



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-G-161B-/W

- (1) NUMBER OF CHARACTERS ----- 16 CH * 1 LINE
- (2) MODULE SIZE ----- 122.0 W * 33.0 H * 15.0 T (Max) mm
- (3) EFFECTIVE AREA----- 99.0 W * 13.0 H mm
- (4) CHARACTER PATTERN----- 5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE ----- 4.84 W * 8.06 H mm
- (6) CHARACTER PITCH ----- 6.0 mm
- (7) DOT SIZE ----- 0.92 W * 1.10 H mm
- (8) DOT PITCH----- 0.98 W * 1.16 H mm
- (9) VIEWING DIRECTION----- 6 O'CLOCK
- (10) LCD TYPE ----- STN.BLUE, TRANSMISSIVE
- (11) BACKLIGHT TYPE ----- LED, WHITE

**MODEL NO : ASI-G-161B-/W**

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ACCEPTED BY: _____

PROPOSED BY : _____



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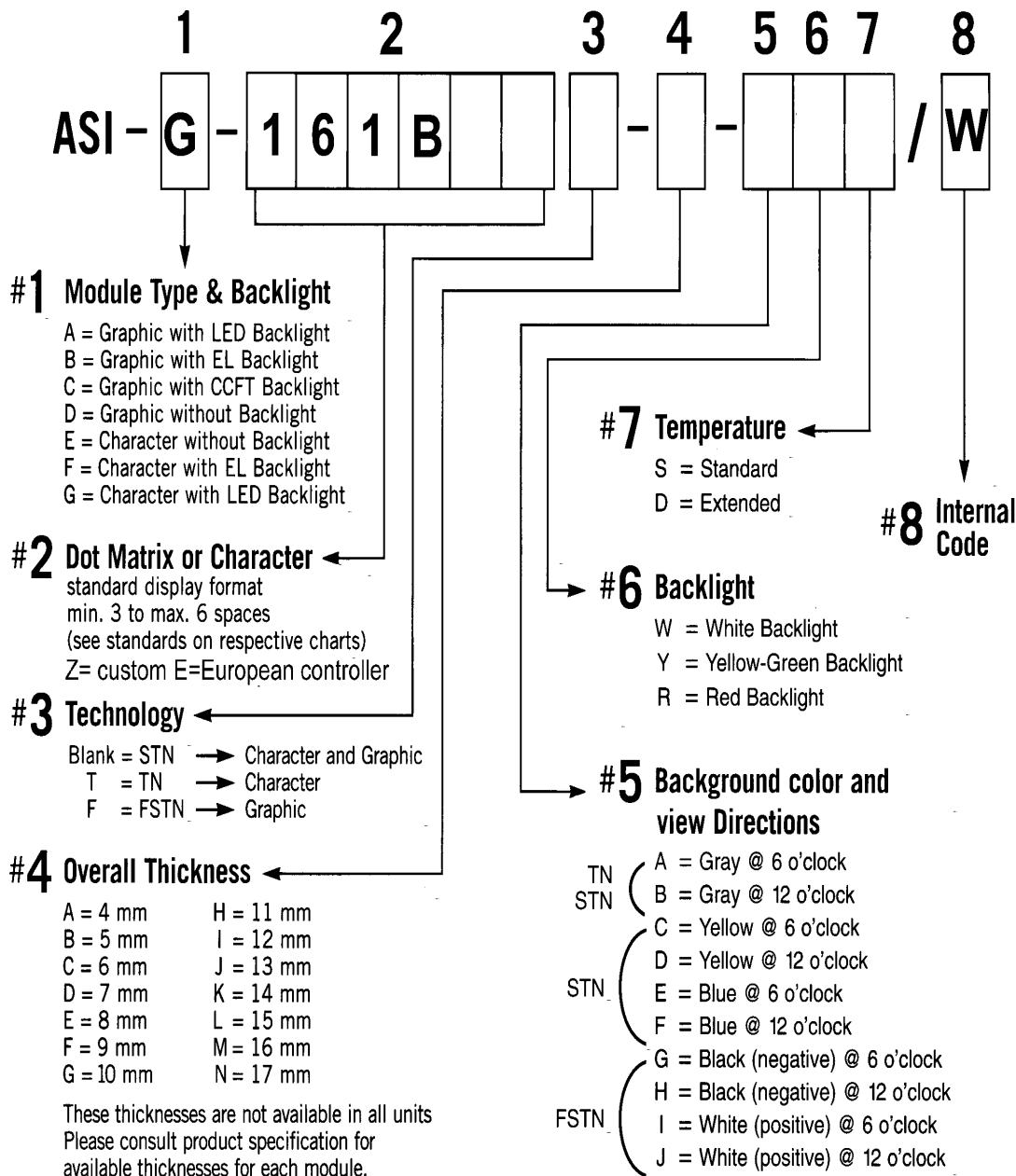
RECORD OF REVISION

