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MC21605H6WK-BNMLW-V2	2 x 16	5mm Character Height	LCD Module
Specification			
Version: 1		Date: 26/11/2016	
Revision			
1	23/11/2016	First Issue	

Display Features	
Character Count	2 x 16
Appearance	White on Blue
Logic Voltage	5V
Interface	Parallel
Font Set	English / European
Display Mode	Transmissive
Character Height	4.99mm
LC Type	Blue STN
Module Size	65.50 x 36.70 x 13.50 mm
Operating Temperature	-20°C ~ +70°C
Construction	COB
LED Backlight	White

Box Quantity	Weight / Display
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RoHS compliant

* - For full design functionality, please use this specification in conjunction with the ST7066U specification. (Provided Separately)

Display Accessories	
Part Number	**Description**
MCCMDB-16SIL	LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output.
MCCBL1A16SLIP-16DILS-150	16 Way, Sinlge in-line to Dual In-line connector Cable.
MCCBL1A16SLIP-16SILS-150	16 Way, Single in-line to Single In-line connector Cable.

Optional Variants		
Fonts	**Appearances**	**Voltage**

FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS
DISPLAY FORMAT	**16 Characters by 2 Lines**
POLARIZER OPTIONS	**Negative Transmissive**
BACKLIGHT TYPE OPTIONS	**Edge Type LED Backlight (Long life span version)**
BACKLIGHT COLOR OPTIONS	**White color**
LCD PANEL OPTIONS	**Blue STN**
VIEWING ANGLE OPTIONS	**6:00 (Bottom)**
TEMPERATURE RANGE OPTIONS	**-20°C ~ 70°C, Single Supply Voltage**
SUGGESTED DRIVING VOLTAGE	**Vlcm = 5.0V Vled = 5.0V**
SUGGESTED LED DRIVING MODE	**PIN15: LED+, PIN16:LED-**
CONTROLLER	**ST7066U + ST7065C**
FONT MAP CODE	**K Version**
DRIVING DUTY	**1/16**
DRIVING BIAS	**1/5**

Please ask for datasheet of the mentioned controller from Midas or Midas 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.

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

MECHANICAL SPECIFICATIONS

OVERALL SIZE	**65.5W x 36.7H**	**mm**	THICKNESS	**max 13.5**	**mm**
VIEWING AREA	**54.0W x 14.4H**	**mm**	HOLE-HOLE	**60.5W x31.7H**	**mm**
CHARACTER SIZE	**2.55W x 4.99H**	**mm**	CHARACTER PITCH	**0.61W x0.42H**	**mm**
DOT SIZE	**0.47W x 0.58H**	**mm**	DOT PITCH	**0.05W x 0.05H**	**mm**

ABSOLUTE MAXIMUM RATINGS

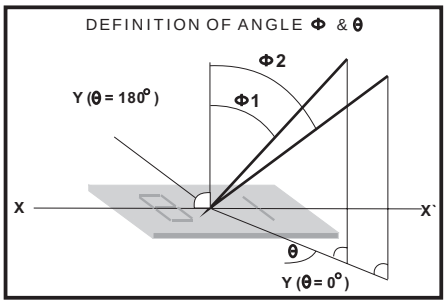
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY (LOGIC)	Vdd	25°C	**-0.3**	—	**7.0**	**V**
POWER SUPPLY (LCD)	V0	25°C	**Vdd -13.5**	—	**Vdd +0.3**	**V**
INPUT VOLTAGE	Vin	25°C	**-0.3**	—	**Vdd +0.3**	**V**
OPERATING TEMPERATURE	Vopr	—	**-20**	—	**70**	**°C**
STORAGE TEMPERATURE	Vstg	—	**-30**	—	**80**	**°C**

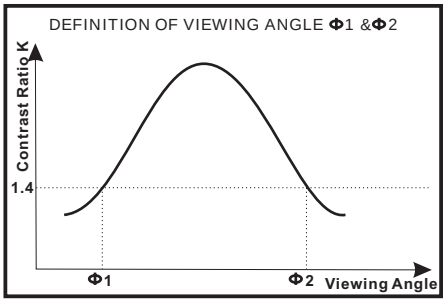
ELECTRONIC CHARACTERISTICS

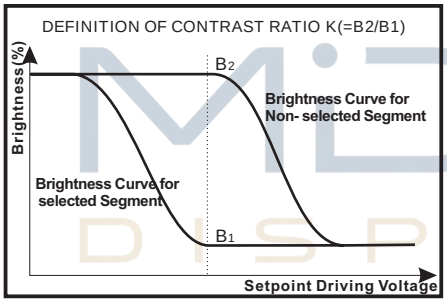
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	Vlcm = Vdd	—	—	**5.0**	—	**V**
	SUPPLY CURRENT	Idd	**Vdd=5.0V**	—	**1.5**	—	**mA**
	DRIVING VOLTAGE FOR LCD PANEL	Vlcd = (Vdd - V0)	**-20°C**	**4.40**	—	**4.80**	**V**
			0°C	**4.30**	—	**4.75**	
			25°C	**4.20**	**4.50**	**4.70**	
			50°C	**4.10**	—	**4.65**	
			70°C	**4.00**	—	**4.60**	

