



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE #: ASI-B-1286DS-EC-_WS/W

- (1) NUMBER OF DOTS----- 128 CH * 64 DOTS
- (2) MODULE SIZE ----- 63.2 W * 54.0 H * 9.5 T (max) mm
- (3) EFFECTIVE AREA----- 54.0 W * 36.0 H mm
- (4) ACTIVE AREA ----- 49.88 W * 31.32 H
- (5) DOT SIZE ----- 0.35 W * 0.45 H mm
- (6) DOT PITCH----- 0.39 W *0.49 H mm



MODEL NO : ASI-B-1286DS-EC-_WS/W

RECORD OF REVISION

| DATE | PAGE | SUMMARY |
|------|------|---------|
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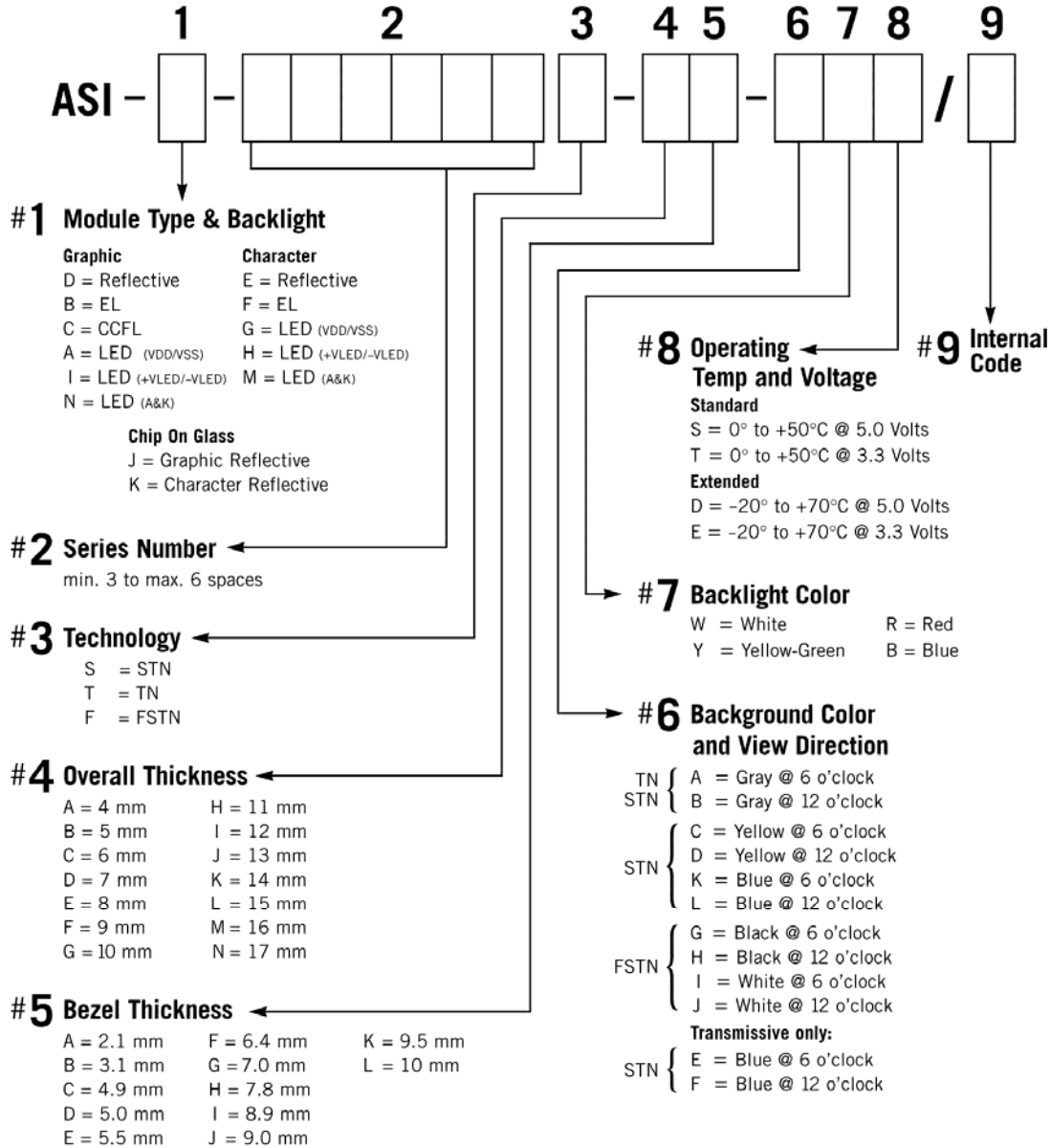
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MODEL NO : ASI-B-1286DS-EC- WS/W

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 : (MS-10-61210)".

