ENH104VD1-850 10.4" Enhanced AMLCD Display

Enhanced Brightness for Outdoor Viewability

The ENH104VD1-850 enhanced color TFT LCD provides improved optical performance based on enhancement of a standard Sharp LQ104V1DG21 color active matrix LCD module. The incorporation of an enhanced light guide (ELG) and four CCFLs provides twice the typical luminance of the standard display. The ENH104VD1-850 is available in two surface treatments – IM/Clear (glossy) or IM/110 (a 10% diffusion).

The enhanced LCD module is composed of a color TFT LCD panel, driver ICs, control circuit, power supply circuit and a backlight unit. Graphics and text can be displayed on a 640 x 480 pixel panel with 262,144 colors by supplying 18-bit data signals (6-bits/color), four timing signals, +3.3V / +5V DC supply voltage for the TFT panel and supply voltage for the backlight. The TFT LCD panel used for this module has low reflection and high color saturation. Viewing angle is 6 o'clock direction. The module offers a wide viewing angle and high brightness (850 cd/m^2 typical). The backlight-driving DC/AC inverter is not built into this module.

ENH104VD1-850 meets the environmental specifications of the standard Sharp LQ104V1DG21. WEDC provides a one year warranty to the enhanced performance display.

Performance Features

- VGA 640(H) x 480(V) resolution
- 850 nit typical luminance
- TTL interface
- High contrast ratio/high aperture ratio
- Higher brightness per watt

Applications

- Industrial automation
- Kiosk systems
- Marine navigation
- Instrumentation

Surface Treatments

- Diffuse front surface, IM/110
- Glossy front surface, IM/Clear

Display Characteristics

- Display Format: 640 Pixels (H) x 480 Pixels (V)
- Active Viewing Area: 211.2mm (H) x 158.4mm (V)
- Pixel Configuration: RGB Vertical Stripe
- Pixel Pitch: 0.330mm (H) x 0.330mm (V)
- Display Mode: Normally White

Viewing Angle

- Typical: 70/70/40/70 CR>10

Luminance

- Typical: 850 cd/m^2

Response Time

- Typical: Rise 20ms / Fall 40ms

Operating Temperature

- Topa -10°C to +65°C (Ambient)

Storage Temperature

- Tstg -30°C to +70°C

When looking for a high-efficiency enhanced display system to integrate into your high-end product application, start with White Electronic Designs. Our people, processes and products are committed to the design, development and delivery of advanced display technology that expands possibilities in ways that consistently translate to success. And that's just the beginning .... Call **503.690.2460** or visit **www.whiteedc.com**.

WHITE ELECTRONIC DESIGNS

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Backlight Specification

The backlight system is an edge-lighting type with four CCFLs (Cold Cathode Fluorescent Lamp).
The characteristics of the lamp are shown in the following table. The values below are for one CCFL.

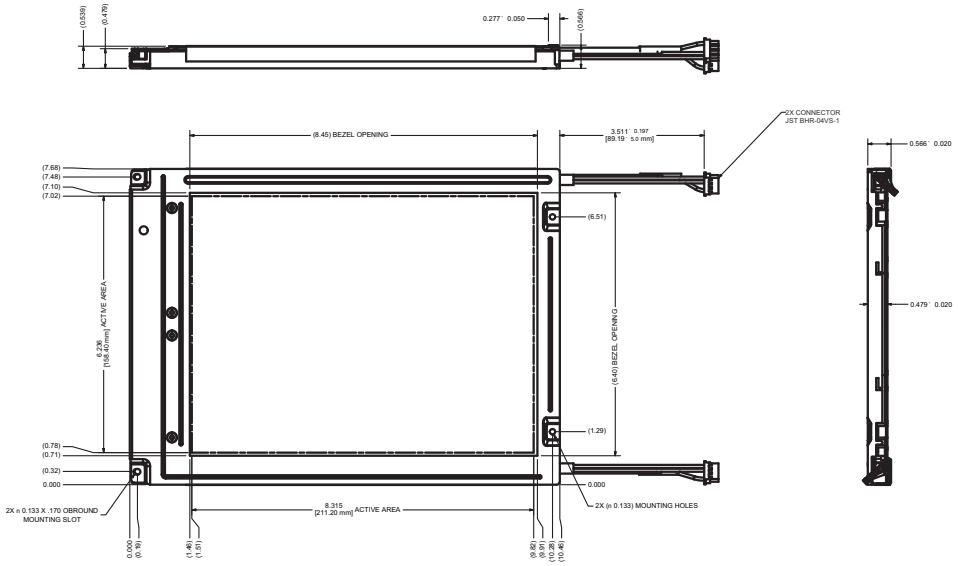
Parameter	Symbol	Min.	Typ.	Max	Unit	Remark
Lamp Current	I_L	2.0	6.0	6.5	mArms	
Lamp Power Consumption	P_L	-	3.0	-	W	
Lamp Frequency	F_L	20	35	60	kHz	
Kick-off Voltage	V_S	-	-	950	Vrms	TA = 25°C
		-	-	1250	Vrms	TA = 0°C
Lamp Life Time	L_L	50,000	-	-	Hour	

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max	Unit
Input Voltage	V_I	TA = 25°C	-0.3 ~ V_{CC} + 0.3	V	Note 1
+5V Supply Voltage	V_{CC}	TA = 25°C	0 ~ +6	V	
Storage Temperature	Tstg	-	-30 ~ +70	°C	
Operating Temperature	Topa	-	-10 ~ +65	°C	Ambient

Note 1: Humidity 95% RH Max. (TA > 40°C)
Maximum wet-bulb temperature at 39°C or less. (TA > 40°C)
No condensation.

Mechanical Drawing



Ordering Information

Part Number	Model	Description
100-0016-00	ENH104VD1-850	850 nit – Glossy front surface, IM/Clear
100-0016-01		850 nit – Diffused front surface, IM/110
100-0016-02		850 nit – No front surface treatment

White Electronic Designs (NASDAQ: WEDC) delivers sophisticated multi-chip semiconductor packages, high-efficiency memory devices, enhanced flat panel display systems and build-to-print electromechanical assemblies that address the unique size, performance and quality requirements for technology creators in diverse market segments. Providing advanced embedded component solutions for defense, aerospace, high-performance computing and industrial applications that have specific design and operational requirements has established White Electronic Designs as a trusted resource and valued partner. Headquartered in Phoenix, Arizona, White Electronic Designs operates world-class development and production centers in Arizona, Oregon and China.

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