PLANAR

Planar LT3200 Owner Manual

This manual is designed for use with the Planar® LT3200 LookThru™ open frame transparent display. Information in this document has been carefully checked for accuracy; however, no guarantee is given to the correctness of the contents.

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I. Precautions and Warnings

To maximize the life and safe use of your Planar product, always be sure to follow the warnings and precautions in this product guide.

Important Instructions:

1. Read, retain, and heed all warnings and instructions.

2. You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.

Do:

- Keep in mind this is an open frame display component. It has components that are fragile and less well-protected than in end-user displays. These vulnerable components are subject to damage from inappropriate handling where contact with abrasive surfaces and sources of electrostatic discharge will damage the unit
- Design an enclosure to adequately protect the open frame display.
- Design your display enclosure using the advice given in this manual.
- Operate and store your transparent display in a clean, dry environment.
- Disconnect the power plug before cleaning
- Clean front glass using multiple soft clean cloth moistened with a commercial mild window glass cleaner or isopropyl alcohol (IPA).
- Remove lint and other loose debris from the inside surface of the LCD with a dry lint-free soft cloth

Don't:

- Do not look directly at the LED illumination system in operation.
- Do not touch the front or the inside display surface with sharp or hard objects.
- Do not use abrasive cleaners, waxes or solvents for your cleaning.
- Do not spray cleaner inside the display enclosure. We recommend wiping the interior with a soft cloth that has been moistened with a mild detergent.

II. LT3200 Product Description

The Planar LT3200 is a high performance open frame transparent display for use indoors in a customer-designed enclosure. Possible digital signage applications include various retail, marketing and other digital showcase uses. The contemporary, bezel-less design and the Planar-modified, high-definition (HD, resolution 1366x768) active matrix liquid crystal display (AMLCD) provide extraordinary, eye-catching transparent display performance with best in class optical clarity, color saturation, contrast and black opacity. The Planar-designed LED illumination system efficiently presents sufficient light intensity to fully illuminate the contents of the transparent display enclosure and AMLCD display simultaneously when a properly prepared enclosure is used. In the LT3200, Planar has provided an open frame display design that enables our customers to create exceptional sales and marketing tools employing the latest in digital display technology.

The LT3200 is composed of 2 primary components: the display module and the driver box. The display module is fabricated from 5mm thick, heat-strengthened glass with an anti-reflection coating on the first surface of the front glass. The front glass is optically bonded to the transparent AMLCD. This optically-bonded assembly is attached to the display chassis along with the LED illumination system and AMLCD drive circuitry. Mounting brackets for the display are also located on the short sides of the frame.

The driver box contains the LED controller and the video interface circuitry and can be located remotely from the display module by as much as four feet. Power is supplied to the LT3200 driver box through the four-pin connector of the 48V power supply brick. The power brick is compatible with an input voltage range of 100 to 240VAC with a suitable power cord.

Your computer or media player can (either) employ any digital output that interfaces with the LT3200 HDMI or Displayport input plugs. The only additional hardware is the correct interface cable that matches your output plug and one of the LT3200 input plugs. No other special additional hardware is needed.

III. LT3200 Display Components

Front and Back Views of the Display
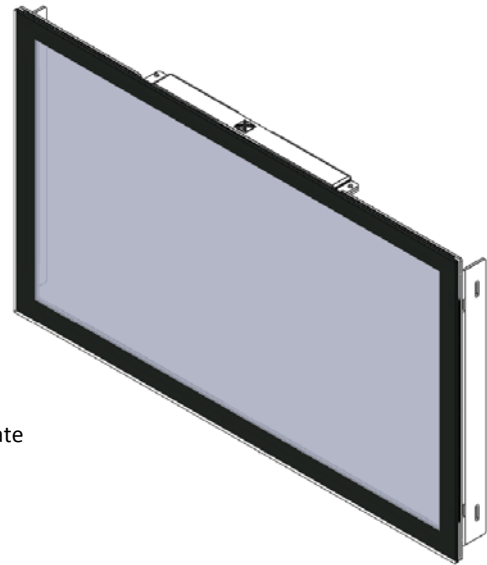
Front View - Heat strengthened Glass with AR coating

AMLCD Circuit Cover Plate

LED Strips (6x)

