



ALL SHORE INDUSTRIES, INC.

SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

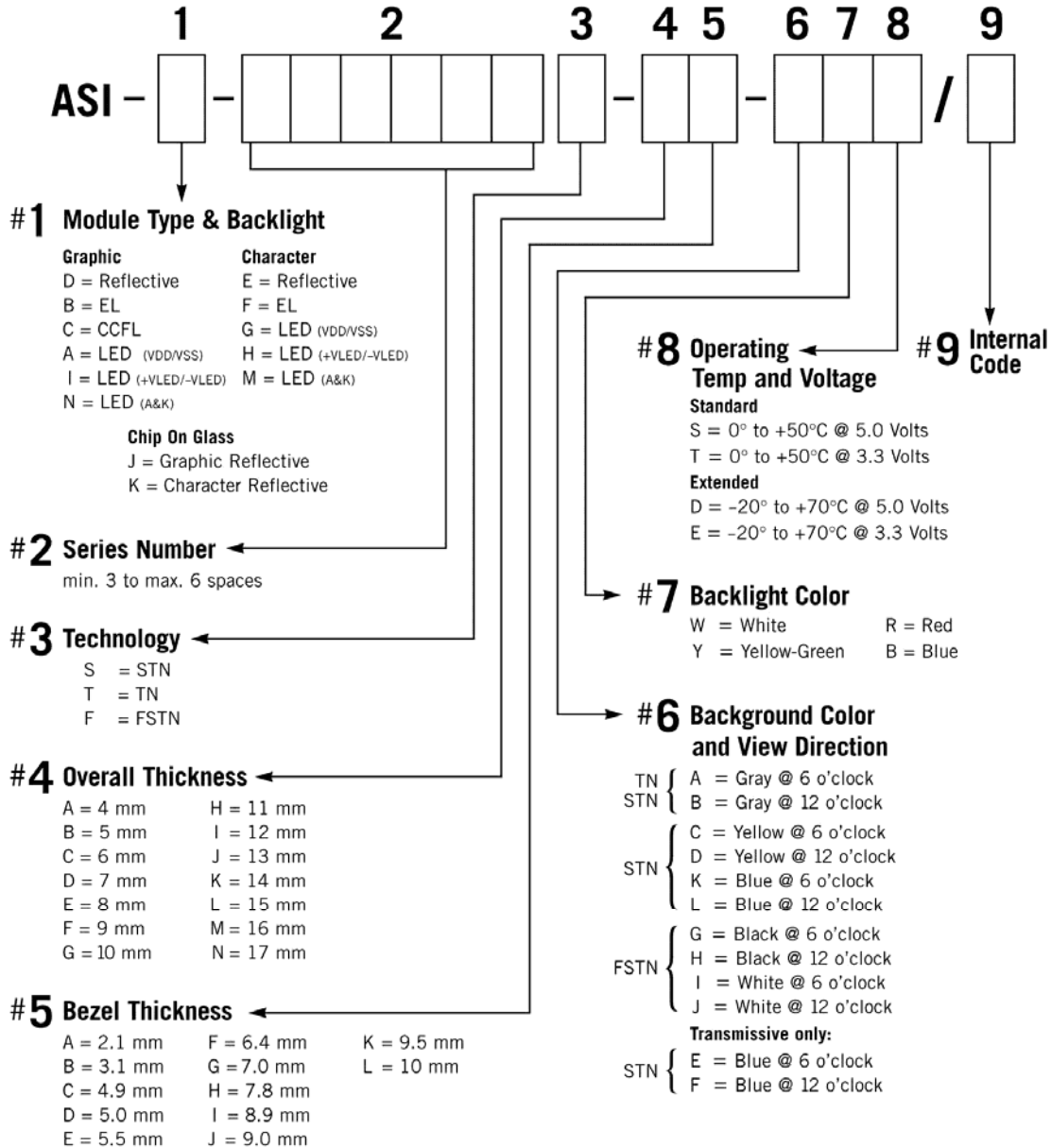
MODULE # : ASI-E-161DAS-GC-_S/W

- (1) NUMBER OF CHARACTER ----- 16 CH * 1 LINE
- (2) MODULE SIZE -----80.0 W * 36.0 H * 10.0 T (max) mm
- (3) EFFECTIVE AREA -----64.5 W * 16.0 H mm
- (4) CHARACTER PATTERN -----5 * 7 DOTS + CURSOR
- (5) CHARACTER SIZE-----3.07 W *5.73 H mm
- (6) CHARACTER PITCH -----3.77 mm
- (7) DOTS SIZE-----0.55 W * 0.75 H mm
- (8) DOTS PITCH-----0.63 W * 0.83 H mm



