



# ALL SHORE INDUSTRIES, INC.

## SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

**MODULE #: ASI-E-202AS-GC-\_S/W**

( 1 )	NUMBER OF CHARACTER	-----	20 CH X 2 LINES
( 2 )	MODULE SIZE	-----	116.0W X 37.0H X 10.0 (max.) mm
( 3 )	EFFECTIVE AREA	-----	84.0W X 19.0H mm
( 4 )	CHARACTER FONT	-----	5 X 7 DOTS + CURSOR
( 5 )	CHARACTER SIZE	-----	3.20W X 4.85H mm
( 6 )	CHARACTER PITCH	-----	3.70 mm
( 7 )	DOT SIZE	-----	0.60W X 0.65H mm
( 8 )	DOT PITCH	-----	0.65W X 0.70H mm
( 9 )	LCD TYPE	-----	STN, YELLOW, GRAY, REFLECTIVE
( 10 )	DRIVING METHOD	-----	1 / 16 DUTY MULTIPLEX DRIVE
( 11 )	VIEWING DIRECTION	-----	6 or 12 O' CLOCK



**MODEL NO : ASI-E-202AS-GC-\_S /W**

RECORDS OF REVISION		DOC . FIRST ISSUE JAN.12,2003
DATE	REVISED DRAWING NO.	SUMMARY



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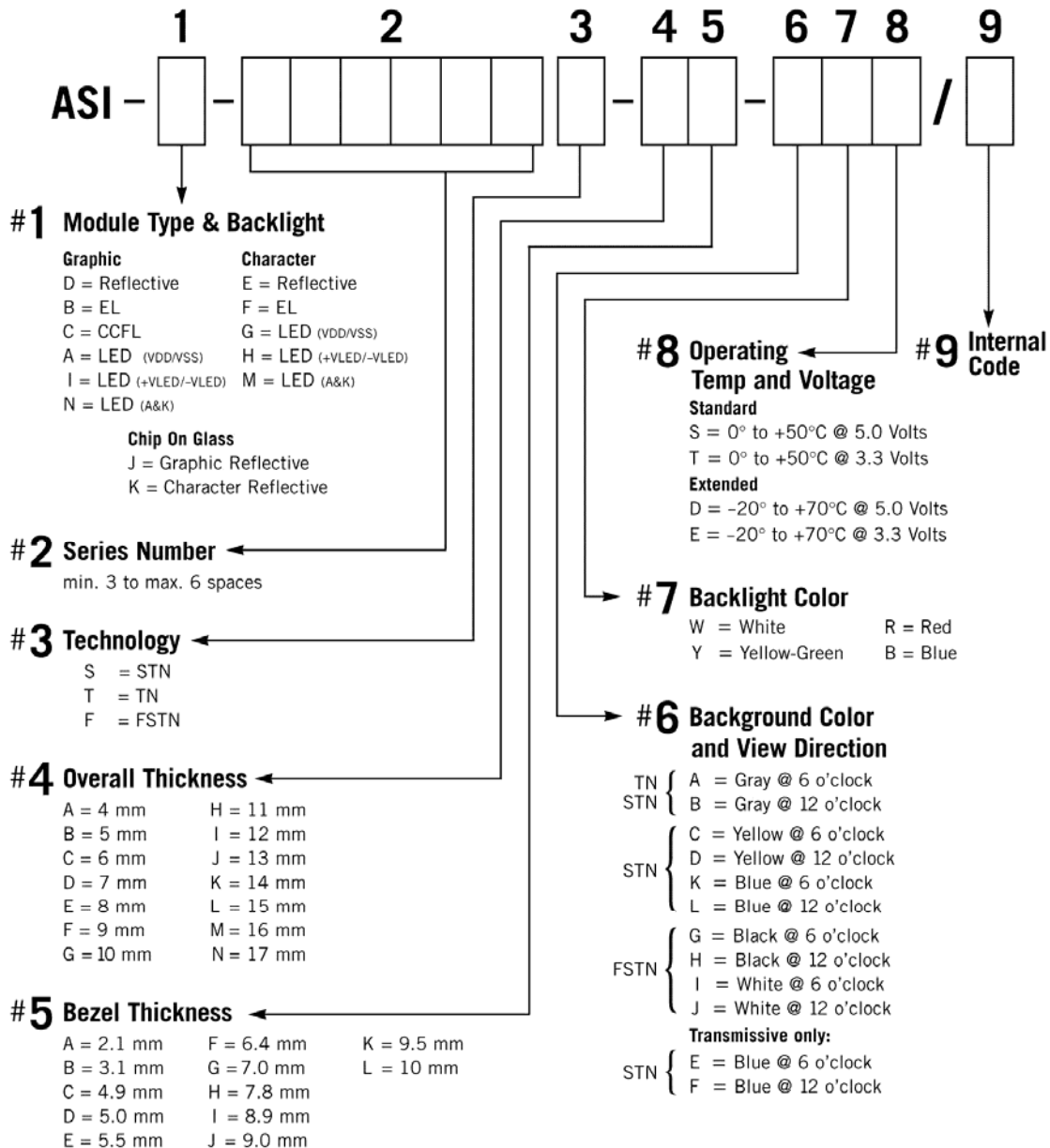
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**LCD MODULE PART NUMBERING SYSTEM**



