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# SPECIFICATION FOR APPROVAL

( ● ) Preliminary Specification

(  ) Final Specification

**MODEL NAME : ET195BA01-RS**

**APPROVED BY**

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**REVIEWED BY**

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**PREPARED BY**

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# 1. General Description

This specification applies to the 19.5 inch Color TFT-LCD SKD model ET195BA01-RS . This Open Cell Unit has a TFT active matrix type liquid crystal panel with 1,920x540 pixels and LVDS interface; which can display up to16.7 million colors.

*** General Information**

| Items | Specification | Unit | Note |
|---|---|---|---|
| Active Screen Size | 19.5 inches diagonal | inch | |
| Display Area | 476.6 (H) x134.6(V) | mm | |
| Outline Dimension | 506.2（H）* 164.1(V)*17.1((D) | mm | D:MAX |
| Driver Element | a-Si TFT Active Matrix | | |
| Display Colors | 8bit (16.7M) | colors | |
| Number of Pixels | 1920 horiz. by 540 vert | pixel | |
| Pixel Arrangement | RGB Vertical strip | | |
| Display Mode | Normally black | | |
| Surface Treatment | Anti-Glare，3H | | |
| Interface | LVDS (2 ch, 8-bit) | | |
| Center Luminance of White | 1500 | nits | |
| Relative degree | 1000:1 | | |
| Weight | TBD | kg | |

## 2. Absolute Maximum Ratings

The followings are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

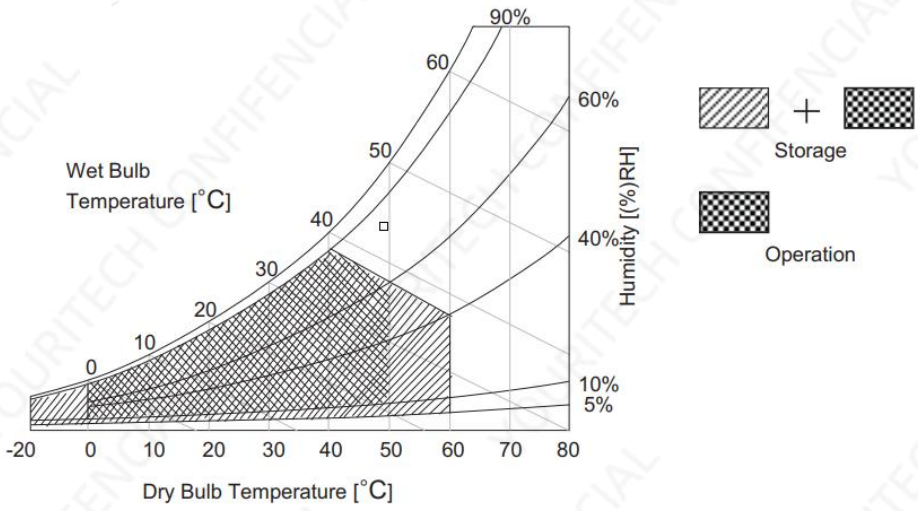
| Item | Symbol | Min | Max | Unit | Note |
|---|---|---|---|---|---|
| Logic/LCD Drive Voltage | VDD | -0.3 | 14 | [Volt] | 1 |
| T-Con Option Selection Voltage | Vin | -0.3 | 4 | [Volt] | 1 |
| Operating Temperature | TOP | -20 | +60 | [℃] | 2 |
| Operating Humidity | HOP | 10 | 90 | [%RH] | 2 |
| Storage Temperature | TST | -20 | 60 | [℃] | 2 |
| Storage Humidity | HST | 10 | 90 | [%RH] | 2 |
| Panel Surface Temperature | PST | | 65 | [℃] | 3 |

Note 1: Duration:50 msec.

Note 2:Maximum Wet-Bulb should be 39C and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40 C or less. At temperatures greater than 40°C, the wet bulb temperature must not exceed 39C.