Display Mounting
Brackets (2x)
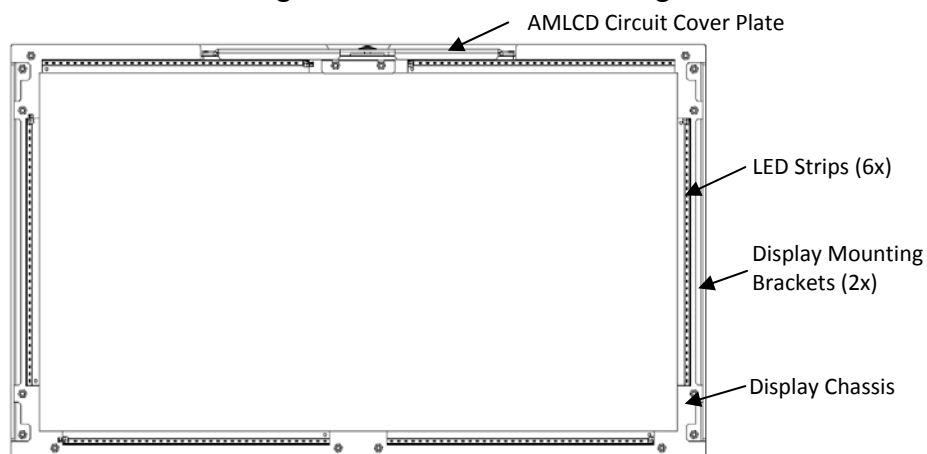
Display Chassis

Rear View – Display chassis with LED illuminators and mounting brackets

Edge Views of the Display

AMLCD Assembly   Cable Strain   AMLCD Circuit Cover Plate   Display Mounting
                   Relief Pad   Brackets (2x)

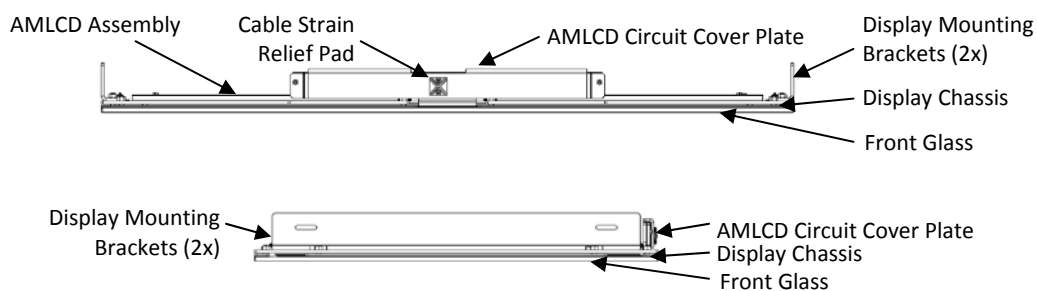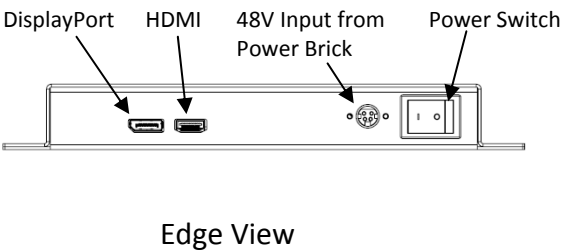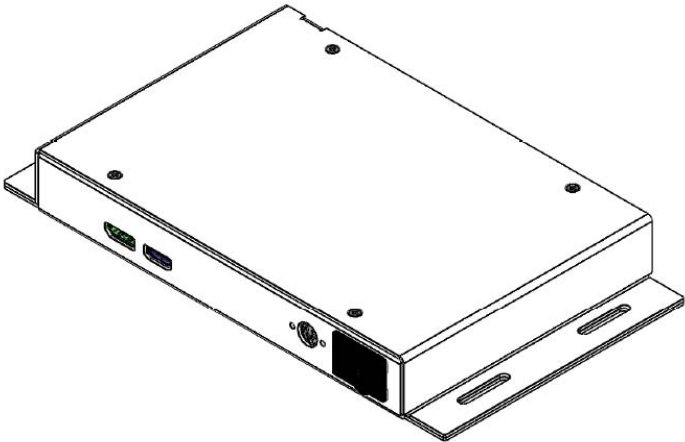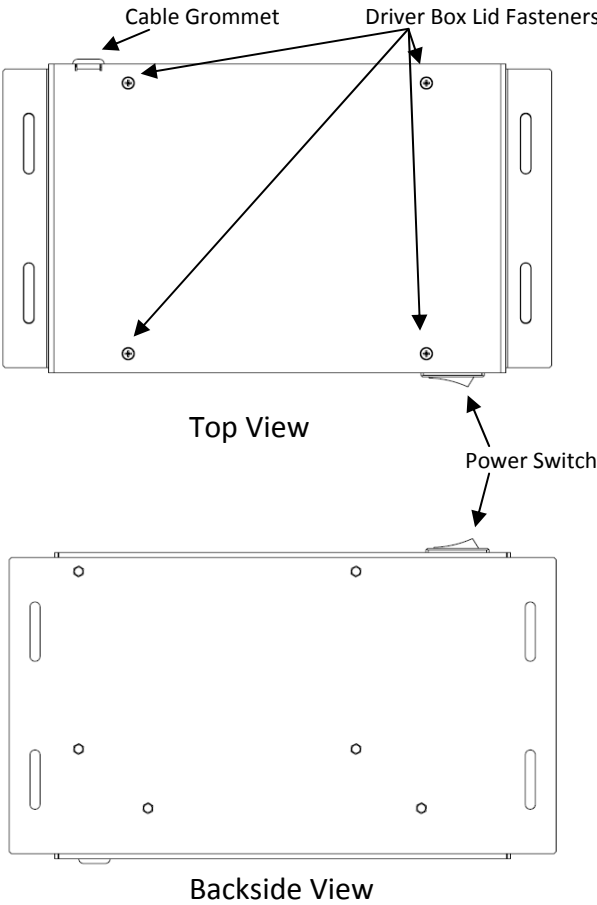   Display Chassis

