



# ALL SHORE INDUSTRIES, INC.

## SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

**MODULE # : ASI-E-162FS-GC-\_S/W**

- (1) NUMBER OF CHARACTERS -----16 CH \* 2 LINE
- (2) MODULE SIZE-----84.0 W \* 44.0 H \* 10.0 T (max) mm
- (3) EFFECTIVE AREA-----64.5 W \* 16.0 H mm
- (4) CHARACTER PATTERN-----5 \* 7 DOTS + CURSOR
- (5) CHARACTER SIZE -----2.96 W \* 4.86 H mm
- (6) CHARACTER PITCH-----3.55 mm
- (7) DOT SIZE -----0.56 W \* 0.66 H mm
- (8) DOT PITCH-----0.60 W \* 0.70 H mm



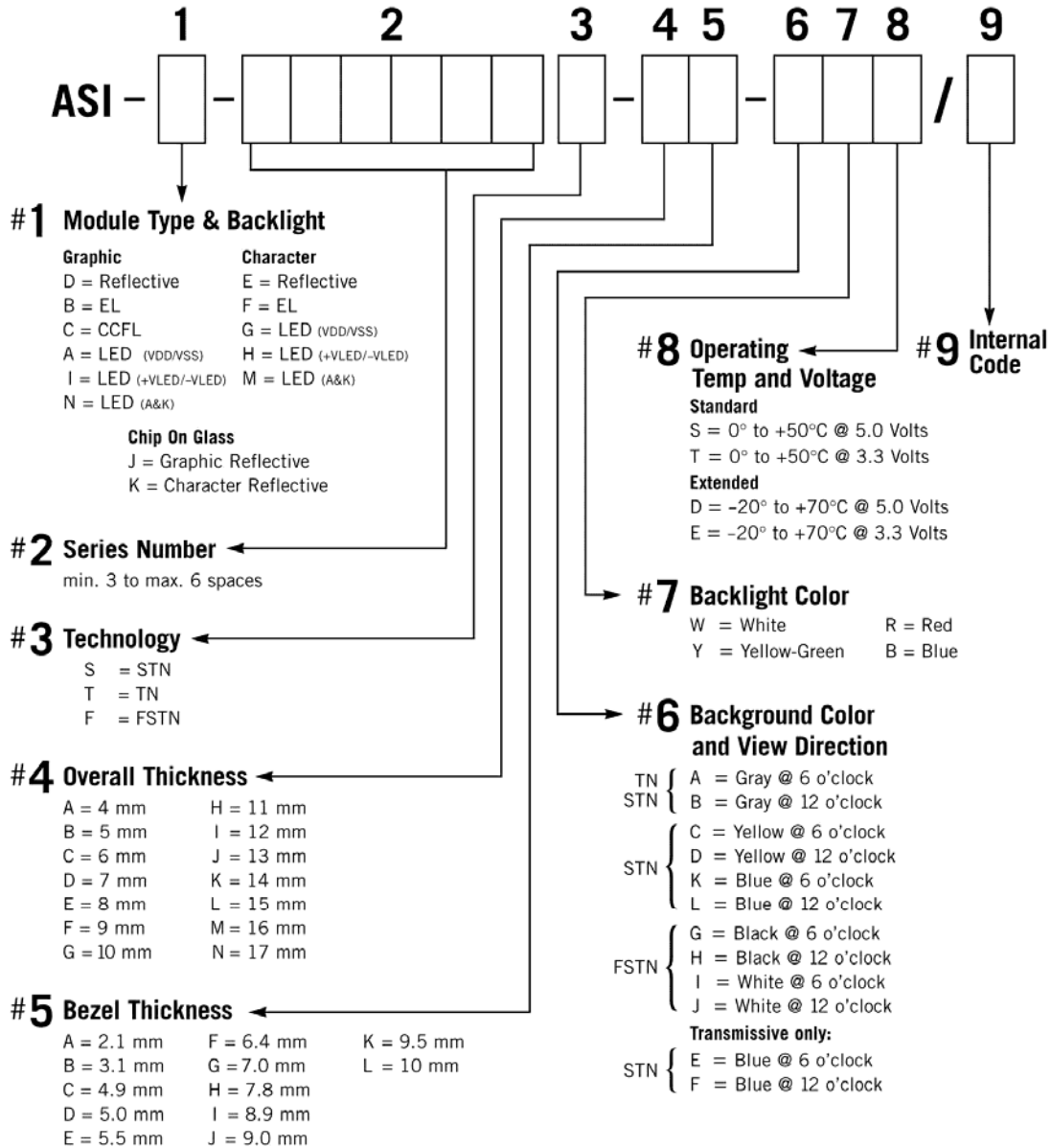
**MODEL NO : ASI-E-162FS-GC-\_S/W**

DATE	PAGE	SUMMARY



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**LCD MODULE PART NUMBERING SYSTEM**



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



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1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

**AS - 10 – 001**

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER : SED1278

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

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### 3. ABSOLUTE MAXIMUM RATINGS

