

Introduction

The LMG226B-156XW01 is a 15.6" sunlight readable LCD module. The module uses an AUO G156XW01 V0 LCD panel and a VHB (very high brightness) LED backlight to achieve a maximum screen brightness of 1,800 Cd/m² (nits). At this brightness, the power consumption of the LED backlight is about 29 Watts.

The LMG226B-156XW01 LCD has 1,366 x 768 HD resolution with a wide viewing angle > ±80° in both horizontal and vertical directions. For applications in low lighting environments, the screen brightness can be adjusted down to less than 5 Cd/m² using a proper LED drive board with PWM (Pulse Width Modulation) dimming control.

Display Specifications

LCD Screen Size	15.6 inches (396.2 mm) diagonal
LCD Active Area Dimensions (mm)	344.23 (H) x 193.54 (H)
Outline Dimensions (mm)	363.8 (H) x 215.9 (V) x 14.3 (D) Typ.
Display Resolution	1366 x 768
Operating Temperature	0 to 50 °C
LCD Module Weight	1.2 Kg
Front Surface Treatment	Hard coating (3H), anti glare treatment

Note: The exterior mechanical dimensions and the mounting hole locations of the LMG226B-156XW01 LCD module are the same as the original LCD. Please refer to the AUO G156XW01 V0 Data Sheet for details.

Optical Characteristics (notes 1, 2)

Parameters	Typical Value	Units	Conditions
LCD Screen Luminance	1,800	Cd/m ²	LCD displays the brightest White
Backlight Power Consumption	29	Watts	@1,800 nits, excluding driver board loss
Typical LCD Contrast Ratio	500:1		White vs. Black (measured in the dark along the normal direction)
Typical Viewing Angles			
3:00 - 9:00 directions	±85	Degrees	Contrast ratio ≥ 10
6:00 - 12:00 directions	±80	Degrees	Contrast ratio ≥ 10
LCD Screen Chromaticity (x, y)			
White	(0.306, 0.332)		Measured at the normal direction
Red	(0.607, 0.359)		Measured at the normal direction
Green	(0.327, 0.607)		Measured at the normal direction
Blue	(0.144, 0.065)		Measured at the normal direction

Note 1: Please refer to the AUO G156XW01 V0 LCD Data Sheet for LCD electrical specifications & general precautions.

Note 2: Screen luminance measured immediately after initial turn on at 25° C ± 2° C ambient temperature.

LED Backlight Driving Specifications

The LCD module has a VHB backlight with two LED lamp strips. Each LED strip has 44 white LEDs that are electrically connected into 4 strings in parallel. Each string has 11 LEDs connected in series.

Each LED strip is terminated with a JST 2-pin connector, BHRS-02VS-1. The LED strip anode connecting pin is shown in the drawing on page 4. The JST mating connector part number is SM02-BHSS-1-TB.

At the maximum screen brightness setting of 1,800 nits,

the driving conditions of each LED strip are,

LED strip driving voltage	34	Vdc (typ)
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LED strip driving current	420	mA
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Thus, the 2 LED strips in the backlight consume about 29 Watts.

Recommended Drive Board - ERG SFDZDB4210F with PWM dimming.

Thermal Management

The backlight power consumption of the LMG226B-156XW01 LCD module is approximately 29 Watts at screen brightness of 1,800 nits. This is about 19 Watts higher than the backlight power consumption of the original AUO LCD at 300 nits brightness. So the LCD temperature will increase some but not significantly.

For outdoor display applications where the LCD may be subject to direct sunlight exposure, the LCD screen can absorb a large amount of solar heat. In the worst conditions, the heating power generated from sunlight exposure can reach 70 Watts, which is more than 4 times the LED backlight power. As a result, the LCD temperature can rise more than 40 °C, particularly if there is a cover plate in front of the LCD.

For outdoor applications with direct sunlight exposure, the combined heating power from the sunlight and the VHB backlight can raise the LCD temperature possibly beyond 80°C. Also, both LED efficiency in Lumens per Watt and LED life span decrease when the ambient temperature rises beyond a certain level. Thus, please remember to implement cooling measures to maintain an LCD temperature below 50 °C to ensure good display performance and long backlight life span.

For outdoor applications in cold winter weather, the ambient temperature may drop well below 0°C. The thermal management (cooling and heating) system should be designed according to the worst case conditions anticipated to ensure the proper operation of the LMG226B-156XW01 LCD and its LED backlight.

Backlight Life

The half brightness life of the VHB backlight in the LMG226B-156XW01 sunlight readable module is rated at 50,000 hours. The half brightness life is the number of operating hours before the backlight luminance (seen as the LCD screen brightness) drops down to 50% of its initial value.

The lifetime of an LED backlight is mainly determined by the luminous decay of the LEDs. As the temperature of the LED chip rises, the LED luminance decay accelerates. This temperature effect on the LED life is relatively small if the LCD case temperature is maintained below 50 °C.

LCD Mounting

The LMG226B-156XW01 is a side mount LCD module. The locations of the mounting holes are shown on the mechanical dimension drawing on the next page. Please use four M3 screws to mount the LMG226B-156W01 LCD module to the display case.

The maximum screw penetration depth inside the LCD module is 4.2 mm. The maximum torque used to tighten the screws is 5 kg-cm (4.3 lb-in). Excessive depth of penetration and amount of tightening torque can potentially cause unrecoverable damages to the LCD module

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Mechanical Dimensions

