

EL –

Electroluminescent Displays

www.planarembded.com/EL



Embedded Displays for EXTREME Conditions

Electroluminescent display (EL) technology is still relevant for today's embedded display solutions. The unique performance and visual characteristics of EL make it an ideal solution for the most challenging and demanding applications where other technologies are simply inadequate. Equipment and system designers use electroluminescent displays to fulfill the growing demands from their customers for improved image quality, longer lifetime and higher reliability.

Over the last 20 years our engineers have made continual and dramatic improvements in the brightness of the luminescent films and the development of drive schemes to extend display life. They have significantly improved brightness and contrast, reduced power consumption, developed proprietary gray-scale algorithms, improved packaging to reduce size and enhanced shock and vibration resistance.

FEATURES and BENEFITS:

- High brightness and contrast
- Wide viewing angle > 179°
- Rapid display response < 1 ms
- "Instant on" from -50 ~ +85 °C
- Unaffected by solar loading because glass performs to +100 °C
- Long-lasting brightness; loses less than 15% of measured brightness over 100,000 hours
- Long life 250,000 display glass MTBF lessens warranty cost
- Rugged 200G shock durability
- Crisp, single-color presentation decreases viewing time requirements to facilitate faster perception
- Low EMI emissions
- RoHS compliant

APPLICATIONS:

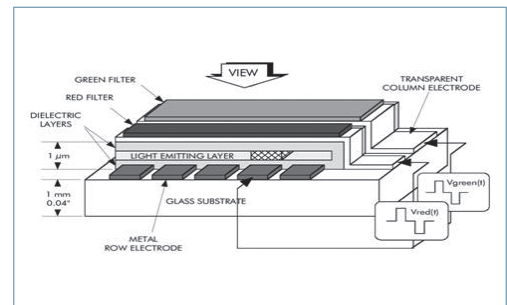
- Military
- Transportation
- Industrial
- Medical
- Public safety
- Maritime



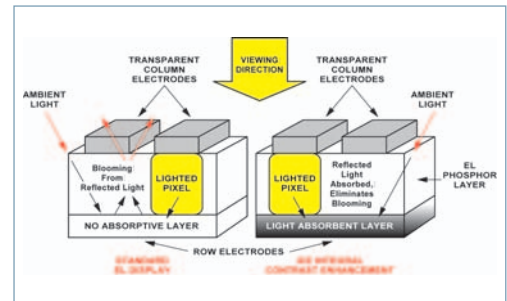
20 REASONS

Why Thin Film EL Is Your Most Reliable Display Choice for Rugged Viewing Conditions

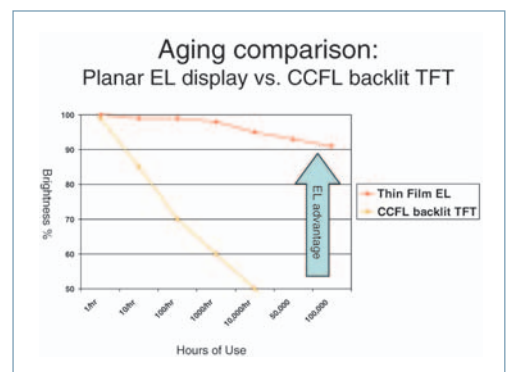
1. "Instant on" module performance as low as -50°C means no waiting time for display heaters to warm a TFT AMLCD.
2. No heaters required with TFEL means increased product reliability and eliminates image smear artifacts common with TFT AMLCDs used at low temperatures. Glass is functional to -100°C.
3. <1 ms response time for excellent waveform presentation across entire temperature range.
4. Unaffected by solar loading because glass performs to +100°C.
5. 85°C module operating temp, no fan required for cooling, thus increasing reliability.
6. EL glass has 250,000/hr MTBF to reduce your product's warranty costs.
7. 100,000/hr measured brightness with <15% reduction. Compare to TFT AMLCD technology that loses 15% brightness in a single year. TFT AMLCD with CCFL decays to 50% brightness in 50,000 hours or less.
8. Hermetically sealed glass and optional conformal coated circuit board outlasts all other fl at panel technologies in moist or humid environments.
9. Integrated Contrast Enhancement (ICE™) delivers up to 1000:1 contrast ratio for daylight readability. Eliminates cost, time and hassle of bonding a TFT AMLCD for improved contrast.
10. Crisp, single color presentation decreases viewing time requirements to facilitate faster user perception. Ideal for healthcare, vehicle, and mission critical instrumentation.
11. 179° vertical and horizontal viewing angles enable multi-person, off axis viewing.
12. Battery power requirements comparable to backlit TFT LCD.
13. Wide dimming range, doesn't require an expensive, custom backlight inverter like TFT AMLCD.
14. Emissive pixel technology makes small text more legible than LCDs to increase perceptibility.
15. 200G shock durability increases the dependability of your product.
16. All solid-state, digital design eliminates backlight failures.
17. LCD compatible interface for easier integration.
18. Over 20 years of product life and still going strong! Long product life helps you omit redesigns triggered by component obsolescence.
19. RoHS for worldwide compliance. Mercury free product is better for the environment. Low EMI/EMC to ease certification of your product.
20. Worldwide and domestic technical support team.



