

Displays for Specialty Applications

Bright.Embedded.Rugged.Touch.3D



A History of Displaying Innovation. A Future Bright With Possibility.

Planar Systems, Inc. is a leading provider of value-added display hardware and software for a variety of specialty display markets worldwide. With over 20 years as a leader in the display industry, we provide a strong portfolio of specialty display solutions for industrial, medical, transportation, military, kiosk and public safety applications. Hospitals, shopping centers, banks, businesses and other discriminating consumers depend on Planar to provide unique display-based solutions to exacting requirements, leveraging its operational excellence, technical innovation and go-to-market capabilities.

This catalog provides a great overview of the industrial business unit's display solutions and capabilities that fit the unique requirements of your project. We are excited about our ongoing investments in this business so that we can continue to provide innovative specialty display solutions to you and your customers in the future.



Doug Barnes
Vice President and General Manager
Industrial Business Unit, Planar Systems

Planar Systems Lifecycle Policy



Whenever possible we want to ensure the long-term availability of our products so you can avoid the costs and headaches of redesigns and replacement projects. Planar’s lifecycle program makes it much easier for our customers to focus on their products. The policy takes the pain out of delivering and servicing embedded systems for extended lifecycles. Planar can help you to build a better product and keep it in production longer. We have created a product lifecycle policy to communicate this commitment.

Over the lifecycle of a product, Planar builds displays with the same components eliminating concerns about varying components with each shipment of displays.

- Planar has consistently exceeded a 5-year life for standard and semi-custom displays from its industrial business unit. Many Planar products continue to be produced for eight to ten years.
- Planar provides 90-day written notice of necessary changes that affect form, fit or function of the display.
- For End of Life (EOL) products, Planar provides 90 days to place orders and one year to receive shipments.
- Planar secures long-term commitments from component suppliers prior to design and production. The company works closely with manufacturers and distributors to ensure long-term availability of products and components.

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EL – Electroluminescent Displays

Embedded Displays for EXTREME Conditions

Electroluminescent display (EL) technology is still unique and 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. We continue to set the standards for the EL flat panel industry with a new multi-color QVGA EL display available Spring 2007.

FEATURES and BENEFITS:

- Unrivaled visual performance
- High brightness and contrast
- Wide viewing angle > 160°
- Rapid display response < 1ms
- Space-efficient mechanical package
- Low EMI emissions
- Extremely rugged and durable
- Reliable, long operating life
- RoHS compliant

APPLICATIONS:

- Military
- Medical
- Transportation
- Public Safety
- Industrial
- Maritime

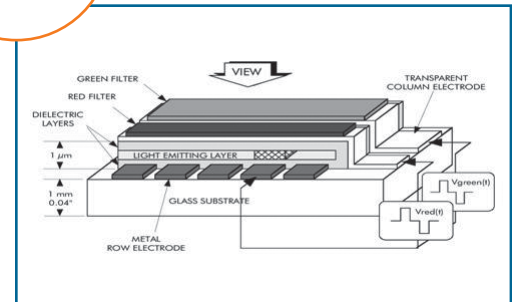
Thin Film EL Technology

Planar's ICEBrite™ Electroluminescent Displays consist of a solid-state glass panel, an electronic control circuit and a power supply.

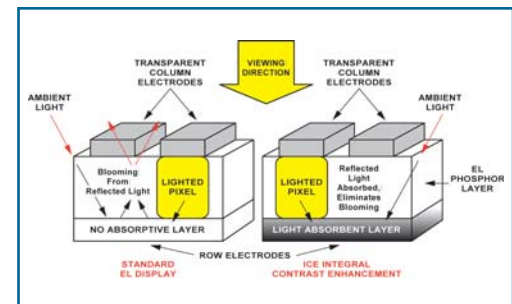
The thin film EL glass panel consists of a luminescent phosphor layer sandwiched between transparent dielectric layers and a matrix of row and column electrodes. A circuit board containing the drive and control electronics is connected to the back of the glass panel. Voltage is applied to row and column electrodes causing the area of intersection (a pixel) to emit light.

The result of this solid-state design is a flat, compact, reliable and inherently rugged display with exceptionally fast response times.

Ask
About our
Transparent EL
Technology



Structure of Thin Film Electroluminescent Display



ICEBrite - Integrated Contrast Enhancement

Featuring the New Multi-Color Electroluminescent Display EL 320.240 FA3 NEW!

Red and green sub-pixel elements are formed on an amber, ALD based substrate by applying an organic filter to a glass cover panel. Offering the same high performance, visual characteristics, and "at-a-glance" viewability of Planar's monochrome EL product line, the EL320.240 FA3 adds critical color capabilities to the inherent ruggedness of this proven display technology.

The new QVGA multi-color red/green/yellow EL display has the same form factor and resolution as Planar's most popular EL display model and is ideal for transportation, medical, military, and industrial applications that need to highlight important information under extreme conditions.



EL – Electroluminescent Displays



MODEL – All resolutions for EL displays are indicated by the model number.	Part Number	Diagonal Size	Pixel Pitch	Brightness Typical @ Max. Frame Rate	Power Typical @ Max. Frame Rate	Operating Temperature	Video Interface	Other Features
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 (240Hz)	4.4 W (240Hz)	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 (150Hz)	3.0 W (150Hz)	-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 (240Hz)	5.8 W (240Hz)	-20 ~ +70 °C	8 bit uP 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 (325Hz)	4.7 W (325Hz)	-50 ~ +85	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 (120Hz)	7.1 W (120Hz)	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 (247Hz)	5.5 W (247Hz)	-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 HB FD8	996-5076-00LF 996-5087-00LF 996-5089-00LF 996-5091-00LF	4.8 in (12.2 cm)	0.3 mm	77 cd/m ² (60Hz) 25 cd/m ² (60Hz) 81 cd/m ² (150Hz) 135 cd/m ² (285Hz)	4.0 W (60Hz) 7.5 W (150Hz) 15.0 W (285Hz)	-25 ~ +65 °C	1 or 2 bit LCD	Non-ICE, dimming, broad input voltage F6 with ICE FD7 with higher brightness >200Hz frame rate max, requires special mounting configuration
EL480.240 PR2 PR2 CC	996-0247-02LF 996-0247-03LF	6.4 in (16.4 cm)	0.305 mm	50 cd/m ² (120Hz)	6.5 W (120Hz)	-25 ~ +65 °C	4 bit LCD	ICEBrite PR2 with conformal coating
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 (70Hz)	6.0 W (70Hz)	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



