**Winstar Display Co., LTD**
**華凌光電股份有限公司**

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# SPECIFICATION

## CUSTOMER :

## MODULE NO.: WG240128B-TMI-VZ#000

| ITEM | STANDARD VALUE | UNIT |
|---|---|---|
| Number of Dots: | 240 ×128 | |
| Module dimension: | 144.0×104.0×15.8(MAX)mm | mm |
| View area: | 114.0×64.0mm | mm |
| Active area: | 107.98×57.58mm | mm |
| Character size: | (L)0.43×(W)0.43 mm | mm |
| Character pitch: | (L)0.45×(W)0.45mm | mm |
| LCD type: | STN , Negative , transmissive ,Blue<br>(In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.) | |
| Duty: | 1/128 | |
| View direction: | 6 o'clock | |
| Backlight: | LED ,White | |

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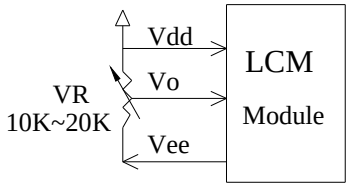
## .Absolute Maximum Ratings

| ITEM | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|
| Operating Temperature | $T_{OP}$ | -20 | - | +70 | ℃ |
| Storage Temperature | $T_{ST}$ | -30 | - | +80 | ℃ |
| 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 | - | 21 | V |

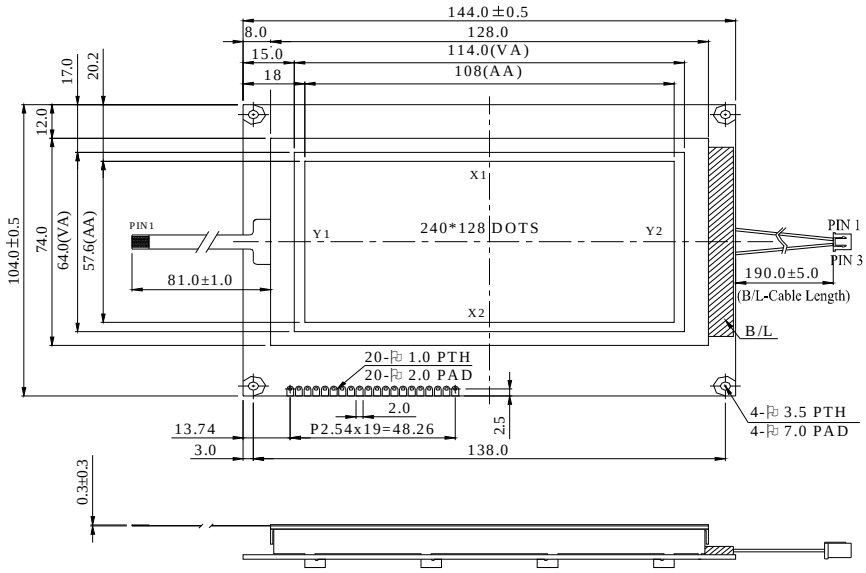
## Electrical Characteristics

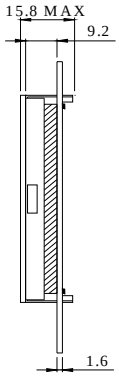
| ITEM | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Supply Voltage For Logic | $V_{DD}$-$V_{SS}$ | - | 3.0 | - | 5.5 | V |
| Supply Voltage For LCD<br>*Note | $V_{DD}$-$V_0$ | Ta=-20℃<br>Ta=25℃<br>Ta=+70℃ | -<br>-<br>17.6 | -<br>19.5<br>- | 21.7<br>-<br>- | V<br>V<br>V |
| Input High Vol | $V_{IH}$ | - | 0.8$V_{DD}$ | - | $V_{DD}$ | V |
| Input Low Vol | $V_{IL}$ | - | 0 | - | 0.2$V_{DD}$ | V |
| Output High Vol | $V_{OH}$ | - | $V_{DD}$ -0.3 | - | $V_{DD}$ | V |
| Output Low Vol. | $V_{OL}$ | - | 0 | - | 0.3 | V |
| Supply Current | $I_{DD}$ | - | 46 | 58 | 65 | mA |