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

General specifications

General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-0069)”

Mechanical data

- (1) NUMBER OF CHARACTER ----- 16 CH * 1 LINE
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MODEL NO : ASI-E-161DAS-GC-_S/W

Absolute maximum ratings

Electrical absolute maximum ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT	COMMENT
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):

SYMBOL	V _{LED} MAX.	LED TYPE
V _{LED}	5.5V	YELLOW-GREEN,AMBER,ORANGE,RED
	5.0V	BLUE,PURE GREEN,WHITE

Environmental absolute maximum ratings

ITEM	CONDITION	OPERATING		STORAGE		COMMENT
		MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	NORMAL	0°C	50°C	-20°C	70°C	-----
	WIDE	-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): T_a ≤ 50°C: 90% RH MAX.

T_a > 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/s²



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

Electrical characteristics

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

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
INPUT VOLTAGE	V _{IH}	-----	2.2	-----	-----	V	
	V _{IL}		-----	-----	0.6	V	
OUTPUT VOLTAGE	V _{OH}	-I _{OH} = 0.205 mA	2.4	-----	-----	V	
	V _{OL}	I _{OL} = 1.2 mA	-----	-----	0.4	V	
POWER SUPPLY CURRENT	I _{DD}	V _{DD} = 5.0V	-----	1.0	1.5	mA	
RECOMMENDED LCD DRIVING VOLTAGE, NOTE(1)	V _{DD} -V _O	STN/ FSTN DUTY =1/16 Φ=10° NOTE(2)	T _a =-20°C	-----	4.8	-----	V
			T _a = 0°C	-----	4.7	-----	V
			T _a = 25°C	-----	4.5	-----	V
			T _a = 50°C	-----	4.3	-----	V
			T _a = 70°C	-----	4.2	-----	V
		TN DUTY =1/16 Φ=25° NOTE(2)	T _a =-20°C	-----	4.7	-----	V
			T _a = 0°C	-----	4.6	-----	V
			T _a = 25°C	-----	4.2	-----	V
			T _a = 50°C	-----	3.8	-----	V
			T _a = 70°C	-----	3.7	-----	V
POWER SUPPLY CURRENT FOR NOTE(3)	I _{LED}	V _{LED} NOTE(3)	-----	30	40	mA	

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

- (2): $\theta = 0^{\circ}$: VIEWING ANGLE AT 6 O'CLOCK
 $\theta = 180^{\circ}$: VIEWING ANGLE AT 12 O'CLOCK

(3): LED CURRENT OF DIFFERENT LED TYPE

LED B.L TYPE	V _{LED}	I _{LED}				LED COLOR
		MIN.	TYP.	MAX.	UNIT.	
A	4.8V	-----	30	40	mA	YELLOW-GREEN、AMBER、ORANGE、RED
B	4.0V	-----	30	40	mA	BLUE、WHITE、PURE GREEN

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

Optical characteristics TN TYPE LCD

 $T_a = 25^{\circ}\text{C}$ $V_{DD}-V_O = 4.2V$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	K = 1.4 NOTE(1)	20	30	----	deg.	NOTE(2)
CONTRAST RATIO	K	$\Phi = 25^{\circ}$ NOTE(1)	2.0	3.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	$\Phi = 25^{\circ}$ NOTE(1)	----	150	250	ms	NOTE(2)
	tf (fall)	$\Phi = 25^{\circ}$ NOTE(1)	----	150	250	ms	NOTE(2)

STN TYPE LCD

 $T_a = 25^{\circ}\text{C}$ $V_{DD}-V_O = 4.5V$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ NOTE(1)	3.0	4.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	$\Phi = 10^{\circ}$ NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	$\Phi = 10^{\circ}$ NOTE(1)	----	300	400	ms	NOTE(2)

