



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-E-161BS-GC-_S-/W

(1)	NUMBER OF CHARACTER	-----	16 CH X 1 LINES
(2)	MODULE SIZE	-----	122 x 33 X 10.0T (max.) mm
(3)	EFFECTIVE AREA	-----	99.0W X 13.0H mm
(4)	CHARACTER FONT	-----	5 X 7 DOTS + CURSOR
(5)	CHARACTER SIZE	-----	4.84W X 8.06H mm
(6)	CHARACTER PITCH	-----	6.0 mm
(7)	DOT SIZE	-----	0.92W X 1.10H mm
(8)	DOT PITCH	-----	0.98W X 1.16H mm
(9)	LCD TYPE	-----	STN GRAY, YELLOW
(10)	DRIVING METHOD	-----	1 / 16 DUTY MULTIPLEX DRIVE
(11)	VIEWING DIRECTION	-----	6 or 12 O 'CLOCK
(12)	BACK - LIGHT	-----	NONE



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RECORDS OF REVISION		DOC . FIRST ISSUE 5/2/2003
DATE	REVISED DRAWING NO.	SUMMARY



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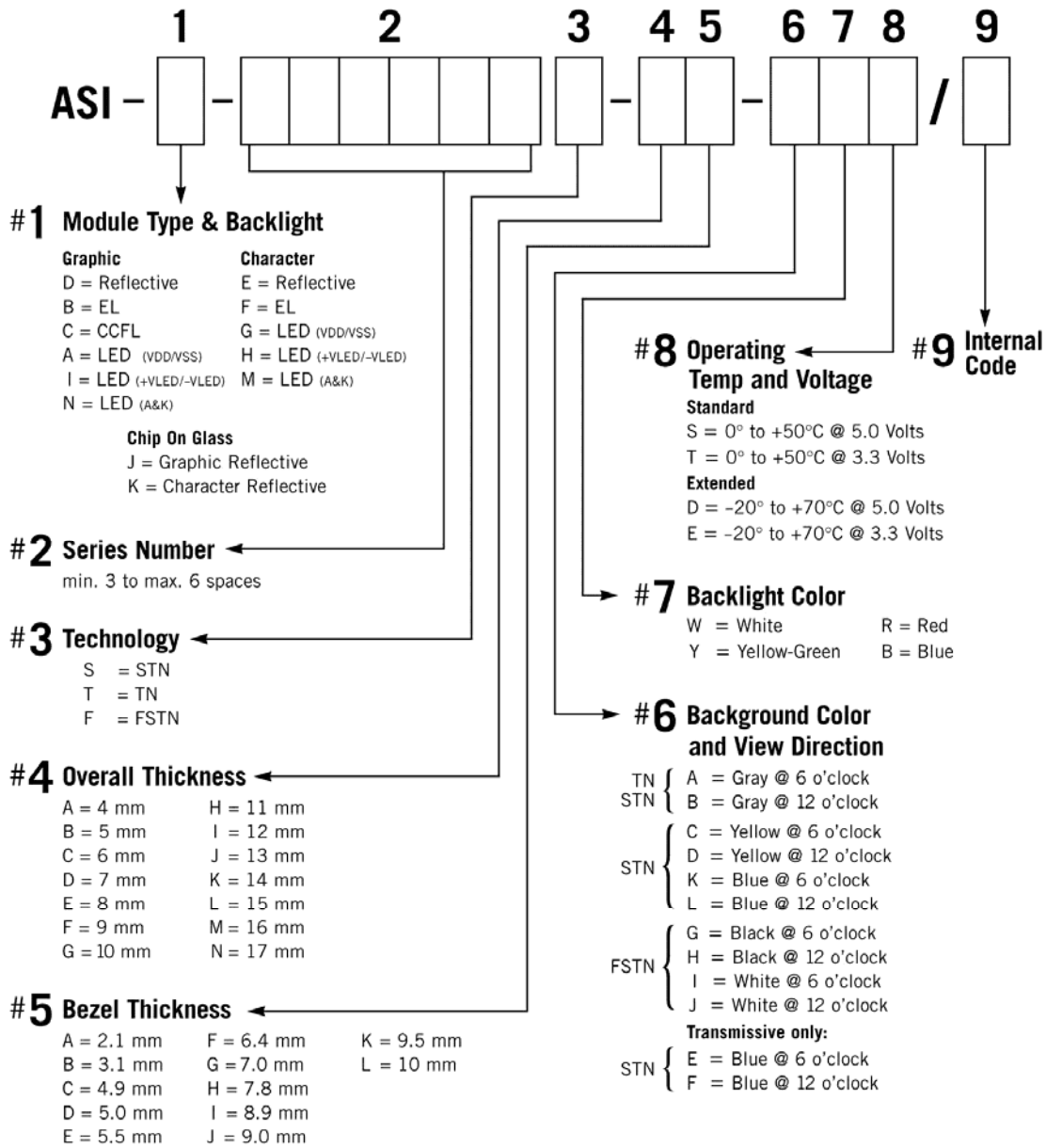
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LCD MODULE PART NUMBERING SYSTEM



