



# ALL SHORE INDUSTRIES, INC.

## SPECIFICATION FOR LIQUID CRYSTAL DISPLAY MODULE

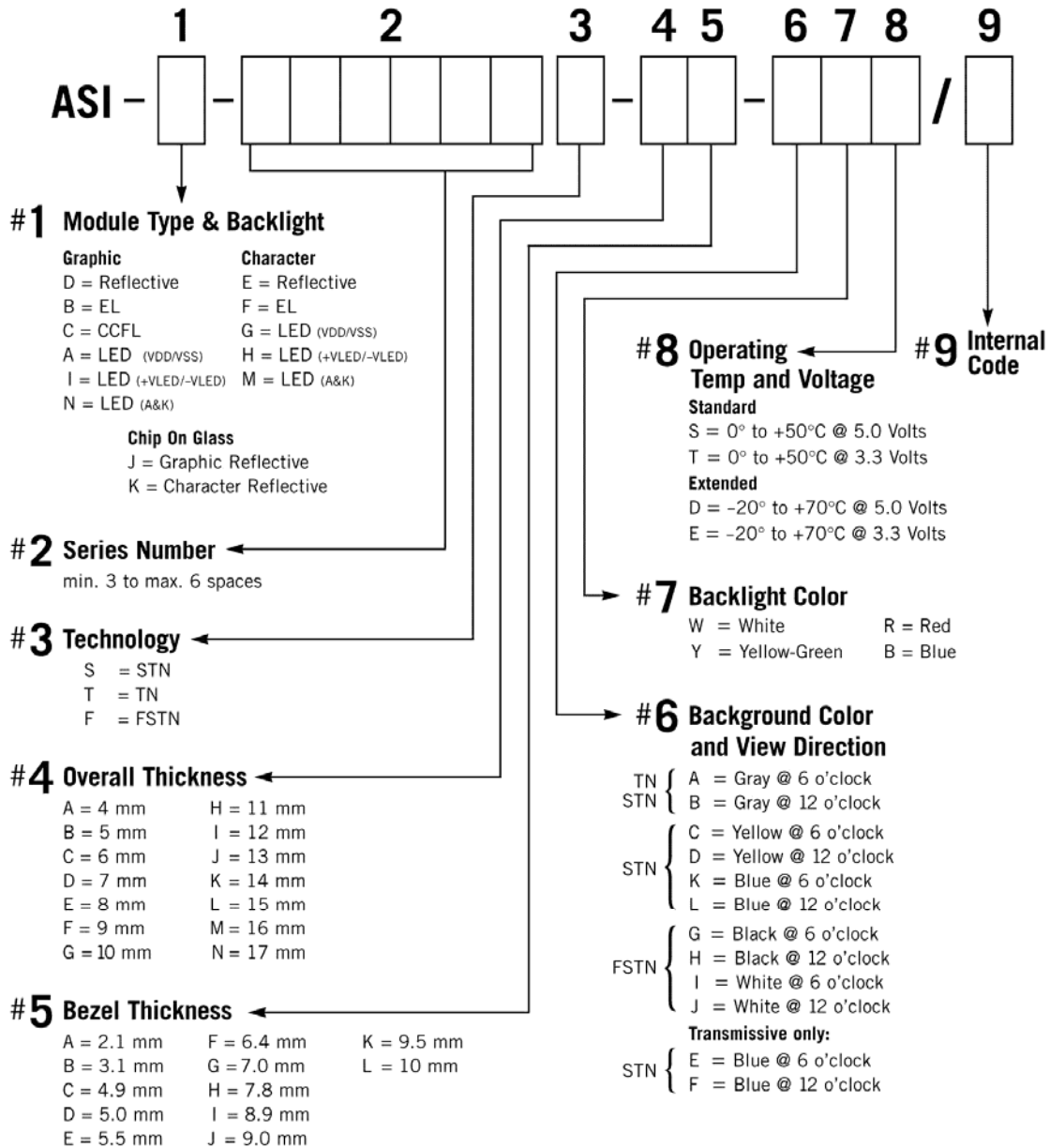
**MODULE # : ASI-\_-1903AS-LK-\_YS/W**

- (1) NUMBER OF DOT -----192 W \* 32 H DOTS
- (2) MODULE SIZE -----116.0 W \* 37.0 H \* 15.0 T (Max) mm
- (3) EFFECTIVE AREA -----84.0 W \* 19.0 H mm
- (4) ACTIVE AREA -----80.61 W \* 15.97 H mm
- (5) DOT SIZE-----0.39 W \* 0.47 H mm
- (6) DOT PITCH -----0.42 W \* 0.50 H mm
- (7) VIEWING DIRECTION -----6 O'CLOCK
- (8) LCD TYPE-----STN.YELLOW-GREEN.TRANSFLECTIVE
- (9) LED COLOR-----YELLOW-GREEN



MODEL NO : ASI\_-1903AS-LK-\_YS 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-\_-1903AS-LK-\_YS W**

1. GENERAL SPECIFICATIONS

1.1 GENERAL SPECIFICATIONS

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

**AS - 10-1000**

1.2 APPLICATION NOTES FOR CONTROLLER / DRIVER : ST7920 or equivalent

PLEASE REFER TO :

CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS :

ASI-10-10000

1.3 THIS INDIVIDUAL SPECIFICATIONS IS PRIOR TO GENERAL SPECIFICATIONS .

2. MECHANICAL SPECIFICATIONS

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## MODEL NO : ASI\_-1903AS-LK-\_YS W

### 3. ABSOLUTE MAXIMUM RATINGS

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

<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	VDD-VSS	-0.3	5.5	V	-----
