



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-F-161BS-CS-_WS/W

- (1) NUMBER OF CHARACTERS -----16 CH * 1 LINE
- (2) MODULE SIZE-----122.0 W * 33.0 H * 10.0 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 OR 12 O'CLOCK
- (10) LCD TYPE-----STN.GRAY, YELLOW.REFLECTIVE.
- (11) EL COLOR -----WHITE



MODEL NO : ASI-F-161BS-GC-_S/W

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ACCEPTED BY: _____ PROPOSED BY: _____

All Shore Industries, Inc. One Edgewater Plaza, Staten Island, NY 10305



MODEL NO : ASI-F-161BS-GC-_S/W

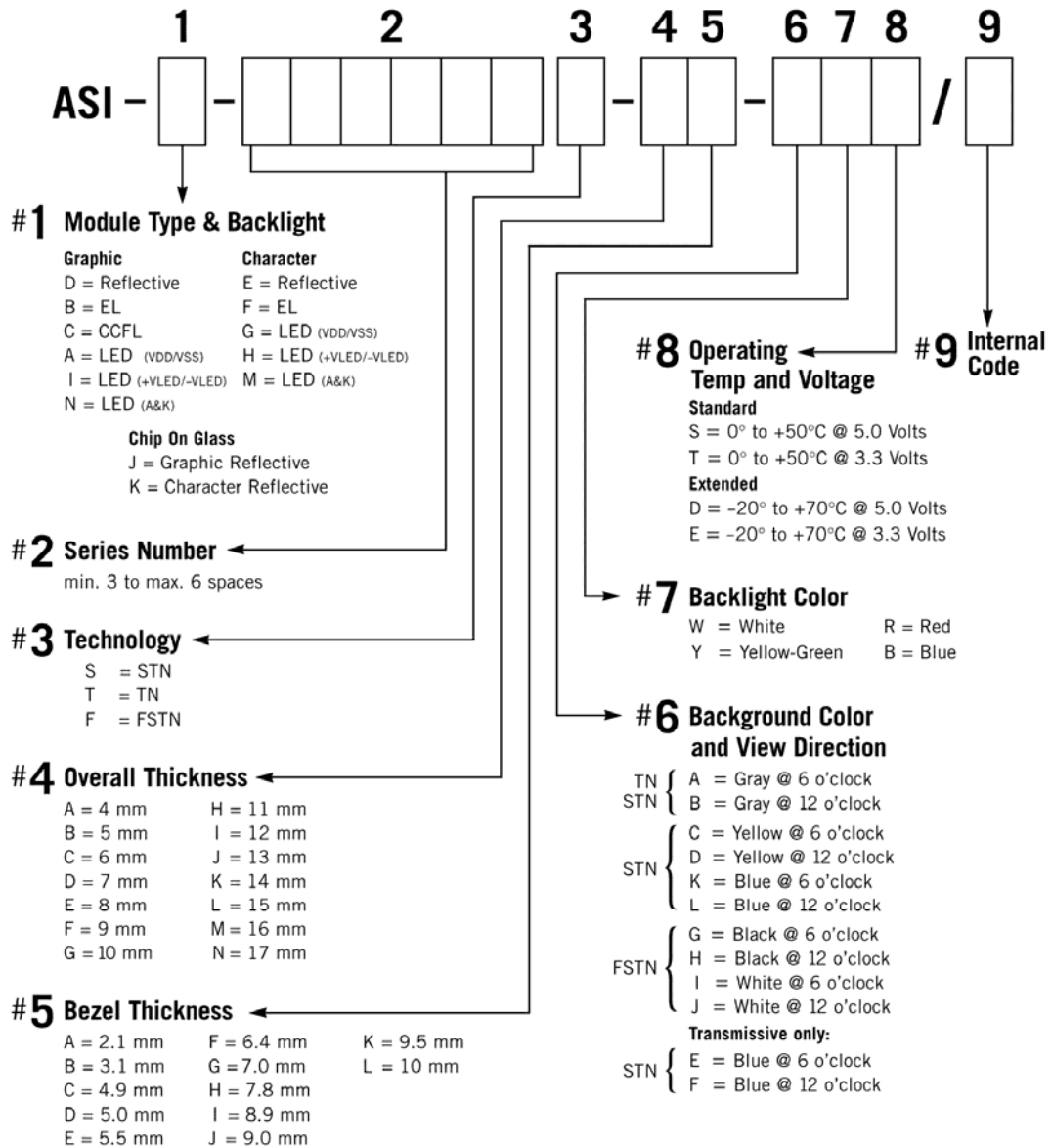
RECORD OF REVISION

| DATE | PAGE | SUMMARY |
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| | | |



MODEL NO : ASI-F-161BS-GC-_S/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-F-161BS-GC-_S/W

3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-10066)”.