Structure of Thin Film Electroluminescent Display



ICEbrite - Integrated Contrast Enhancement



EL – ELECTROLUMINESCENT DISPLAYS



MODEL – All resolutions for EL displays are indicated by the model number.	Part Number ¹	Diagonal Size	Pixel Pitch	Brightness Typical @ Max. Frame Rate	Power Typical @ Max. Frame Rate	Operating Temperature ²	Video Interface	Other Features ³
EL160.80.50 IN ET ET CC	996-0267-15LF 996-0267-20LF 996-0267-18LF 996-0267-17LF	3.5 in (8.93 cm)	0.5 mm	107 cd/m ² (240 Hz)	4.4 W (240 Hz)	0 ~ +55 °C -25 ~ +65 °C -40 ~ +65 °C -40 ~ +65 °C	4 bit LCD	Standard product Dimming capability IN with locking connector ET with conformal coating
EL160.120.39	996-0303-00LF	3.1 in (7.79 cm)	0.39 mm	70 cd/m ² (150 Hz)	3.0 W (150 Hz)	-25 ~ +70 °C	4 bit LCD	Dimming, locking connector
EL240.128.45 INT	996-0301-01LF 996-0301-02LF	4.8 in (12.2 cm)	0.45 mm	130 cd/m ² (240 Hz)	5.8 W (240 Hz)	-20 ~ +70 °C	8 bit µP 4 bit LCD	Built-in SED1335 controller, dimming, locking connector Dimming, locking connector
EL320.240 NEW! FA3 FA3 CC	997-3377-00LF 997-3377-01LF	4.9 in (12.4 cm)	.012 in (.31 mm)	85 cd/m ² (325 Hz)	4.7 W (325 Hz)	-50 ~ +85 °C	4 bit TFT	Red/Green/Yellow multi-color, 16 colors, dimming, locking connector FA3 with conformal coating
EL320.240.36 AG AGL IN IN AG ET ET CC	996-0273-01LF 996-0273-60LF 996-0273-62LF 996-0273-02LF 996-0273-61LF 996-0273-03LF 996-0273-30LF	5.7 in (14.4 cm)	0.36 mm	50 cd/m ² (120 Hz)	7.1 W (120 Hz)	0 ~ +55 °C 0 ~ +55 °C 0 ~ +55 °C -25 ~ +65 °C -25 ~ +65 °C -40 ~ +65 °C -40 ~ +65 °C	4 bit LCD	Standard product Anti-glare film AG with locking connector Dimming IN with anti-glare film Locking connector, dimming ET with conformal coating
EL320.240.36 HB HB NE HB NE CC HB CC HB SE	996-0292-00LF 996-0292-03LF 996-0292-02LF 996-0292-06LF 996-0292-07LF	5.7 in (14.4 cm)	0.36 mm	150 cd/m ² (247 Hz)	5.5 W (247 Hz)	-40 ~ +85 °C	4 bit LCD	High bright, dimming, locking connector, broad input voltage No mounting ears No mounting ears, conformal coating Conformal coating HB with only top mounting ears
EL320.256 F6 FD6 FD7 FD7 HB FD8 V2	996-5076-00LF 996-5087-00LF 996-5089-00LF 996-5089-00LF 996-5091-00LF	4.8 in (12.2 cm)	0.3 mm	77 cd/m ² (60 Hz) 25 cd/m ² (60 Hz) 81 cd/m ² (150 Hz) 55 cd/m ² (120 Hz) 105 cd/m ² (200 Hz)	4.0 W (60 Hz) 7.5 W (150 Hz) 6.0 W (120 Hz) 9.0 W (200 Hz)	-25 ~ +65 °C	1 or 2 bit LCD	Non-ICE, dimming, broad input voltage F6 with ICE FD7 with higher brightness
EL480.240 PR1	996-0247-04	6.4 in (16.4 cm)	0.305 mm	50 cd/m ² (120 Hz)	6.5 W (120 Hz)	-25 ~ +65 °C	4 bit LCD	ICEBrite
EL512.256 H2 H2 FRA H2 FRB H3 H3 FRA H3 FRB H3 ET FRB	997-3214-00LF 997-3215-00LF 997-3216-00LF 996-5052-00LF 996-5059-00LF 996-5060-00LF 996-2436-00LF	8.6 in (21.8 cm)	0.38 mm	65 cd/m ² (70 Hz)	6.0 W (70 Hz)	0 ~ +55 °C 0 ~ +55 °C 0 ~ +55 °C -25 ~ +65 °C -25 ~ +65 °C -25 ~ +65 °C -40 ~ +85 °C	1 or 2 bit LCD	Dimming, broad input voltage H2 with aluminum frame H2 with steel frame Dimming, Broad input voltage H3 with aluminum frame H3 with steel frame H3 FRB with extended temperature

