

LCD Controller Manual

MMS1232A Version 1.5



3 48-6

110002

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1. MMS1232A

2. MMS1232A Connector

2-1. RS-232C Connector

2-2. Power Connector

3.

3-1.

3-1-1.

3-1-2.

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[1.] MMS1232A Special Font

[2.] MMS1232A Font

1. MMS1232A

◆ MMS1232A

- ◆ LCD Resolution : FSTN Mono 122*32 dots
- ◆ :
- ◆ Font : 8*16 dots
8*16 dots
16*16 dots

◆ MMS1232A

- ◆ CPU : 8BIT micro controller
- ◆ Display Type : FSTN Mono 122*32 dots
- ◆ : DC 5[V]
- ◆ : RS-232C 9600, 19200, 57600,115200 [bps]

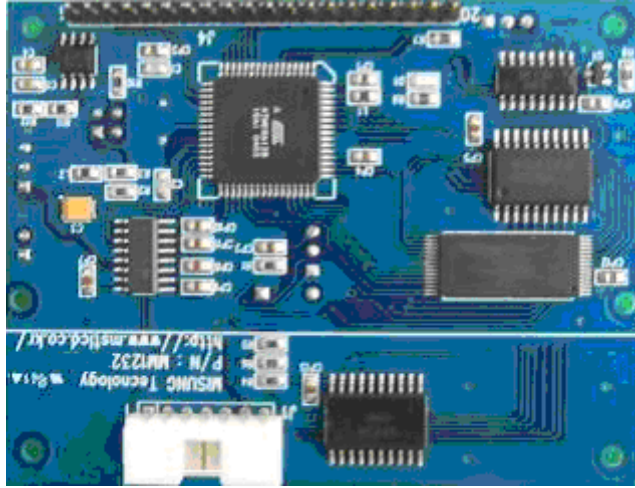
◆ MMS1232A

- ◆ , :가 2 , 2 , 가 2
- ◆ / Font
- ◆
- ◆ : Enter
- ◆ Clear : Clear
- ◆

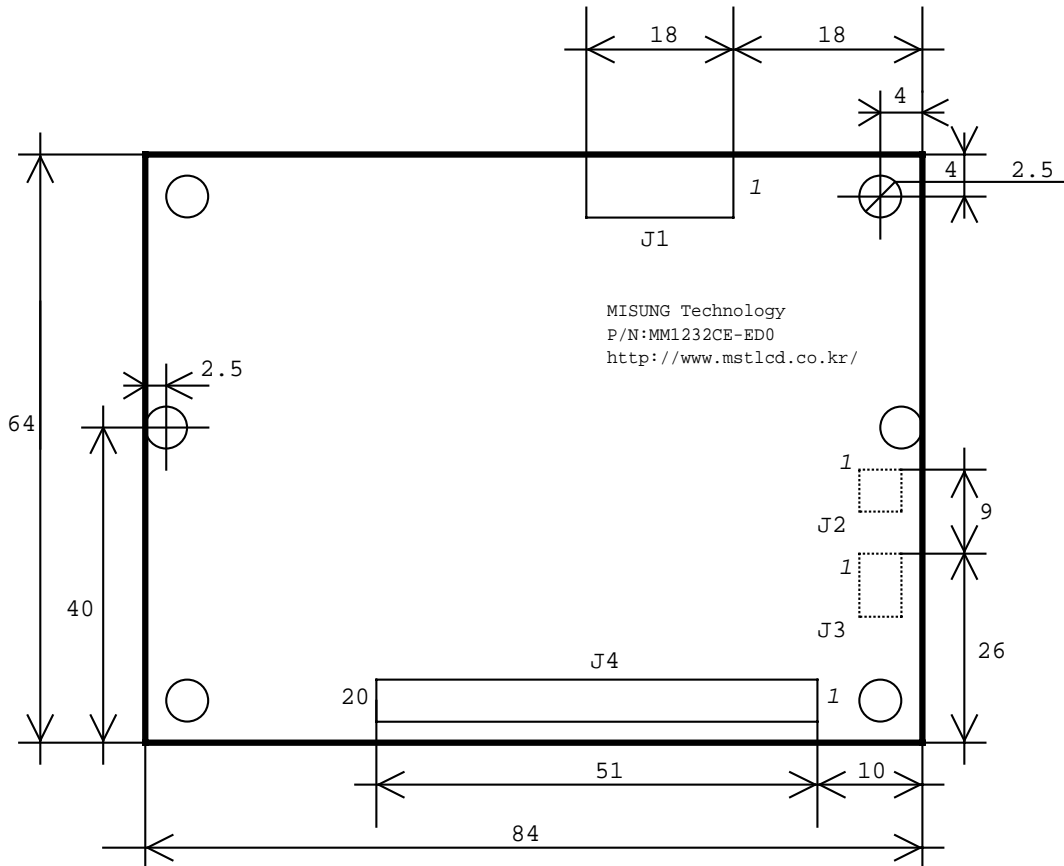
2. MMS1232A Connector

2 MMS1232A Dimensions Connector

MMS1232A



MMS1232A Dimensions



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'	'I'	'0x01'			3-1-1
'Esc'	'E'	'0x01'			3-1-2
		'0x02'			
'Esc'	'P'	'0x01'		Text Layer OFF	3-1-3
		'0x02'		Text Layer ON	
		'0x03'		Text Layer ON	
		'0x04'		Text Layer OFF	3-1-4
		'0x05'		Text Layer Font ON	
		'0x06'		Text Layer Font 가 ON	3-1-5
		'0x07'		Text Layer Font ON	
		'0x08'		Text Layer Font OFF	
'Esc'	'D'	'0x01'		clear	3-1-7
'Esc'	'C'	'0x01'	(X,Y)	X,Y cursor (X,Y hex 가 :0x00 ~ 0x1d :0x00 ~ 0x07)	3-1-8
'Esc'	'L'	'0x01'		Backlight ON	3-1-9
		'0x02'		Backlight OFF	
'Esc'	'A'	'0x01'		Reset	3-1-10
'Esc'	'T'	'0x03'		Keypad 1 가 "0~9","*","#" ASCII Serial	3-1-11

3-1.

Parameter '+'
 'Esc' = 0x1b (Hex)

Graphic X MMS1232A byte(Hex)

3-1-1.

	'ESC'+ 'I'
	'0x01'
Parameter	
	'ESC'+ 'I' '0x01'
	'ESC'+ 'I'+ '0x01' => (2) 1byte  가 display

3-1-2.

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

3-1-3. Text Layer

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

3-1-4. Text Layer ON/OFF

	'ESC'+ 'P'								
	'0x03' or '0x04'								
Parameter									
	<table border="0" style="width:100%"> <tr> <td style="width:15%">'ESC'+ 'P'</td> <td style="width:15%">'0x03'</td> <td style="width:40%">Text Layer</td> <td style="width:30%">ON</td> </tr> <tr> <td></td> <td>'0x04'</td> <td>OFF</td> <td>.</td> </tr> </table>	'ESC'+ 'P'	'0x03'	Text Layer	ON		'0x04'	OFF	.
'ESC'+ 'P'	'0x03'	Text Layer	ON						
	'0x04'	OFF	.						
