



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI_-164DS-LJ-_YS/W

- (1) NUMBER OF CHARACTERS -----16 CH * 4 LINE
- (2) MODULE SIZE-----77.0 W * 51.0 H * "C" T (Max) mm
- (3) EFFECTIVE AREA-----61.8 W * 25.2 H mm
- (4) CHARACTER PATTERN-----5*7 DOTS + CURSOR
- (5) CHARACTER SIZE -----2.95 W * 4.16 H mm
- (6) CHARACTER PITCH-----3.55 W * 5.35 H mm
- (7) DOT SIZE -----0.56 W * 0.56 H mm
- (8) DOT PITCH-----0.60 W * 0.60 H mm



MODEL NO : ASI_-164DS-LJ-_YS/W

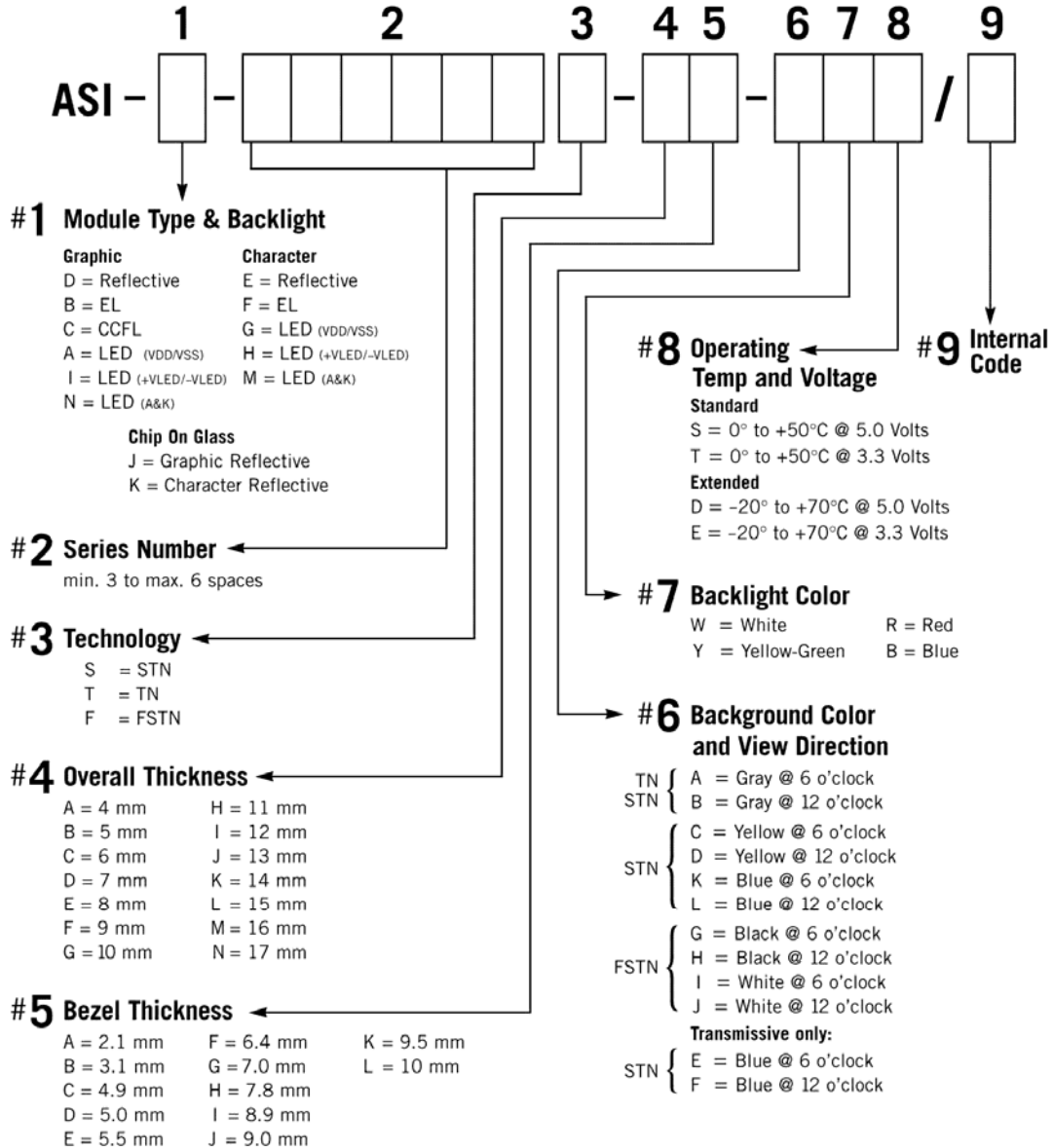
RECORD OF REVISION

DATE	PAGE	SUMMARY



MODEL NO : ASI_-164DS-LJ-_YS/W

LCD MODULE PART NUMBERING SYSTEM



NOTE: Some options may not be available in specific modules. Please contact your Sales Representative to check availability.