MODEL – All resolutions for EL displays are indicated by the model number.	Part Number	Diagonal Size	Pixel Pitch	Brightness Typical @ Max. Frame Rate	Power Typical @ Max. Frame Rate	Operating Temperature	Video Interface	Other Features								
EL640.200	SK	996-0290-01LF	8.9 in (22.6 cm)	0.33 mm x 0.396 mm	81 cd/m ² (240Hz)	7.6 W (240Hz)	-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 (70Hz)	11.0 W (70Hz)	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								-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 (70Hz)	11.0 W (70Hz)	0 ~ +55 °C	1 or 2 bit LCD	Non-ICE, dimming, +5 and +12V input voltage, aluminum frame CB series display with a VH of 24V							
	CB3 FRA	996-5082-01LF														
	CD4 FRA	996-5085-00LF E0064450301LF								11.0 W (70Hz)	Nominal input, includes frame Dimming, +5 and +12V 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 (120Hz)	4.5 W (120Hz)	-5 ~ +55 °C -5 ~ +55 °C -40 ~ +85 °C	8 bit LCD	ICEBrite, dual panel interface AF1 with anti-glare film AF1 eith extended temperature, locking connector, dimming							
	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 (120Hz)	-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														
EL640.480	AM1 AM1 AG AM8 ET AM8 ET CC AM8 IN	996-0268-00LF 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 (120Hz)	11.0 W (120Hz)	-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, 24V option, low profile, dual panel interface.							
	AA1	996-5088-00								10.4 in (26.4 cm)	0.33 mm	21 cd/m ² (70Hz)	10.0 W (70Hz)	-25 ~ +65 °C	4 bit LCD	Multi-color: 8 colors + black, dimming, improved EMI
	A4 SB A4 SBS AD4 SB AD4 SBS	996-5083-02 996-5083-03 996-5084-02 996-5084-03								10.4 in (26.4 cm)	0.33 mm	56 cd/m ² (60Hz) 22 cd/m ² (60Hz)	15.6 W (65Hz)	0 ~ +55 °C	4 or 8 bit LCD	Non-ICE, 16 level gray scale, dimming A4 SB with improved EMI A4 SB with ICE AD4 SB with improved EMI

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. For special applications where lead-free solder presents reliability concerns, some products may be available with leaded solder. Please consult your Planar sales contact.



LA, LB, LC – Embedded AMLCD Monitors

LA, LB, LC – Embedded AMLCD Monitors for Indoor and Outdoor Environments

The LA Open-Frame Kiosk Display product family, perfect for indoor environments, includes 15", 17" and 19" open-frame monitors with or without touchscreens. The LA15 and LA17 products are available with 5-wire, long-life resistive or durable capacitive touchscreens and the LA19 is available with a capacitive touchscreen.

The LB Open-Frame Kiosk Display product family, perfect for indoor environments where a bright, attention-grabbing display is needed, features a brightness of 550cd/m²—almost twice as bright as standard displays. The competitively-priced 15" LB15 series offers options for integrating composite video for streaming video advertisements and capacitive touchscreen.

The LC Embedded Display product family, available from 8" to 15" are outstanding in sunlight installations. They are ideal for outdoor ATMs and digital signage, as well as ticketing, information and retail kiosks.

FEATURES and BENEFITS:

- Bright and easy to read LCD displays for indoor or outdoor kiosk applications
- 8", 12" and 15" for sunlight-readable environments
- 12", 15", 17" and 19" for indoor environments
- Open-frame configuration with all the benefits of comparable LCD monitors
- Easily integrated into kiosk enclosures
- Standard design for rapid product development and quick time to market
- Touchscreen options available

APPLICATIONS:

- Retail/POS
- Ticketing machines
- Rail
- ATMs
- Hospitality
- Drive-through windows

www.planar.com/OpenFrameLCDs
www.planar.com/HighBrightLCDs

LA – Standard Brightness Embedded AMLCD Monitors Non Touch



SPECIFICATIONS	LA1500R - 15"	LA1710R - 17"	LA1910R - 19"
Planar Part Number	997-2806-00 997-2806-00LF (RoHS Complaint Version)	997-2808-00LF	997-2810-00LF
Contrast Ratio (typical)	400:1	500:1	1000:1
Response Time (typical)	16ms (4 ms rise, 12 ms fall)	8ms (6 ms rise, 2 ms fall)	8 ms GTG with RapidVideo™ Accelerator
Horizontal Scan	31.5 - 60 KHz	31.5 - 80 KHz	31.5 - 80 KHz
Viewing Angle (typical)	150° H, 125° V (+50/-75)*	160° H, V*	170° H, V
Brightness (w/o touchscreen)	350 cd/m ²	300 cd/m ²	250 cd/m ²
Pixel Pitch	0.297 mm	0.264 mm	0.294 mm
Refresh Rate	56-75 Hz	56-75 Hz	56-75 Hz
Power Consumption (operational)	30 W (5W standby)	40 W (3W standby)	60 W (5W standby)
Input Options	Analog	Analog/DVI-D	Analog/DVI-D
Power Requirements	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz
External Connections	D-sub, 15 pin	D-sub, 15 pin, DVI-D	D-sub, 15 pin, DVI-D
Features	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)
Power Supply	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.
Display Active Area	15" diagonal, 304 mm x 228 mm	17" diagonal, 338 mm x 270 mm	19" diagonal, 376 mm x 301 mm
Native Resolution	XGA (1024 x 768) native. Supports IBM VGA; VESA VGA, SVGA, XGA; and Apple® Mac modes	SXGA (1280 x 1024) native. Supports IBM VGA; VESA VGA, SVGA, XGA, SXGA; and Apple® Mac modes	SXGA (1280 x 1024) native. Supports IBM VGA; VESA VGA, SVGA, XGA, SXGA; and Apple® Mac modes
Dimensions (WxHxD)	14.2" x 10.6" x 1.9" (360 mm x 270 mm x 47 mm)	14.6" x 11.8" x 1.8" (371 mm x 299 mm x 46 mm)	17.2" x 14.3" x 3.2" (436 mm x 363 mm x 81 mm)
Weight (display and brackets)	7.9 lbs (3.6 kg)	10.1 lbs (4.6 kg)	12.5 lbs (5.7 kg)
Approvals	FCC-B, CE, TUV, RoHS	FCC-B, CE, TUV, RoHS	FCC-B, CE, TUV, RoHS
Operating Temperature	5° - 35° C	5° - 35° C	5° - 35° C
Service and Support/Warranty	1 year	1 year	1 year
Extended Warranty Package	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00
Mounting Options	Adjustable rear panel mounting brackets included. VESA 75 mm compatible.	Adjustable rear panel mounting brackets included. VESA 100 mm compatible.	Adjustable rear panel mounting brackets included. VESA 75/100 mm compatible.

