



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 |

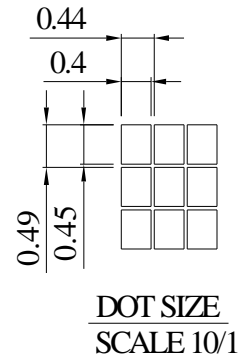
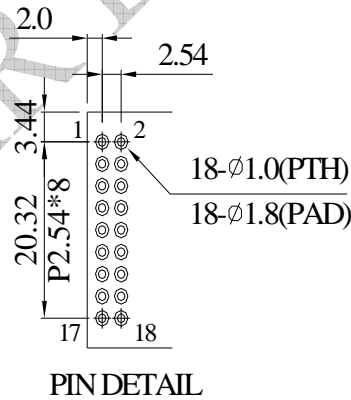
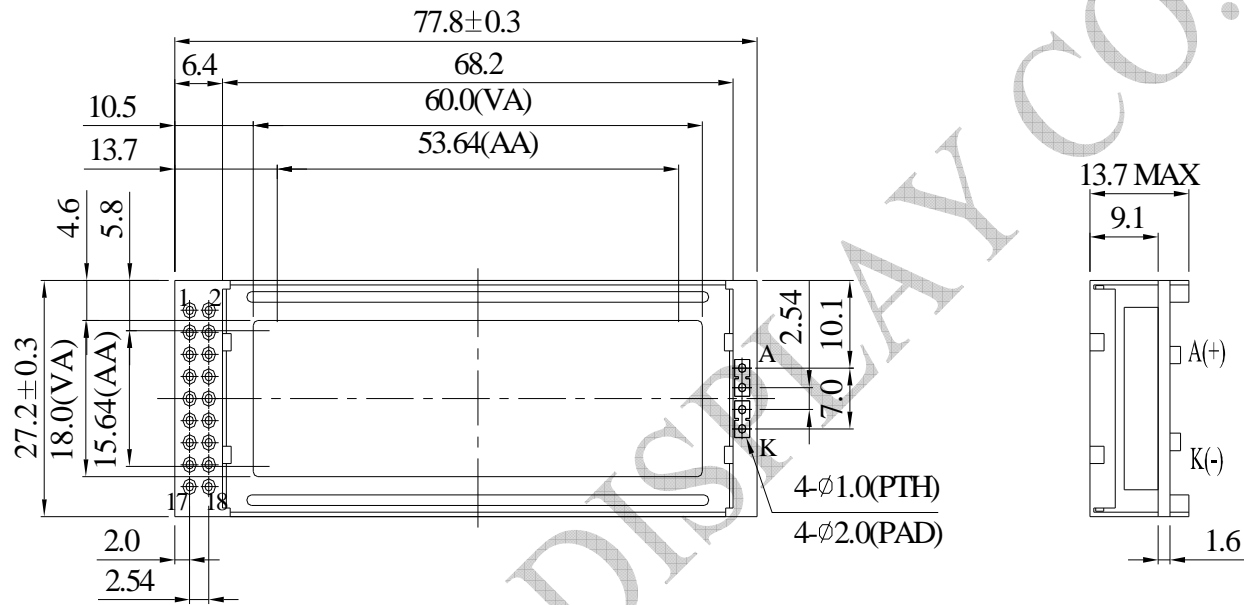
Electrical Characteristics

| 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 _{ss} | 0V | Ground |
| 2 | V _{dd} | 5.0V | Power supply for logic |
| 3 | V _o | (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 |