


MC240128A6W-SPTLY-V2	240 x 128	LCD Module
<b>Specification</b>		
Version: 1	Date: 02/05/2016	
<b>Revision</b>		
1	30/04/2016	First Issue

Display Features			
Resolution	240 x 128		
Appearance	Black on Yellow/Green		
Logic Voltage	5V		
Interface	Parallel		
Font Set	N/A		
Display Mode	Transflective		
LC Type	STN		
Module Size	144.00 x 104.00 x 13.00mm		
Operating Temperature	-20°C ~ +70°C		
Construction	COB		
LED Backlight	Yellow/Green		
			Box Quantity
		...	...

Display Accessories	
Part Number	Description
MCCMDB-16DIL	LCD Interconnect board, can be driven from either a PC or a single board computer with a USB output.
MCCBL1A16DIL P -DILS-150	16 Way, Dual in-line to Dual in-line connector cable.

Optional Variants	
Appearances	Voltage
Black on White White on Blue	



## FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS
DISPLAY FORMAT	240 Characters by 128 Lines
POLARIZER OPTIONS	Positive Transflective
BACKLIGHT TYPE OPTIONS	Edge Type LED Backlight (Long life span version)
BACKLIGHT COLOR OPTIONS	Yellow-Green color
LCD PANEL OPTIONS	Yellow-Green STN
VIEWING ANGLE OPTIONS	6:00 (Bottom)
TEMPERATURE RANGE OPTIONS	-20°C ~ 70°C, Positive Voltage Driving Only
SUGGESTED DRIVING VOLTAGE	V <sub>lcm</sub> = 5.0V V <sub>led</sub> = 5.0V
SUGGESTED LED DRIVING MODE	PIN19: LED+, PIN20: LED-
CONTROLLER ▲1	RA6963(RAIO)+NT7086
FONT MAP CODE	NO FONT SET
DRIVING DUTY	1/128
DRIVING BIAS	1/12

▲1 Please ask for datasheet of the mentioned controller from Midas or Midas's authorized distributors. You can find the related information including AC & DC characteristics, Write & Read Timing diagram, Instruction table and descriptions, DDRAM & CGRAM, Rest Function and so on from the datasheet of controller.

▲1 You can ask for the example of software program (C language) from Midas or Midas's authorized distributors.

## MECHANICAL SPECIFICATIONS

OVERALL SIZE	144.0W x 104.0H	mm	THICKNESS	max 13.0	mm
VIEWING AREA	114.0W x 64.0H	mm	HOLE-HOLE	138.0W x 97.0H	mm
CHARACTER SIZE	—	mm	CHARACTER PITCH	—	mm
DOT SIZE	0.40W x 0.40H	mm	DOT PITCH	0.05W x 0.05H	mm