POWER SUPPLY FOR LCD	Vo	-0.3	3.5	V	-----
INPUT VOLTAGE	VI	-0.3	VDD+0.3	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE(1)
POWER SUPPLY FOR LED	VLED	-----	6.0	V	-----

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

#### 3.1 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°C	50°C	-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): 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 (3): 1G = 9.8 m/s<sup>2</sup>



## MODEL NO : ASI\_-1903AS-LK-\_YS W

### 4. ELECTRICAL CHARACTERISTICS

Ta 25°C

<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 <sub>DD</sub> - V <sub>SS</sub>	-----	2.7	-----	5.5	V	
INPUT VOLTAGE	V <sub>IH</sub>	-----	0.7 V <sub>DD</sub>	-----	V <sub>DD</sub>	V	
	V <sub>IL</sub>	-----	-0.3	-----	0.6	V	
OUTPUT VOLTAGE	V <sub>OH</sub>	I <sub>OH</sub> = -0.1 mA	0.8V <sub>DD</sub>	-----	V <sub>DD</sub>	V	
	V <sub>OL</sub>	I <sub>OL</sub> = 0.1 mA	-----	-----	0.1	V	
POWER SUPPLY CURRENT	I <sub>DD</sub>	V <sub>DD</sub> - V <sub>SS</sub> = 5.0V	-----	0.5	1.0	mA	
RECOMMENDED LCD DRIVING VOLTAGE NOTE (1)	V <sub>O</sub> -V <sub>SS</sub>	DUTY = 1/32 Φ = 10° θ = 0°	Ta= 0°C	-----	-----	3.5	V
			Ta=25°C	-----	3.0	3.5	V
			Ta=50°C	-----	-----	3.5	V
POWER SUPPLY CURRENT FOR LED	I <sub>LED</sub>	V <sub>LED</sub> = 5.0V	-----	125	250	mA	