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



## MODEL NO : ASI-E-202AS-GC-\_S /W

### 1. GENERAL SPECIFICATIONS

#### 1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

**AS – 002A**

#### 1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER :

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

### 2. MECHANICAL SPECIFICATIONS

(1)	NUMBER OF CHARACTER	-----	20 CH X 2 LINES
(2)	MODULE SIZE	-----	116.0W X 37.0H X 15.0 (max.) mm
(3)	EFFECTIVE AREA	-----	84.0W X 19.0H mm
(4)	CHARACTER FONT	-----	5 X 7 DOTS + CURSOR
(5)	CHARACTER SIZE	-----	3.20W X 4.85H mm
(6)	CHARACTER PITCH	-----	3.70 mm
(7)	DOT SIZE	-----	0.60W X 0.65H mm
(8)	DOT PITCH	-----	0.65W X 0.70H mm
(9)	LCD TYPE	-----	STN, YELLOW, GRAY REFLECTIVE
(10)	DRIVING METHOD	-----	1 / 16 DUTY MULTIPLEX DRIVE
(11)	VIEWING DIRECTION	-----	6 or 12 O ' CLOCK



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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	VDD-VSS	0	6.0	V	-----
INPUT VOLTAGE	VI	VSS	VDD	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>	-----	2.2	-----	V <sub>DD</sub>	V	
	V <sub>IL</sub>		V <sub>SS</sub>	-----	0.6	V	
OUTPUT VOLTAGE (H LEVEL)	V <sub>OH</sub>	I <sub>OH</sub> = -0.2 mA	2.4	-----	-----	V	
	V <sub>OL</sub>	I <sub>OL</sub> = 1.2 mA	-----	-----	0.4	V	
POWER SUPPLY CURRENT	I <sub>DD</sub>	V <sub>DD</sub> = 5.0V	-----	2.0	3.5	mA	
RECOMMENDED LCD DRIVING VOLTAGE NOTE(1)	V <sub>DD</sub> -V <sub>o</sub>	DUTY= 1/16 Φ=10° θ=0°	Ta= 0°C	-----	4.7	-----	V
			Ta=25°C	-----	4.5	-----	V
			Ta=50°C	-----	4.3	-----	V