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



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

1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

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	-----	16 CH X 1 LINES
(2)	MODULE SIZE	-----	122 x 33 X 10.0T (max.) mm
(3)	EFFECTIVE AREA	-----	99.0W X 13.0H mm
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(7)	DOT SIZE	-----	0.92W X 1.10H mm
(8)	DOT PITCH	-----	0.98W X 1.16H mm
(9)	LCD TYPE	-----	STN GRAY, YELLOW REFLECTIVE
(10)	DRIVING METHOD	-----	1 / 16 DUTY MULTIPLEX DRIVE
(11)	VIEWING DIRECTION	-----	6 or 12 O' CLOCK
(12)	BACK - LIGHT	-----	NONE



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3. ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	MIN .	MAX .	UNIT	COMMENT
POWER SUPPLY FOR LOGIC	VDD--VSS	0	6.0	V	
INPUT VOLTAGE	VI	VSS	VDD	V	
STATIC ELECTRICITY	————	—	100	V	NOTE (1)

NOTE(1) : TEST METHOD AND CONDITIONS : AFTER CHARGING UP 200 PF CAPACITOR BY STATED VOLTAGE, THE CAPACITOR IS CONNECTED WITH INTERFACE PINS OF THE MODULE .

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS .

I T E M	OPERATING		STORAGE		COMMENT
	MIN .	MAX .	MIN .	MAX .	
AMBIENT TEMPERATURE	0°C	50°C	-20 °C	70 °C	NOTE (2)
HUMIDITY	SEE NOTE 3		SEE NOTE 3		WITHOUT CONDENSATION
VIBRATION NOTE (4)		4 . 9 m /s ² (0.5G)		1 9 . 6 m /s ² (2G)	10 ~ 300HZ XYZ DIRECTIONS 1 HR EACH
SHOCK NOTE (4)		2 9 . 4 m /s ² (3G)		490.0 m /s ² (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 (4) : 1G = 9.8 m/s²



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4. ELECTRICAL CHARACTERISTICS

		Ta = 25°C		VDD = 5.0 +/- 0.25 V		
PARAMETER	SYMBOL	CONDITION	MIN .	TYP .	MAX .	UNIT
H LEVEL INPUT VOLTAGE	VIH	————	0.7VDD	—	—	V
L LEVEL INPUT VOLTAGE	VIL	————	—	—	0.55	V
H LEVEL OUTPUT VOLTAGE	VOH	-IOH = 0.1 mA	0.75VDD	—	—	V
L LEVEL OUTPUT VOLTAGE	VOL	IOL = 0.1mA	—	—	0.2VDD	V
POWER SUPPLY CURRENT (LOGIC)	IDD	VDD = 5.0 V	—	1.0	1.5	mA
RECOMMENDED LCD DRIVING VOLTAGE	VDD - VO DUTY = 1/16 $\phi = 10$	Ta = 0 °C	—	5.0	—	V
		Ta = 25 °C	—	4.6	—	V
		Ta = 50 °C	—	3.8	—	V

NOTE (1) : RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT +/- 0.5V BY EACH MODULE

