'+ 'X'+ 'Y' => (X, Y) . ) Graphic (50, 80) => 'ESC'+ 'G'+ '0x01'+ ' <u>0x32</u> '+'0x50' 'ESC'+ 'G'+ '0x02'+ 'X'+ 'Y' => (X, Y) . ) Graphic (50, 80) => 'ESC'+ 'G'+ '0x02'+ ' <u>0x32</u> '+'0x50' X _____ (Graphic) : X 0x00 ~ 0x7f, Y 0x00 ~ 0x3f



## 3-1-10. Graphic

Line /

	'ESC'+ 'G'
	'0x03' or '0x04'
Parameter	'X1'+ 'Y1'+ 'X2'+ 'Y2'
	<pre>'ESC'+ 'G'+ '0x03'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Line . ) Graphic (0, 10, 63, 31) Line =&gt; 'ESC'+ 'G'+ '0x03'+ '0x00'+ '0x0a'+ '0x3f'+ '0x1f' 'ESC'+ 'G'+ '0x04'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Line . ) Graphic (0, 10, 63, 31) Line =&gt; 'ESC'+ 'G'+ '0x04'+ '0x00'+ '0x0a'+ '0x3f'+ '0x1f'</pre> <p style="text-align: center;"><b>X1, X2</b></p> <p>(Graphic) : X            0x00 ~ 0x7f, Y            0x00 ~ 0x3f</p>

## 3-1-11. Graphic

/ Rectangle /

	'ESC'+ 'G'
	'0x05' or '0x06' or '0x07' or '0x08'
Parameter	'X1'+ 'Y1'+ 'X2'+ 'Y2'
	<pre>'ESC'+ 'G'+ '0x05'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Rectangle . ) Graphic (10, 10, 100, 31) Rectangle =&gt; 'ESC'+ 'G'+ '0x05'+ '0x0a'+ '0x0a'+ '0x64'+ '0x1f' 'ESC'+ 'G'+ '0x06'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Rectangle . ) Graphic (10, 10, 100, 31) Rectangle =&gt; 'ESC'+ 'G'+ '0x06'+ '0x0a'+ '0x0a'+ '0x64'+ '0x1f' 'ESC'+ 'G'+ '0x07'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Rectangle . ) Graphic (10, 10, 100, 31) Rectangle =&gt; 'ESC'+ 'G'+ '0x07'+ '0x0a'+ '0x0a'+ '0x64'+ '0x1f' 'ESC'+ 'G'+ '0x08'+ 'X1'+ 'Y1'+ 'X2'+ 'Y2' =&gt; (X1,Y1,X2,Y2) Rectangle . ) Graphic (10, 10, 100, 31) Rectangle =&gt; 'ESC'+ 'G'+ '0x08'+ '0x0a'+ '0x0a'+ '0x64'+ '0x1f'</pre> <p style="text-align: center;"><b>X1, X2</b></p> <p>(Graphic) : X            0x00 ~ 0x7f, Y            0x00 ~ 0x3f</p>

## 3-1-12. Graphic

	'ESC'+ 'G'
	'0x09' or '0x0a' or '0x0b' or '0x0c'
<b>Parameter</b>	'X'+ 'Y'+ radius
	<p>'ESC'+ 'G'+ '0x09'+ 'X'+ 'Y'+ 'radius'</p> <p>=&gt; (X,Y) 'radius'</p> <p>) Graphic (63, 31) radius = 31</p> <p>=&gt; 'ESC'+ 'G'+ '0x09'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'</p> <p>'ESC'+ 'G'+ '0x0a'+ 'X'+ 'Y'+ 'radius'</p> <p>=&gt; (X,Y) 'radius'</p> <p>) Graphic (63, 31) radius = 31</p> <p>=&gt; 'ESC'+ 'G'+ '0x0a'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'</p> <p>'ESC'+ 'G'+ '0x0b'+ 'X'+ 'Y'+ 'radius'</p> <p>=&gt; (X,Y) 'radius'</p> <p>) Graphic (63, 31) radius = 31</p> <p>=&gt; 'ESC'+ 'G'+ '0x0b'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'</p> <p>'ESC'+ 'G'+ '0x0c'+ 'X'+ 'Y'+ 'radius'</p> <p>=&gt; (X,Y) 'radius'</p> <p>) Graphic (63, 31) radius = 31</p> <p>=&gt; 'ESC'+ 'G'+ '0x0c'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'</p> <p style="text-align: center;"><b>X</b></p> <hr/> <p>(Graphic) : X 0x00 ~ 0x7f, Y 0x00 ~ 0x3f</p> <hr/> <p style="text-align: center;">radius '0x01' ~ '0x1f'</p>