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MODEL NO : ASI-G-161B-/W

LCD MODULE PART NUMBERING SYSTEM





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3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-12780)”.

3.2 This individual specification is prior to general specifications

4. Mechanical data

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5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	VDD-VSS	0	6.0	V	
INPUT VOLTAGE	V _I	VSS	VDD	V	
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)
POWER SUPPLY FOR LED	-----	-----	6.0	V	-----

NOTE (1): ELECTRO-STATIC DISCHARGE RESISTANCE IS TESTED BY CHARGING A 200PF CAPACITOR AND DISCHARGING IT BY CONTACT WITH A INTERFACE CONNECTOR PIN.

5.2 Environmental absolute maximum ratings

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	0°	50°	-20°	70°	
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10 300HZ XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (2) : Ta $\geq$ 50°: 90% RH MAX.

Ta < 50°: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90% RH AT 50°. (80% RH AT 60°)

NOTE (3): 1G = 9.8 m/S²



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6. Electrical characteristics

$T_a = 25^\circ$ $V_{DD} = 5.0 \pm 0.25$ V

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
INPUT VOLTAGE	V_{IH}	—	$2.0 V_{DD}$	—	—	V
	V_{IL}	—	V_{SS}	—	0.8	V
OUTPUT VOLTAGE	V_{OH}	$-I_{OH} = 0.2$ mA	2.4	—	—	V
	V_{OL}	$I_{OL} = 1.6$ mA	—	—	$0.4 V_{DD}$	V
POWER SUPPLY CURRENT	I_{DD}	$V_{DD} = 5.0$ V	—	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE	$V_{DD}-V_0$ DUTY= 1/16 =108	$T_a = -20^\circ$	—	4.9	—	V
		$T_a = 25^\circ$	—	4.5	—	V
		$T_a = 70^\circ$	—	4.1	—	V
POWER SUPPLY CURRENT FOR LED	I_{LED}	$V_{LED}=5.0$ V	—	40	60	mA

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ± 0.5 V BY EACH MODULE.

7. Optical characteristics

$T_a = 25^\circ$ $V_{DD} = 5.0$ V

I T E M	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT.	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	$K = 2.0$	30	40	—	deg.	2
CONTRAST RATIO	K	$\Phi = 10^\circ$ $\theta = 0^\circ$	4.0	5.0	—	—	2
RESPONSE TIME	t_r (rise)	$\Phi = 10^\circ$ $\theta = 0^\circ$	—	200	350	ms	2
	t_f (fall)	$\Phi = 10^\circ$ $\theta = 0^\circ$	—	300	400	ms	2
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^\circ$ $\theta = 0^\circ$	6.0	-----	----	cd/m ²	2,3