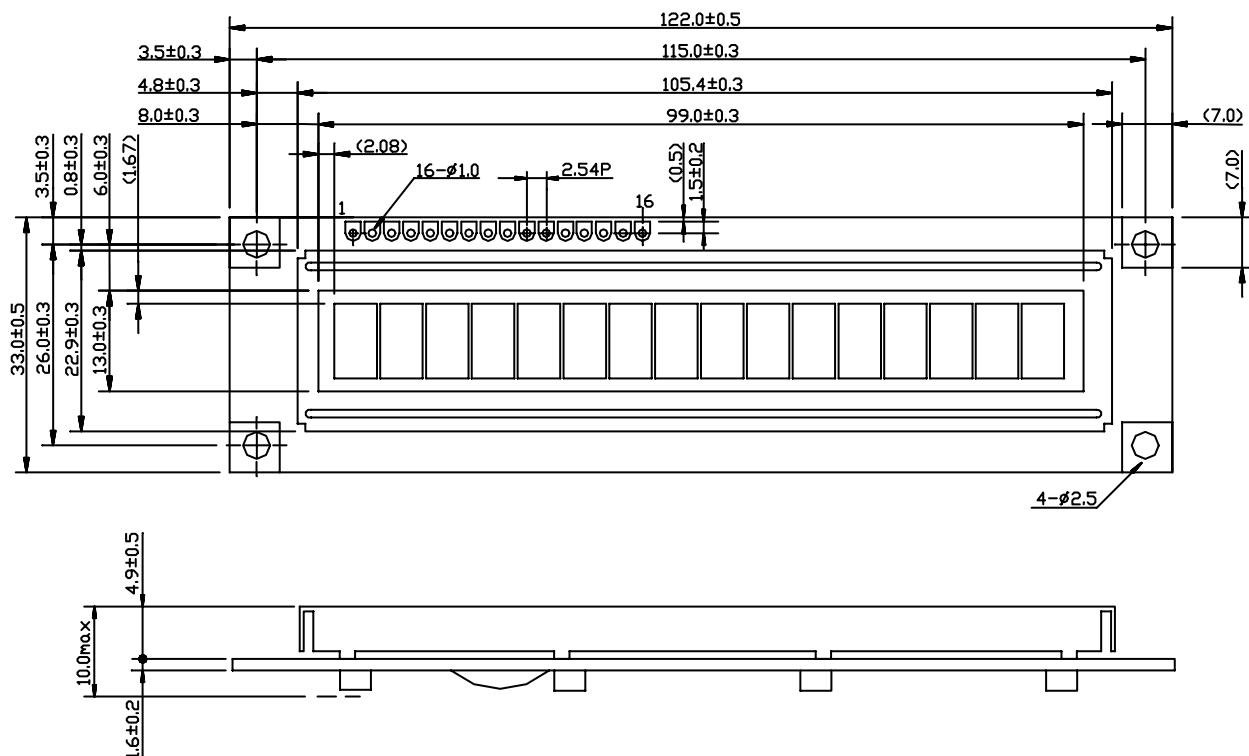
5. OPTICAL CHARACTERISTICS

		Ta = 25°C		VDD = 5.0 V			
I T E M	SYMBOL	CONDITION	MIN .	TYP .	MAX .	UNIT	NOTE
VIEWING AREA	$\phi 2 - \phi 1$	K = 2.0	30	40	————	deg .	2
CONTRAST RATIO	K	$\phi = 10^\circ$ $\theta = 0^\circ$	3.0	4.0	————	————	2
RESPONSE TIME	tr (rise)	$\phi = 10^\circ$ $\theta = 0^\circ$	————	200	350	ms	2
	tf (fall)	$\phi = 10^\circ$ $\theta = 0^\circ$	————	300	400	ms	2