#### 3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS . ( AT Ta = 25°C)

<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 <sub>DD</sub> -V <sub>SS</sub>	0	6.0	V	-----
INPUT VOLTAGE	V <sub>I</sub>	V <sub>SS</sub>	V <sub>DD</sub>	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)

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

#### 3.2 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°C	50°C	-20°C	70°C	-----
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 ≤ 50°C: 90% RH MAX.

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

NOTE (3): 1G = 9.8 m/s<sup>2</sup>



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### 4. ELECTRICAL CHARACTERISTICS

Ta = 25°C

VDD = 5.0 +/- 0.25 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 <sub>IH</sub>	-----	2.0	-----	-----	V
	V <sub>IL</sub>	-----	-----	-----	0.8	V
OUTPUT VOLTAGE	V <sub>OH</sub>	-I <sub>OH</sub> = 0.2 mA	2.4	-----	-----	V
	V <sub>OL</sub>	I <sub>OL</sub> = 1.6 mA	-----	-----	0.4	V
POWER SUPPLY CURRENT	I <sub>DD</sub>	V <sub>DD</sub> = 5.0V	-----	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE	V <sub>DD-V<sub>O</sub></sub> DUTY= 1/16 Φ=10°	Ta = 0°C	-----	4.9	-----	V
		Ta = 25°C	-----	4.5	-----	V
		Ta = 50°C	-----	4.1	-----	V