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



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5. OPTICAL CHARACTERISTICS

Ta = 25°C

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGEL	$\Phi 2 - \Phi 1$	$K = 2.0$ $\theta = 0^\circ$	30	40	-----	deg.	1
CONTRAST RATIO	K	$\Phi = 10^\circ$ $\theta = 0^\circ$	3.0	4.0	-----	-----	1
RESPONSE TIME	tr (rise)	$\Phi = 10^\circ$ $\theta = 0^\circ$	-----	200	350	ms	1
	tf (fall)	$\Phi = 10^\circ$ $\theta = 0^\circ$	-----	300	400	ms	1
BRIGHTNESS FOR LED BACKLIGHT	B	$\Phi = 0^\circ$ $\theta = 0^\circ$	5.0	-----	-----	cd/m <sup>2</sup>	1,2

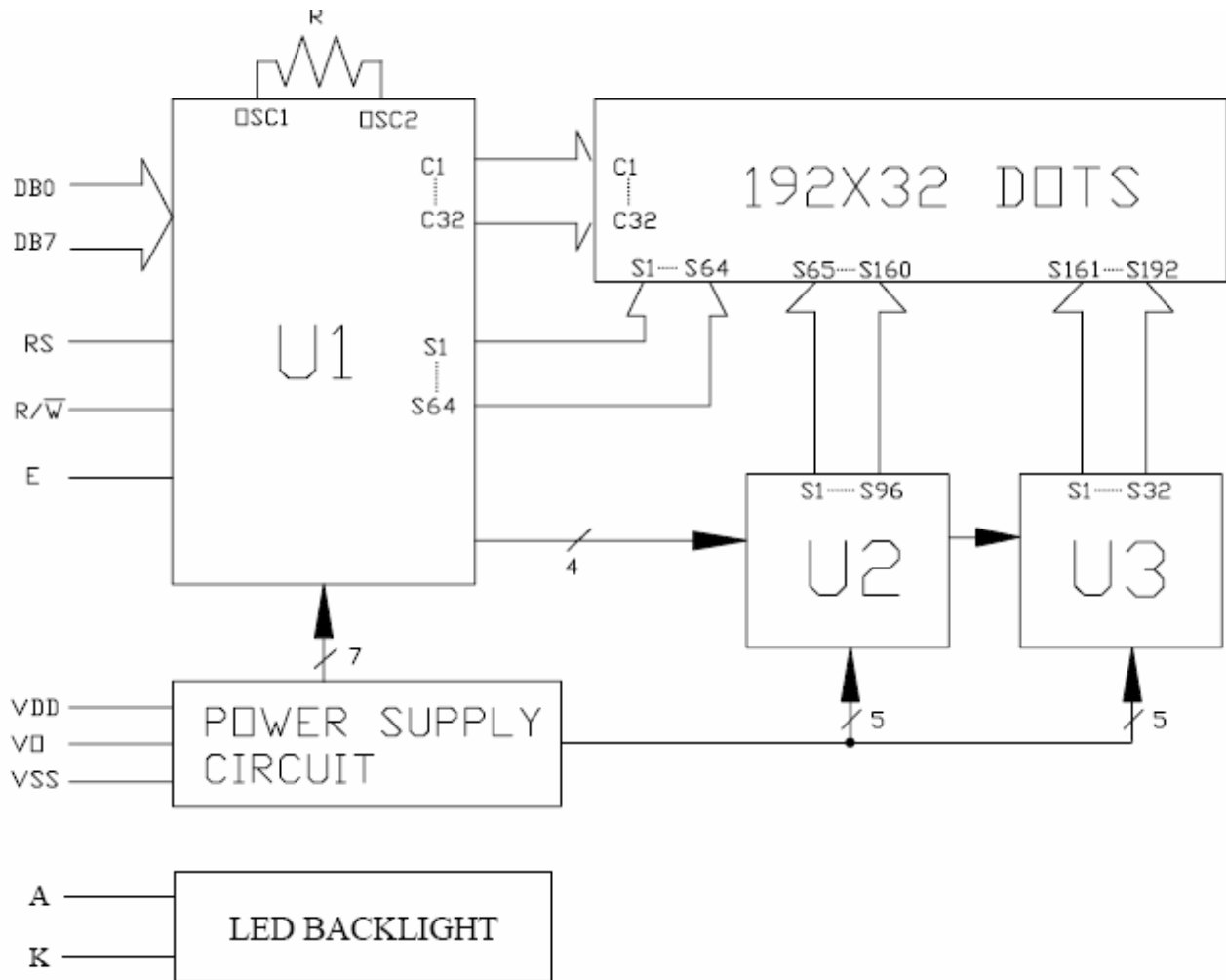
NOTE (1): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS.