FSTN /STN BLUE TYPE LCD

 $T_a = 25^{\circ}\text{C}$ $V_{DD}-V_O = 4.5V$

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
VIEWING ANGLE	$\Phi 2-\Phi 1$	K = 2.0 NOTE(1)	30	40	----	deg.	NOTE(2)
CONTRAST RATIO	K	$\Phi = 10^{\circ}$ NOTE(1)	4.0	5.0	----	----	NOTE(2)
RESPONSE TIME	tr (rise)	$\Phi = 10^{\circ}$ NOTE(1)	----	200	350	ms	NOTE(2)
	tf (fall)	$\Phi = 10^{\circ}$ NOTE(1)	----	300	400	ms	NOTE(2)

Brightness for LED backlight

SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	LED TYPE	NOTE
B	$\Phi = 0^{\circ}$	4.0	----	----	cd/m ²	YELLOW-GREEN、RED、 AMBER、ORANGE	NOTE(2)
	$\theta = 0^{\circ}$	6.0	----	----		BLUE、PURE GREEN、 WHITE	NOTE(3)

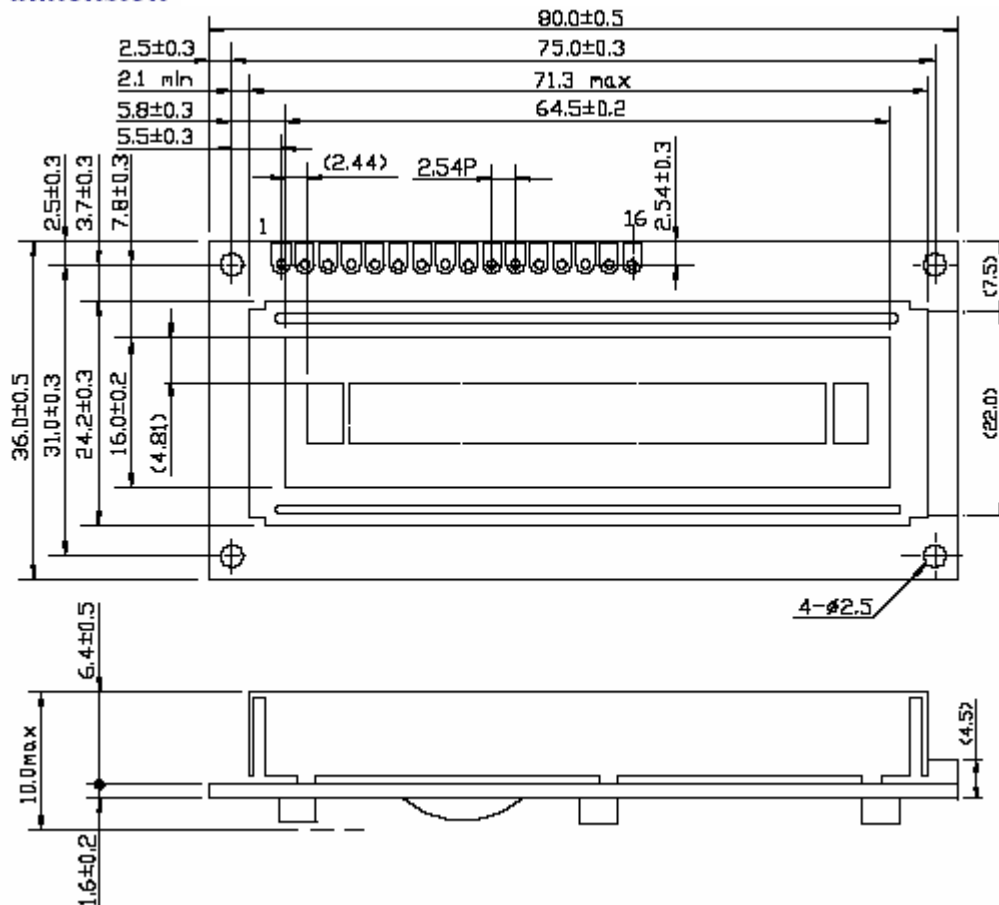
NOTE (1): $\theta = 0^{\circ}$ WHEN VIEWING ANGLE AT 6 O'CLOCK
 $\theta = 180^{\circ}$ WHEN VIEWING ANGLE AT 12 O'CLOCK

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

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

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

Outline dimension



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	15	16
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	A(+)	K(-)