Notes:

1. The "LF" suffix on part numbers indicates that the product is in compliance with the EU RoHS requirements. Those products without this suffix are not compliant.
2. All EL products are capable of operating temperature ranges of -50 - +80 °C
3. For special applications where lead-free solder presents reliability concerns, some products may be available with leaded solder. Please consult your Planar sales contact.

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EL640.200	SK	996-0290-01LF	8.9 in (22.6 cm)	0.33 mm x 0.396 mm	81 cd/m ² (240 Hz)	7.6 W (240 Hz)	-40 ~ +85 °C	4 bit (Buffered) 8 bit (Non-buffered)	ICEBrite, two modes (buffered and non-buffered) dimming, and locking connector SK with conformal coating
	SK CC	996-0290-02LF							
EL640.400	C2	997-3217-00LF	9.1 in (23 cm)	0.3 mm	53 cd/m ² (70 Hz)	11.0 W (70 Hz)	0 ~ +55 °C	1 or 2 bit LCD	Non-ICE, dimming, wide input voltage C2 with aluminum frame
	C2 FRA	997-3218-00LF							
	C3 C3 FRA	996-5056-00LF 996-5062-00LF					-25 ~ +65 °C		Non-ICE, dimming, wide input voltage Non-ICE, dimming, wide input voltage, aluminum frame
	CD3 FRA	996-5078-00LF			21 cd/m ² (70 Hz)		-25 ~ +65 °C		CD3 with aluminum frame
EL640.400	CB1 FRA	996-5073-00LF	9.1 in (23 cm)	0.3 mm	53 cd/m ² (70 Hz)	11.0 W (70 Hz)	0 ~ +55 °C	1 or 2 bit LCD	Non-ICE, dimming, +5 and +12 V input voltage, aluminum frame
	CB3 FRA	996-5082-01LF			53 cd/m ² (70 Hz)				CB series display with a VH of 24 V
	CD4 FRA	996-5085-00LF E0064450301LF			22 cd/m ² (70 Hz)				Nominal input, includes frame Dimming, +5 and +12 V input, aluminum frame
EL640.480	AF1 AF1 AG AF1 ET	996-0270-00LF 996-0270-01LF 996-0270-05LF	6.4 in (16.2 cm)	0.2 mm	65 cd/m ² (120 Hz)	4.5 W (120 Hz)	-5 ~ +55 °C -5 ~ +55 °C -40 ~ +85 °C	8 bit LCD	ICEBrite, dual panel interface AF1 with anti-glare film AF1 with extended temperature, locking connector, dimming
EL640.480	AG1 AG1 AG AG1 ET	996-0269-00LF 996-0269-01LF 996-0269-03	8.1 in (20.5 cm)	0.26 mm	55 cd/m ²	6.5 W (120 Hz)	-5 ~ +55 °C -5 ~ +55 °C -40 ~ +85 °C	8 bit LCD	ICEBrite, dual panel interface AG1 with anti-glare film Extended temperature, wide input voltage
	AG1 ET CC	996-0269-05					-40 ~ +85 °C		AG1 ET with conformal coating
EL640.480	AM1 AM1 AG AM8 ET AM8 ET CC AM8 IN	966-0268-00LF 996-0268-02LF 996-0268-16LF 996-0268-20LF 996-0268-27LF	10.4 in (26.4 cm)	0.33 mm	55 cd/m ² (120 Hz)	11.0 W (120 Hz)	-5 ~ +55 °C -5 ~ +55 °C -40 ~ +65 °C -40 ~ +65 °C -25 ~ +65 °C	8 bit LCD	ICEBrite, dual panel interface AM1 with anti-glare film Extended operating temperature AM8 ET with conformal coating ICEBrite, dimming, 24 V option, low profile, dual panel interface.
	AA1	996-5088-00	10.4 in (26.4 cm)	0.33 mm	21 cd/m ² (120 Hz)	10.0 W (70 Hz)	-25 ~ +65 °C	4 bit LCD	Multi-color: 8 colors + black, dimming, improved EMI

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