* Note: Please design the VOP adjustment circuit on customer's main board



# Counter Drawing & Block Diagram

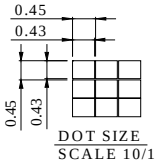


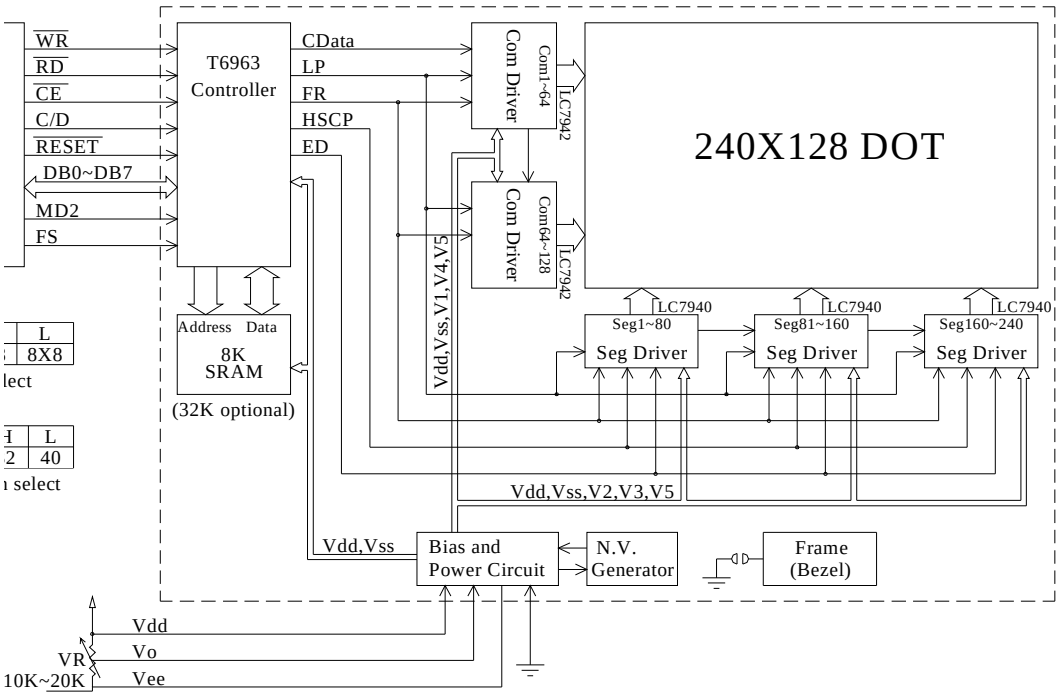




| PIN NO. | SYMBOL |
|---|---|
| 1 | Vss |
| 2 | Vdd |
| 3 | Vo |
| 4 | C/D |
| 5 | $\overline{RD}$ |
| 6 | $\overline{WR}$ |
| 7 | DB0 |
| 8 | DB1 |
| 9 | DB2 |
| 10 | DB3 |
| 11 | DB4 |
| 12 | DB5 |
| 13 | DB6 |
| 14 | DB7 |
| 15 | $\overline{CE}$ |
| 16 | $\overline{RESET}$ |
| 17 | Vee |
| 18 | MD2 |
| 19 | FS1 |
| 20 | NC |

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

| PIN NO. | Assignment |
|---|---|
| 1 | X1 |
| 2 | Y1 |
| 3 | X2 |
| 4 | Y2 |




ontrast adjustment.

# Interface Pin Function

| Pin No. | Symbol | Level | Description |
|---|---|---|---|
| 1 | Vss | | GND |
| 2 | Vdd | | Power supply |
| 3 | Vo | | Power supply for LCD driver |
| 4 | C/D | H / L | WR=L , C/D=H : Command Write C/D=L: Data write<br>RD=L , C/D=H : Status Read C/D=L: Data read |
| 5 | RD | L | Data read. Read data from RA6963 when RD = L |
| 6 | WR | L | Data write. Write data into RA6963 when WR = L |
| 7 | DB0 | H / L | Data bus line |
| 8 | DB1 | H / L | Data bus line |
| 9 | DB2 | H / L | Data bus line |
| 10 | DB3 | H / L | Data bus line |
| 11 | DB4 | H / L | Data bus line |
| 12 | DB5 | H / L | Data bus line |
| 13 | DB6 | H / L | Data bus line |
| 14 | DB7 | H / L | Data bus line |
| 15 | CE | L | L : Chip enable |
| 16 | RESET | H / L | H : Normal ; L : Initialize RA6963 |
| 17 | Vee | | Negative Voltage output( -16 V ) |
| 18 | MD2 | H / L | H: 32 columns ; L: 40 columns |
| 19 | FS1 | H / L | Pins for selection of font ; H : 6 * 8 , L : 8 * 8 |
| 20 | N.C | | No connection |