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

### 5. OPTICAL CHARACTERISTICS .

Ta = 25°C

VDD = 5.0 V

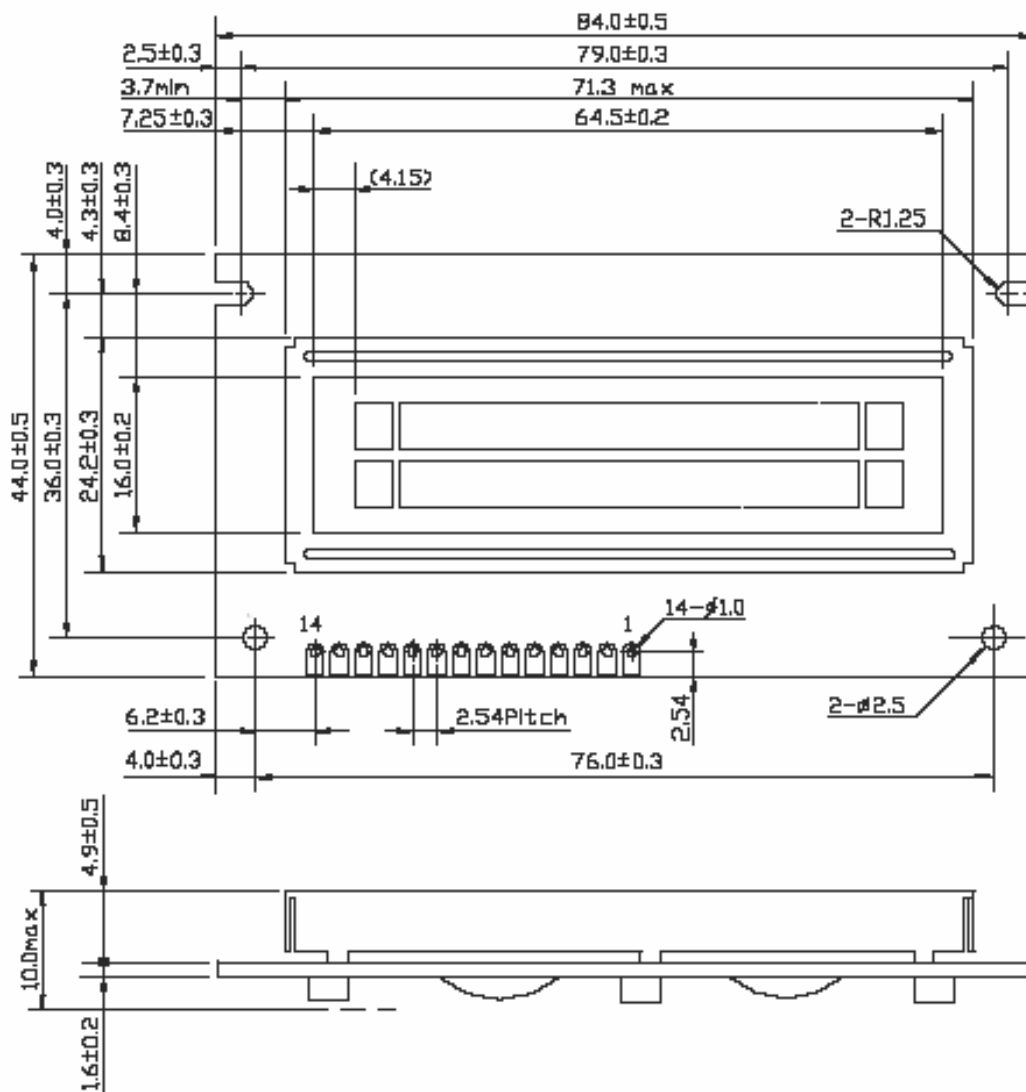
<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	Φ <sub>2</sub> -Φ <sub>1</sub>	K = 2.0	30	40	-----	deg.	2
CONTRAST RATIO	K	Φ = 10° θ = 0°	3.0	4.0	-----	-----	2
RESPONSE TIME	tr (rise)	Φ = 10° θ = 0°	-----	200	350	ms	2
	tf (fall)	Φ = 10° θ = 0°	-----	300	400	ms	2