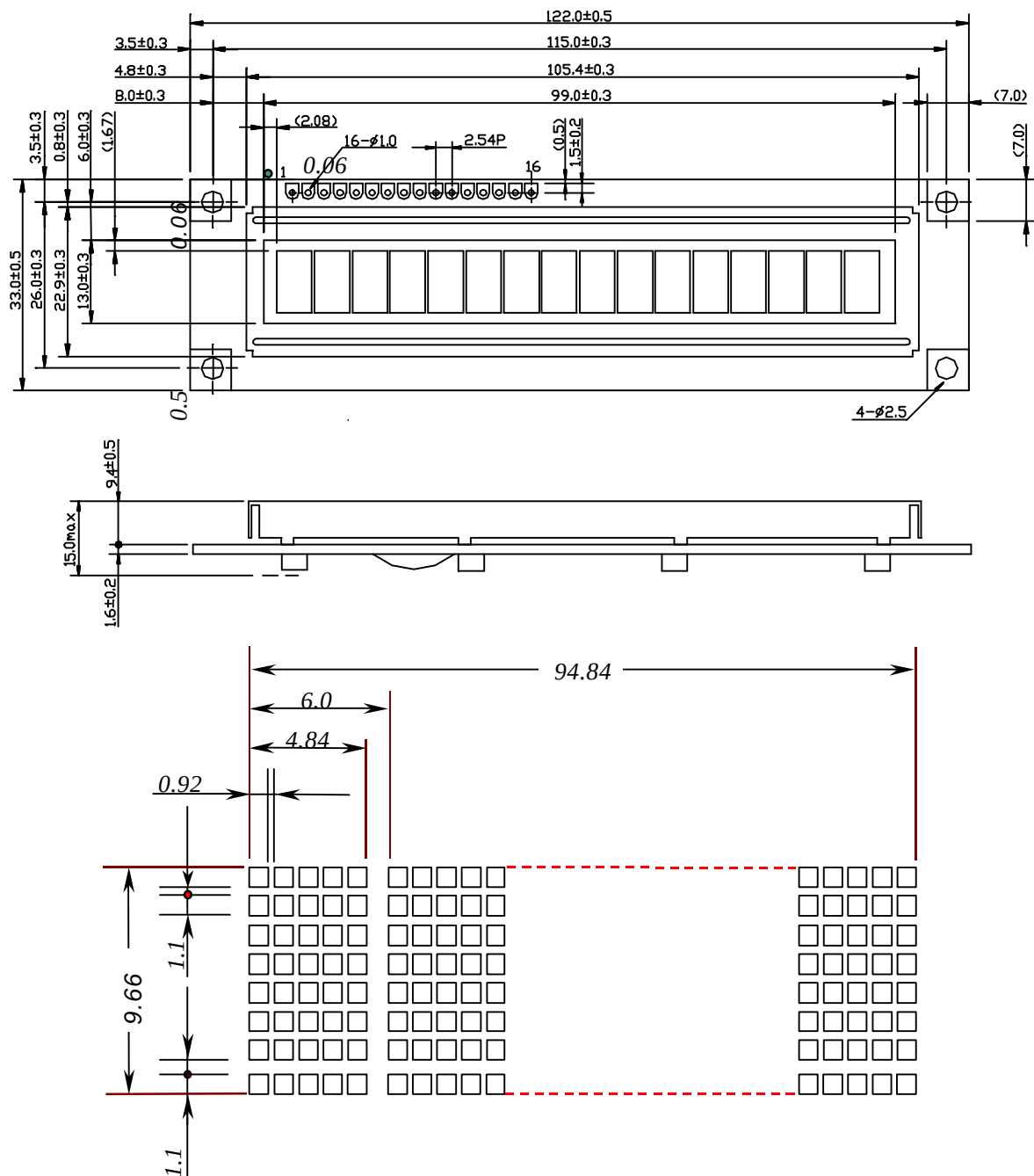
NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

NOTE (3): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM.