	<table border="0" style="width:100%"> <tr> <td style="width:40%">'ESC'+ 'P'+ '0x03' => Text Layer</td> <td style="width:60%">ON</td> </tr> <tr> <td>'ESC'+ 'P'+ '0x04' => Text Layer</td> <td>OFF</td> </tr> </table>	'ESC'+ 'P'+ '0x03' => Text Layer	ON	'ESC'+ 'P'+ '0x04' => Text Layer	OFF				
'ESC'+ 'P'+ '0x03' => Text Layer	ON								
'ESC'+ 'P'+ '0x04' => Text Layer	OFF								

3-1-5. Text Layer

	'ESC'+ 'P'																						
	'0x04' or '0x05' or '0x06' or '0x07'																						
Parameter																							
	<table border="0" style="width:100%"> <tr> <th style="width:15%">'ESC'+ 'P'</th> <th style="width:15%">'0x04'</th> <th style="width:15%">Text Layer</th> <th style="width:15%">Display</th> <th style="width:15%">Font</th> </tr> <tr> <td>(가 ,)</td> <td>가</td> <td>.</td> <td>.</td> <td>.</td> </tr> <tr> <td>, '0x06'</td> <td></td> <td>OFF</td> <td>.</td> <td>, '0x07'</td> </tr> </table>	'ESC'+ 'P'	'0x04'	Text Layer	Display	Font	(가 ,)	가	.	.	.	, '0x06'		OFF	.	, '0x07'							
'ESC'+ 'P'	'0x04'	Text Layer	Display	Font																			
(가 ,)	가	.	.	.																			
, '0x06'		OFF	.	, '0x07'																			
	<table border="0" style="width:100%"> <tr> <td style="width:45%">'ESC'+ 'P'+ '0x04' => Text Layer</td> <td style="width:55%">Font</td> </tr> <tr> <td>8*16 dots => 16*32 dots</td> <td></td> </tr> <tr> <td>16*16 dots => 32*32 dots</td> <td></td> </tr> <tr> <td>'ESC'+ 'P'+ '0x05' => Text Layer</td> <td>Font 가</td> </tr> <tr> <td>8*16 dots => 16*16 dots</td> <td></td> </tr> <tr> <td>16*16 dots => 32*16 dots</td> <td></td> </tr> <tr> <td>'ESC'+ 'P'+ '0x06' => Text Layer</td> <td>Font</td> </tr> <tr> <td>8*16 dots => 8*32 dots</td> <td></td> </tr> <tr> <td>16*16 dots => 16*32 dots</td> <td></td> </tr> <tr> <td>'ESC'+ 'P'+ '0x07' => Text Layer</td> <td>Font</td> </tr> <tr> <td></td> <td style="text-align:right">OFF</td> </tr> </table>	'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
'ESC'+ 'P'+ '0x04' => Text Layer	Font																						
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8*16 dots => 8*32 dots																							
16*16 dots => 16*32 dots																							
'ESC'+ 'P'+ '0x07' => Text Layer	Font																						
	OFF																						