MODEL NO : ASI_-164DS-LJ-_YS/W

3. General specifications

3.1 General specifications

*PLEASE REFER TO:
"CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS "*

3.2 This individual specification is prior to general specifications

4. Mechanical data

- (1) NUMBER OF CHARACTERS -----16 CH * 4 LINE
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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	V _{DD} -V _{SS}	0	6.0	V	-----
INPUT VOLTAGE	V _I	V _{SS}	V _{DD}	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE(1)
POWER SUPPLY FOR B.L	V _{LED}	-----	5.0	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>CONDITION</i>	<i>OPERATION</i>		<i>STORAGE</i>		<i>COMMENT</i>
		<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	NORMAL	0°C	50°C	-20°C	70°C	-----
	WIDE	-20°C	70°C			
HUMIDITY	-----	NOTE (3)		NOTE (3)		NO CONDENSATION
VIBRATION NOTE (3)	-----	-----	0.5G	-----	2G	10~300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (4)	-----	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	-----	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (3): T_a ≤ 50°C: 90% RH MAX.

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

NOTE(4): 1G=9.8m/s²



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6. Electrical characteristics $T_a = 25^\circ$ $V_{DD} = 5.0 \pm 0.25$ V

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

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>		
INPUT VOLTAGE	V _{IH}	-----	2.2	-----	-----	V		
	V _{IL}	-----	-----	-----	0.6	V		
OUTPUT VOLTAGE	V _{OH}	-I _{OH} = 0.2 mA	2.4	-----	-----	V		
	V _{OL}	I _{OL} = 1.2 mA	-----	-----	0.4	V		
POWER SUPPLY CURRENT	I _{DD}	V _{DD} = 5.0V	-----	2.0	3.0	mA		
RECOMMENDED LCD DRIVING VOLTAGE, NOTE(1)	V _{DD} -V _O	STN/ FSTN DUTY =1/16 Φ=10° NOTE(2)	Ta=-20°C	-----	4.8	-----	V	
			Ta= 0°C	-----	4.7	-----	V	
			Ta= 25°C	-----	4.5	-----	V	
			Ta= 50°C	-----	4.3	-----	V	
			Ta= 70°C	-----	4.2	-----	V	
		TN DUTY =1/16 Φ=25° NOTE(2)	Ta=-20°C	-----	4.5	-----	-----	V
			Ta= 0°C	-----	4.4	-----	-----	V
			Ta= 25°C	-----	4.2	-----	-----	V
			Ta= 50°C	-----	4.0	-----	-----	V
			Ta= 70°C	-----	3.9	-----	-----	V
POWER SUPPLY CURRENT FOR B.L	I _{LED}	V _{LED} =5.0V	-----	170	220	mA		

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

(2): $\theta = 0^\circ$: VIEWING DIRECTION AT 6 O'CLOCK
 $\theta = 180^\circ$: VIEWING DIRECTION AT 12 O'CLOCK


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7. Optical characteristics
T_a = 25° V_{DD} = 5.0V
TN TYPE LCD
T_a = 25 °C V_{DD}-V_O =4.2V

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	Φ2-Φ1	K = 1.4 NOTE(1)	20	30	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 25° NOTE(1)	2.0	3.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 25° NOTE(1)	----	150	250	ms	NOTE(2)
	tf (fall)	Φ = 25° NOTE(1)	----	150	250	ms	NOTE(2)

STN TYPE LCD
T_a = 25 °C V_{DD}-V_O =4.5V

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	Φ2-Φ1	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 10° NOTE(1)	3.0	4.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 10° NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	Φ = 10° NOTE(1)	----	300	400	ms	NOTE(2)