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 | 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 EL | V _{EL} | ———— | AC200 | V _{rms} | f _{EL} =1.0KHz 60 SEC.MAX |
| | f _{EL} | ———— | 2.0 | KHz | AC115V _{rms} 60 SEC.MAX |

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 ≤ 50°: 85 % RH MAX.

Ta > 50°: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 85% RH AT 50°. (50% RH AT 60°)

NOTE (3): 1G = 9.8 m/s²



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6. Electrical characteristics

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

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|--|---|----------------|-------|-------|------|
| INPUT VOLTAGE | V _{IH} | ————— | 2.0 | ————— | ————— | V |
| | V _{IL} | ————— | ————— | ————— | 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 |
| POWER SUPPLY CURRENT | I _{DD} | V _{DD} = 5.0 V | ————— | 0.6 | 1.0 | mA |
| RECOMMENDED LCD DRIVING VOLTAGE | V _{DD} -V _O DUTY= 1/16 | T _a = 0° | ————— | 4.9 | ————— | V |
| | | T _a = 25° | ————— | 4.5 | ————— | V |
| | | T _a = 50° | ————— | 4.1 | ————— | V |
| POWER SUPPLY CURRENT FOR EL | I _{EL} | V _{EL} =115V f _{EL} =400Hz | ————— ————— | 1.5 | ————— | mA |

NOTE (1): RECOMMENDED LCD DRIVING VOLTAGE MAY
FLUCTUATE ABOUT $\pm 0.5\text{V}$ BY EACH MODULE.

7. Optical characteristics

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

| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | NOTE |
|-----------------------------|-----------------------|-------------------------------------|-------|-------|-------|-------------------|------|
| VIEWING ANGLE | $\phi_2 - \phi_1$ | K = 2.0 | 30 | 40 | ————— | deg. | 2 |
| CONTRAST RATIO | K | $\phi = 10^\circ; \theta = 0^\circ$ | 3.0 | 4.0 | ————— | ————— | 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 EL BACKLIGHT | B | $\phi = 10^\circ; \theta = 0^\circ$ | 4.0 | ————— | ————— | cd/m ² | 2,3 |

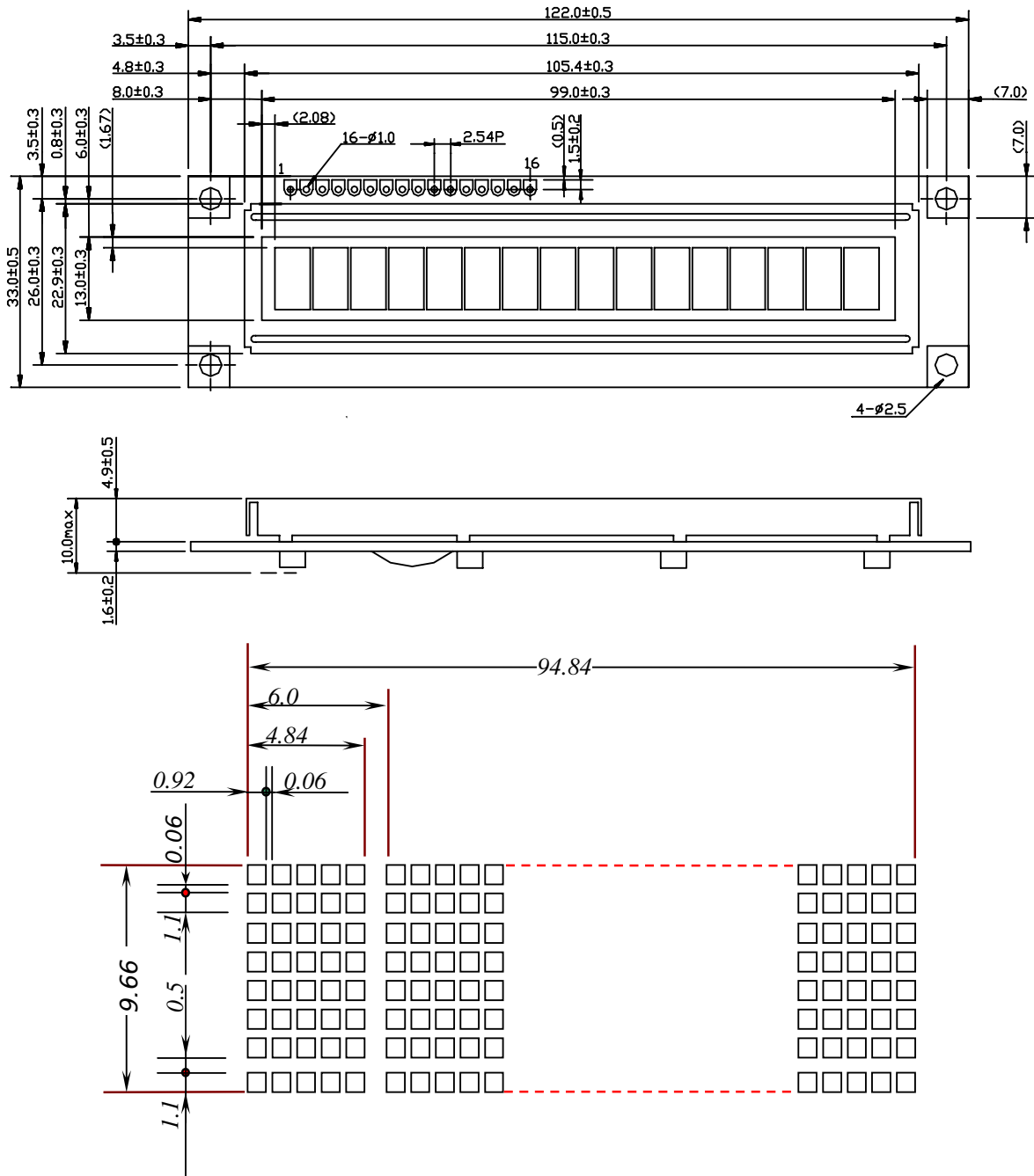
NOTE (2): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR
DEFINITION OF OPTICAL CHARACTERISTICS.