Note 3: Surface temperature is measured at 50C Dry condition



# 3. Electrical Specification

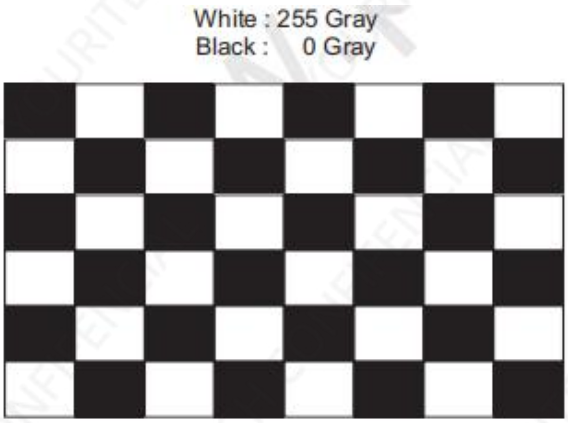
## 3-1 TFT LCD Module

### 3-1-1 Power Specification

| Item | | Symbol | Vaule | | | Unit | Note |
|---|---|---|---|---|---|---|---|
| | | | Min | TYP | Max | | |
| Power Input Voltage | | VLCD | 4..5 | 5.0 | 5.5 | VDC | |
| Power Input Current | | ILCD | - | 460 | 550 | mA | 1 |
| T-CON Option U-Selection Voltage | Input High Voltage | VIH | 2.7 | - | 3.3 | VDC | |
| | Input Low Voltage | VIL | 0 | - | 0.6 | | |
| Power Consumption | | PLCD | - | 2.3 | 2.75 | Watt | 1 |
| Rush current | | | - | - | 3.0 | A | 2 |

NOTE:

1. The specified current and power consumption are under the VLCD=12.0V, Ta=25±℃, fV=60Hz condition, and mosaic pattern(8 x 6) is displayed and fV is the frame frequency.
2. The current and power consumption are specified at the maximum current pattern.
3. The duration of rush current is about 2ms and rising time of power input is 0.5ms (min.).
4. Ripple voltage level is recommended under ±5% of typical voltage




Mosaic Pattern(8 x 6)

Max Current Pattern (White)

## 3-2. Interface Connections

**30-pin connector is used for the module electronics.**

3-2-1. LCD Module

- LCD Connector:FI-X30HL (JAE)

| PIN NO | Symbol | Description | Remark |
|---|---|---|---|
| 1 | RxO0- | Negative LVDS differential data input (Odd data) | |
| 2 | RxO0+ | Positive LVDS differential data input (Odd data) | |
| 3 | RxO1- | Negative LVDS differential data input (Odd data) | |
| 4 | RxO1+ | Positive LVDS differential data input (Odd data) | |
| 5 | RxO2- | Negative LVDS differential data input (Odd data) | |
| 6 | RxO2+ | Positive LVDS differential data input (Odd data) | |
| 7 | GND | Ground | |
| 8 | RxOCLK- | Negative LVDS differential clock input (Odd clock) | |
| 9 | RxOCLK+ | Positive LVDS differential clock input (Odd clock) | |
| 10 | RxO3- | Negative LVDS differential data input (Odd data) | |
| 11 | RxO3+ | Positive LVDS differential data input (Odd data) | |
| 12 | RxE0- | Negative LVDS differential data input (Even data) | |
| 13 | RxE0+ | Positive LVDS differential data input (Even data) | |
| 14 | GND | Ground | |
| 15 | RxE1- | Negative LVDS differential data input (Even data) | |
| 16 | RxE1+ | Positive LVDS differential data input (Even data) | |
| 17 | GND | Ground | |
| 18 | RxE2- | Negative LVDS differential data input (Even data) | |
| 19 | RxE2+ | Positive LVDS differential data input (Even data) | |
| 20 | RxECLK- | Negative LVDS differential clock input (Even clock) | |
| 21 | RxECLK+ | Positive LVDS differential clock input (Even clock) | |
| 22 | RxE3- | Negative LVDS differential data input (Even data) | |
| 23 | RxE3+ | Positive LVDS differential data input (Even data) | |
| 24 | GND | Ground | |
| 25 | NC | No Connection | |
| 26 | NC | No Connection | |
| 27 | NC | No Connection | |
| 28 | VCC | Power Supply Input Voltage | |
| 29 | VCC | Power Supply Input Voltage | |
| 30 | VCC | Power Supply Input Voltage | |