*Specified at CR≥5:1. All other LCDs specified at CR≥10:1. www.planarembedded.com | www.planar.com

LA – Standard Brightness Embedded AMLCD Monitors Resistive Touch



SPECIFICATIONS	LA 1500RTR - 15" Resistive	LA1710RTR - 17" Resistive
Planar Part Number	997-2971-00LF	997-2972-00 997-2972-00LF (RoHS Compliant Version)
Touchscreen Type	3M® 5-wire Resistive	3M® 5-wire Resistive
Touch Screen Interface	USB (Windows® 95/98/2000/ME/XP)	USB (Windows® 95/98/2000/ME/XP)
Brightness (w/touchscreen)	298 cd/m ²	255 cd/m ²
Brightness (w/o touchscreen)	350 cd/m ²	300 cd/m ²
Contrast Ratio (typical)	400:1	500:1
Response Time (typical)	16 ms (4 ms rise, 12 ms fall)	8 ms (6 ms rise, 2 ms fall)
Horizontal Scan	31.5 - 60 KHz	31.5 - 80 KHz
Viewing Angle (typical)	150° H, 125° V (+50/-75)*	160° H, V*
Pixel Pitch	0.297 mm	0.264 mm
Refresh Rate	56-75 Hz	56-75 Hz
Power Consumption (operational)	30 W (5W standby)	40 W (3W standby)
Input Options	Analog	Analog, DVI-D
Power Requirements	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz
External Connections	D-sub, 15 pin USB (touchscreen option)	D-sub, 15 pin, DVI-D USB (touchscreen option)
Features	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)
Power Supply	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.
Display Active Area	15" diagonal, 304 mm x 228 mm	17" diagonal, 338 mm x 270 mm
Native Resolution	XGA (1024 x 768) native. Supports IBM VGA; VESA VGA, SVGA, XGA	SXGA (1280 x 1024) native. Supports IBM VGA; VESA VGA, SVGA, XGA, SXGA
Dimensions (WxHxD)	14.2" x 10.6" x 1.9" (360 mm x 270 mm x 47 mm)	14.6" x 11.8" x 1.8" (371 mm x 299 mm x 46 mm)
Weight (display and brackets)	9.2 lbs (4.2 kg)	11.2 lbs (5.1 kg)
Approvals	FCC-B, CE, TUV, RoHS	FCC-B, CE, TUV, RoHS
Operating Temperature	5° - 35° C	5° - 35° C
Service and Support/Warranty	1 year	1 year
Extended Warranty Package	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00
Mounting Options	Adjustable rear panel mounting brackets included. VESA 75 mm compatible.	Adjustable rear panel mounting brackets included. VESA 100 mm compatible.

*Specified at CR≥5:1. All other LCDs specified at CR≥10:1.

LA – Standard Brightness Embedded AMLCD Monitors Capacitive Touch



SPECIFICATIONS	LA1500RTC - 15" Capacitive	LA1710RTC - 17" Capacitive	LA1910RTC - 19" Capacitive
Planar Part Number	997-2930-00LF (RoHS Compliant Version)	997-2931-00 997-2931-00LF (RoHS Compliant Version)	997-2811-00 997-2811-00LF (RoHS Compliant Version)
Touchscreen Type	3M® ClearTek™ Capacitive	3M® ClearTek™ Capacitive	3M® ClearTek™ Capacitive
Touch Screen Interface	USB (Windows® 95/98/2000/ME/XP)	USB (Windows® 95/98/2000/ME/XP)	USB (Windows® 95/98/2000/ME/XP)
Brightness (w/touchscreen)	308 cd/m ²	273 cd/m ²	222 cd/m ²
Brightness (w/o touchscreen)	350 cd/m ²	260 cd/m ²	250 cd/m ²
Contrast Ratio (typical)	400:1	450:1	1000:1
Response Time (typical)	16 ms (4 ms rise, 12 ms fall)	16ms (4 ms rise, 12 ms fall)	8 ms GTG with RapidVideo™ Accelerator
Horizontal Scan	31.5 - 60 KHz	31.5 - 80 KHz	31.5 - 80 KHz
Viewing Angle (typical)	150° H, 125° V (+50/-75)*	160° H, V*	170° H, V
Pixel Pitch	0.297 mm	0.264 mm	0.294 mm
Refresh Rate	56-75 Hz	56-75 Hz	56-75 Hz
Power Consumption (operational)	30 W (5W standby)	40 W (3W standby)	60 W (5W standby)
Input Options	Analog	Analog, DVI-D	Analog, DVI-D
Power Requirements	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz
External Connections	D-sub, 15 pin USB (touchscreen option)	D-sub, 15 pin, DVI-D USB (touchscreen option)	D-sub, 15 pin, DVI-D USB (touchscreen option)
Features	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)
Power Supply	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.	External Module with IEC 320 Connector, USA, Cord-set, UL1950 certified.
Display Active Area	15" diagonal, 304 mm x 228 mm	17" diagonal, 338 mm x 270 mm	19" diagonal, 376 mm x .301 mm
Native Resolution	XGA (1024 x 768) native. Supports IBM VGA; VESA VGA, SVGA, XGA	SXGA (1280 x 1024) native. Supports IBM VGA; VESA VGA, SVGA, XGA, SXGA	SXGA (1280 x 1024) native. Supports IBM VGA; VESA VGA, SVGA, XGA, SXGA
Dimensions (WxHxD)	14.2" x 10.6" x 1.9" (360 mm x 270 mm x 47 mm)	14.6" x 11.8" x 1.8" (371 mm x 299 mm x 46 mm)	17.2" x 14.3" x 3.2" (436 mm x 363 mm x 81 mm)
Weight (display and brackets)	9.4 lbs (4.3 kg)	11.4 lbs (5.2 kg)	15.2 lbs (6.9 kg)
Approvals	FCC-B, CE, TUV, RoHS	FCC-B, CE, TUV, RoHS	FCC-B, CE, TUV, RoHS
Operating Temperature	5° - 35° C	5° - 35° C	5° - 35° C
Service and Support/Warranty	1 year	1 year	1 year
Extended Warranty Package	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00
Mounting Options	Adjustable rear panel mounting brackets included. VESA 75 mm compatible.	Adjustable rear panel mounting brackets included. VESA 100 mm compatible.	Adjustable rear panel mounting brackets included. VESA 75/100 mm compatible.

*Specified at CR≥5:1. All other LCDs specified at CR≥10:1.

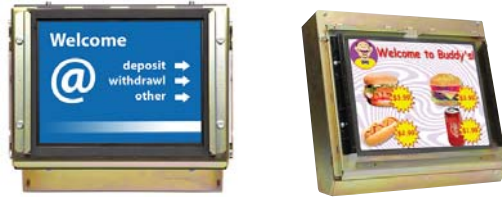
LB – Enhanced Brightness Embedded AMLCD Monitors - Non Touch and Capacitive Touch

Ask about
our LB12
sunlight readable
open-frame
monitor with IR touch
screen available
late Spring
2007!