FSTN TYPE LCD
T_a = 25 °C V_{DD}-V_O =4.5V

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	Φ2-Φ1	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	Φ = 10° NOTE(1)	4.0	5.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	Φ = 10° NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	Φ = 10° NOTE(1)	----	300	400	ms	NOTE(2)

Brightness for LCM backlight

<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>B.L TYPE</i>	<i>NOTE</i>
B	Φ = 0° θ = 0°	5.0	----	----	cd/m ²	ARRAY LED	NOTE(2) NOTE(3)

NOTE (1): θ = 0° : VIEWING DIRECTION AT 6 O'CLOCK

θ = 180° : VIEWING DIRECTION AT 12 O'CLOCK

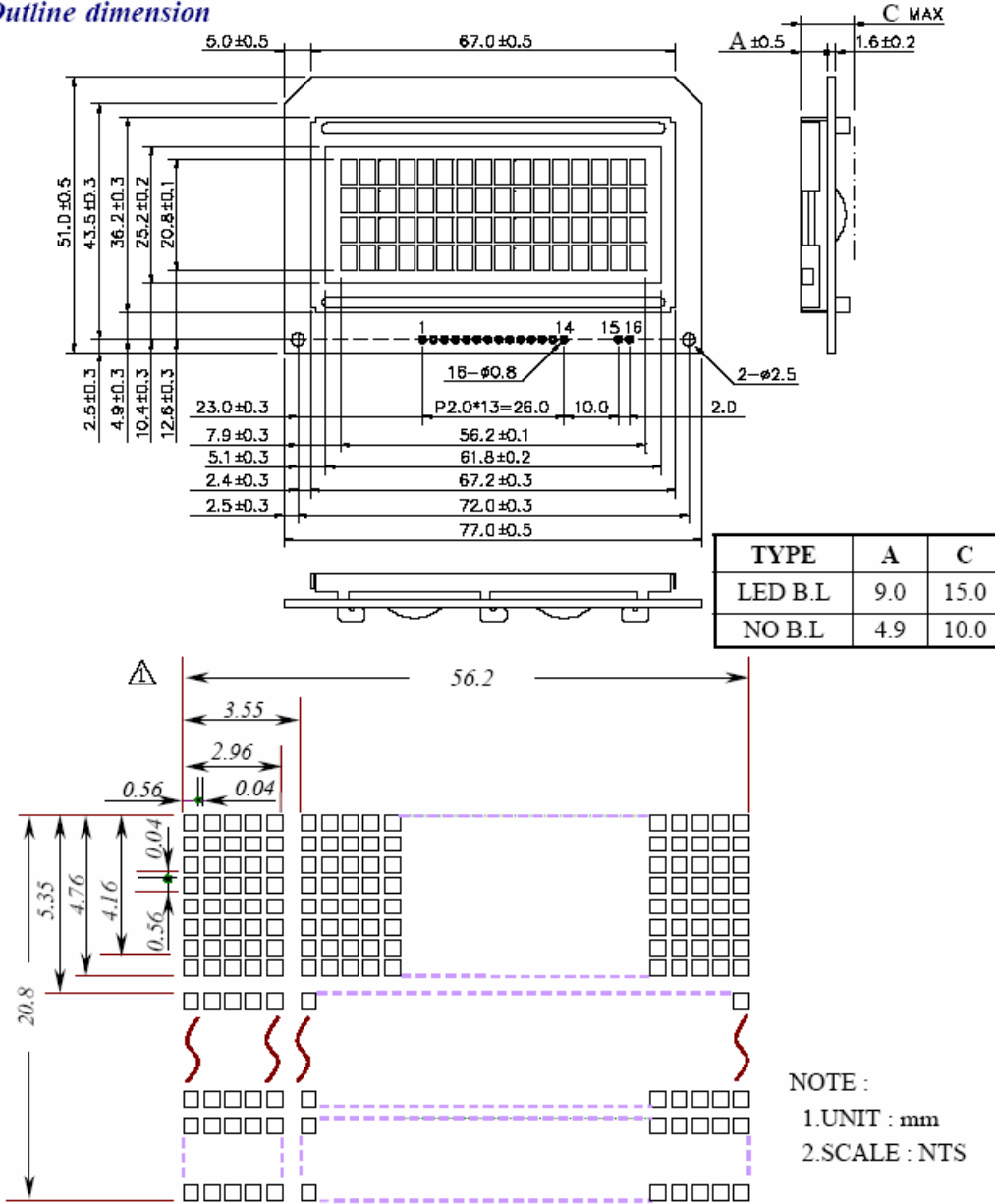
 NOTE (2):SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR
DEFINITION OF OPTICAL CHARACTERISTICS.

