



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

MODULE # : ASI-E-404AS-GC-_S/W

- (1) NUMBER OF CHARACTERS -----40 CH * 4 LINE
- (2) MODULE SIZE-----190.0 W * 54.0 H * 10.0 T (Max) mm
- (3) EFFECTIVE AREA -----149.0 W * 31.0 H mm
- (4) CHARACTER PATTERN-----5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE -----2.78 W * 4.27 H mm
- (6) CHARACTER PITCH-----3.53 W *5.49 H mm
- (7) DOT SIZE -----0.50 W * 0.55 H mm
- (8) DOT PITCH-----0.57 W * 0.62 H mm
- (9) VIEWING DIRECTION -----6 or 12 O'CLOCK
- (10) LCD TYPE -----STN.YELLOW, GRAY REFLECTIVE



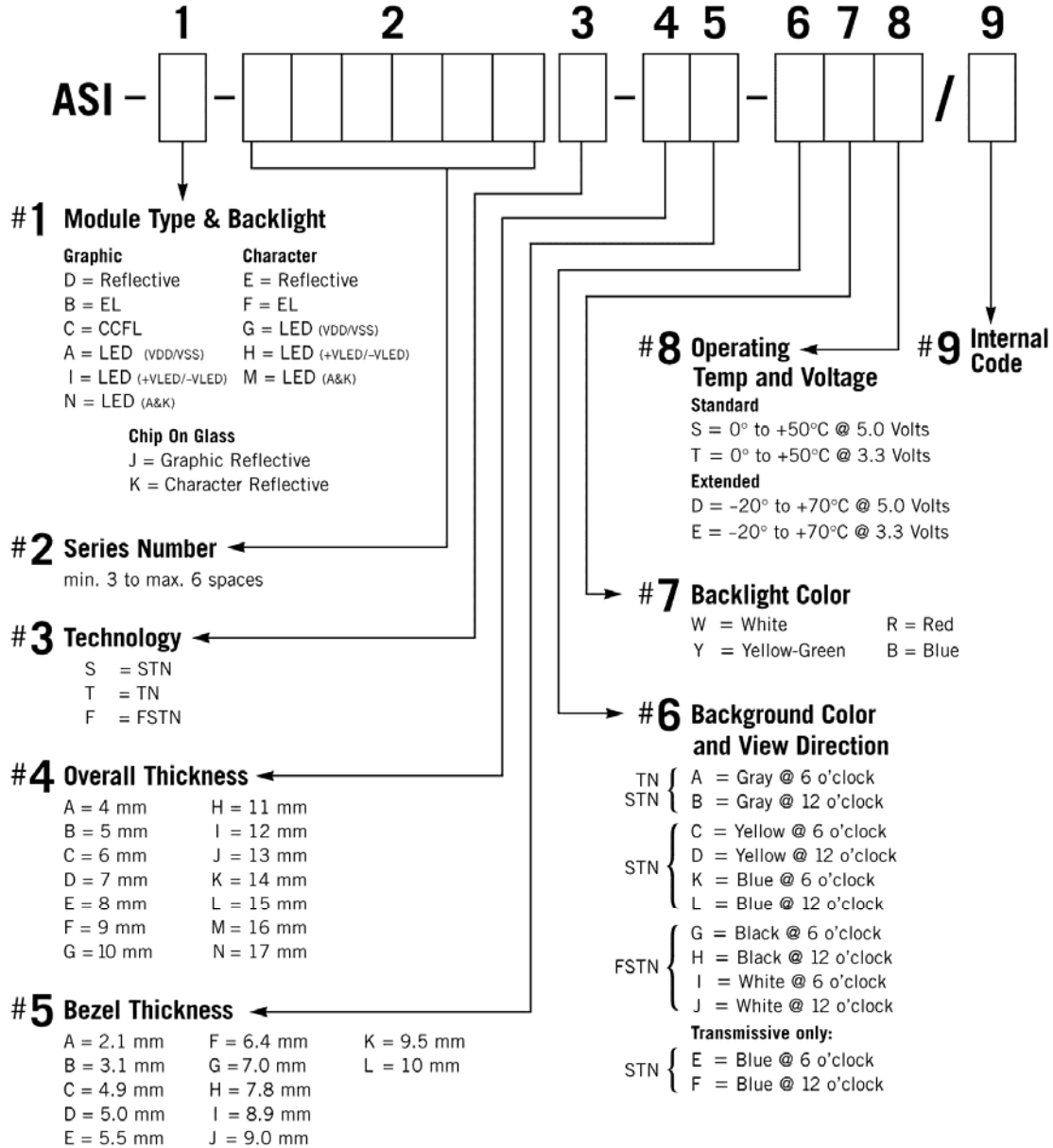
MODEL NO : ASI-E-404AS-GC-_S-/W

RECORD OF REVISION

DATE	PAGE	SUMMARY

MODEL NO : ASI-E-404AS-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.