# 4. Backlight Electrical Specification

## 4-1 Electrical Specification

| Parameter | | | Symbol | Values | | | Unit | Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | Min | Typ | Max | | |
| Power Supply Input Voltage | | | VBL | 11.5 | 12 | 13 | Vdc | |
| Power Supply Input Current | | | IBL | | - | | A | |
| Power Consumption (Total) | | | PBL | | - | | W | MAX |
| Input Voltage for Control System Signals | On/Off | On | Von | 2 | | 5 | Vdc | |
| | | Off | Voff | 0 | | 0.5 | Vdc | |
| | External PWM Duty ratio | | D_PWM | 5 | | 100 | % | |
| | External PWM Frequency | | F_PWM | 1k | | 10k | Hz | |
| Life Time | | | | | 50000 | | Hrs | 1 |

Note1：

The life time is determined as the time at which brightness of the LED is 50% compared to that of initial value at the typical LED current on condition of continuous operating at 25 ±2℃, based on Brightest state.

## 4-2 Input Pin Assignment

### 4-2-1 LED Driver Board connector

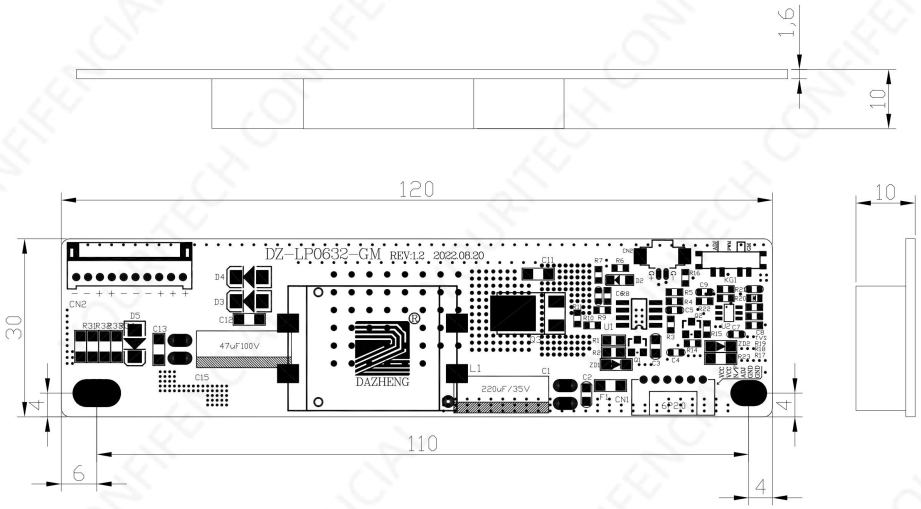
CN1:PH2.0-6PIN (2.0mm*6)

| CN1 | Symbol | Description |
|---|---|---|
| 1 | VCC | Power Supply input Voltage |
| 2 | VCC | Power Supply input Voltage |
| 3 | N/F | Backlight ON/OFF control |
| 4 | PWM | External PWM |
| 5 | GND | Power ground |
| 6 | GND | Power ground |

CN3/CN4 ： PH2.0-2PIN (2.0mm*2) LED Light Bar Current output connector

| CN3/CN4 | Symbol | Description |
|---|---|---|
| 1 | LED+ | LED Light Bar Current outputr anode |
| 2 | LED- | LED Light Bar Current output cathode |

LED Driver Board dimensional drawing



## 5. Mechanical Characteristics

**UNIT:mm**