                                                                       Front Glass

Display Mounting   AMLCD Circuit Cover Plate
Brackets (2x)   Display Chassis
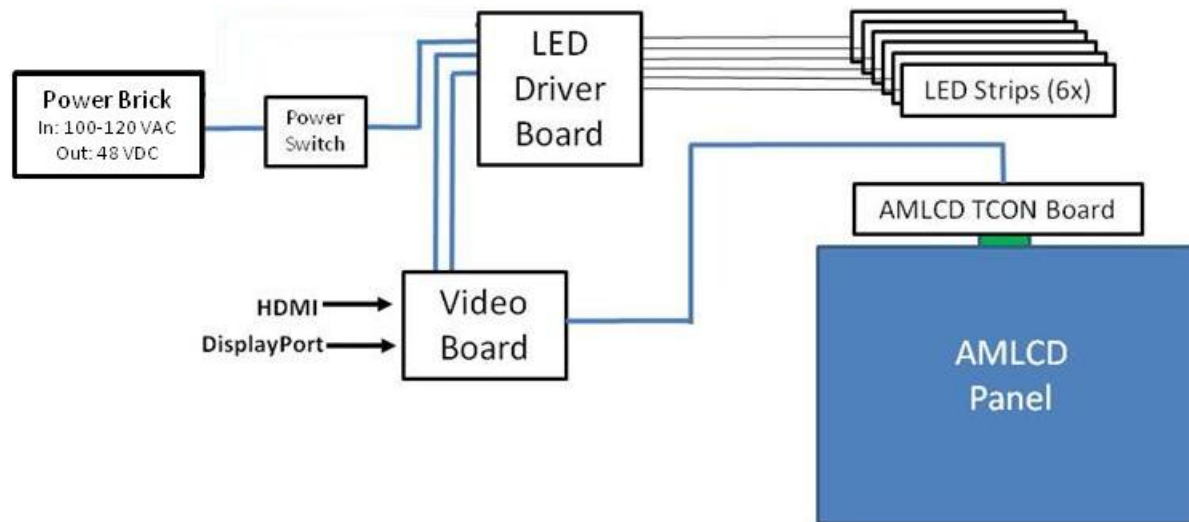   Front Glass

⚠ **Caution! Avoid any impact or contact with the cover plate surrounding the AMLCD circuit card. It should not be grasped or manipulated while handling the open frame display.**

