



Product Specification

SPECIFICATION
FOR
APPROVAL

| | |
|-------|----------------------------------|
| Title | 17.0" SXGA LED BACKLIGHT TFT LCD |
|-------|----------------------------------|

| | |
|--------|----------|
| BUYER | |
| MODEL | BR170S10 |
| SUFFIX | AUO |



Product Specification

1. General Description

The BR170S10 is a Color Active Matrix Liquid Crystal Display with an integral Light Emitting Diode (LED) backlight system. The matrix employs a-Si Thin Film Transistor as the active element.

It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 17.0 inch diagonal measured active display area with SXGA resolution(1024 vertical by 1280 horizontal pixel array) Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes.

Gray scale or the brightness of the sub-pixel color is determined with a 6-bit gray scale signal for each dot,thus, presenting a palette of more than 16.2M colors with FRC(Frame Rate Control).

The BR17S10 has been designed to apply the interface method that enables low power, high speed,low EMI. FPD Link or compatible must be used as a LVDS(Low Voltage Differential Signaling) chip.

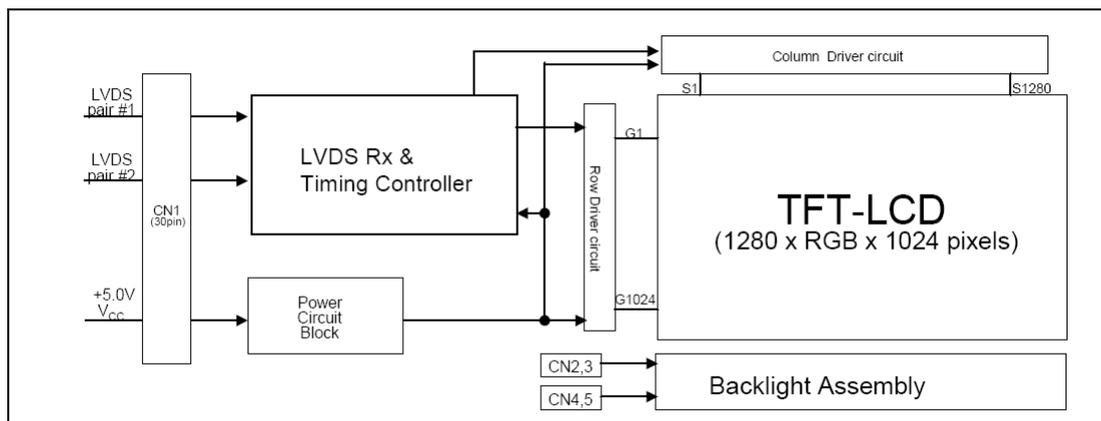


Figure 1. Block diagram

General Features

| | |
|------------------------|--|
| Active screen size | 17.0 inch (43.27cm) diagonal |
| Outline Dimension | 358.5(H) x 296.5(V) x 17.0(D) mm(Typ.) |
| Active Area | 337.920(H) x 270.336(V) mm |
| Pixel Pitch | 0.264 mm x 0.264 mm |
| Pixel Format | 1280 horiz. by 1024 vert. Pixels. RGB stripe arrangement |
| Display Colors | 16.2M colors |
| Luminance, white | 1000 cd/m2(Typ. Center 1 point) |
| Power Consumption | 30.8 Watts(Typ.) (PDD=6W PBL=24.8W) |
| Weight | 1950g (Typ.) |
| Display operating mode | Transmissive mode, normally white |
| Surface treatments | Hard coating (3H), Anti-glare treatment of the front polarizer |



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2. Absolute maximum ratings

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

Table 1. Absolute Maximum Ratings

| Parameter | Symbol | Values | | Units | Notes |
|----------------------------|-----------------|--------|------|-----------------|---------|
| | | Min | Max | | |
| Power Supply Input Voltage | V _{CC} | -0.3 | +5.5 | V _{dc} | At 25°C |
| Operating Temperature | T _{OP} | 0 | +50 | °C | 1 |
| Storage Temperature | T _{ST} | -20 | +60 | °C | 1 |
| Operating Ambient Humidity | H _{OP} | 10 | +90 | %RH | 1 |
| Storage Humidity | H _{ST} | 10 | +90 | %RH | 1 |

Note : 1. Temperature and relative humidity range are shown in the figure below. Wet bulb temperature should be 39 °C Max, and no condensation of water.