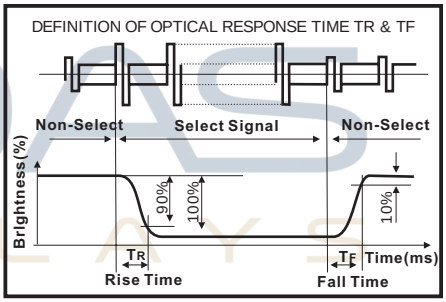
LCD CHARACTERISTICS

FOR STN/**FSTN** TYPE LCD **Panel** (TA=25°C, V**lcd**=5.0V ± 0.5V)							
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	VIEWING ANGLE	Φ2 − Φ1	K=4	40	—	—	deg
		θ		60			
HC	CONTRAST RATIO	K	—	6	—	—	—
	RESPONSE TIME(RISE)	TR	—	—	150	250	ms
	RESPONSE TIME(FALL)	TF	—	—	150	250	ms









LED CHARACTERISTICS

ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	LED FORWARD VOLTAGE	Vf	25°C If = 17mA	—	3.0	—	V
	LED FORWARD CURRENT	If	25°C	—	17	—	mA
	LED REVERSE CURRENT	Ir	25°C Vr=5.0V	—	—	30	μA
	LED COLOR RANGE	X coordinate	25°C If = 17mA	0.26	—	0.30	—
		Y coordinate		0.27	—	0.31	—
	LED BRIGHTNESS (WITHOUT LCD)	Lv	25°C If = 17mA	—	320	—	cd/m^2
	LED BRIGHTNESS UNIFORMITY	Lvmin/Lvmax	25°C If = 17mA	70	—	—	Ratio
	LED LIFE TIME	—	25°C If = 17mA	20K	—	—	Hours

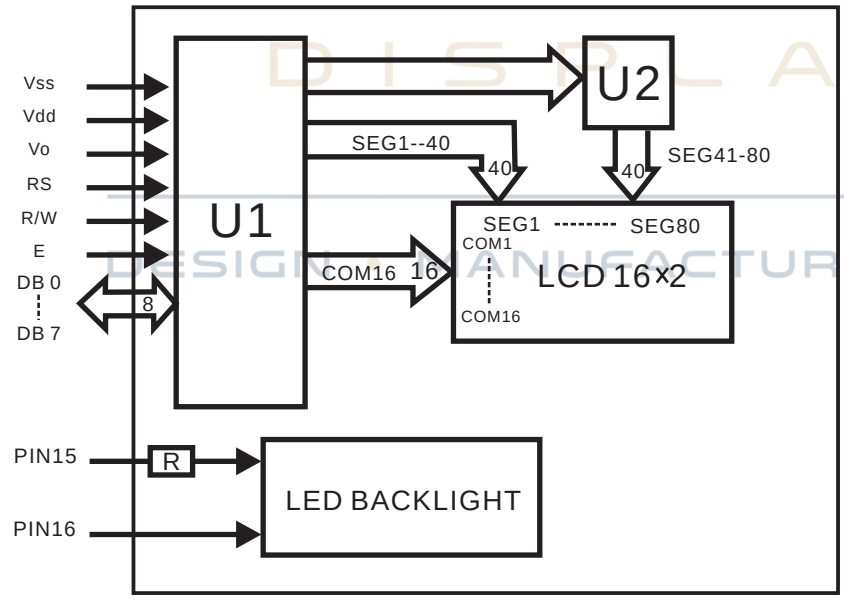
YOUR ATTENTION: It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

* For operation above 25°C,The Ifm Ifp & Pd must be derated,the Curent derating is -0.36*3mA/°C for DC drive and -0.86*3 mA/°C for Pulse drive,
the power dissipation is -75*3 mW/ °C The product working current must not be more than 60% of the Ifm ir Ifp according to the working temperature.

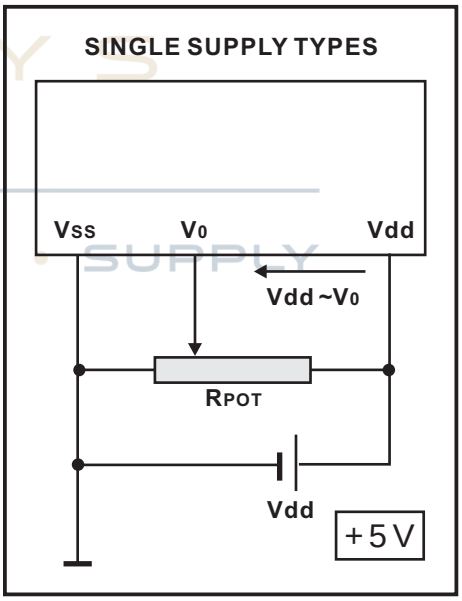
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vss	GND	
2	Vdd	Power supply for LCM	5.0V
3	V0	Contrast Adjust	
4	RS	Register Select Signal	
5	R/W	Data Read / Write	
6	E	Enable Signal	
7	DB0	Data bus line	
8	DB1	Data bus line	
9	DB2	Data bus line	
10	DB3	Data bus line	
11	DB4	Data bus line	
12	DB5	Data bus line	
13	DB6	Data bus line	
14	DB7	Data bus line	
15	LED+	Power supply for BKL	5.0V
16	LED-	Power supply for BKL	

BLOCK DIAGRAM



POWER SUPPLY DIAGRAM



Upper 4bit / Lower 4bit	LLLL	LLLH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL	CG RAM (1)															
LLLH	(2)															
LLHL	(3)															
LLHH	(4)															
LHLL	(5)															
LHLH	(6)															
LHHL	(7)															
LHHH	(8)															
HLLL	(1)															
HLLH	(2)															
HLHL	(3)															
HLHH	(4)															
HHLL	(5)															
HHLH	(6)															
HHHL	(7)															
HHHH	(8)