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3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-12780)”.

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)

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°: 90% RH MAX.

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

NOTE (3): 1G = 9.8 m/s²



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6. Electrical characteristics

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

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	—————	2.5	3.5	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

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

7. Optical characteristics

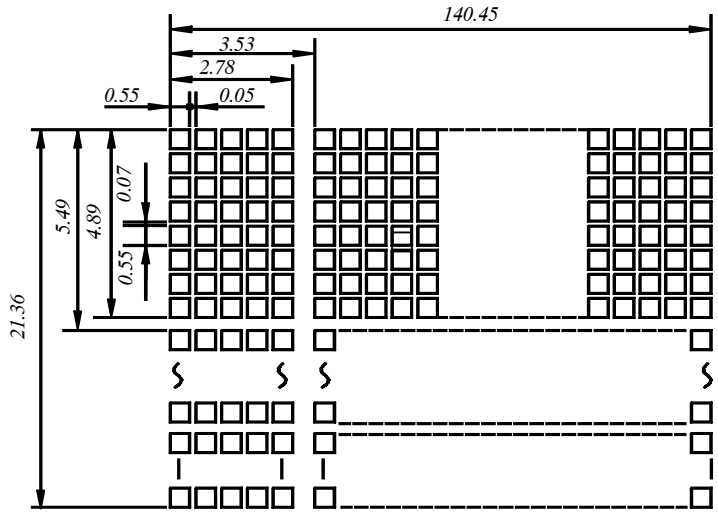
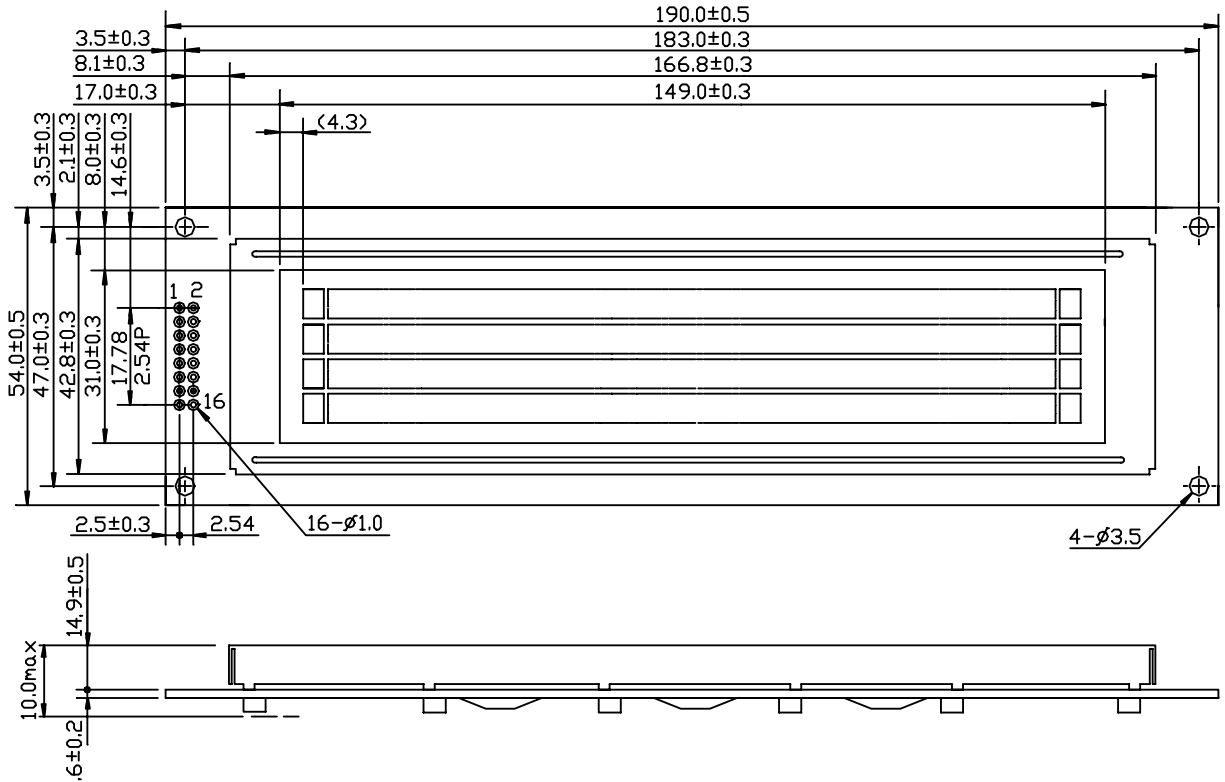
$$T_a = 25^\circ \quad V_{DD} = 5.0V$$