NOTE (2): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM.



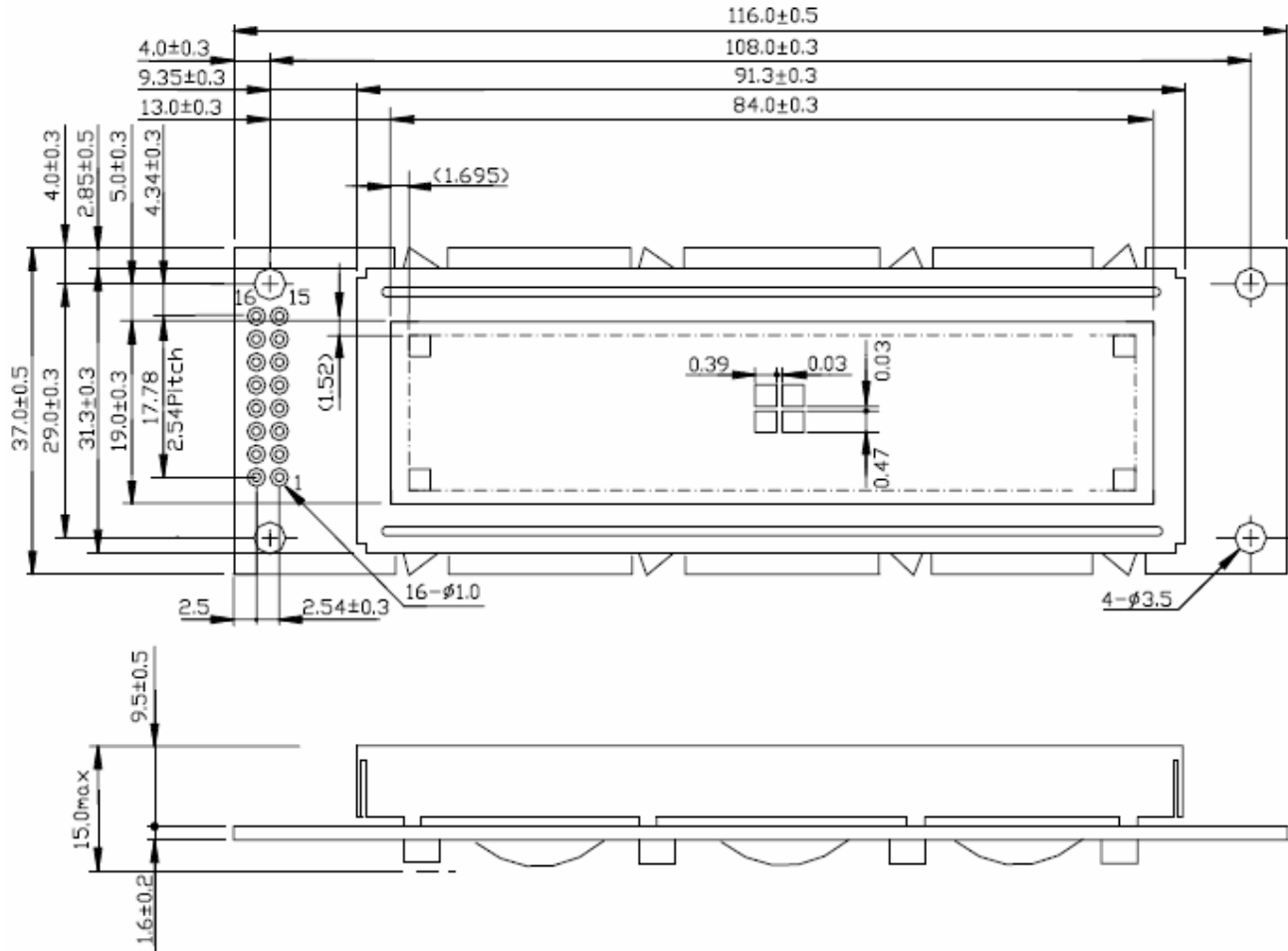
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6. BLOCK DIAGRAM



