



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

## SPECIFICATION

**MODULE NO.:**

**WH2002D**

### General Specification

Item	Dimension	Unit
Number of Characters	20 Characters x 2 Lines	—
Module dimension	89.0 x 21.5 x 9.0 (MAX)	mm
View area	75.0 x 15.0	mm
Active area	68.5x 10.7	mm
Dot size	0.55 x 0.60	mm
Dot pitch	0.60 x 0.65	mm
Character size	2.95 x 5.15	mm
Character pitch	3.45 x 5.55	mm
Duty	1/16	
Backlight Type	LED	
IC	ST7066U	
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	$V_I$	$V_{SS}$	—	$V_{DD}$	V
Supply Voltage For Logic	$V_{DD}-V_{SS}$	-0.3	—	7	V
Supply Voltage For LCD	$V_{DD}-V_0$	-0.3	—	13	V

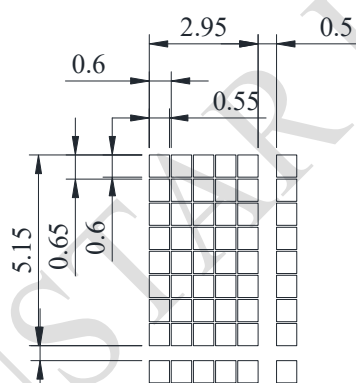
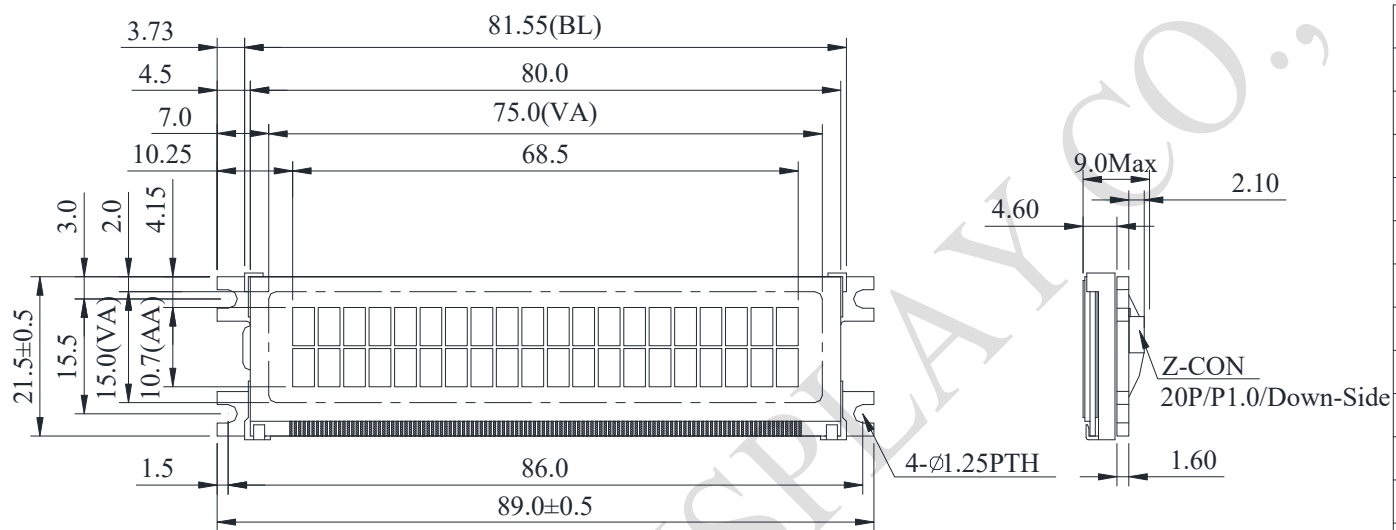
## Electrical Characteristics

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	$V_{DD}-V_0$	$T_a=-20^{\circ}\text{C}$	—	—	5.2	V
		$T_a=25^{\circ}\text{C}$	4.1	4.2	4.3	V
		$T_a=70^{\circ}\text{C}$	3.6	—	—	V
Input High Volt.	$V_{IH}$	—	$0.7 V_{DD}$	—	$V_{DD}$	V
Input Low Volt.	$V_{IL}$	—	$V_{SS}$	—	0.6	V
Output High Volt.	$V_{OH}$	—	3.9	—	$V_{DD}$	V
Output Low Volt.	$V_{OL}$	—	0	—	0.4	V
Supply Current	$I_{DD}$	$V_{DD}=5.0\text{V}$	1.0	1.2	1.5	mA

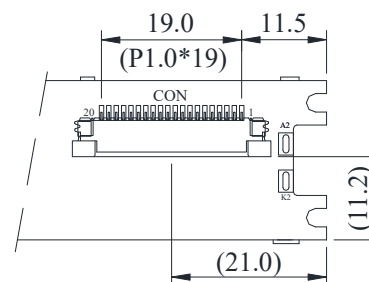
# Interface Pin Function

Pin No.	Symbol	Level	Description
1	NC	—	No connection
2	NC	—	No connection
3	V <sub>SS</sub>	0V	Ground
4	V <sub>DD</sub>	5.0V	Supply Voltage for logic
5	VO	(Variable)	Operating voltage for LCD
6	RS	H/L	H: DATA, L: Instruction code
7	R/W	H/L	H: Read L: Write
8	E	H,H→L	Chip enable signal
9	DB0	H/L	Data bus line
10	DB1	H/L	Data bus line
11	DB2	H/L	Data bus line
12	DB3	H/L	Data bus line
13	DB4	H/L	Data bus line
14	DB5	H/L	Data bus line
15	DB6	H/L	Data bus line
16	DB7	H/L	Data bus line
17	VLED+	—	Power supply for LED +
18	VLED-	—	Power supply for LED—
19	NC	—	No connection
20	NC	—	No connection

# Contour Drawing



DOT SIZE  
 SCALE 5/1



CON DETAIL  
 Component Side

PIN NO.	SYMBOL
1	NC
2	NC
3	Vss
4	Vdd
5	Vo
6	RS
7	R/W
8	E
9	DB0
10	DB1
11	DB2
12	DB3
13	DB4
14	DB5
15	DB6
16	DB7
17	VLED+
18	VLED-
19	NC
20	NC

The non-specified tolerance of dimension is ±0.3mm.