SPECIFICATIONS	LB1500R - 15"	LB1503R - 15"	LB1500RTC - 15" NEW!
Planar Part Number	997-3006-00LF	997-3156-00LF	997-3275-00LF
Touchscreen Type	-	-	3M® ClearTek™ Capacitive
Touchscreen Interface	-	-	USB
Brightness (w/touchscreen)	-	-	503 cd/m ²
Brightness (w/o touchscreen)	550 cd/m ²	550 cd/m ²	550 cd/m ²
Contrast Ratio (typical)	500:1	500:1	500:1
Response Time (typical)	12 ms	12 ms	12 ms
Horizontal Scan	31.5 - 60 KHz	31.5 - 60 KHz	31.5 - 60 KHz
Viewing Angle (typical @ 10:1 CR)	140° H, 120° V	140° H, 120° V	140° H, 120° V
Pixel Pitch	0.297 mm	0.297 mm	0.297 mm
Refresh Rate	56-75 Hz	56-75 Hz	56-75 Hz
Power Consumption (operational)	40 W (1W standby)	60 W (3W standby)	40 W (1W standby)
Input Options	Analog	Analog/DVI-D/Composite NTSC, PAL	Analog
Power Requirements	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz
External Connections	VGA D-sub, 15 pin	VGA D-sub, 15 pin , DVI-D, BNC	D-sub, 15 pin
Features	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)	Anti-glare coating Multi-language support On screen display (OSD)
Power Supply	External Module UL, CuL 1950 certified.	External Module with IEC 320 Connector, USA and European, Cord-set, UL1950 certified.	External Module UL, CuL 1950 certified.
Display Active Area	15" diagonal, 304 mm x 228 mm	15" diagonal, 304 mm x 228 mm	15" diagonal, 304 mm x 228 mm
Native Resolution	1024 x 768 native. Supports IBM VGA; VESA VGA, SVGA and XGA	1024 x 768 native. Supports IBM VGA; VESA VGA, SVGA and XGA	1024 x 768 native. Supports IBM VGA; VESA VGA, SVGA and XGA
Dimensions (WxHxD)	14.2" x 10.6" x 2.0" (360 mm x 270 mm x 51.3 mm)	14.2" x 10.6" x 1.6" (360 mm x 270 mm x 41.5 mm)	14.2" x 10.6" x 2.0" (360 mm x 270 mm x 51.3 mm)
Weight (display and brackets)	8.7 lbs (3.9 kg)	6.7 lbs (3.0 kg)	8.7 lbs (3.9 kg)
Approvals	UL, FCC-B, CE-B, TUV, RoHS	UL, FCC-B, CE-B, TUV, RoHS	UL, FCC-B, CE-B, TUV, RoHS
Operating Temperature	5° - 35° C	5° - 35° C	5° - 35° C
Service and Support/Warranty	1 year	1 year	1 year
Extended Warranty Package	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00	Extends standard 1 year warranty to a total of 3 years - 990-0068-00
Mounting Options	Adjustable rear panel mounting brackets included. VESA 75 mm compatible.	VESA 75 mm rear mount and edge mount compatible.	Adjustable rear panel mounting brackets included. VESA 75 mm compatible.

LC – Sunlight-Readable Embedded AMLCD Monitors



SPECIFICATIONS	LC08	LC12
Planar Part Number	997-2566-00	997-2584-02
Display Type	Full Color TFT AMLCD	Full Color TFT AMLCD
Video Modes	SVGA (800 x 600), VGA	SVGA (800 x 600) native. Supports VGA and XGA as well.
Image Area	170.9 mm x 129.6 mm (8.4" diagonal)	246 mm x 184.5 mm (12.1" diagonal)
Video Input	Analog; 15-pin D-sub connector	Analog; 15-pin D-sub connector
Luminance (typical)	1000 cd/m ²	>1500 cd/m ²
Contrast Ratio (typical)	250:1	300:1
Dimming Range	-	-
Viewing angle (typical)	100° H, +20°/-45° V	120° H, +45°/-55° V
Response Time (typical)	100 ms max. (rise + fall)	45 ms (rise + fall)
Power Consumption (typical)	40 W	54 W
Supply Voltage & Current (typical)	+12 VDC	+12 VDC
Dimensions (WxHxD)	9.6" x 7.1" x 4.3" (245 mm x 180 mm x 110 mm)	13.4" x 12.2" x 4.1" (340 mm x 310 mm x 105 mm)
Weight	5.7 lbs (2.5 kg)	10.7 lbs (5.0 kg)
Operating Temperature	0° to +60° C	0° to +60° C
Storage & Transport Temperature	-20° to +60° C	-20° to +60° C
Humidity (operating)	< 95% RH non-condensing	<95% RH non-condensing
Regulatory and Safety	FCC Class A, CE, UL/cUL, TUV	FCC Class A, CE, UL/cUL, TUV
Cooling Kit	Internal cooling w/thermostat & front cooling	Internal cooling and front-surface cooling
Power Supply	Optional 80W power supply and cord: US version: 997-3287-00LF European version: 997-3286-00LF	Optional 80W power supply and cord: US version: 997-3287-00LF European version: 997-3286-00LF
Vandal Glass & Enhancements	Custom touchscreens available	Custom touchscreens
Mounting Options	Custom. See drawings on website	Custom. See drawings on website



Optional Contrast Enhancement Technology (CET)

FEATURES:

- Rugged vandal glass with integrated Contrast Enhancement Technology (CET): protects you and your display system from impact and contaminants
- Increases display contrast ratio by as much as 75% in high ambient light and high glare, improving readability and user satisfaction
- Reduces need for a brighter backlight lamp, increasing overall system reliability and reducing maintenance costs
- Improves display system's thermal performance in direct sunlight
- Based on technology invented by Planar's optics experts

Dimensions (15" version)

333 x 262 x 7.3 mm (13.1"x10.3"x.29")

Weight (15" version)

3.0 lbs (1.4 kg) typical.

(Custom sizes available. Consult Factory.)

LC – Sunlight-Readable Embedded AMLCD Monitors



SPECIFICATIONS	LC1200R	LC15
Planar Part Number	997-3058-00LF	997-2799-02LF
Display Type	Compensated TN, Full Color TFT AMLCD	Compensated TN, Full Color TFT AMLCD
Video Modes	SVGA (800 x 600), SGA, VGA	XGA (1024 x 768), SVGA, VGA
Image Area	307.5 mm (12.1" diagonal)	304 mm x 228 mm (15" diagonal)
Video Input	Analog; 15-pin D-sub	Analog; 15-pin D-sub
Luminance (typical)	1500 cd/m ²	1200 cd/m ²
Contrast Ratio	500:1	600:1
Dimming Range	4:1 (typical)	4:1 (typical)
Viewing Angle (typical)	110° H, 90° V	160° H, 115° V*
Response Time (typical)	35 ms	16 ms
Power Consumption (typical)	48 W	48 W
Supply Voltage	+12 VDC	+12 VDC
Dimensions (WxHxD) (w/o touchscreen)	11.85" x 9.25" x 3.26" (301 mm x 235 mm x 83 mm)	13.4" x 10.3" x 3.1" (333 mm x 262 mm x 78 mm)
Weight (w/touchscreen)	4.0 lbs (1.8 kg)	6.7 lbs (3.0 kg)
Operating Temperature	0° to +60° C	-10° to +60° C
Storage & Transport Temperature	-20° to +60° C	-20° to +60° C
Humidity	< 95% RH non-condensing	< 95% RH non-condensing
Regulatory and Safety	CE, RoHS	FCC Class B, CE, UL/cUL, TUV, RoHS
Cooling	4 Internal fans	Internal fan. Optional 3-fan cooling kit for solar loading (p/n 997-2823-01LF)
Power Supply	80W external p/s options. US version: 997-3066-01 European version: 997-3067-00LF	80W external p/s options. US version: 997-2826-01LF European version: 997-2825-01LF
Touchscreen	Semi-Custom - call Planar sales	IR touch monitor option-consult factory
Mounting Features	Side/Rear mounting points	Side mounting points
Audio	n/a	n/a
Cables Provided	Remote photo sensor cable, remote button board and 6'VGA cable	No cables provided

Why PLANAR?