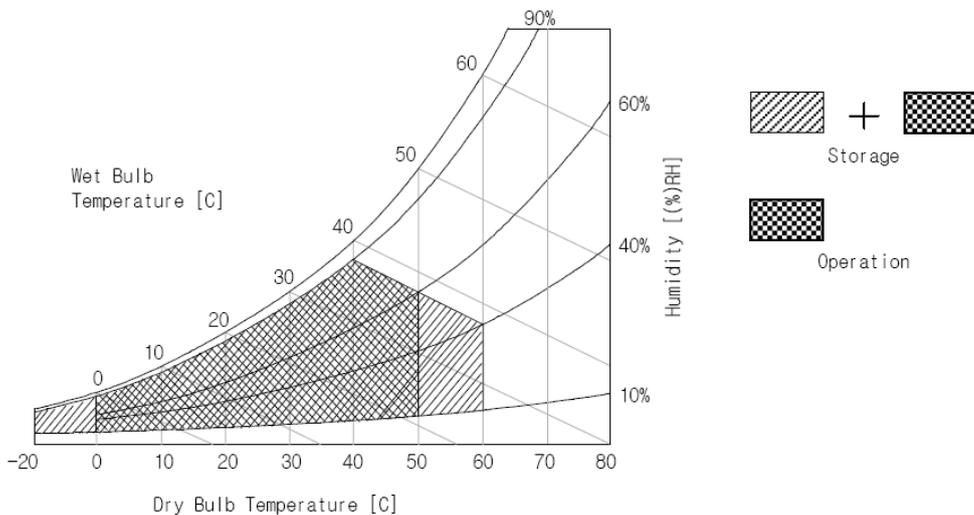


Figure 2. Temperature and relative humidity



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3. Electrical specifications

3-1. Electrical characteristics

The BR17S10 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. Another which powers the LED Backlight .LED Driver is an internal unit to the LCD.

Table 2. Electrical Characteristics

| Parameter | Symbol | Values | | | Units | Notes |
|-------------------------------|-------------------|--------|------|------|-------|-------|
| | | Min | Type | Max | | |
| Power Supply Input Voltage | V _{CC} | 4.5 | 5.0 | 5.5 | V | |
| Permissive Power Input Ripple | V _{RF} | - | - | 0.1 | V | |
| Power Supply Input Current | I _{CC} | - | 1.2 | 1.56 | A | 1 |
| Power Consumption | P _C | - | 6 | 7.8 | Watts | |
| In Rush Current | I _{RUSH} | - | - | 2.5 | A | 2 |
| LED Power supply Voltage | V _{BL} | 9 | 12 | 18 | V | 3 |
| LED Power Supply current | I _{BL} | - | 2.06 | 2.10 | A | |
| LED BL Power Consumption | P _{BL} | - | 24.8 | - | Watts | 4 |
| Life Time | | 50,000 | | | Hrs | 5 |

Note: Do not attach a conducting tape to lamp connecting wire. If the lamp wire attach to conducting tape TFT-LCD Module have a low luminance.

- 1.The specified current and power consumption are under the V_{CC}=5.0V, 25°C, fv (frame frequency)=60Hz condition.
- 2.The duration of rush current is about 2ms. And V_{CC} rise time is 500us ± 20%.
- 3.Operating voltage is measured under 25°C.
- 4.The LED Backlight power consumption shown above include LED Diver Module under 25°C.
- 5.The life time is determined as the time at which brightness of lamp is 50% compared to that of initial value at the typical lamp current on condition of continuous operating at 25° C.



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3-2. Interface Connections

Interface chip must be used LVDS, part No. SN75LVDS83 (Tx, Texas Instrument) or compatible.

This LCD employs a interface connection, a 30 pin connector is used for the module electronics interface. One 6pin connectors are used for the LED backlight system.

The pin configuration for the connector is shown in the table 3.

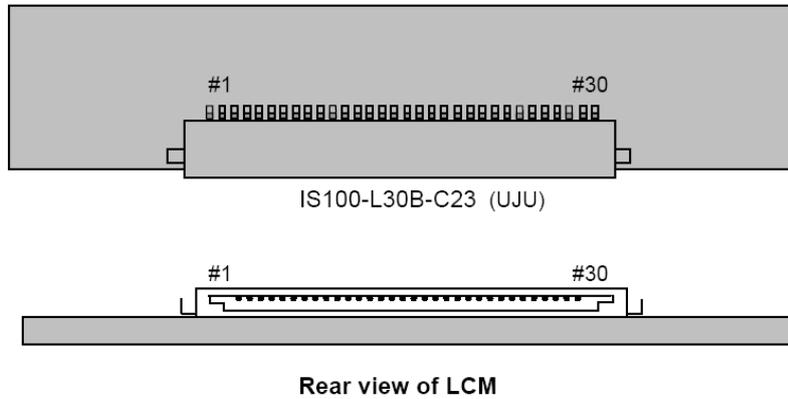
LED BackLight Driver 6pin connectors is shown in the table 4.