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



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**6. OUTLINE DIMENSION**

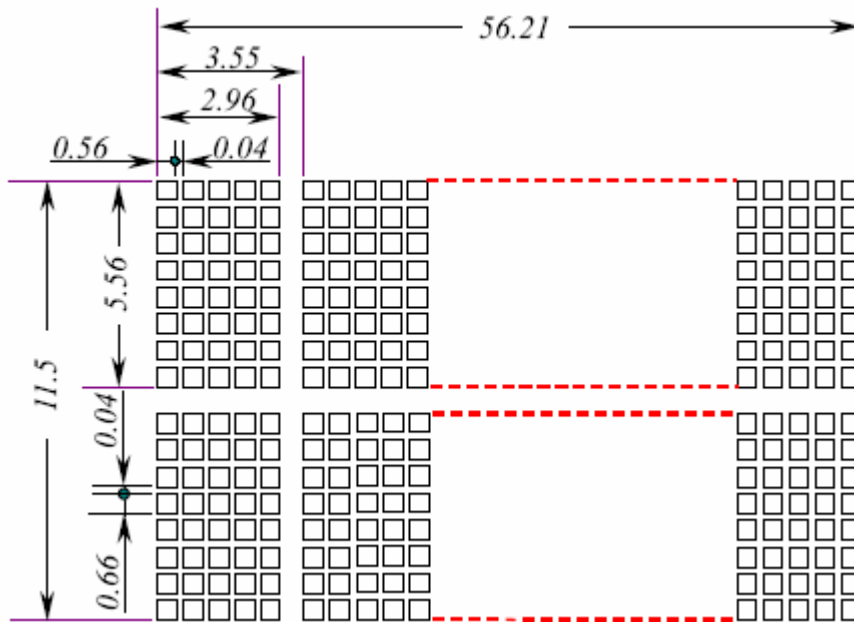


**Interface pin connection**

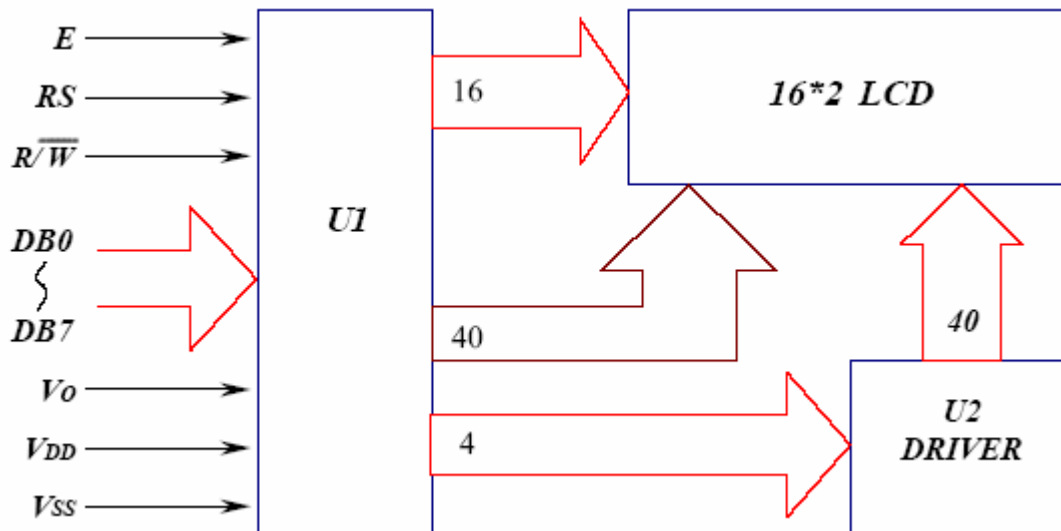
<i><b>PIN NO.</b></i>	<i><b>1</b></i>	<i><b>2</b></i>	<i><b>3</b></i>	<i><b>4</b></i>	<i><b>5</b></i>	<i><b>6</b></i>	<i><b>7</b></i>
SYMBOL	V <sub>SS</sub>	V <sub>DD</sub>	V <sub>O</sub>	RS	R/ $\bar{W}$	E	DB0
<i><b>PIN NO.</b></i>	<i><b>8</b></i>	<i><b>9</b></i>	<i><b>10</b></i>	<i><b>11</b></i>	<i><b>12</b></i>	<i><b>13</b></i>	<i><b>14</b></i>
SYMBOL	DB1	DB2	DB3	DB4	DB5	DB6	DB7

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7. DETAIL DRAWING OF DOT MATRIX



8. BLOCK DIAGRAM





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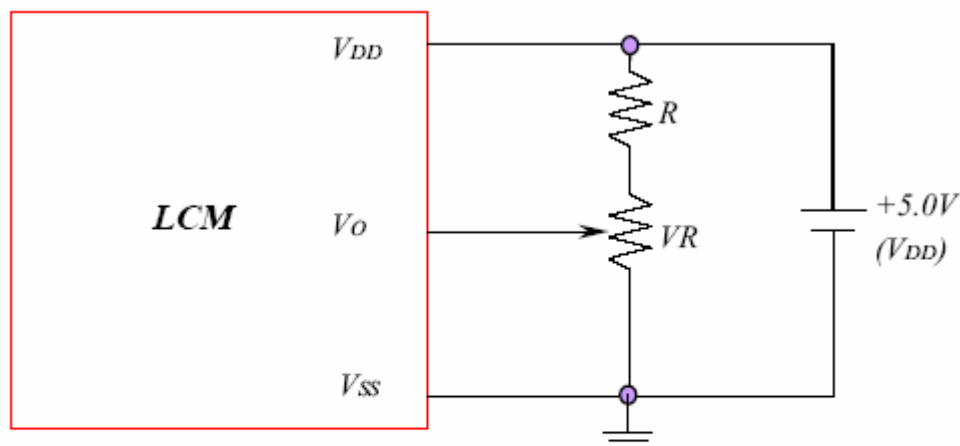
### 9.0 DISPLAY DATA ADDRESS CHARTS

#### *Display data address charts*

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F
LINE 2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF

### 10. POWER SUPPLY

#### 10.1 POWER SUPPLY FOR LCM



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

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

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

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.