



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



**Winstar Display Co., LTD**

**華凌光電股份有限公司**

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



## SPECIFICATION

**MODULE NO.:**

**WH2002A2**

### General Specification

| Item                 | Dimension                 | Unit |
|----------------------|---------------------------|------|
| Number of Characters | 20 characters x 2Lines    | —    |
| Module dimension     | 116.0 x 37.0 x 13.9 (MAX) | mm   |
| View area            | 85.0 x 18.6               | mm   |
| Active area          | 73.5x 11.5                | mm   |
| Dot size             | 0.60 x 0.65               | mm   |
| Dot pitch            | 0.65 x 0.70               | mm   |
| Character size       | 3.20 x 5.55               | mm   |
| Character pitch      | 3.70 x 5.95               | mm   |
| Duty                 | 1/16                      |      |
| Backlight Type       | LED                       |      |
| IC                   | RW1063                    |      |
| Interface            | IIC                       |      |

# 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            | $V_{IN}$        | -0.3         | —   | $V_{DD}+0.3$ | V    |
| Supply Voltage For Logic | $V_{DD}-V_{SS}$ | -0.3         | —   | 5.5          | V    |
| Supply Voltage For LCD   | $V_{DD}-V_0$    | $V_{SS}-0.3$ | —   | $V_{SS}+7.0$ | V    |

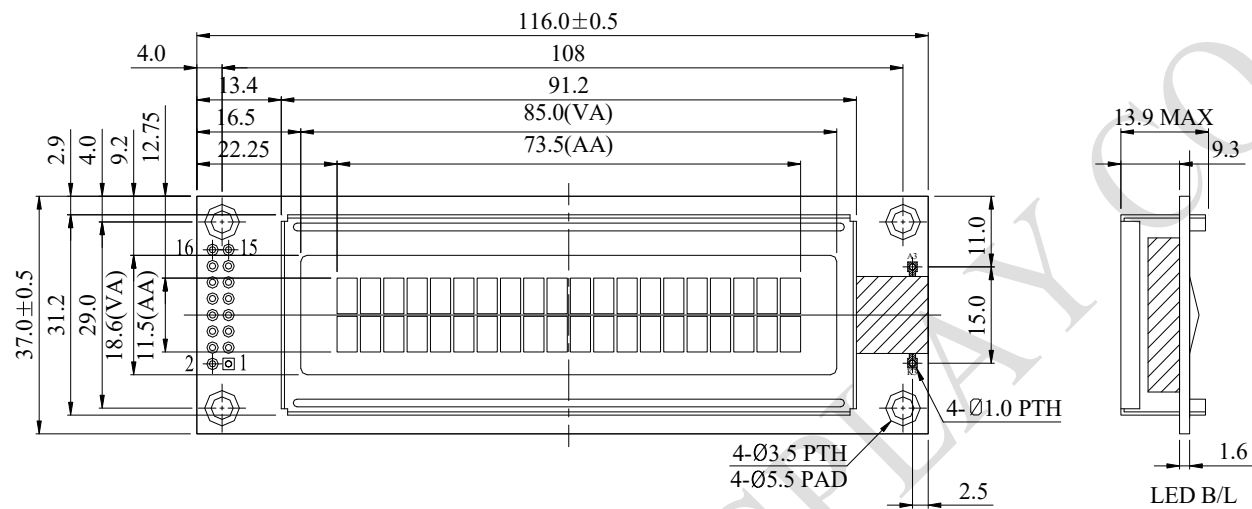
# Electrical Characteristics

| 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   | $V_{DD}-V_0$    | $T_a=-20^{\circ}\text{C}$ | —    | —    | 5.7      | V    |
|                          |                 | $T_a=25^{\circ}\text{C}$  | 4.2  | 4.35 | 4.5      | V    |
|                          |                 | $T_a=70^{\circ}\text{C}$  | 3.8  | —    | —        | V    |
| Input High Volt.         | $V_{IH}$        | —                         | 2.5  | —    | $V_{DD}$ | V    |
| Input Low Volt.          | $V_{IL}$        | —                         | -0.3 | —    | 0.55     | V    |
| Output High Volt.        | $V_{OH}$        | —                         | 3.9  | —    | $V_{DD}$ | V    |
| Output Low Volt.         | $V_{OL}$        | —                         | —    | —    | 0.4      | V    |
| Supply Current           | $I_{DD}$        | $V_{DD}=5.0\text{V}$      | 1.0  | 1.2  | 1.5      | mA   |

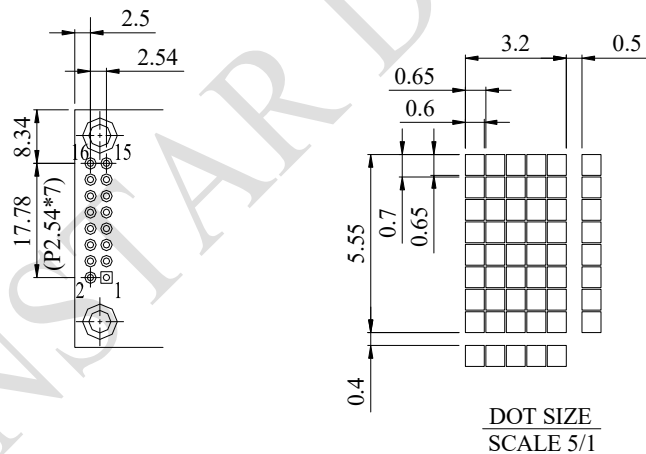
# Interface Pin Function

| Pin No. | Symbol          | Level      | Description                                                                                                                                  |
|---------|-----------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | V <sub>SS</sub> | 0V         | Ground                                                                                                                                       |
| 2       | V <sub>DD</sub> | 5.0V       | Supply Voltage for logic                                                                                                                     |
| 3       | VO              | (Variable) | Operating voltage for LCD                                                                                                                    |
| 4       | NC              | —          | No connection                                                                                                                                |
| 5       | NC              | —          | No connection                                                                                                                                |
| 6       | NC              | —          | No connection                                                                                                                                |
| 7       | SA0             | H/L        | In IIC interface ,DB1(SA1) and DB0(SA0) are used for Slave address, must be connect to VDD or VSS                                            |
| 8       | SA1             | H/L        |                                                                                                                                              |
| 9       | NC              | —          | No connection                                                                                                                                |
| 10      | NC              | —          | No connection                                                                                                                                |
| 11      | NC              | —          | No connection                                                                                                                                |
| 12      | CSB             | H/L        | In IIC serial mode, used as chip selection input.<br>When CSB = “Low”, selected<br>When CSB = “High”, not selected.<br>( Low access enable ) |
| 13      | SDA             | H/L        | serial input data                                                                                                                            |
| 14      | SCL             | H/L        | serial clock input                                                                                                                           |
| 15      | A               | —          | Power supply for B/L +                                                                                                                       |
| 16      | K               | —          | Power supply for B/L -                                                                                                                       |

# Contour Drawing



| PIN NO. | SYMBOL |
|---------|--------|
| 1       | Vss    |
| 2       | Vdd    |
| 3       | Vo     |
| 4       | NC     |
| 5       | NC     |
| 6       | NC     |
| 7       | SA0    |
| 8       | SA1    |
| 9       | NC     |
| 10      | NC     |
| 11      | NC     |
| 12      | CSB    |
| 13      | SDA    |
| 14      | SCL    |
| 15      | A      |
| 16      | K      |



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