LC3200 Display Components, cont'd

Top, Backside and Edge Views of the Driver Box

Cable Grommet   Driver Box Lid Fasteners

Top View

Power Switch

Backside View

DisplayPort   HDMI   48V Input from   Power Switch
                       Power Brick

Edge View

IV. Product Architecture

LT3200 Block Diagram

V. Designing an Enclosure for your LT3200

The LT3200 open frame display will provide best in class transparent display performance, but the enclosure design is a critical contributor to the appearance and operation of the full display assembly. We encourage our customers to be creative in designing their presentation configuration using the LT3200. To achieve optimum results, we recommend the following:

- Orientation: the display can be used in portrait, landscape or countertop (horizontal) mode. Note that the enclosure can be incorporated into an existing wall or table.

- Enclosure material: use materials structurally capable of supporting the weight of the display and its planned contents while providing an opaque enclosed space. Light leaks should be eliminated.

- Interior surface finish: it should be a uniform, high reflectance white. Use satin or matte finish white paint or a material with a white reflective body color. A gloss finish is not recommended unless it is part of a specific visual design. Use of a color other than white will reduce the efficiency of the display and will cause a color shift in the output of the AMLCD. Minimize, ideally eliminate, any dark colored surfaces in the interior finish of the enclosure. Note that there is almost no ultraviolet light emitted from the white LEDs employed in the LT3200, but the white light is sufficiently bright to cause potential photobleaching of materials susceptible to light-induced color fading. Use colorfast materials.

- Enclosure dimensions: we suggest the horizontal and vertical dimensions be within a few inches of the perimeter dimensions of the front glass (17.9 x 29.9 inches, 455 x 760 mm). The LED lighting system is designed to illuminate a space roughly the rectangular size of the front glass. Items placed in an enclosure much larger than the glass will not necessarily be adequately lit. Regarding the depth of the enclosure, we recommend a depth no greater than about 15 inches (380 mm) for best visibility. You will find items placed closest to the inside surface of the AMLCD will have the best clarity.

- Thermal consideration: the display chassis can reach a temperature of 55°C (130°F) during normal operation at typical ambient room temperature (22°C, 72°F) due to heat dissipation from the LED illumination system. Depending on the thermal properties of the enclosure, this can result in enclosure temperatures above 30°C (86°F) that may be detrimental to some items to be demonstrated in the enclosure. While this will not be a problem for the LED illumination system, we recommend a properly ventilated design of the enclosed space if a somewhat elevated enclosure temperature poses an issue to the box contents. Since heat from the LEDs is dissipated primarily through the metal chassis, in designing your enclosure make certain to not hinder air flow in the vicinity of the chassis. No fan should be needed.

- Environment: the LT3200 display is intended to be used indoors at a typical indoor temperature range (10° to 30°C, although the operating range is 0° to 40°C). Positioning the display in direct sunlight or other very bright illumination sources is not recommended for best viewing performance. Do not use the LT3200 in an environment of condensing humidity.

- Placement of the Driver Box: We have provided sufficient length in the wiring bundle for the driver box to be as much as four feet from the display module. Be certain to protect and enclose the wire bundle and any other wiring, including the power brick, from customer access. Note that the LT3200 power switch is located in the Driver Box so be sure to provide access.

- Power Supply: the power brick is compatible with 100 to 240V input.

- The system is shipped from the factory with the LED power leads and the video cable disconnected from the driver box. These must be attached before operating the display. In addition, there are grounding wires in the LED and video wiring bundle that are to be connected to the driver box. More details are found in the next section of this document.

- The LT3200 is a component type open frame TFT LCD display intended to be installed into a final system assembly. Therefore the mechanical enclosure, electrical enclosure, EMC enclosure and mounting function must be evaluated in the final system assembly.

VI. Connecting the Driver Box

The LT3200 is shipped with the wiring bundle disconnected from the Driver Box so the free end of the bundle can be routed in the enclosure as part of the assembly process. This section describes how to connect the wiring bundle to the Driver Box. You will need a small (#1) Phillips screwdriver.

Note: It is important to follow the instructions carefully and observe safe ESD practices, especially if the assembly is taking place away from a grounded workbench.