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

### 5. OPTICAL CHARACTERISTICS

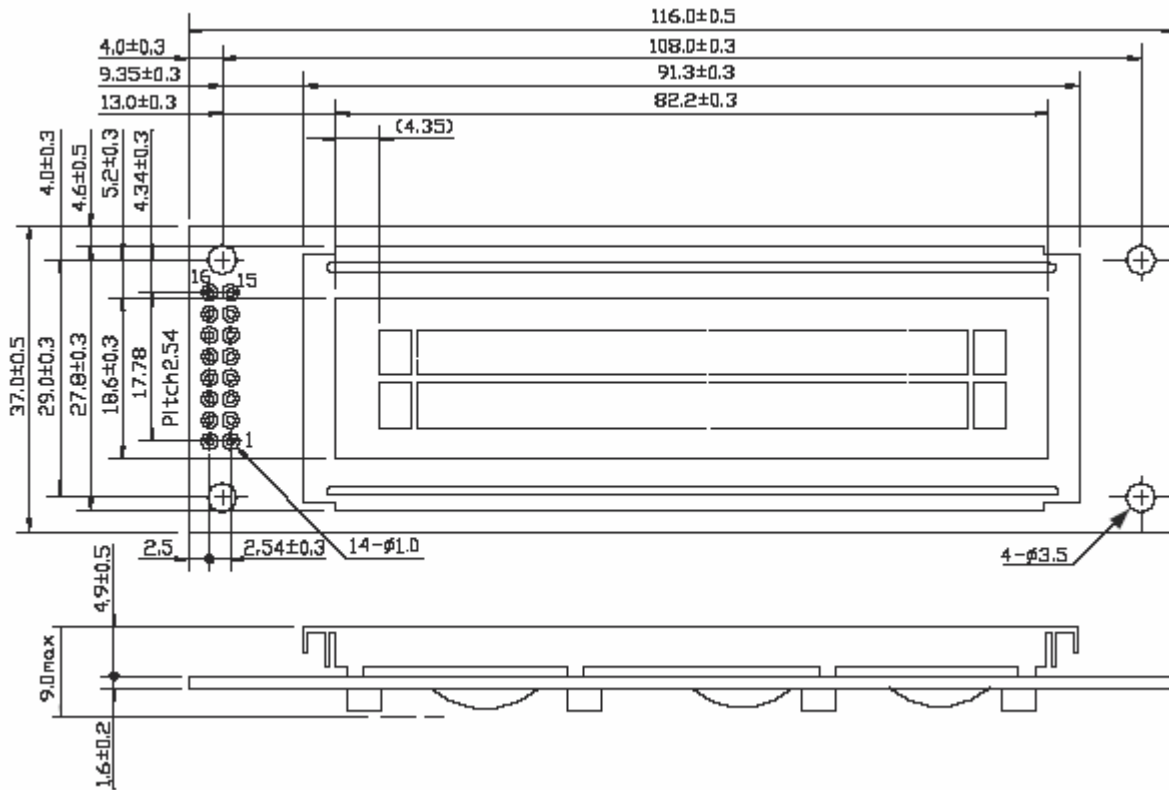
VDD = 5.0 V

<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	Φ2-Φ1	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**