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



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8. Outline dimension



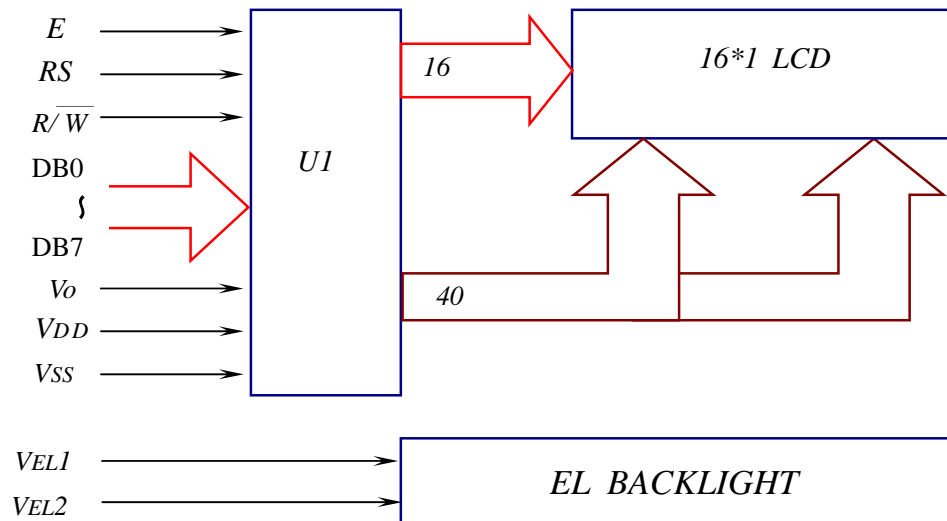


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Interface pin connection

| | | | | | | | | |
|----------------|-----------------|-----------------|----------------|-----------|--------------|-----------|-----------|-----------|
| PIN NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| SYMBOL | V _{SS} | V _{DD} | V _O | RS | R/ \bar{W} | E | DB0 | DB1 |
| PIN NO. | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 17 |
| SYMBOL | DB2 | DB3 | DB4 | DB5 | DB6 | DB7 | VEL1 | VEL2 |

9 Block diagram



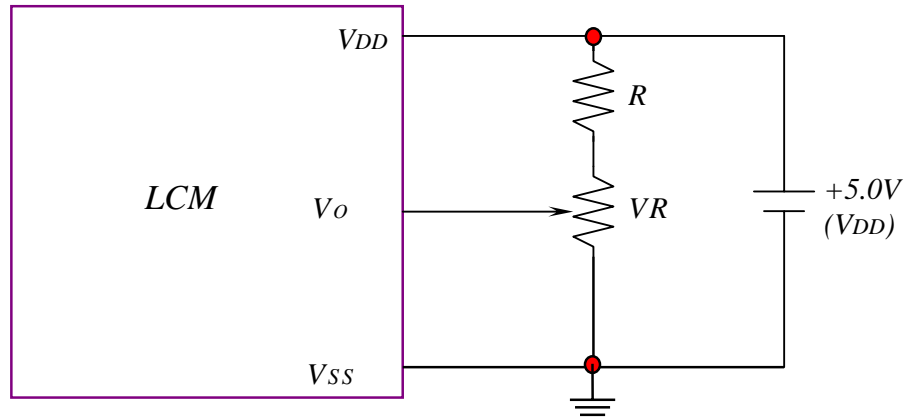
Display data address charts

| | | | | | | | | | | | | | | | | |
|-----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| LINE 1 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | C0 | C1 | C2 | C3 | C4 | C5 | C6 | C7 |



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10. Power supply for LCM



RECOMMENDED RESISTOR R: $V_{DD} - V_O \Omega 1.5V$
 $V_{DD} - V_O$: LCD DRIVING VOLTAGE
VR: $10K\Omega \sim 20K$