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 DOTS----- 128 CH * 64 DOTS
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3. ABSOLUTE MAXIMUM RATINGS

3.1 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 LED | V _{LED} | ----- | NOTE(2) | V | ----- |

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

NOTE (2):

| <i>SYMBOL</i> | <i>V_{LED} MAX.</i> | <i>LED TYPE</i> | | | |
|---------------------|-----------------------------|-------------------------------|-------|------------------|----------------------------------|
| V _{LED} | 5.5V | YELLOW-GREEN,AMBER,ORANGE,RED | | | |
| | 5.0V | WHITE, BLUE, PURE-GREEN | | | |
| POWER SUPPLY FOR EL | VEL | --- | AC200 | V _{rms} | FEL=1.0KHz 60 Sec.Max |
| | fEL | --- | 2.0 | KHZ | AC115 V _{rms} 60 Sec |

3.3 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 | -20°C | 70°C | -20°C | 70°C | ----- |
| HUMIDITY | NOTE (3) | | NOTE (3) | | NO CONDENSATION |
| VIBRATION NOTE (4) | ----- | 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): 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 (4): 1G = 9.8 m/s²



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4. ELECTRICAL CHARACTERISTICS

| <i>I T E M</i> | <i>SYMBOL</i> | <i>CONDITION</i> | <i>MIN.</i> | <i>TYP.</i> | <i>MAX.</i> | <i>UNIT</i> | |
|--|----------------------------------|---|----------------------|-------------|--------------------|-------------|---|
| POWER SUPPLY VOLTAGE FOR CIRCUIT | V _{DD} -V _{SS} | ----- | 4.75 | 5.0 | 5.25 | V | |
| INPUT VOLTAGE NOTE (2) | V _{IH} | H LEVEL | 0.7V _{DD} | ----- | V _{DD} | V | |
| | V _{IL} | L LEVEL | V _{SS} | ----- | 0.3V _{DD} | V | |
| OUTPUT VOLTAGE NOTE (1) | V _{OH} | I _{OH} = -0.4 mA | V _{DD} -0.4 | ----- | ----- | V | |
| | V _{OL} | I _{OL} = 0.4 mA | ----- | ----- | 0.4 | V | |
| POWER SUPPLY CURRENT, NOTE (3) | I _{DD} | V _{DD} -V _{SS} = 5.0V | ----- | 5.0 | 8.0 | mA | |
| RECOMMENDED LCD DRIVING VOLTAGE, NOTE(4) | V _{DD} -V _O | STN/ FSTN DUTY =1/64 Φ=10° NOTE(5) | Ta=-20°C | ----- | 9.3 | ----- | V |
| | | | Ta= 25°C | ----- | 8.9 | ----- | V |
| | | | Ta= 70°C | ----- | 8.5 | ----- | V |
| POWER SUPPLY CURRENT FOR LED | I _{LED} | NOTE(6) | ----- | NOTE(6) | NOTE(6) | mA | |

NOTE(1): APPLIED TO TERMINALS DB0~DB7

(2): APPLIED TO TERMINALS D/ \bar{I} , R/ \bar{W} , E, DB0~DB7, CS1, CS2, \bar{RST}

(3): THE DISPLAY PATTERN IS ALL "ON", OR ALL "OFF"

(4): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT $\pm 0.5V$ BY EACH MODULE.

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

$\theta = 180^\circ$: VIEWING DIRECTION AT 12 O'CLOCK

(6): LED CURRENT FOR DIFFERENT LED BACKLIGHT TYPE

| <i>LED B.L TYPE</i> | <i>CONDITION</i> | <i>I_{LED}</i> | | | | <i>LED COLOR</i> |
|---------------------|------------------------|------------------------|-------------|-------------|--------------|-----------------------------------|
| | | <i>MIN.</i> | <i>TYP.</i> | <i>MAX.</i> | <i>UNIT.</i> | |
| A | V _{LED} =4.8V | ----- | 75 | 100 | mA | YELLOW-GREEN、 AMBER、ORANGE、RED |
| B | V _{LED} =4.0V | ----- | 150 | 200 | mA | BLUE、WHITE、 PURE-GREEN |