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

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

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8. Outline dimension

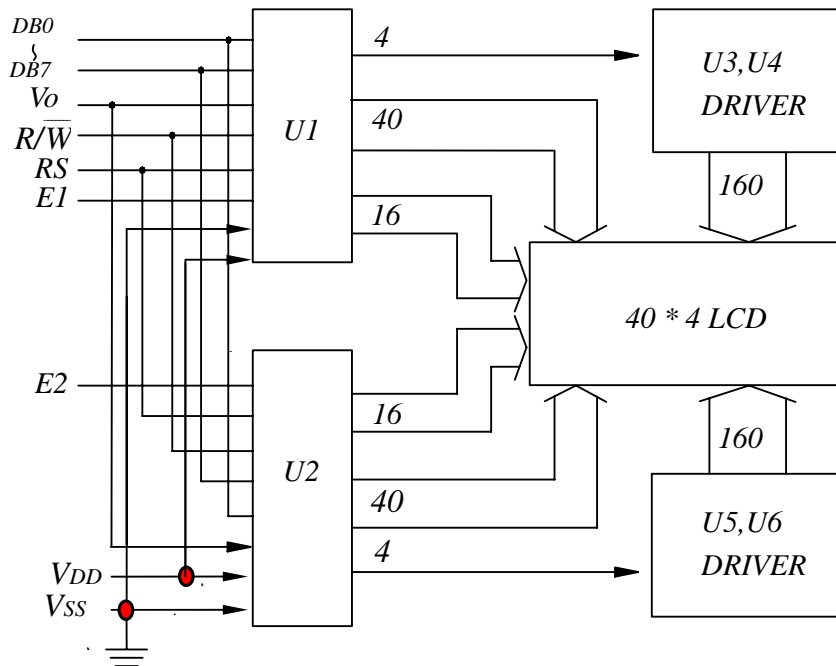


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Interface pin connection

PIN NO.	1	2	3	4	5	6	7	8
SYMBOL	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
PIN NO.	9	10	11	12	13	14	15	16
SYMBOL	E1	R/W	RS	Vo	Vss	Vcc	E2	NC

9 Block diagram



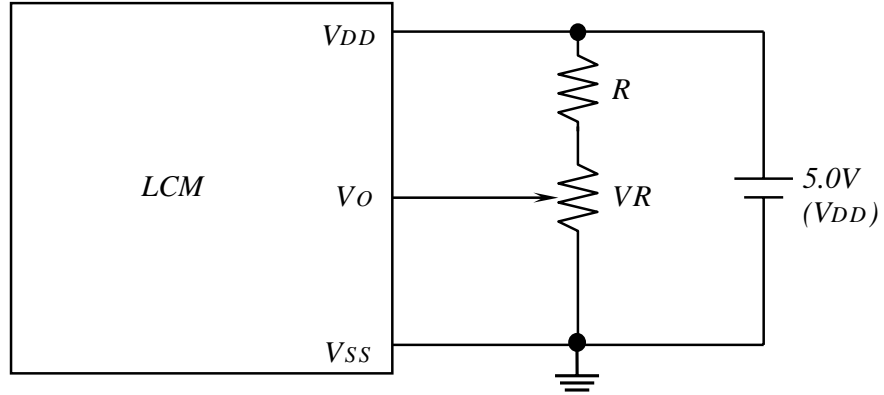
Display data address charts

Character 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

LINE1	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
LINE2	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7
LINE3	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F	A0	A1	A2	A3	A4	A5	A6	A7
LINE4	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF	E0	E1	E2	E3	E4	E5	E6	E7

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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: $10K\Omega \sim 20K$