3-1-6. Serial Baud Rate

	J5 Header pin				
Parameter					
	MMS1232A J5 Header pin .				
	<table border="0" style="width:100%"> <tr> <td style="width:50%"> NO.1 [9600] 1번 2번 </td> <td style="width:50%"> NO.2 [19200] 1번 2번 </td> </tr> <tr> <td> NO.3 [57600] 1번 2번 </td> <td> NO.4 [115200] 1번 2번 </td> </tr> </table>	NO.1 [9600] 1번 2번	NO.2 [19200] 1번 2번	NO.3 [57600] 1번 2번	NO.4 [115200] 1번 2번
NO.1 [9600] 1번 2번	NO.2 [19200] 1번 2번				
NO.3 [57600] 1번 2번	NO.4 [115200] 1번 2번				

3-1-7. Clear

	'ESC'+ 'D'
	'0x01'
Parameter	'X1'+ 'Y1'+ 'X2'+ 'Y2'
	'ESC'+ 'D' '0x01' Clear .
	'ESC'+ 'D'+ '0x01' => Clear

3-1-8. Cursor

	'ESC'+ 'C'
	'0x01'
Parameter	'X'+ 'Y'
	'ESC'+ 'C' '0x01' Parameter Cursor가 . Text Layer X 0x00 ~ 0x1d , Y 0x00 ~ 0x07 .
	'ESC'+ 'C'+ '0x01'+ 'X'+ 'Y' => Text Layer (X, Y) Cursor

3-1-9. Backlight ON/OFF

	'ESC'+ 'L'
	'0x01' or '0x02'
Parameter	
	'ESC'+ 'L' '0x01' Backlight ON. '0x02' Backlight OFF.
	'ESC'+ 'L'+ '0x01' => CCFL Power ON. 'ESC'+ 'L'+ '0x02' => CCFL Power OFF.

[1.] MMS1232A

Special Font

< 1- 1 > MMS1232A (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	ℓℓ	mℓ	dℓ	ℓ	kℓ	cc
0x20	mm ³	cm ³	m ³	km ³	fm	nm	μm	mm	cm	km	mm ²	cm ²	m ²	km ²	ha	ℓg
0x30	m ^g	k ^g	kt	cal	kcal	dB	m/s	m/s ²	ps	ns	μs	ms	pV	nV	μV	mV
0x40	kV	MV	PA	nA	μA	mA	KA	FW	nW	μW	mW	kW	MW	Hz	kHz	MHz
0x50	GHz	THz	Ω	kΩ	MΩ	PF	nF	μF	mol	cd	rad	rad/s	rad/s ²	sr	Pa	kPa
0x60	MPa	GPa	Wb	Im	lx	Bq	Gy	Sv	°/kg	㉿	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	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
0xE0	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)	(z)	(1)	(2)	(3)
0xF0	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)				

< 1 - 1 >

[2.] MMS1232A Font

< 2 > MMS1232A Font
 < 2- 1 >

	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0a	0x00b	0x0c	0x0d	0x0e	0x0f
0x00		آ	ا	با	ب	ب	ب	ب	گ	گ	گ	گ	ه	ه	ه	ه
0x01	و	و	و	و	و	و	و	و	و	و	و	و	و	و	و	و
0x02	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی	ی
0x03	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن	ن
0x04	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت	ت
0x05	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث	ث
0x06	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ	ظ
0x07	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع	ع
0x08	۴	۶	۷	۸	۹											

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