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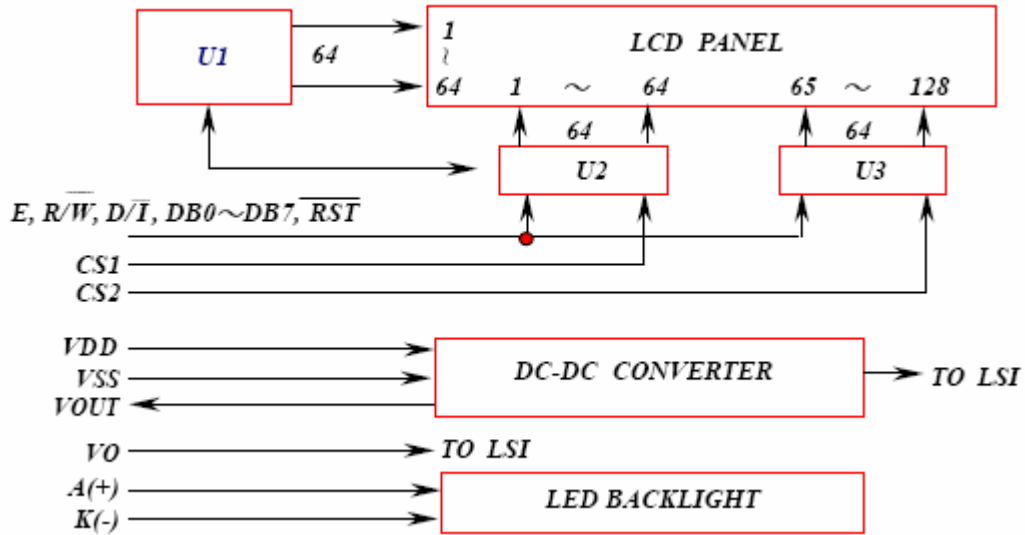
7. Interface pin connection

Interface pin connection

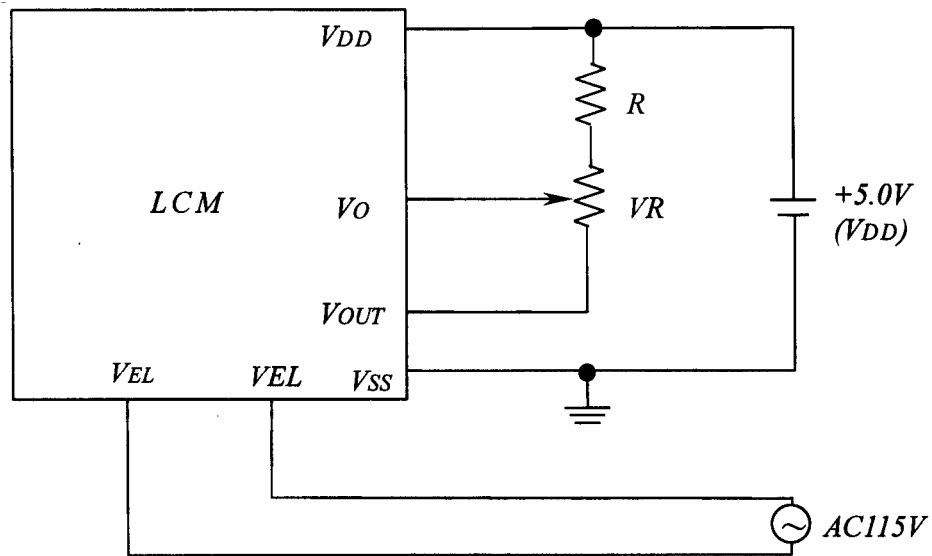
| PIN NO. | SYMBOL | FUNCTION |
|---------|------------------|---|
| 1 | V _{SS} | GROUND |
| 2 | V _{DD} | POWER SUPPLY FOR LOGIC |
| 3 | V ₀ | OPERATING VOLTAGE FOR LCD DRIVING |
| 4 | D/ \bar{I} | H: DATA INPUT L: INSTRUCTION CODE INPUT |
| 5 | R/ \bar{W} | H: DATA READ (LCD MODULE → MPU) L: DATA WRITE (LCD MODULE ← MPU) |
| 6 | E | ENABLE SIGNAL |
| 7 | DB0 | DATA INPUT/OUTPUT (LSB) |
| 8 | DB1 | DATA INPUT/OUTPUT |
| 9 | DB2 | DATA INPUT/OUTPUT |
| 10 | DB3 | DATA INPUT/OUTPUT |
| 11 | DB4 | DATA INPUT/OUTPUT |
| 12 | DB5 | DATA INPUT/OUTPUT |
| 13 | DB6 | DATA INPUT/OUTPUT |
| 14 | DB7 | DATA INPUT/OUTPUT (MSB) |
| 15 | CS1 | H: CHIP SELECTION FOR IC1 |
| 16 | CS2 | H: CHIP SELECTION FOR IC2 |
| 17 | \bar{RST} | L: RESET |
| 18 | V _{OUT} | POWER SUPPLY FOR LCD DRIVING |
| 19 | A(+) | POWER SUPPLY FOR LED (+) |
| 20 | K(-) | POWER SUPPLY FOR LED (-) |

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8. BLOCK DIAGRAM



9. POWER SUPPLY



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

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

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