"Our outdoor building communication products need to survive in all weather conditions. Particularly the direct sunlight heating up the surface of the display could create serious problems for the TFT-technology. The high brightness 15" monitor from Planar is bundled with a custom designed cooling-kit to protect the display. We take Planar because they are offering a complete and competent solution."

- Karl Diring, Product Construction
SSS Siedle

LC – Sunlight-Readable Embedded AMLCD Monitors



SPECIFICATIONS	LC17 ^{NEW!} HIGH DEFINITION READY!	LC19 ^{NEW!} HIGH DEFINITION READY!
Planar Part Number	997-3361-00LF	997-3360-00LF
Display Type	Compensated TN, Full Color TFT AMLCD	Compensated TN, Full Color TFT AMLCD
Video Modes	SXGA (1280 x 1024), XGA, SVGA, VGA	SXGA (1280 x 1024), XGA, SVGA, VGA
Image Area	338 mm x 270 mm (17" diagonal)	396 mm x 301 mm (19" diagonal)
Video Input	DVI-D, 15-pin VGA, S-Video, Composite	DVI-D, 15-pin VGA, S-Video, Composite
Luminance (typical)	1100 cd/m ²	1150 cd/m ²
Contrast Ratio	500:1	500:1
Dimming Range	6:1	6:1
Viewing Angle (typical)	140° H, 140° V	140° H, 140° V
Response Time (typical)	12 ms	20 ms
Power Consumption (typical)	50 W	70 W
Supply Voltage	+12 VDC	+12 VDC
Dimensions (WxHxD) (w/o touchscreen)	14.6" x 12.2" x 3.2" (370 mm x 310 mm x 80 mm)	15.6" x 13.5" x 2.4" (376 mm x 343 mm x 60 mm)
Weight (w/touchscreen)	10.0 lbs (4.5 kg)	11.3 lbs (5.12 kg)
Operating Temperature	0° to +50° C	0° to +50° C
Storage & Transport Temperature	-20° to +60° C	-20° to +60° C
Humidity	< 80% RH non-condensing	< 80% RH non-condensing
Regulatory and Safety	FCC Class A, CE, UL/cUL, TUV, RoHS	FCC Class B, CE, UL/cUL, TUV, RoHS
Cooling	Whisper quiet internal fan. Consult factory for external cooling options.	Whisper quiet internal fan. Consult factory for external cooling options.
Power Supply	80W external p/s included	80W external p/s included
Touchscreen	IR touch monitor p/n 997-3451-00LF	IR touch monitor p/n 997-3475-00LF
Mounting Features	Side/Rear mounting points	Side/Rear mounting points
Audio	1W/ch	1W/ch
Cables Provided	VGA, DVI-D, S-Video, Composite, AC (Eur & NA)	VGA, DVI-D, S-Video, Composite, AC (Eur & NA)

SPECIFICATIONS	LC640.480.33-AC
Planar Part Number	996-0403-02
Display Type	Full Color TFT AMLCD
Video Modes	VGA (640 x 480)
Image Area	211.2 mm x 158.4 mm (10.4" diagonal)
Video Input	18 bit interface on 34-pin connector
Luminance (typical)	1000 cd/m ²
Contrast Ratio (typical)	150:1
Viewing angle (typical)	+70° H, +40°/-60° V
Response Time (typical)	Rise 25 ms, Fall 45 ms
Power Consumption (typical)	32 W
Supply Voltage & Current (typical)	+5VDC, Backlight: +12VDC
Dimensions (WxHxD)	10.7" x 7.9" x 1.1" (272.3 mm x 199.9 mm x 27.0 mm)
Weight	2.0 lbs (0.9 kg)
Operating Temperature	-10° to +70° C
Storage & Transport Temperature	-25° to +85° C
Humidity (operating)	< 95% RH non-condensing
Vibration (operating)	.02 g /Hz (5 to 500 Hz)
Shock	100 g, 6 ms
Regulatory and Safety	The LC640.480.33-AC will not inhibit the end product from obtaining the following certifications: Safety - UL1950, IEC950, EMC - EN55022, FCC Class B
Mounting Options	Custom. See drawings on website



LX1200 In-Vehicle Touch Monitor

The LX1200 is a rugged, open standard, touch monitor for in-vehicle use. Using the latest in transfective display technology to improve readability at a glance, the LX series of monitors improves driver safety during night and day use.

"I can buy almost three Planar's for the cost of one of our existing monitors. The LX1200 was easy to install and has the perfect screen size for field use. The touchscreen was plug and play which helped us get rid of computer configuration problems."

John Vincent, Municipal Systems Analyst

FEATURES	BENEFITS
Daylight readable AMLCD	At a glance readability improves driver safety
Night mode	Stealthy, comfortable nighttime viewing
Safety glass touchscreen over display	Will not scratch or burnish. Easily cleaned
Configurable macro buttons	Change screen views with single touch to minimize driver distraction
2-port USB hub	Quickly install peripherals and more memory
Magnesium enclosure	Rugged design to lengthen service life
Open standards design	Future upgrades of PC don't obsolete the monitor or change operator interface

Transflective Technology Overview

Planar's LX monitor leverages the recent advancements of TFT transflective LCD technology to offer optimum display viewing for in-vehicle use from night time to full sunlight brightness.

Transflective LCD technology combines both backlit transmissive operation mode and a reflective mode. This rear reflector enhances the display viewability when exposed to very bright ambient sunlight conditions. The display maintains excellent viewability over a wide range of ambient illumination conditions from night time to full sunlight. In low level ambient light conditions the display relies on the traditional transmissive backlit mode to supply required display brightness.

As ambient illumination levels increase to full sunlight levels, the display's brightness is increased using the rear reflector and required image and color contrast are maintained. "Recycling" the ambient light using the rear surface reflector and minimizing unwanted front surface reflections results in lower lamp power demands and less heat generation. Avoidance of increasing lamp power substantially extends the display's useful life.