Table 3. Module connector pin configuration

| Pin No | Symbol | Description |
|--------|--------|--------------------------------------|
| 1 | RxO0- | LVDS Signal of Odd Channel 0(-) |
| 2 | RxO0+ | LVDS Signal of Odd Channel 0(+) |
| 3 | RxO1- | LVDS Signal of Odd Channel 1(-) |
| 4 | RxO1+ | LVDS Signal of Odd Channel 1(+) |
| 5 | RxO2- | LVDS Signal of Odd Channel 2(-) |
| 6 | RxO2+ | LVDS Signal of Odd Channel 2(+) |
| 7 | GND | Ground |
| 8 | RxOC- | LVDS Signal of Odd Channel Clock(-) |
| 9 | RxOC+ | LVDS Signal of Odd Channel Clock(+) |
| 10 | RxO3- | LVDS Signal of Odd Channel 3(-) |
| 11 | RxO3+ | LVDS Signal of Odd Channel 3(+) |
| 12 | RxE0- | LVDS Signal of Even Channel 0(-) |
| 13 | RxE0+ | LVDS Signal of Even Channel 0(+) |
| 14 | GND | Ground |
| 15 | RxE1- | LVDS Signal of Even Channel 1(-) |
| 16 | RxE1+ | LVDS Signal of Even Channel 1(+) |
| 17 | GND | Ground |
| 18 | RxE2- | LVDS Signal of Even Channel 2(-) |
| 19 | RxE2+ | LVDS Signal of Even Channel 2(+) |
| 20 | RxEC- | LVDS Signal of Even Channel Clock(-) |
| 21 | RxEC+ | LVDS Signal of Even Channel Clock(+) |
| 22 | RxE3- | LVDS Signal of Even Channel 3(-) |
| 23 | RxE3+ | LVDS Signal of Even Channel 3(+) |
| 24 | GND | Ground |
| 25 | NC | No connection |
| 26 | NC | No connection |
| 27 | NC | No connection |
| 28 | VCC | Power supply (5.0V Typ.) |
| 29 | VCC | Power supply (5.0V Typ.) |
| 30 | VCC | Power supply (5.0V Typ.) |



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[Figure 4] Connector diagram

Notes:

- 1.All GND(ground) pins should be connected together and should also be connected to the LCD's metal frame.
- 2.All VCC(power input) pins should be connected together.
- 3.All NC pins should be separated from other signal or power.

Table 4. LED Backlight Driver connector pin configuration

| Pin | Symbol | Description | Notes |
|-----|-----------------|--|-------|
| 1 | V _{cc} | LED Driver Power Supply Input Voltage | 1 |
| 2 | V _{cc} | LED Diver Power Supply Input Voltage | |
| 3 | On/Off | LED Backlight On/Off Control (0.0V-5.0V) | |
| 4 | Dim | Analog dimming voltage(0.0V-3.3V) or PWM Dimming input | 2 |
| 5 | GND | Ground | 3 |
| 6 | GND | Ground | |

Notes:

1. The LED Driver Power supply Input Voltage Base on Table 2.
2. This Dim Voltage control brightness.

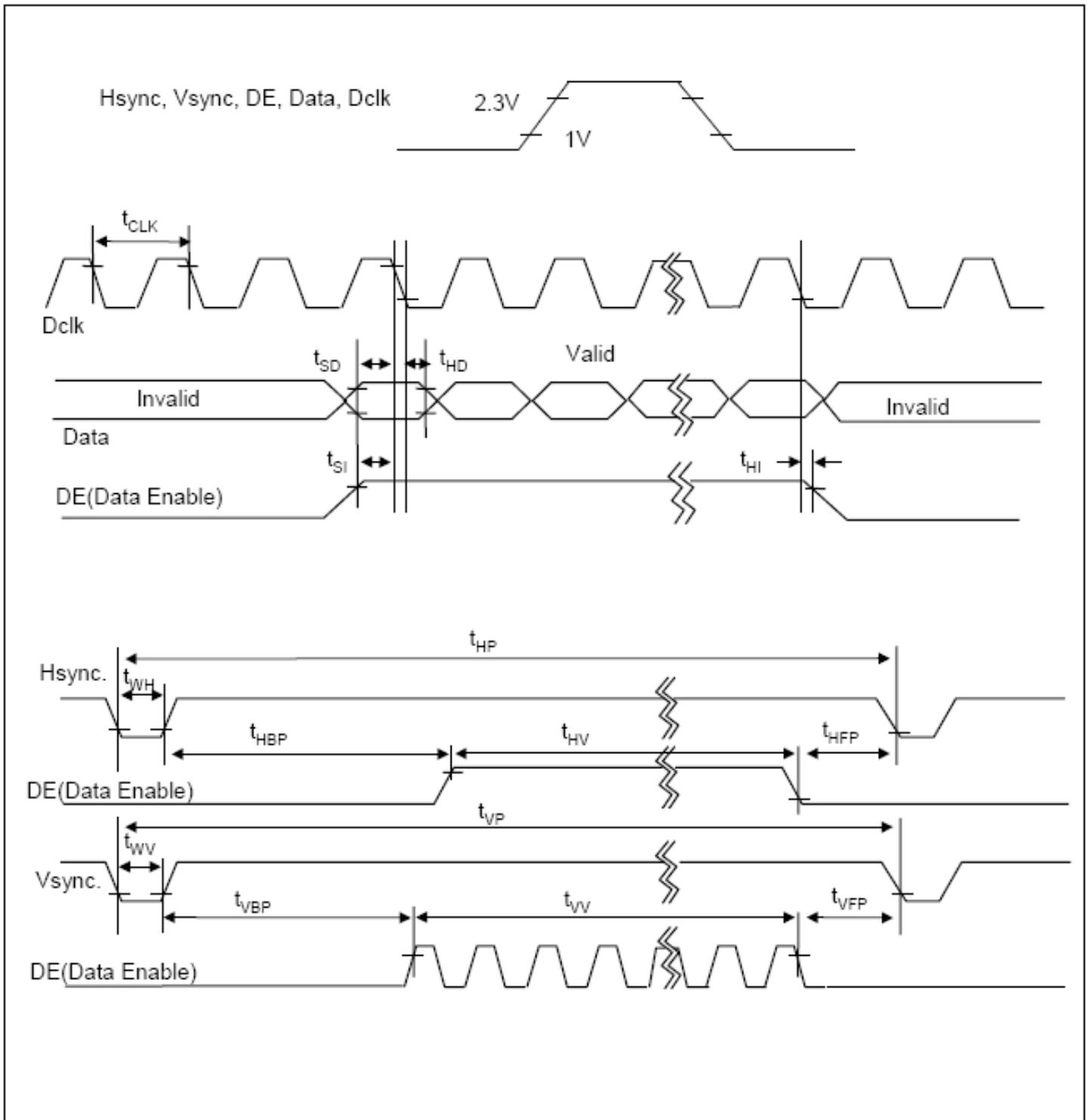
| Voltage | Function | Voltage | Function |
|---------|--------------------|---------|---------------------|
| 0V | Minimum Duty (20%) | 3.3V | Maximum Duty (100%) |

3. The backlight ground should be common with LCD metal frame.



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3-3. Signal Timing Waveforms