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7. OUTLINE DIMENSION



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

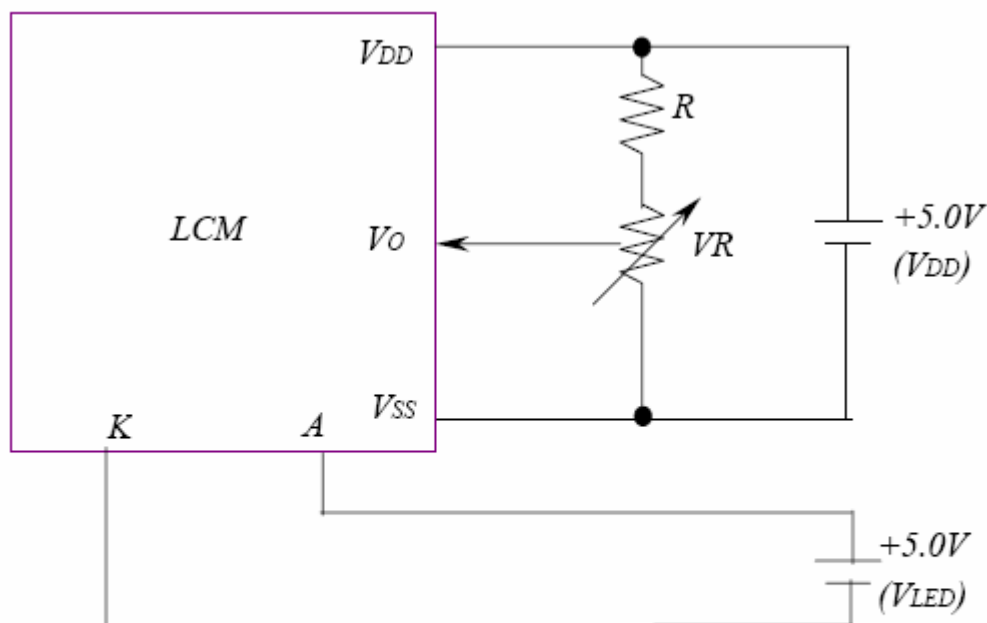




**MODEL NO : ASI-\_-1903AS-LK-\_YS W**

<i>PIN NO.</i>	<i>SYMBOL</i>	<i>FUNCTION</i>
1	V <sub>SS</sub>	POWER SUPPLY ( GND )
2	V <sub>DD</sub>	POWER SUPPLY ( +5V )
3	V <sub>o</sub>	POWER SUPPLY FOR LCD
4	RS	RS = "H" DB0~DB7 FOR DISPLAY DATA RS = "L" DB0~DB7 FOR CONTROL DATA
5	R/ $\bar{W}$	H: DATA READ ( LCD MODULE → MPU ) L: DATA WRITE ( LCD MODULE ← MPU )
6	E	ENABLE SINGAL
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	A	POWER SUPPLY FOR LED (+)
16	K	POWER SUPPLY FOR LED (-)

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

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

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

*The information presented in this datasheet has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Information contained herein is for selection purposes only, and is subject to change without notice. Please contact ASI for current datasheets prior to designing.*