## 3-1-13. Graphic

	'ESC'+ 'G'
	'0x0d' or '0x0e' or '0x0f' or '0x10'
<b>Parameter</b>	'X'+ 'Y'+ 'a'+ 'b'
	<p>'ESC'+ 'G'+ '0x0d'+ 'X'+ 'Y'+ 'a'+ 'b'</p> <p>=&gt; (X,Y) 가 'a', 'b'</p> <p>) Graphic (63, 31) 'a'= 31, 'b'= 63</p> <p>=&gt; 'ESC'+ 'G'+ '0x0d'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'+ '0x3f'</p> <p>'ESC'+ 'G'+ '0x0e'+ 'X'+ 'Y'+ 'a'+ 'b'</p> <p>=&gt; (X,Y) 가 'a', 'b'</p> <p>) Graphic (63, 31) 'a'= 31, 'b'= 63</p> <p>=&gt; 'ESC'+ 'G'+ '0x0e'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'+ '0x3f'</p> <p>'ESC'+ 'G'+ '0x0f'+ 'X'+ 'Y'+ 'a'+ 'b'</p> <p>=&gt; (X,Y) 가 'a', 'b'</p> <p>) Graphic (63, 31) 'a'= 31, 'b'= 63</p> <p>=&gt; 'ESC'+ 'G'+ '0x0f'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'+ '0x3f'</p> <p>'ESC'+ 'G'+ '0x10'+ 'X'+ 'Y'+ 'a'+ 'b'</p> <p>=&gt; (X,Y) 가 'a', 'b'</p> <p>) Graphic (63, 31) 'a'= 31, 'b'= 63</p> <p>=&gt; 'ESC'+ 'G'+ '0x10'+ <b>'0x3f'</b>+ '0x1f'+ '0x1f'+ '0x3f'</p> <p style="text-align: center;"><b>X</b></p> <hr/> <p>(Graphic) : X 0x00 ~ 0x7f, Y 0x00 ~ 0x3f</p> <hr/> <p style="text-align: center;">'a' '0x01' ~ '0x1f', 'b' '0x01' ~ 0x3f'</p>

[ 1.] MMS1264K Special Font

< 1- 1 > MMS1264K (Special Font)

Special < 1- 1 >

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x00		☎	☎	☎	☎	☎	☎	☎		No.	Co.	TM.	am.		FM.	Tel.
0x10	I	II	III	IV	V	VI	VII	VIII	IX	X	μ	m	d	l	k	cc
0x20	mm <sup>3</sup>	cm <sup>3</sup>	m <sup>3</sup>	km <sup>3</sup>	fm	nm	μm	mm	cm	km	mm <sup>2</sup>	cm <sup>2</sup>	m <sup>2</sup>	km <sup>2</sup>	ha	μg
0x30	mg	kg	kt	cal	kcal	dB	‰	‰	ps	ns	μs	ms	pV	nV	μV	mV
0x40	kV	MV	PA	nA	μA	mA	KA	PW	nW	μW	mW	kW	MW	Hz	kHz	MHz
0x50	GHz	THz	Ω	kΩ	MΩ	PF	nF	μF	mol	cd	rad	rad/s	rad/s <sup>2</sup>	sr	Pa	kPa
0x60	MPa	GPa	Wb	lm	lx	Bq	Gy	Sv	‰	㉿	㊀	㊁	㊂	㊃	㊄	㊅
0x70	㊆	㊇	㊈	㊉	㊊	㊋	㊌	㊍	㊎	㊏	㊑	㊒	㊓	㊔	㊕	㊖
0x80	㊗	㊘	㊙	㊚	㊛	㊜	㊝	㊞	㊟	㊠	㊡	㊢	㊣	㊤	㊥	㊦
0x90	㊧	㊨	㊩	㊪	㊫	㊬	㊭	㊮	㊯	㊰	㊱	㊲	㊳	㊴	㊵	㊶
0xA0	㊷	㊸	㊹	㊺	㊻	㊼	㊽	㊾	㊿	①	②	③	④	⑤	⑥	⑦
0xB0	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓
0xC0	㉔	㉕	㉖	㉗	㉘	㉙	㉚	㉛	㉜	㉝	㉞	㉟	㊀	㊁	㊂	㊃
0xD0	㊄	㊅	㊆	㊇	㊈	㊉	㊊	㊋	㊌	㊍	㊎	㊏	㊑	㊒	㊓	㊔
0xE0	㊕	㊖	㊗	㊘	㊙	㊚	㊛	㊜	㊝	㊞	㊟	㊠	㊡	㊢	㊣	㊤
0xF0	㊥	㊦	㊧	㊨	㊩	㊪	㊫	㊬	㊭	㊮	㊯	㊰	㊱	㊲	㊳	㊴

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