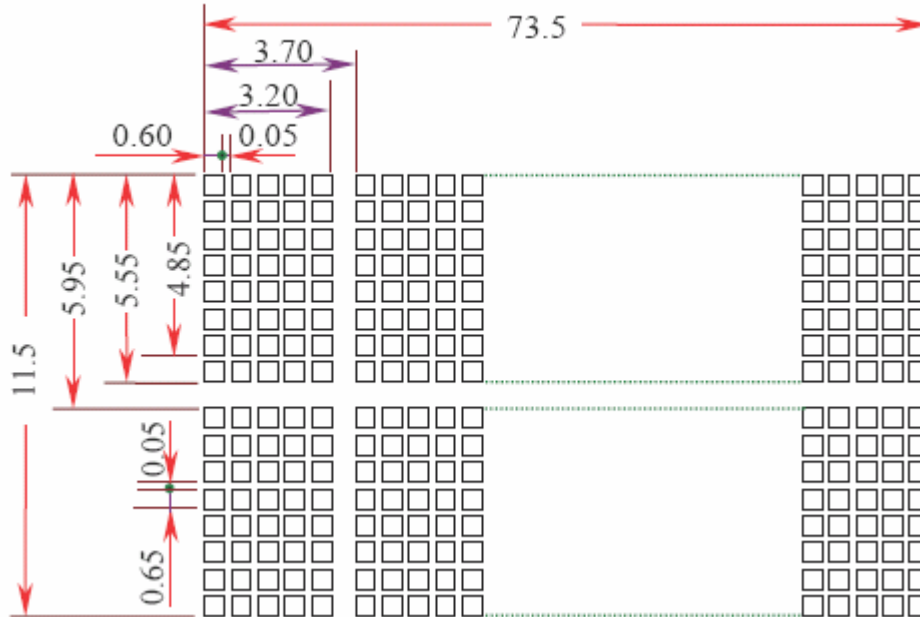
**Interface pin connection**

<b>PIN NO.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>SYMBOL</b>	V <sub>SS</sub>	V <sub>DD</sub>	V <sub>O</sub>	RS	R <sub>W</sub>	E	DB0	DB1
<b>PIN NO.</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>SYMBOL</b>	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC

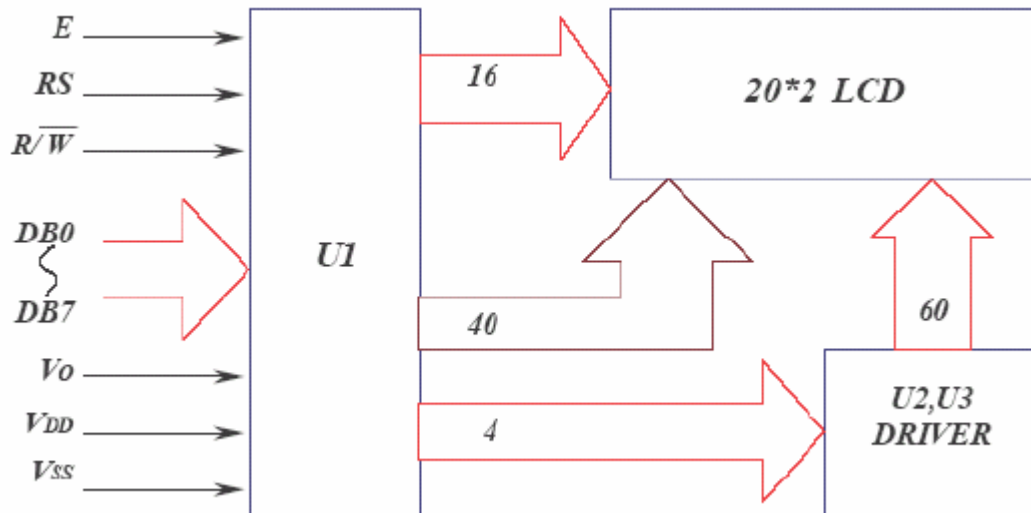


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**7. DETAIL DRAWING OF DOT MATRIX**

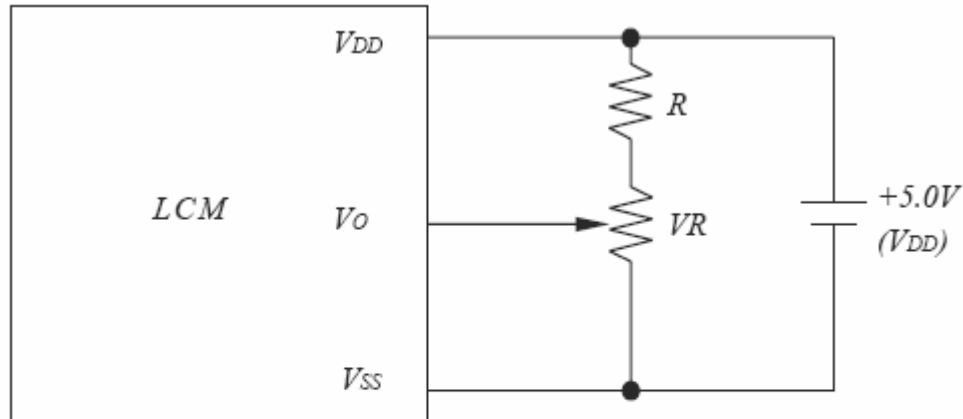


**8. BLOCK DIAGRAM**



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### 9. POWER SUPPLY



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

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

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

### 10 DISPLAY DATA RAM ADDRESS

#### *Display data address charts*

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
LINE 1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13
LINE 2	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53

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.