## ABSOLUTE MAXIMUM RATINGS

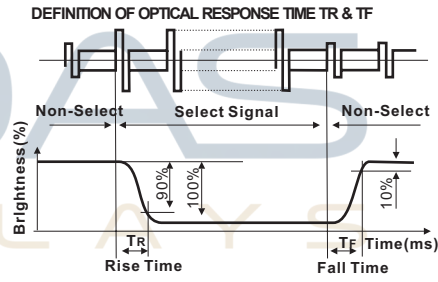
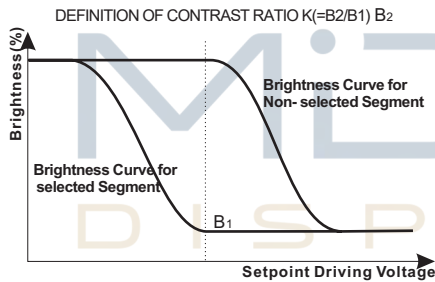
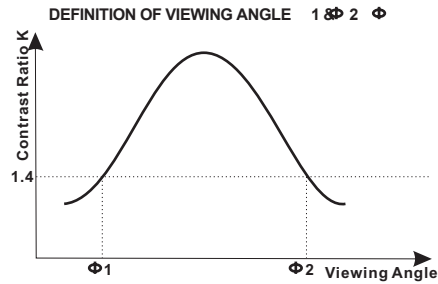
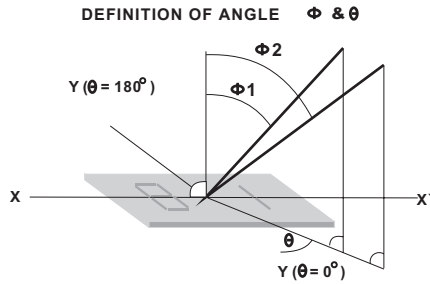
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY (LOGIC)	V <sub>dd</sub>	25°C	-0.3	—	7.0	V
POWER SUPPLY (LCD)	V <sub>0</sub>	25°C	V <sub>dd</sub> -30	—	V <sub>dd</sub> +0.3	V
INPUT VOLTAGE	V <sub>in</sub>	25°C	-0.3	—	V <sub>dd</sub> +0.3	V
OPERATING TEMPERATURE	V <sub>opr</sub>	—	-20	—	70	°C
STORAGE TEMPERATURE	V <sub>stg</sub>	—	-30	—	80	°C

## ELECTRONIC CHARACTERISTICS\*

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
INPUT VOLTAGE	V <sub>lcm</sub> = V <sub>dd</sub>	+5.0	4.7	5.0	5.5	V
SUPPLY CURRENT	I <sub>dd</sub>	V <sub>dd</sub> =5V	—	29.0	—	mA
DRIVING VOLTAGE FOR LCD PANEL	V <sub>lcd</sub> = (V <sub>dd</sub> - V <sub>0</sub> )	-20°C	17.7	—	18.0	V
		0°C	—	—	—	
		25°C	17.0	17.5	17.7	
		50°C	—	—	—	
		70°C	16.3	—	16.5	

## LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel (T <sub>A</sub> =25 °C, V <sub>lcd</sub> =5.0V ± 0.25V)						
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
VIEWING ANGLE	$\Phi 2 - \Phi 1$	K=4	40	—	—	deg
	$\theta$		60			
CONTRAST RATIO	K	—	6	—	—	—
RESPONSE TIME(RISE)	TR	—	—	150	250	ms
RESPONSE TIME(FALL)	TF	—	—	150	250	ms



## LED CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
LED FORWARD VOLTAGE	V <sub>f</sub>	25°C I <sub>f</sub> = 25mA	2.6	—	3.0	V
LED FORWARD CURRENT <b>▲2</b>	I <sub>f</sub>	25°C	—	25	—	mA
LED REVERSE CURRENT	I <sub>r</sub>	25°C V <sub>r</sub> =5.0V	—	—	50	μA
LED PEAK WAVE LENGTH	λ <sub>p</sub>	25°C I <sub>f</sub> = 25mA	569	—	575	nm
LED BRIGHTNESS (WITHOUT LCD)	L <sub>v</sub>	25°C I <sub>f</sub> = 25mA	—	140	—	cd/m <sup>2</sup>
LED BRIGHTNESS UNIFORMITY	L <sub>vmin</sub> /L <sub>vmax</sub>	25°C I <sub>f</sub> = 25mA	70	—	—	Ratio
LED LIFE TIME	—	25°C I <sub>f</sub> = 25mA	20K	—	—	Hours

**▲2** 请注意, 驱动背光考虑的是恒流而不是恒压. 所以, 这个数值非常重要!

YOUR ATTENTION: It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

\* 当工作温度高于25°C时, I<sub>fm</sub>, I<sub>fp</sub>和P<sub>d</sub>必须降低; 电流降低率是 -0.36\*5mA/°C (直流驱动), 或-0.86\*5 mA/°C (脉冲驱动), 功率降低率是-75\*5mW/°C. 产品工作电流不能大于对应的工作条件温度I<sub>fm</sub>或I<sub>fp</sub>的60%.