Planar's optimized transflective display results in

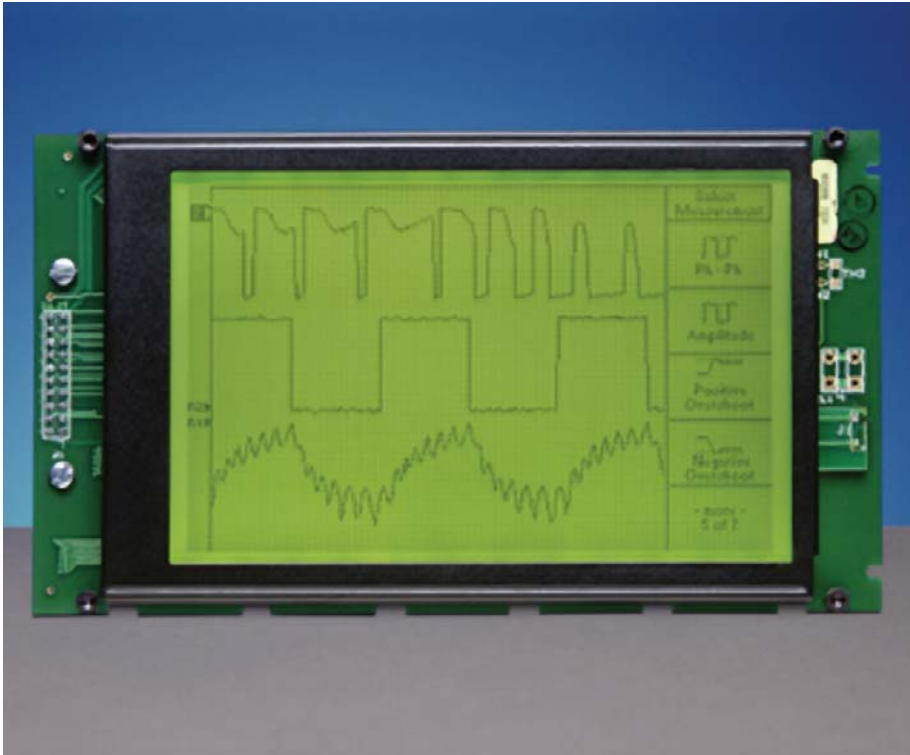
- Excellent viewability over all ambient light conditions
- Lower Power
- Less Heat
- Extended Lamp Life

Ask about our LX0700 available in 2007!



SPECIFICATIONS	LX1200TR - 12" SVGA	LX1200TI-12" XGA NEW!
Planar Part Number	997-3200-01	997-3342-00LF
Touchscreen Type	5-Wire Resistive	IR with glass overlay
Touchscreen Interface	USB Touchscreen driver (Windows® 2000/XP)	USB touchscreen driver (Windows®2000/XP)
Brightness* (Typical daylight conditions)	1100 cd/m ²	1100 cd/m ²
Contrast Ratio	250:1	250:1
Viewing Angle (typical)	140° H / +45°/-55° V	140°H / +45°/-55°V
Power Consumption (operational)	<17 W	<17W
Supply Voltage and Current (typical)	8 to 18 V with built-in transient protection	8 to 26V with built-in transient protection
Video Interface	Analog VGA	Analog VGA
Macro Buttons	n/a	6 programmable function keys including dedicated color coded Emergency Button
Macro Button Programming	n/a	User configurable Planar SoftKey utility included
External Connections	D-sub 15-pin video connector 2 pin locking power connector 3.5mm stereo audio input USB (2-Type A, 1-Type B) Power interrupt connector (Power button for remote PC)	D-Sub 15-pin video connector 2 pin locking power connector 3.5mm stereo audio input USB (2-Type A, 1 Type B) Power interrupt connector (Power button for remote PC)
Features	Manual dimming Video blanking (for instant screen concealment) Power button turns on/off remote PC 2 port USB 2.0 Hub Volume Control LED status light Automatic video mode synchronization Drip resistant front surface Integrated stereo speakers	Manual dimming to off Video blanking (for instant screen concealment) Power button turns on/off remote PC 2 port USB 2.0 hub Speaker volume control LED status lights Automatic video mode synchronization Waterproof IP 65 front surface Integrated stereo speakers
Display Active Area	12.1" diagonal, 246 mm x 184.5 mm	12.1" diagonal, 246mm x 184.5mm
Native Resolution	SVGA (800 x 600) Supports VGA (640 x 468) and XGA (1024 x 768)	XGA (1024 x 768) Supports VGA (640 x 480) and SVGA (800 x 600)
Dimensions (WxHxD)	12.36" x 10.51" x 1.9" (314mm x 267mm x 47mm)	12.36" x 10.51" x 1.9" (314mm x 267mm x 47mm)
Weight (net)	6.5 lbs (2.9 kg)	6.5 lbs (2.9 kg)
Approvals	FCC Class B, UL/CSA 60950, E-MARK	FCC Class B, UL/CSA 60950, E-MARK
Operating Temperature	20° to 60° C	20° to 60° C
Storage Temperature	20° to 70° C	20° to 70° C
Humidity (operating)	<95% RH non-condensing	<95% RH non-condensing
Service and Support	1 year standard return to depot 3 year Customer Frist (p/n 990-0213-00) optional	1 year standard return to depot 3 year Customer First (p/n 990-0213-00) optional
Options	AC/DC Power Adaptor (80W switching supply p/n 997-3066-01LF)	AC/DC Power Adaptor (80W switching supply p/n 997-3066-01LF)

*LX1200TR & LX1200TI uses Transflective display – equivalent brightness in typical sunlight condition



Passive LCD Products

Passive Liquid Crystal Displays (PLCDs)

Planar specializes in custom LCDs and LCD modules utilizing liquid crystal fluids and temperature-compensated electronics for a wide range of operating temperatures. More than 80% of Planar's PLCD products are manufactured with one or more modifications. The latest innovations in custom LCD technology are carefully developed and monitored starting from sales administration and technical support, through design, manufacturing and quality assurance.

WHY CHOOSE PLANAR FOR LCD APPLICATIONS?

- Over 20 years of experience developing custom display solutions
- Dedicated engineering teams to guide your project from design through manufacturing
- Broad portfolio of capabilities and value-added services
- We have experience developing LCD solutions for transportation, industrial, military, medical, maritime and public safety applications

OPTIONS AVAILABLE:

- Backlight
- Viewing mode options
- Display images
- Connection methods
- LCD types
- LCD sizes
- Fluid options

www.planarembded.com/PLCD



Negative Image Color Ink Process

Negative image LCD with all four colors (green, red, yellow and black) provide a unique appearance and "user friendly" characteristics. The LCD provides tire alignment and status information to the operator.



Negative Image Color Ink Process

This copier status LCD features unique graphics, annunciators and digits combine with color inks to alert the operator to status changes. Trouble areas and proper count. The white ink overlay creates an outline of the copier even when the LCD is not activated



Negative Image Color Ink Process

Digits and annunciators combined with a multi-color format provide a quick and easy reference to the user and also adds appeal to the product. The LCD is backlit for low light/night use.



Supertwist (STN) Custom LCD

Segmented digits, bar graphs and dot matrix characters combine in a single LCD to provide a multi-purpose LCD design. This STN LCD combines two multiplex levels, 3:1 and 8:1 to achieve this multi-purpose format.



Positive Image LCD With Blank Ink Screen

This custom LCD is in the "traditional" dark segments, light background reflective viewing mode. The black lines are screened on the LCD to divide the active area making the LCD more user friendly.



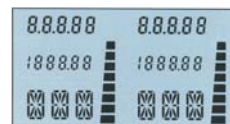
Positive Image STN LCD in the "Silver Mode"

A unique combination of bar graphs, digits and dot matrix characters illustrate the versatility of LCDs in format and character design.



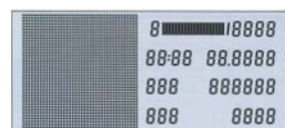
Positive Image TN Custom LCD

Numerous digits, a semi-circular bar graph and unique icons combine in this custom TN LCD to provide information to an "off road" vehicle operator. Minimum fluid was used in this design for an increased viewing angle, and as a secondary benefit, a wide operating temperature range.



