



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



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WEB: <https://www.winstar.com.tw> E-mail: sales@winstar.com.tw

SPECIFICATION

MODULE NO.: **WG20232A**

General Specification

Item	Dimension	Unit
Number of Characters	202 x 32	—
Module dimension	146.0 x 43.0 x 13.7(MAX)	mm
View area	123.0 x 23.0	mm
Active area	119.16 x 18.86	mm
Dot size	0.57 x 0.57	mm
Dot pitch	0.59x 0.59	mm
Duty	1/32	
Backlight Type	LED	
IC	SBN1661G-M18	
Interface	6800	

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	—	+6.0	V
LCD bias voltage	V_{LCD}	3.5	—	13	V

Electrical Characteristics

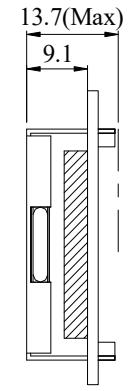
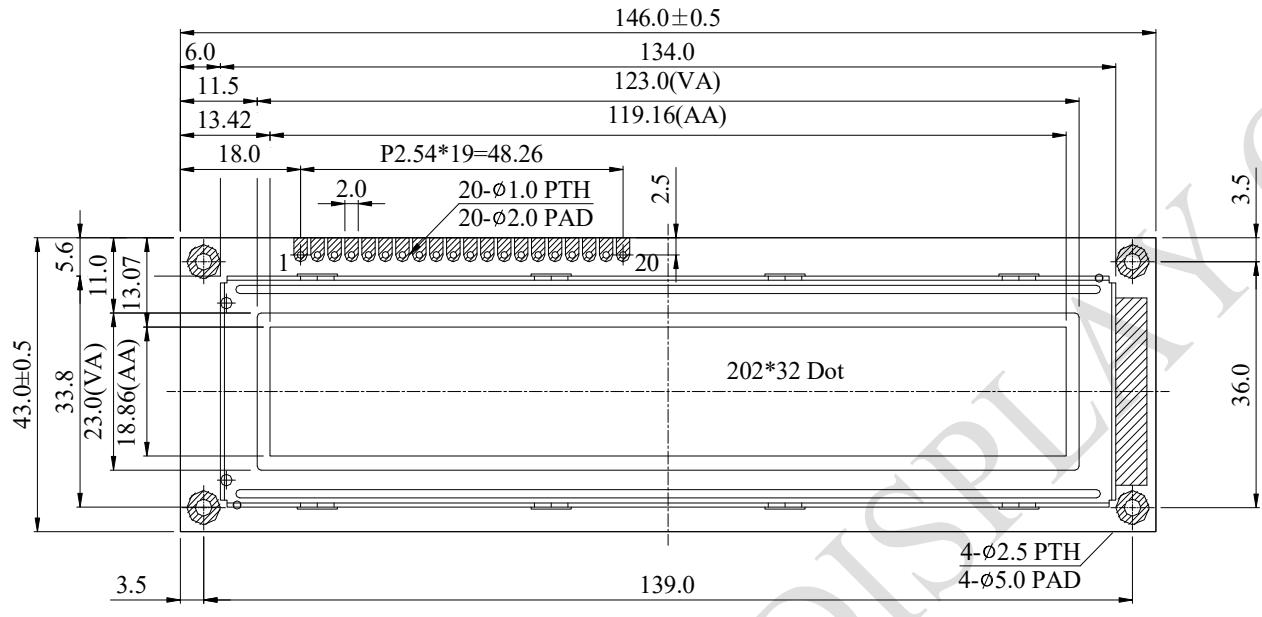
Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Logic	$V_{DD}-V_{SS}$	—	4.5	5.0	5.5	V
Supply Voltage For LCD	$V_{DD}-V_0$	Ta=-20°C	—	—	—	V
		Ta=25°C	4.8	5.0	5.2	V
		Ta=+70°C	—	—	—	V
Input High Volt.	V_{IH}	$V_{DD}=5.0V$	3.0	5.0	$V_{DD}+0.5$	V
Input Low Volt.	V_{IL}	—	0	0.7	1.1	V
Output High Volt.	V_{OH}	—	$V_{DD}-0.3$	—	V_{DD}	V
Output Low Volt.	V_{OL}	—	0	—	0.3	V
Supply Current	I_{DD}	$V_{DD}=5.0V$	—	10.0	—	mA

Interface Pin Function

Pin No.	Symbol	Level	Description
1	VSS	0V	Ground
2	VDD	5.0V	Power Supply
3	VO	(Variable)	Operating voltage for LCD
4	A0	H/L	H : Data L : Instruction
5	R/W	H/L	Read/Write (R/W) signal for the 68-type microcontroller 68-type microcotroller is selected as the host microcontroller, this pin should be connected to the R/W output of the microcontroller. A HIGH level on this pin indicates that the microcontroller intends to read from the SBN1661G_X series. A LOW level on this pin indicates that the microcontroller intends to write to the SBN1661G_X series.
6	CS1	H/L	Enable signal (E) for the 68-type microcontroller. 68-type microcotroller is selected as the host microcontroller, this pin should be connected to the ENABLE output of the microcontroller. A HIGH level on this pin indicates that the microcontroller intends to select the SBN1661G_X series.
7	DB0	H/L	Bi-direction, tri-state 8-bit parallel data bus for interface with a host microcontroller. This data bus is for data transfer between the host microcontroller and the SBN1661G_X.
8	DB1	H/L	Bi-direction, tri-state 8-bit parallel data bus for interface with a host microcontroller.
9	DB2	H/L	This data bus is for data transfer between the host microcontroller and the SBN1661G_X.
10	DB3	H/L	Bi-direction, tri-state 8-bit parallel data bus for interface with a host microcontroller.
11	DB4	H/L	This data bus is for data transfer between the host microcontroller and the SBN1661G_X.
12	DB5	H/L	Bi-direction, tri-state 8-bit parallel data bus for interface with a host microcontroller.
13	DB6	H/L	This data bus is for data transfer between the host microcontroller and the SBN1661G_X.
14	DB7	H/L	Bi-direction, tri-state 8-bit parallel data bus for interface with a host microcontroller.
15	VEE	-	Negative Voltage Output
16	RES	H/L	Hardware RESET and interface type selection.

			<p>This pin is a dual function pin. It can be used to reset the SBN1661G_X and select the type of interface timing.</p> <p>Negative RESET pulse</p> <p>Interface timing for the 68-type microcontroller is selected.</p> <p>RESET pulse interface timing selection</p>
17	A	—	Power Supply for LED backlight (+)
18	K	—	Power Supply for LED backlight (-)
19	CS2	H/L	<p>Enable signal (E) for the 68-type microcontroller.</p> <p>68-type microcontroller is selected as the host microcontroller, this pin should be connected to the ENABLE output of the microcontroller. A HIGH level on this pin indicates that the microcontroller intends to select the SBN1661G_X series.</p>
20	CS3	H/L	<p>Enable signal (E) for the 68-type microcontroller.</p> <p>If a 68-type microcontroller is selected as the host microcontroller, this pin should be connected to the ENABLE output of the microcontroller. A HIGH level on this pin indicates that the microcontroller intends to select the SBN1661G_X series.</p>

Contour Drawing



LED B/L

PIN NO.	SYMBOL
1	V _{ss}
2	V _{dd}
3	V _o
4	A ₀
5	R/W
6	CS1
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	V _{ee}
16	RES
17	A
18	K
19	CS2
20	CS3

The non-specified tolerance of dimension is $\pm 0.3\text{mm}$.

