

ENH050QA1-600 5.0" QVGA Analog AMLCD Display

Enhanced Brightness for Outdoor Viewability

The ENH050QA1-600 color TFT LCD provides improved optical performance based on enhancement of a standard Sharp LQ5AW136 color active matrix LCD module. The incorporation of high efficiency optical films provides an increase of approximately 85% over the typical luminance of the stock display. The ENH050QA1-600 is available in two surface treatments – IM/Clear (glossy) or IM/110 (a 10% diffusion).

The enhanced module accepts full color video signal conforming to the NTSC(M) and PAL(B·G) system standards. The TFT LCD panel used for this module is a low-reflection and high color saturation type. Viewing angle is 6 o'clock direction. The module offers a wide viewing angle and high brightness (600 cd/m² typical). The backlight-driving DC/AC inverter is not built into this module.

WEDC's ENH050QA1-600 meets the environmental specifications of the stock Sharp LQ5AW136. WEDC provides a full one year warranty to the enhanced performance product.



Performance Features

- QVGA 320(H) x 234(V) Resolution
- 600 nit typical Luminance
- Analog RGB Interface
- Dual Mode NTSC and PAL(B·G)
- High Contrast Ratio/High Aperture Ratio

Applications

- Portable Instrumentation
- GPS Systems
- Navigation Products
- Automotive

Surface Treatments

- 600 nit – Diffuse front surface, IM/110
- 600 nit – Glossy front surface, IM/Clear

Display Characteristics

- Display Format: 320 Pixels (H) x 234 Pixels (V)
- Active Viewing Area: 102.2mm (H) x 74.8mm (V)
- Pixel Configuration: RGB Vertical Stripe
- Pixel Pitch: 0.3195mm (H) x 0.3195mm (V)
- Display Mode: Normally White

Viewing Angle

- Typical: 65/65/40/65 CR > 5

Luminance

- Typical: 600 cd/m²

Response Time

- Typical: Rise 30ms / Fall 50ms

Operating Temperature

- TOPA -30°C to +60°C (Ambient)
- TOPP -30°C to +85°C (Panel Surface)

Storage Temperature

- Tstg -30°C to +85°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**.



Display Systems Division
21333 NW Jacobson Road ■ Hillsboro, OR 97124
Tel: 503.690.2460 ■ Fax: 503.690.2490



Backlight Specification

The backlight system is an edge-lighting type with 1 CCFL (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 Voltage	V _L	550	610	670		I _L = 6.5mA
Lamp Current	I _L	5.0	5.5	6.0	mArms	
Lamp Power Consumption	P _L	-	3.0	-	W	
Lamp Frequency	F _L	30	-	60	kHz	
Kick-off Voltage	V _s	-	-	1450	Vrms	TA = 25°C
Lamp Life Time	L _L	10,000	-	-	Hour	TA = 25°C

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Positive power supply voltage	V _{SH}	-0.3	+9.0	V	
Negative power supply voltage	V _{SL}	-6.0	+0.3	V	
Analog input signals	V _i	-	2.0	Vp-p	Note 1
Digital input/output signals	V _I	-0.3	+5.4	V	Note 2
DC bias voltage of common electrode driving signal	T _{cdc}	V _{SL}	V _{SH}	V	
Storage Temperature	T _{stg}	-	-30 ~ +85	°C	
Operating Temperature (Panel)	T _{opa}	-	-30 ~ +85	°C	Note 3
Operating Temperature (Ambient)	T _{opa}	-	-30 ~ +60	°C	

Note 1: V_{BS}, V_{R1}, V_{G1}, V_{B1}, V_{R2}, V_{G2}, V_{B2} terminals (video signal).

Note 2: N_{TP}, H_{RV}, V_{RV}, S_{AM}, V_{SW}, S_{HY}, C_{LKC}, C_{LK} terminals.

Note 3: The temperature of all parts in module should exceed this rating.

Maximum wet-bulb temperature should be less than 58°C, non-condensing.

Power Consumption

Part Number	Symbol	Condition	Min	Typ.	Max	Unit	Remark
Positive supply current	I _{SH}		-	140	170	mA	
Negative supply current	I _{SL}	V _{SH} = +8.0V	-	55	70	mA	
Total	W _S	V _{SL} = -5.0V	-	1.4	1.7	W	
Lamp power consumption	W _L			4.0		W	

Ordering Information

Model	Part Number	Description
ENH050QA1-600	100-0006-00	600 nit – Glossy front surface, IM/Clear
	100-0006-01	600 nit – Diffused front surface, IM/110
	100-0006-02	600 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.



WHITE ELECTRONIC DESIGNS