Positive Image TN LCD in the Transflective Viewing Mode

Seven segment digits combined with two vertical bar graphs and sixteen segment alphanumeric characters make this design distinctive. The LCD is transflective for universal day and night use when backlit.



Custom Film Compensated STN (FSTN) LCD

Seven segment digits, a bar graph and a 40x40 graphics format combine in this versatile custom LCD design. FSTN LCD technology is used to achieve a "black on white" appearance.



SD – Stereoscopic LCD Monitors

Introducing the Next Generation of Stereoscopic Displays

- Excellent Stereo Image Quality
- Comfortable Stereo Viewing
- Elegantly Simple

Planar's SD product line, featuring innovative StereoMirror™ technology, provides the highest-quality stereoscopic image available in a desktop monitor. These displays have the exemplary resolution and brightness you've come to expect from Planar.

Planar's SD line is available in three sizes: 17" with SXGA resolution (1280x1024), 20" with UXGA resolution (1600x1200) and 23" wide-format with WUXGA (1920x1200) resolution. Only Planar StereoMirror monitors deliver the full resolution to both eyes for stunning stereo imaging.

FEATURES and BENEFITS:

- Multiple resolutions and sizes
- Full-resolution stereo viewing
- Flicker-free, high-contrast imaging
- Viewable in typical office lighting
- Multi-user, wide-angle viewing
- Compatible with several off-the-shelf graphics cards
- Plug-and-play with OpenGL and DirectX applications that support stereo
- Uses simple polarizing glasses
- 1-Year Customer First™ Warranty

APPLICATIONS:

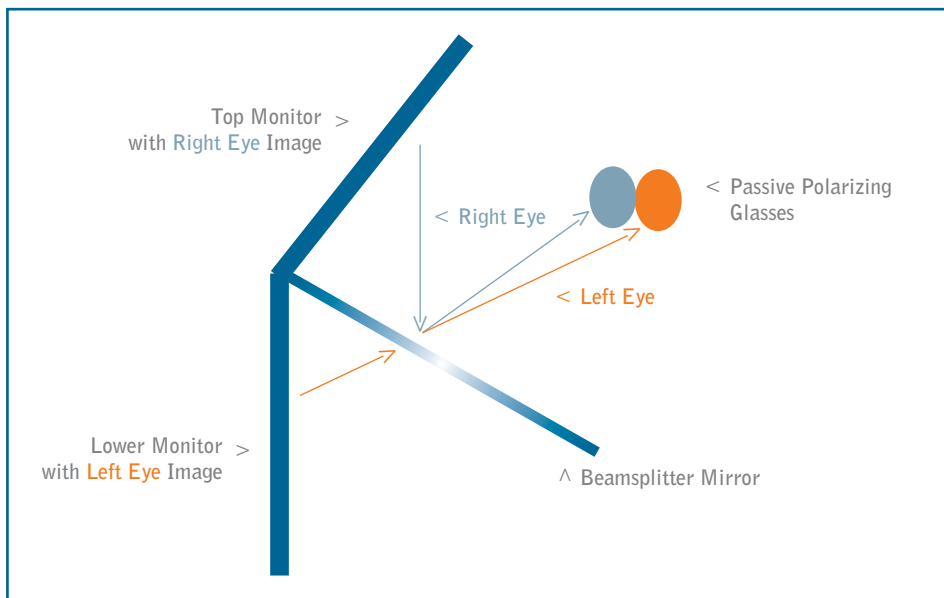
- Geospatial & photogrammetry
- Medical imaging
- Geowall
- Molecular modeling
- Data visualization
- Oil & gas exploration

www.planar.com/StereoMirror

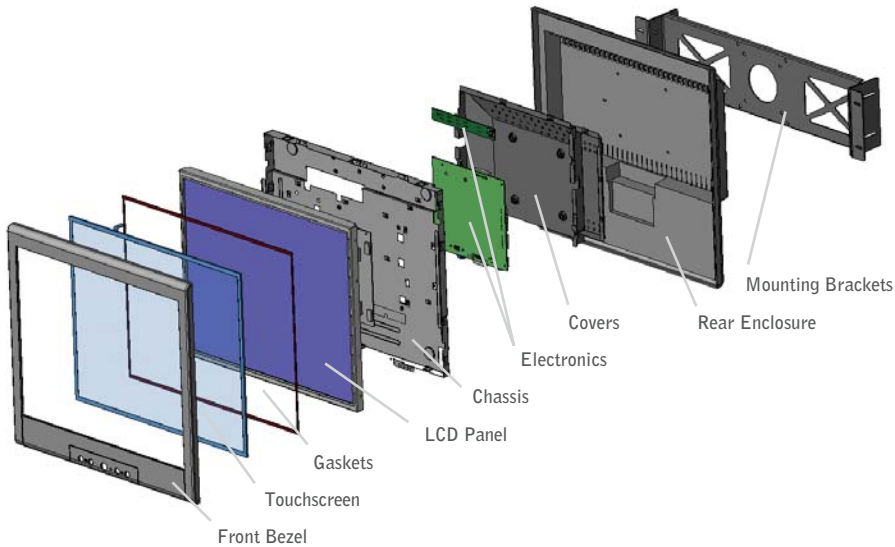


SPECIFICATIONS	SD1710	SD2020	SD2320W
Planar Part Number	997-2881-01	997-3004-01	997-3191-01
Pixel Format	SXGA	UXGA	WUXGA
Resolution	1280x1024	1600x1200	1920x1200
Megapixel Count	1.3	1.9	2.3
Pixel Pitch	0.264 mm (96 LPI)	0.256 mm (100 LPI)	0.258 mm (99 LPI)
Screen Diagonal	17.0 in	20.1 in	23.1 in
Colors	16 M	16 M	16 M
Stereo Luminance	70 cd/m ² (through glasses)	150 cd/m ² (through glasses)	150 cd/m ² (through glasses)
Response Time	8 ms (2 ms rise, 6 ms fall)	16 ms (11 ms rise, 5 ms fall)	12 ms (3 ms rise, 9 ms fall)
Refresh Rate, Hz	56 to 75	49 to 75	60
Interface	24-pin DVI	24-pin DVI	24-pin DVI, S-Video, Composite
Dimensions (WxHxD)	18.7" x 19.5" x 23.3" (475 mm x 495 mm x 592 mm)	23.1" x 20.4" x 25.5" (588 mm x 519 mm x 648 mm)	23.1" x 21.2" x 26.9" (588 mm x 538 mm x 682 mm)
System Weight	33 lbs. (15 kg)	47 lbs. (21 kg)	54 lbs. (24 kg)

How does the StereoMirror work?



The left eye polarized lens of the glasses blocks light from the top monitor while light from the lower monitor is blocked by the right eye lens.



Custom Capabilities & Touch Technologies

We Can Meet the Specifications of Your Display Project

For many customers, customization is a chief means of product differentiation. Customization of an LCD can be as simple as changing the fluid, polarizing materials, or pin length on a standard part. Or a customization project can be a complete custom design involving special graphics, installing touch sensors, adding color ink printing to emphasize special icons or symbols, or changing viewing modes or connection methods.