1- Remove the four Philips screws securing the lid to the Driver Box and remove the lid. Locate the LED ground wire loop at the free end of the cable assembly (see Photo 1). The cable assembly is attached to the display.
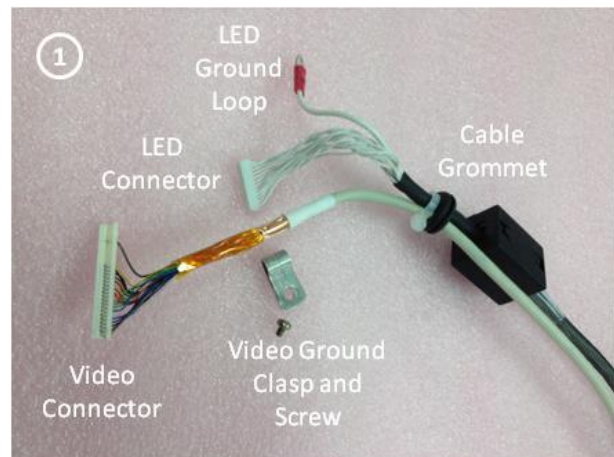

2- Remove the Phillips screw from the corner of the video board closest to the cable slot. As shown in Photo 2 place the screw in the ground wire loop connector (upper arrow) from the cable bundle and secure the screw back in place with the ground wire loop (lower arrow).
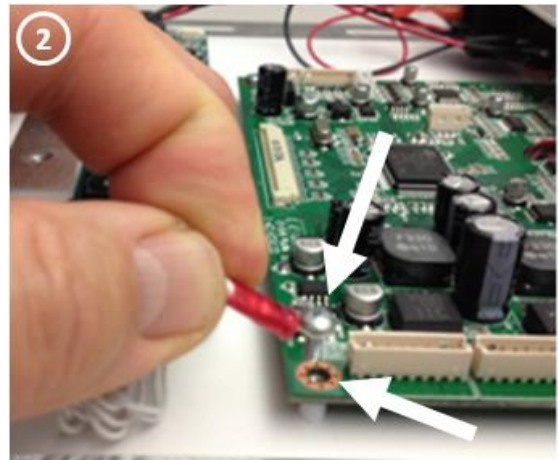

