

MC24005AA6W9-BNMLW-V2	2 x 40	5mm Character Height	LCD Module
Specification			
Version: 1		Date: 31/10/2016	
Revision			

Display Features			
Character Count	2 x 40		
Appearance	White on Blue		
Logic Voltage	5V		
Interface	Parallel		
Font Set	English / Japanese		
Display Mode	Transmissive		
Character Height	5.55mm		
LC Type	BSTN		
Module Size	182.00 x 33.50 x 11.00 mm		
Operating Temperature	-20°C ~ +70°C		
Construction	COB		
LED Backlight	White	Box Quantity	Weight / Display
		15 pcs	120 grams

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

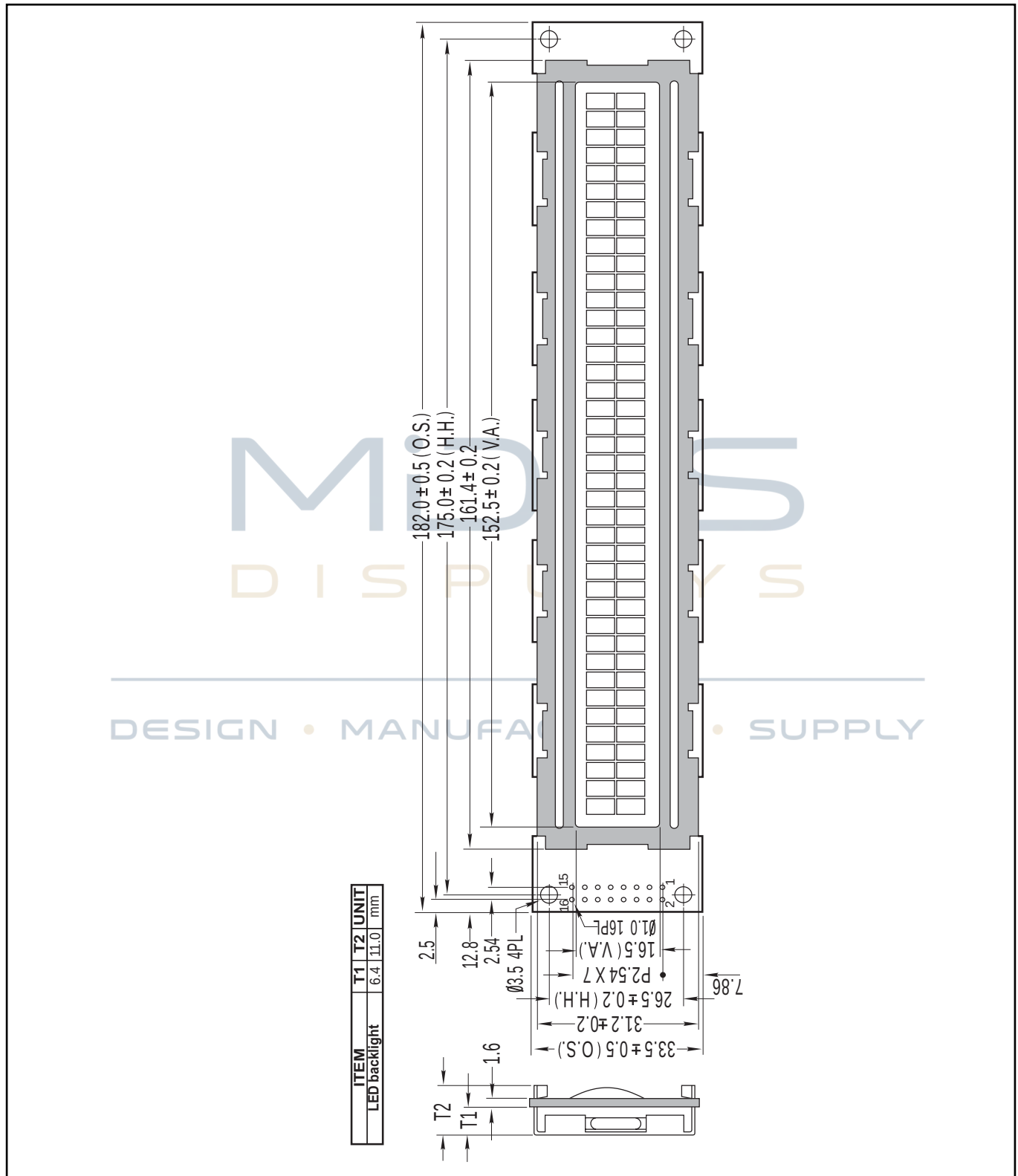
Display Accessories	
Part Number	Description
MCCMDB-16DIL	LCD Interconnect board, can be driven from either a PC or a single Board computer with a USB output.
MCCBL1A16DLIP-16DILS-150	16 Way, Dual in-line to Dual In-line connector Cable.