A key advantage Planar brings to this equation is the company's understanding of the application and how best to match the use of special LCD fluids, cell construction, polarizers and other materials to achieve superior results. With such a diverse range of markets and applications comes an equally diverse set of customer needs, which are met by augmenting the company's line of standard products with extensive custom LCD designs and services.

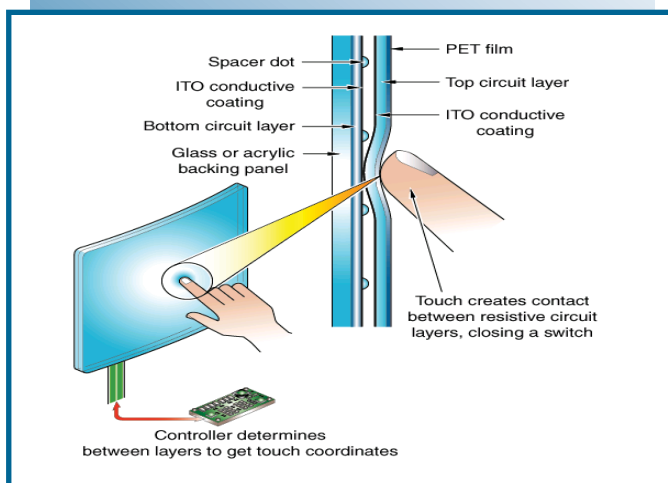
CUSTOM CAPABILITIES:

- Performance films and enhancements
 - Anti-glare
 - Anti-reflective
 - Vandal glass
 - Optical glass bonding
- Custom enclosures and brackets
 - Bezels
 - Mounts
 - Chassis
 - Stands
- Rugged hardware
- Embedded computing
- Extended temperature
 - Cooling Kit
 - Heaters
- Drive electronics
- LED backlights
- Video
- Industrial Design

Why RESISTIVE Touch?

- Cost effective solution
- Activated by a stylus, a finger or gloved hand
- Functions even if damaged
- Applications:
 - Healthcare
 - Hospitality
 - High-Volume Retail Environments

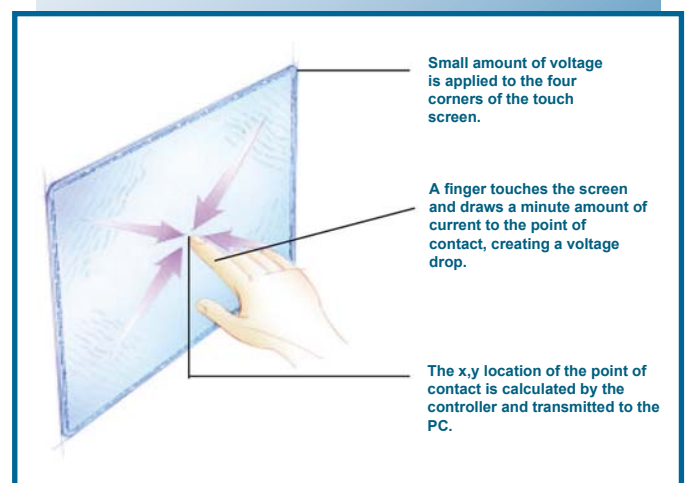
Resistive Touch: How it Works



Why CAPACITIVE Touch?

- Durable and resistant to scratches for demanding applications
- Faster and more responsive
- Immune to surface contaminants
- Superior optical clarity, brighter display and less surface reflection
- Applications:
 - Casino Gaming
 - Retail
 - Hospitality

Capacitive Touch: How it Works



Ask about our IR touch solutions

Why INFRARED (IR) TOUCH?

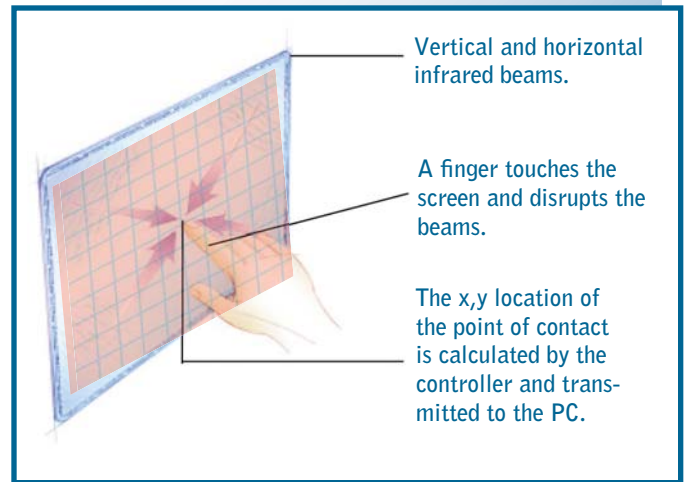
TOUCH TECHNOLOGIES:

Benefits of Using a Touchscreen:

- Intuitive way to interface with technology
- Eliminates the need for a keyboard or mouse
- Eliminates the need for mechanical buttons on an enclosure
- Allows the user to enter information quickly with fewer errors
- Perfect for handicapped users

- Clear as glass. The clarity of the technology improves readability at a glance.
- The rugged surface and bezel design is the best technology for sealing against liquids and dust.
- Applications:
 - Transportation Informatics
 - Kiosk
 - Industrial Machine Control

IR Touch: How it Works



	INFRARED (IR) NEW!	RESISTIVE (5-wire)	CAPACITIVE	SAW
Gloved Hand	Yes	Yes	No	Yes
IP 65/NEMA 4 Seal Capable	Yes	Yes	Achieved with Correct Material	No
Durability/Wear	Excellent	Fair	Good	Excellent
USB Interface	Yes	Yes	Yes	Yes
Calibration Stability	Excellent	Fair to Excellent	Good to Excellent	Excellent
Light Transmission	92-99%	75-85%	88-93%	90%

RoHS Statement

European Union 2002/95/EC Directive on the Restriction of Hazardous Substances (RoHS)

In February 2003, the European Union issued Directive 2002/95/EC on the Restriction of Hazardous Substances, commonly known as RoHS, in certain electrical and electronic equipment. It restricts the use of six hazardous substances, including lead (Pb). The Directive states that all products placed on the European market after July 1, 2006 must be compliant with its requirements.

Planar Systems Inc. is fully in support of and compliant with EU Directive 2002/95/EC on all its products, except where exempted, such as medical. Should those exemptions be removed in the future, Planar will comply with such directives or amendments.

A Planar part number will be modified with an "LF" suffix designation to indicate RoHS compliance, as shown on the part number label affixed to the display and on the box containing the display.

ISO Certifications

Planar's Beaverton, Espoo, and Waltham sites have obtained ISO 9001:2000 registration and throughout our organization there is a commitment to continual improvements. In addition, Planar's Beaverton and Waltham sites have obtained ISO 13485:2003 registration.

Planar System Inc.'s FDA Establishment Registration Number: 1226517

For more information visit <http://www.planar.com/advantages/ISO/index.html>



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