For operation above 25°C, The I<sub>fm</sub> I<sub>fp</sub> & P<sub>d</sub> must be derated, the Current derating is -0.36\*5mA/°C for DC drive and -0.86\*5 mA/°C for Pulse drive, the power dissipation is -75\*5 mW/°C The product working current must not be more than 60% of the I<sub>fm</sub> or I<sub>fp</sub> according to the working temperature.

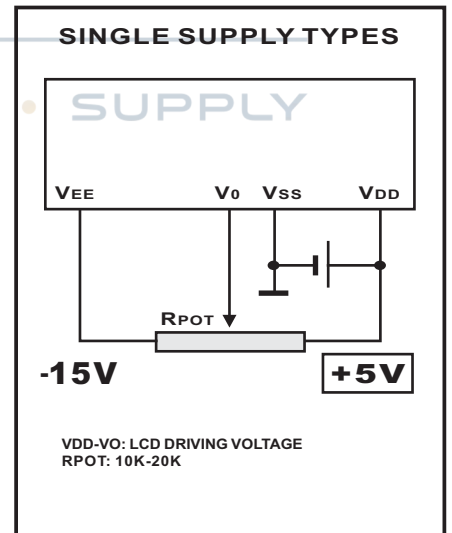
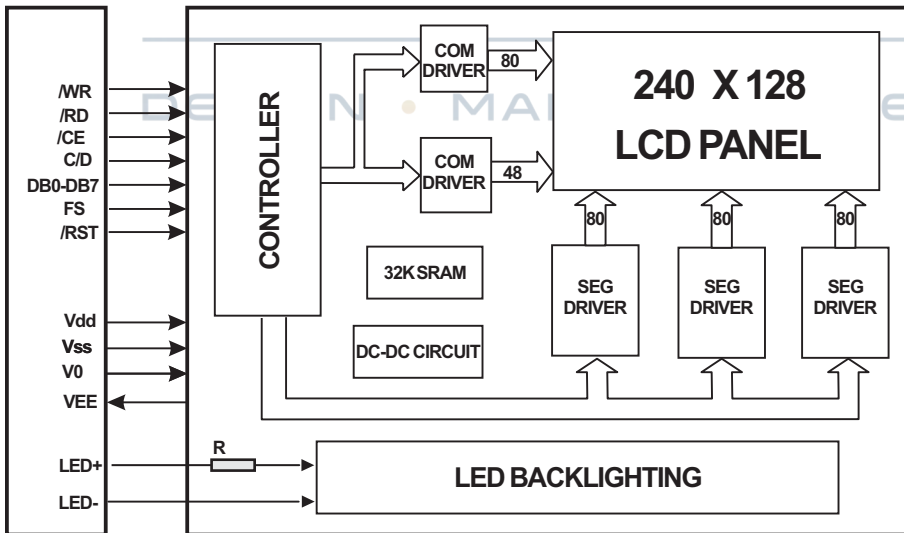


**PIN ASSIGNMENT**

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vee	Negative voltage output	-15.0V
2	Vss	Power supply for LCM	
3	Vdd	Power supply for LCM	5.0V
4	V0	Contrast Adjust	
5	WR	Data Write	
6	RD	Data Read	
7	CE	Chip Enable	
8	C/D	Command/Data Select	
9	RST	Reset Signal	
10	DB0	Data bus line	
11	DB1	Data bus line	
12	DB2	Data bus line	
13	DB3	Data bus line	
14	DB4	Data bus line	
15	DB5	Data bus line	
16	DB6	Data bus line	
17	DB7	Data bus line	
18	FS	Font Selection	
19	LED+	Power supply for BKL	5.0V
20	LED-	Power supply for BKL	

**BLOCK DIAGRAM**

**POWER SUPPLY DIAGRAM**



# ROM Code 0101

MSB \ LSB	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
1	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
2	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
3	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
4	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
5	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
6	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
7	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]

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