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

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8. Outline dimension

Outline dimension

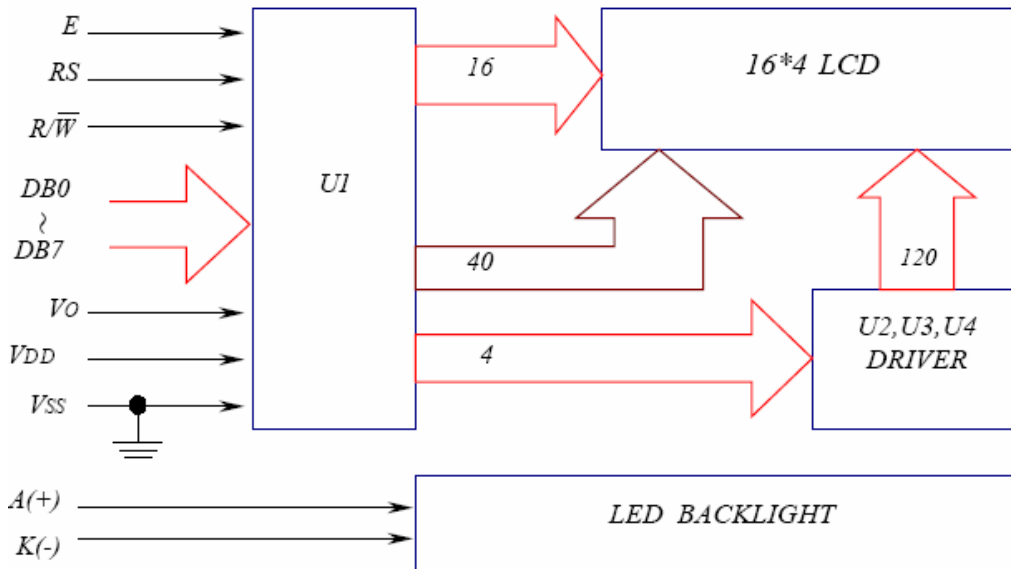


Interface pin connection

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(-)

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9 Block diagram



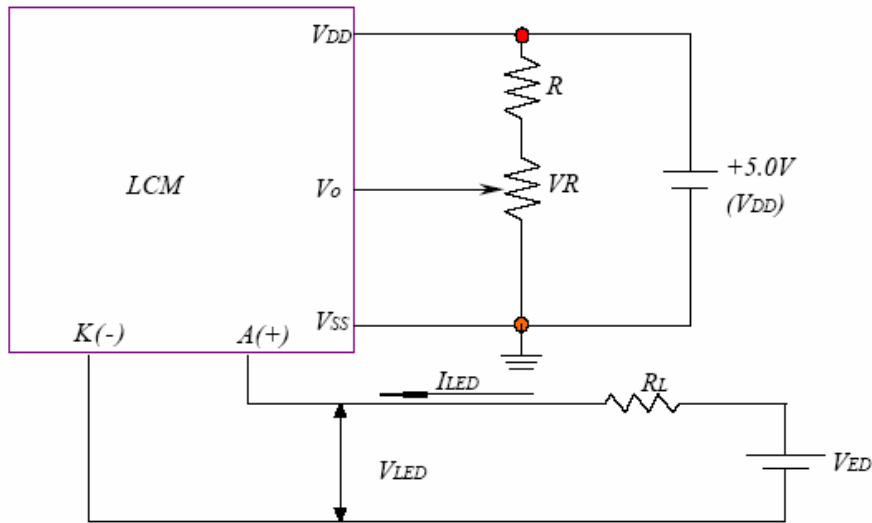
Display data address charts 

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
LINE 2	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F
LINE 3	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
LINE 4	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F



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

ITEM	LED TYPE	CONDITION
Limit resistor of LED (RL)	ARRAY LED	$R_L \geq ((V_{ED} - 5.0V) / I_{LED})$, $I_{LED} \leq 220mA$

The information presented in this datasheet has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Information contained herein is for selection purposes only, and is subject to change without notice. Please contact ASI for current datasheets prior to designing.