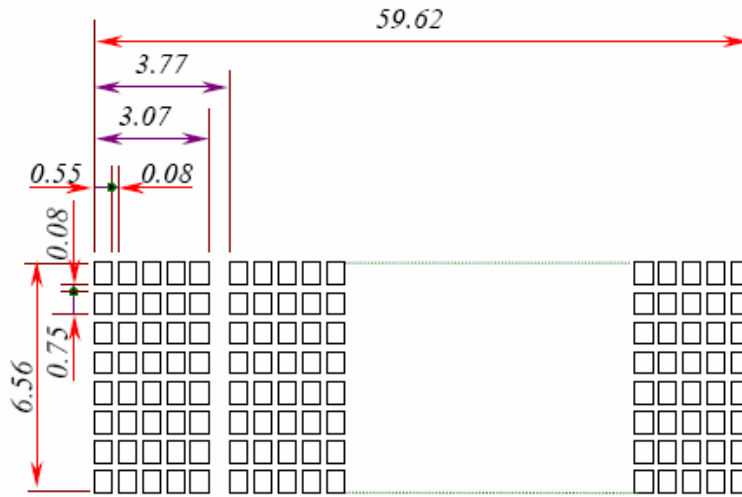
Interface pin

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	15	16
SYMBOL	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC

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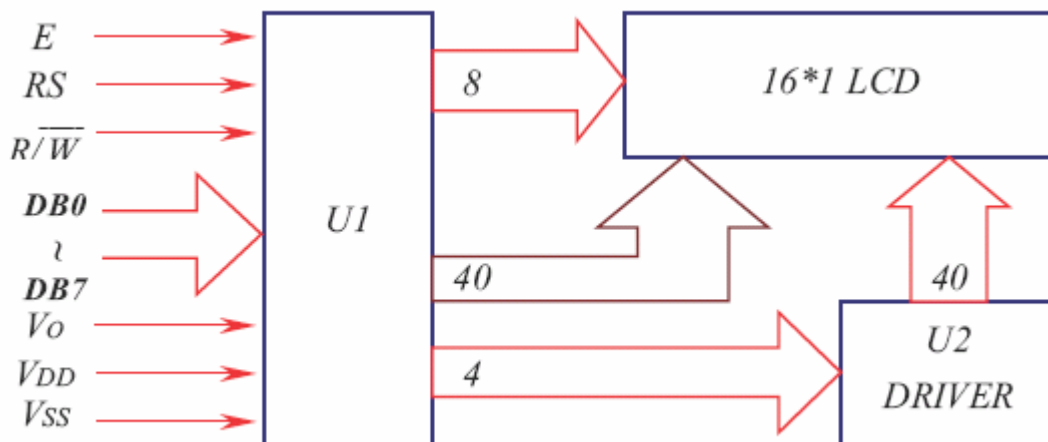
Block diagram

7. DETAIL DRAWING OF DOT MATRIX



NOTE :
 1. UNIT : mm
 2. SCALE : NTS

Block diagram



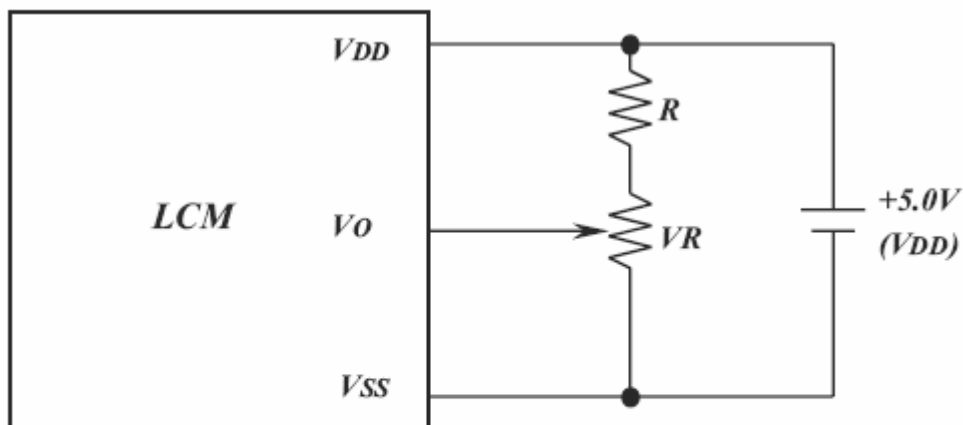
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Display data address charts

	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>
LINE 1	00	01	02	03	04	05	06	07	40	41	42	43	44	45	46	47

1 0 . POWER SUPPLY

1 0 . 1 POWER SUPPLY FOR LCD MODULE



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

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

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