NOTE (2) : PLEASE REFER TO :
CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF..
OPTICAL CHARACTERISTICS

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6. OUTLINE DIMENSION

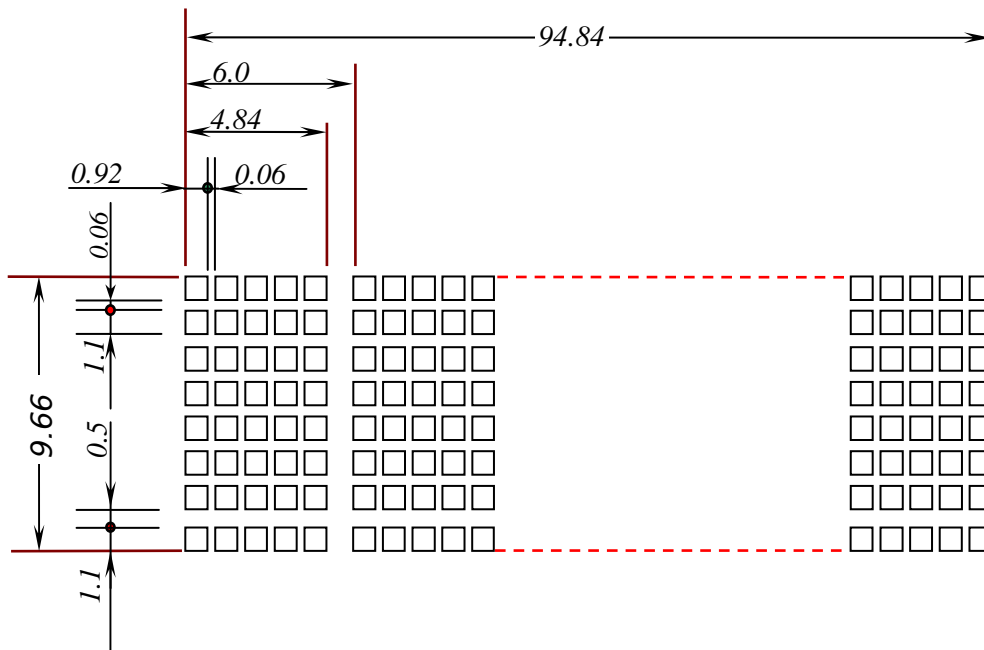


Interface pin connection

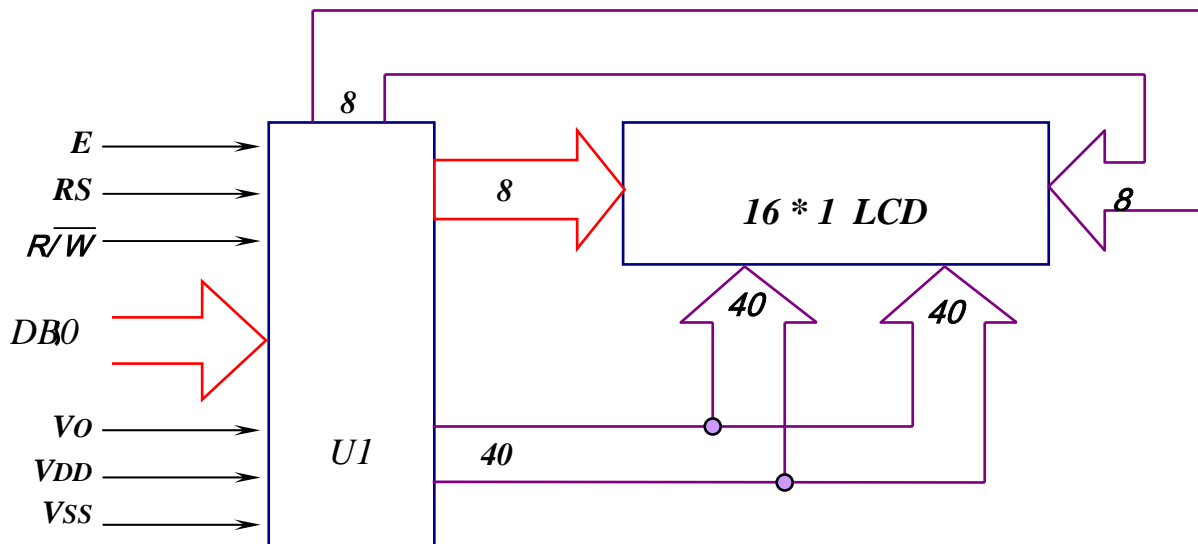
PIN NO.	1	2	3	4	5	6	7	8
SYMBOL	VSS	VDD	VO	RS	R/W	E	DB0	DB1
PIN NO.	9	10	11	12	13	14	15	16
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC

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7. DETAIL DRAWING OF DOT MATRIX



8. BLOCK DIAGRAM





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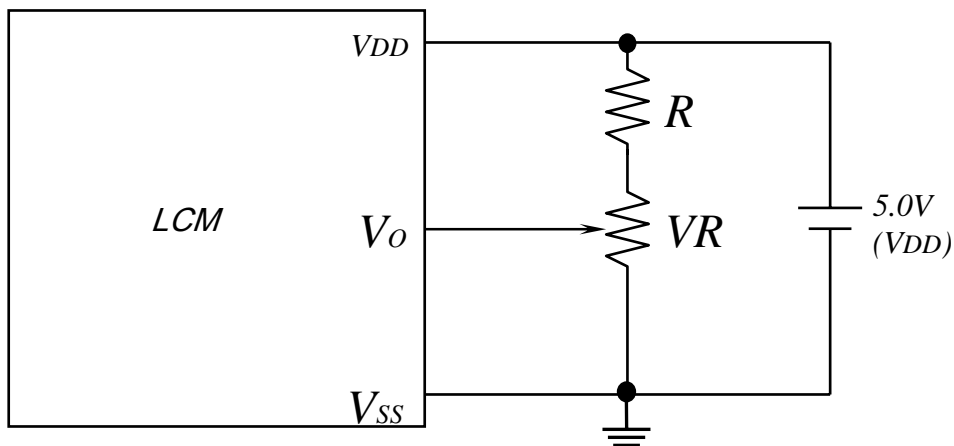
9. DISPLAY DATA ADDRESS CHARTS

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	C0	C1	C2	C3	C4	C5	C6	C7

10. POWER SUPPLY

10.1 POWER SUPPLY FOR LCD MODULE



RECOMMENDED RESISTOR R: $VDD - VO \square 1.5V$
 $VDD - VO$: LCD DRIVING VOLTAGE
 VR: $10K\Omega \sim 20K\Omega$