Optional Variants		
Fonts	Appearances	Voltage
	Black on Yellow/Green Black on White	



Mechanical Specifications

Module Size	182.00 x 33.50 x 11.00 (With Backlight)				W x H x D mm
Viewing Area	152.50 x 16.50	W x H mm	Hole-to-Hole	175.00 x 26.50	W x H mm
Character Size	3.20 x 5.55	W x H mm	Character Pitch	0.50 x 0.40	W x H mm
Dot Size	0.60 x 0.65	W x H mm	Dot Pitch	0.05 x 0.05	W x H mm



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Pin Layout			
PI	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	NC	No Connection	
16	NC	No Connection	

Block diagram of the LCD module showing connections between U1, U2, U3, and the LCD 40x2. U1 is connected to U2 and U3. U2 and U3 are connected to the LCD 40x2. The LCD 40x2 is connected to the LED BACKLIGHT. The diagram shows various signal lines and their widths.

- U1 (Microcontroller) is connected to U2 (Driver) and U3 (Driver).
- U2 and U3 are connected to the LCD 40x2.
- The LCD 40x2 is connected to the LED BACKLIGHT.
- Signal lines and widths:
 - SEG1--40 (40)
 - COM16 16
 - SEG41--120 (80)
 - SEG121--200 (80)
 - SEG1 SEG200
 - COM1
 - COM16

The diagram illustrates a single supply type DAC circuit. A large rectangular block represents the DAC, with three output terminals labeled V_{SS} , V_0 , and V_{DD} . The V_{SS} terminal is connected to ground. The V_0 terminal is connected to the wiper of a potentiometer labeled R_{POT} . The V_{DD} terminal is connected to one end of the potentiometer. A $+5V$ supply is connected to the other end of the potentiometer, which is also labeled V_{DD} . An arrow indicates the voltage across the potentiometer is $V_{DD} \sim V_0$.



Font Map

Upper 4bit Lower 4bit	LLLL	LLHH	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLLH	HLHL	HLHH	HHLL	HHLH	HHHL	HHHH
LLLL	CG RAM (1)															
LLHH	(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)															

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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						
Item	Symbol	Condition	Min	Typ	Max	Unit
Input Voltage	Vlcm = Vdd	+5V	4.7	5.0	5.5	v
Supply Current	Idd	Vdd=3V	---	1.6	---	mA
Driving Voltage for LCD Panel	Vlcd = (Vdd - V0)	-20°C	4.50	---	5.20	v
		0°C	4.35	---	5.05	
		25°C	4.20	4.50	4.90	
		50°C	4.05	---	4.75	
		70°C	3.85	---	4.55	

LCD Characteristics						
For STN/FSTN LCD Panel Types						
Item	Symbol	Condition	Min	Typ	Max	Unit
Viewing Angle	$\Phi 2 - \Phi 1$	K = 4	40°	---	---	Deg
	Θ		60°			
Contrast Ratio	K	---	---	10	---	---
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	Vf	25°C	2.9	---	3.4	V
LED Forward Current*	If	25°C	---	60	80	mA
LED Reverse Current	Ir	25°C	---	40	---	μA
LED Colour Range	X Coordinate	25°C If=60mA	0.25	---	0.28	---
	Y Coordinate		0.26	---	0.29	---
LED Brightness (Without LCD)	Lv	25°C If=60mA	130	---	---	cd/m ²
LED Life Time	---	25°C If=60mA	9K	---	---	Hours

Attention: It is constant current, not constant voltage, which should be applied when driving the LED backlight, please ensure you adhere to this rule.

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