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8. Outline dimension



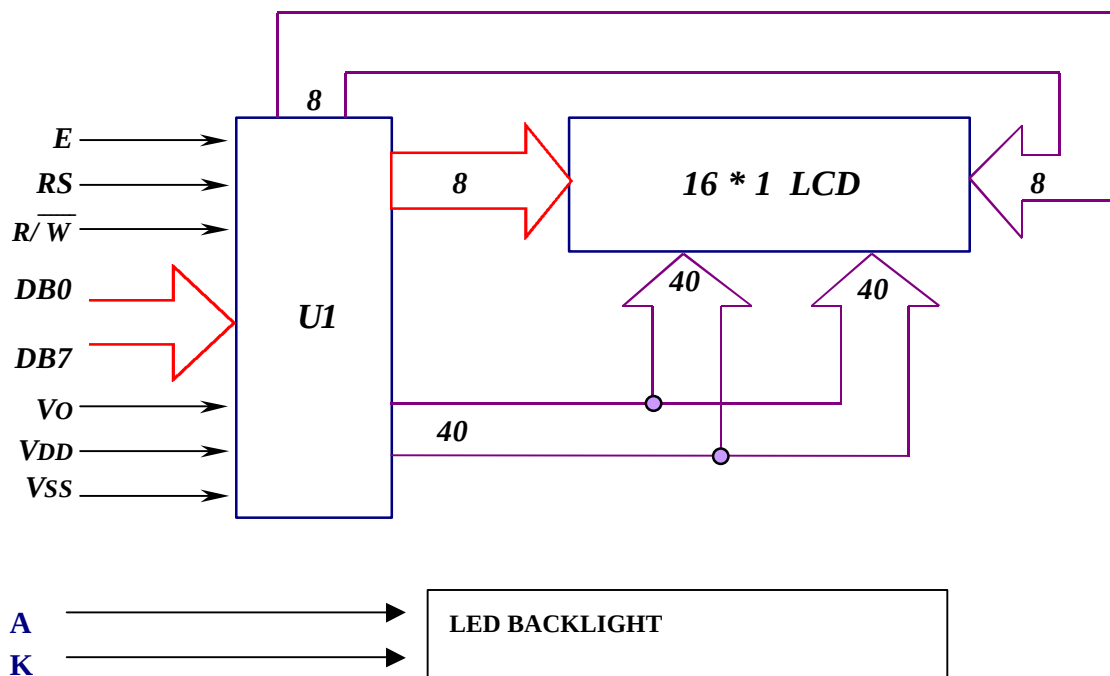


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Interface pin connection

PIN NO.	1	2	3	4	5	6	7	8
SYMBOL	V _{SS}	V _{DD}	V _O	RS	R/W	E	DB0	DB1
PIN NO.	9	10	11	12	13	14	15	16
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	A	K

9 Block diagram



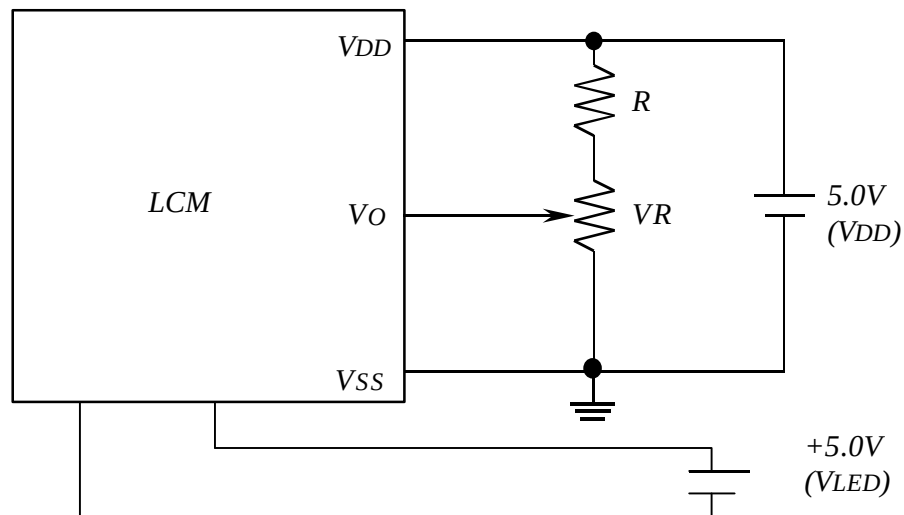
Display data address charts

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F



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10. Power supply for LCM



RECOMMENDED RESISTOR R: $V_{DD} - V_O \geq 1.5V$

$V_{DD} - V_O$: LCD DRIVING VOLTAGE

VR: $10K\Omega \sim 20K\Omega$