



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**

## SPECIFICATION

**MODULE NO.: WG122320-TML-N#A**

### General Specification

Item	Dimension	Unit
Number of dots	122 x 32 dot	—
Module dimension	77.8 x 27.2 x 13.7(MAX)	mm
View area	60.0 x 18.0	mm
Active area	53.64 x 15.64	mm
Dot size	0.4 x 0.45	mm
Dot pitch	0.44 x 0.49	mm
LCD type	STN Negative, Blue Transmissive (In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.)	
Duty	1/32	
View direction	12 o'clock	
Backlight Type	LED White	
IC	SBN1661G	

## Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	$T_{OP}$	-20	—	+70	°C
Storage Temperature	$T_{ST}$	-30	—	+80	°C
Input Voltage	$V_I$	-0.3	—	$V_{DD}+0.3$	V
Supply Voltage For Logic	$V_{DD}-V_{SS}$	-0.3	—	+7.0	V
LCD bias voltage	$V_{LCD}$	0	—	13	V

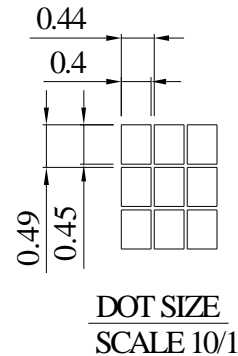
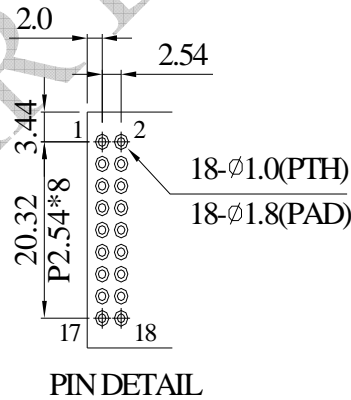
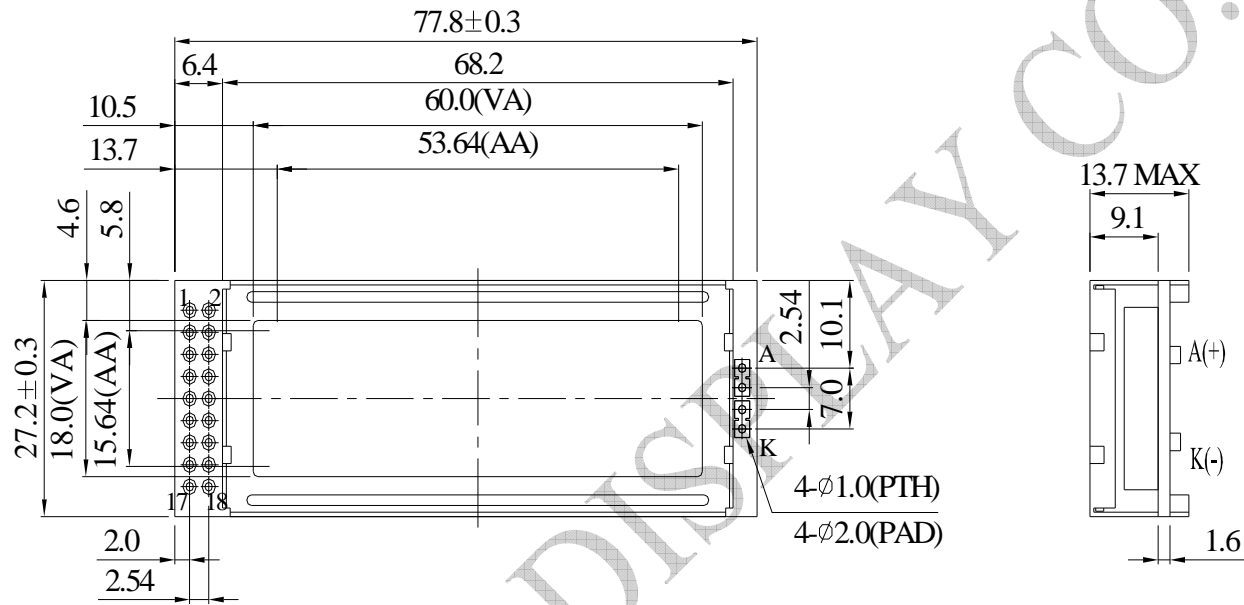
## Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	$V_{DD}-V_{SS}$	—	4.5	5.0	5.5	V
Supply Voltage For LCD	$V_{DD}-V_0$	$T_a=-20^{\circ}\text{C}$	—	—	—	V
*Note		$T_a=25^{\circ}\text{C}$	4.3	4.45	4.6	V
		$T_a=+70^{\circ}\text{C}$	—	—	—	V
Input High Volt.	$V_{IH}$	—	$0.7 V_{DD}$	—	$V_{DD}$	V
Input Low Volt.	$V_{IL}$	—	0	—	1.2	V
Output High Volt.	$V_{OH}$	—	$V_{DD}-0.3$	—	$V_{DD}$	V
Output Low Volt.	$V_{OL}$	—	0	—	0.3	V
Supply Current	$I_{DD}$	$V_{DD}=5.0\text{V}$	—	1.0	—	mA

# Interface Pin Function

Pin No.	Symbol	Level	Description
1	V <sub>ss</sub>	0V	Ground
2	V <sub>dd</sub>	5.0V	Power supply for logic
3	V <sub>o</sub>	(Variable)	Operating voltage for LCD
4	A0	H/L	H : Data L : Instruction
5	E1	H/L	Enable chip 1
6	E2	H/L	Enable chip 2
7	NC	—	NC
8	NC	—	NC
9	R/W	H/L	H : Read ; L : Write
10	DB0	H/L	Data bus line
11	DB1	H/L	Data bus line
12	DB2	H/L	Data bus line
13	DB3	H/L	Data bus line
14	DB4	H/L	Data bus line
15	DB5	H/L	Data bus line
16	DB6	H/L	Data bus line
17	DB7	H/L	Data bus line
18	/RST	H/L	H -> L: The LCM be reset

# Contour Drawing & Block Diagram



PIN NO.	SYMBOL
1	Vss
2	Vdd
3	V0
4	A0
5	E1
6	E2
7	NC
8	NC
9	R/W
10	DB0
11	DB1
12	DB2
13	DB3
14	DB4
15	DB5
16	DB6
17	DB7
18	RST