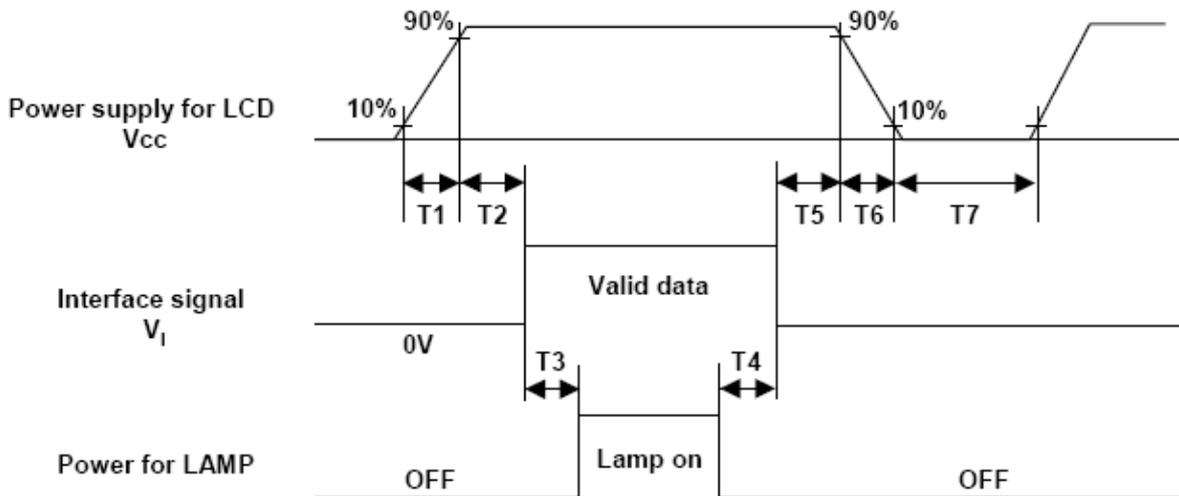


[Figure 6] Signal timing waveforms



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3-4. Power Sequence



[Figure 7] Power sequence

Table 5. Power sequence time delay

| Parameter | Values | | | Units |
|----------------|--------|------|-----|-------|
| | Min | Type | Max | |
| T ₁ | - | - | 10 | ms |
| T ₂ | 0.01 | - | 50 | ms |
| T ₃ | 200 | - | - | ms |
| T ₄ | 200 | - | - | ms |
| T ₅ | 0.01 | - | 50 | ms |
| T ₆ | 0.01 | - | 10 | ms |
| T ₇ | 1 | - | - | s |

Notes:

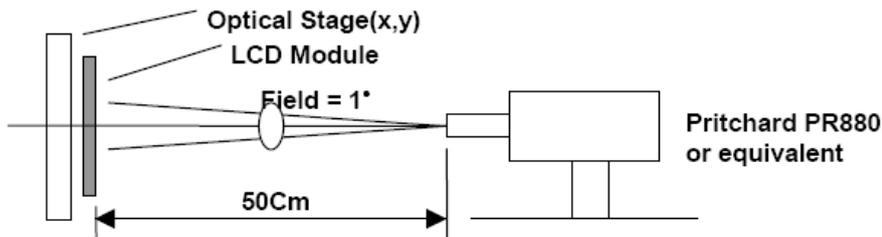
1. Please avoid floating state of interface signal at invalid period.
2. When the interface signal is invalid, be sure to pull down the power supply for LCD VCC to 0V.
3. Lamp power must be turn on after power supply for LCD and interface signals are valid.



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4. Optical Specifications

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25 °C. The values specified are measured at an approximate distance 50cm from the LCD surface at a viewing angle 0 °.



[Figure 9] Optical characteristic measurement equipment and method

Table 6. Optical characteristics

| Parameter | Symbol | Values | | | Units |
|----------------------------|--------------------------|--------|-------|-----|-------------------|
| | | Min | Type | Max | |
| Contrast ratio | CR | 800 | 1000 | - | |
| Surface luminance, white | L _{wH} | 900 | 1000 | - | cd/m ² |
| White luminance uniformity | Δ Y | 75 | 80 | - | % |
| Response time | G to G | - | 8 | 13 | ms |
| Color Temperature | | | 10000 | | K |
| Color Gamut(NTSC %) | | | 72 | | % |
| Viewing angle (by CR >10) | x axis, right(φ =0°) | - | 80 | - | degree |
| | x axis, left (φ =180°) | - | 80 | - | |
| | y axis, up (φ =90°) | - | 70 | - | |
| | y axis, down (φ =270°) | - | 60 | - | |
| Cross Talk | CT | - | - | 1.5 | % |

Notes:

1. Contrast Ratio(CR) is defined mathematically as :

$$CR = \text{Surface Luminance at all white pixels} / \text{Surface Luminance at all black pixels}$$

It is measured at center 1-point.

2. Surface luminance is determined after the unit has been 'ON' and 1Hour after lighting the backlight in a dark environment at 25 ± 2° C. Surface luminance is the luminance value at center 1-point across the LCD surface 50cm from the surface with all pixels displaying L255 white.

3. The White luminance uniformity on LCD surface is then expressed as :

$$\Delta Y = (\text{Minimum Luminance of 9points} / \text{Maximum Luminance of 9points}) * 100$$



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5. Mechanical Characteristics

Table 7. provides general mechanical characteristics for the model BR1750S. Please refer to Figure 15,16 regarding the detailed mechanical drawing of the LCD.

Table 7. Mechanical characteristics

| | | |
|---------------------|--|---------------|
| Outside dimensions | Horizontal | 358.5 ± 0.5mm |
| | Vertical | 296.5 ± 0.5mm |
| | Depth | 17.0 ± 0.5mm |
| Active display area | Horizontal | 337.920mm |
| | Vertical | 270.336mm |
| Weight(approximate) | 1900g(Typ.), 1950g(Max.) | |
| Surface Treatment | Hard coating(3H) Anti-glare treatment of the front polarizer | |