3- Carefully position the free end of the LED wiring bundle near the corner of the box that has the cable slot. Locate the LED connector and orient it as seen in Photo 3 at right. While avoiding placing any stress on the attached wires, gently insert the connector and fully seat it in the socket by pressing on the edges of the connector, not the wires.
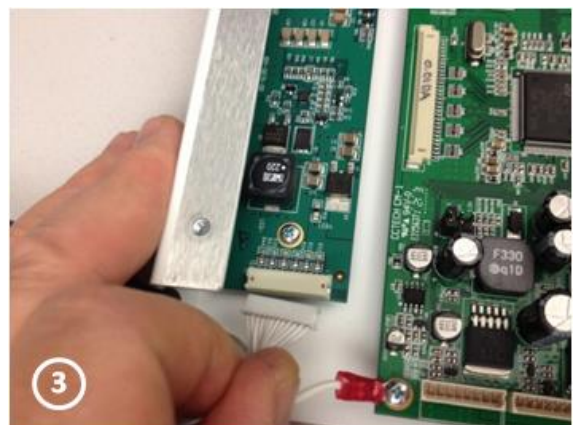
4- Locate the video connector in cable assembly as shown in photo 4 at right.
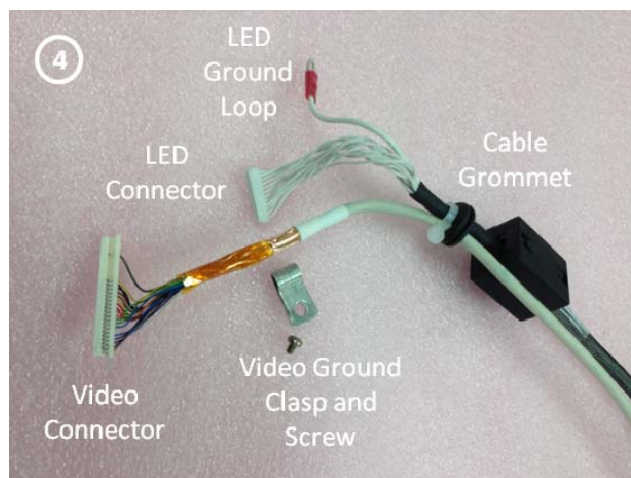
5- Orient the video plug as seen in Photo 5A. Insert the edge into its socket on the video board. Align the connector parallel to the socket and gently slide the connector into the socket (Photo 5B). Using steady pressure between thumb and fingernail of index finger, seat the connector. A properly inserted connector will have the backside of the connector located parallel to the socket. The white arrows (Photo 5C) point out the slots in the socket that should be fully filled with the white color of the connector.
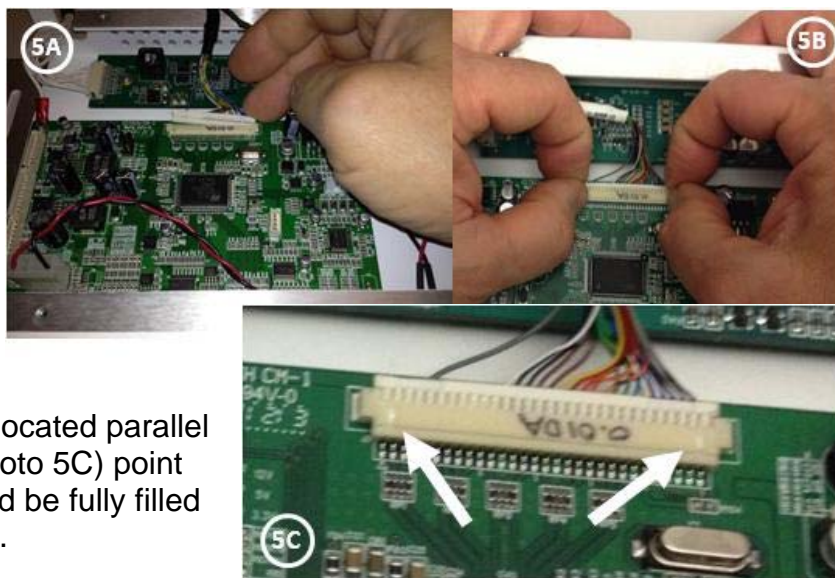
6- Place the video ground clasp around the bare-metal section of the video cable and attach it to the standoff near the LED connector on the LED driver board. See photo 6 at right.
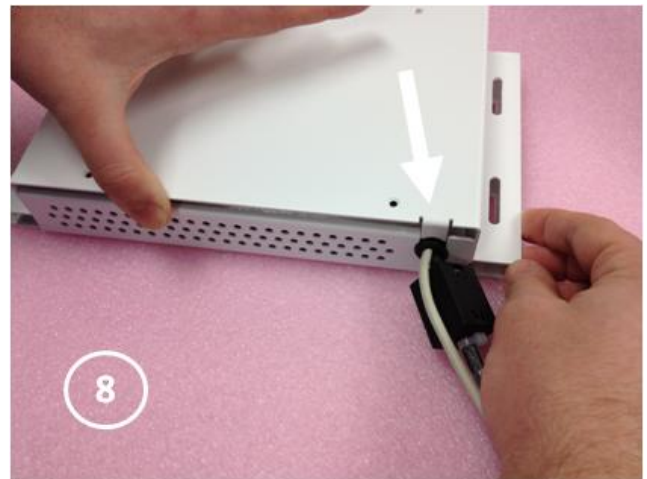
7- Once the LED connector, the two ground connections, and the video connector have been attached, position the rubber grommet into the slot in the box as shown in Photo 7.

8- Position the lid over the lower half of the box as shown, making sure the tab in the lid (arrow in Photo 8) captures the grommet.

9- Refasten the four Phillips screws to secure the Driver Box cover. The assembled Driver Box is shown in Photo 9 at right.

Note: once the wiring bundle has been connected, the protective release liner can be removed from the front surface of the display. The power brick should be plugged into the driver box and a grounded power receptacle during the removal.

VII. Presentation of Your Material using the LT3200

You should experiment with placement of the objects to be displayed in the LT3200 to optimize their appearance and interaction with your video content. You will find that the brightness of display box and the legibility of the screen content can be affected by the color of objects placed in the display box. For best results we suggest avoiding large areas of dark colors inside the display box.
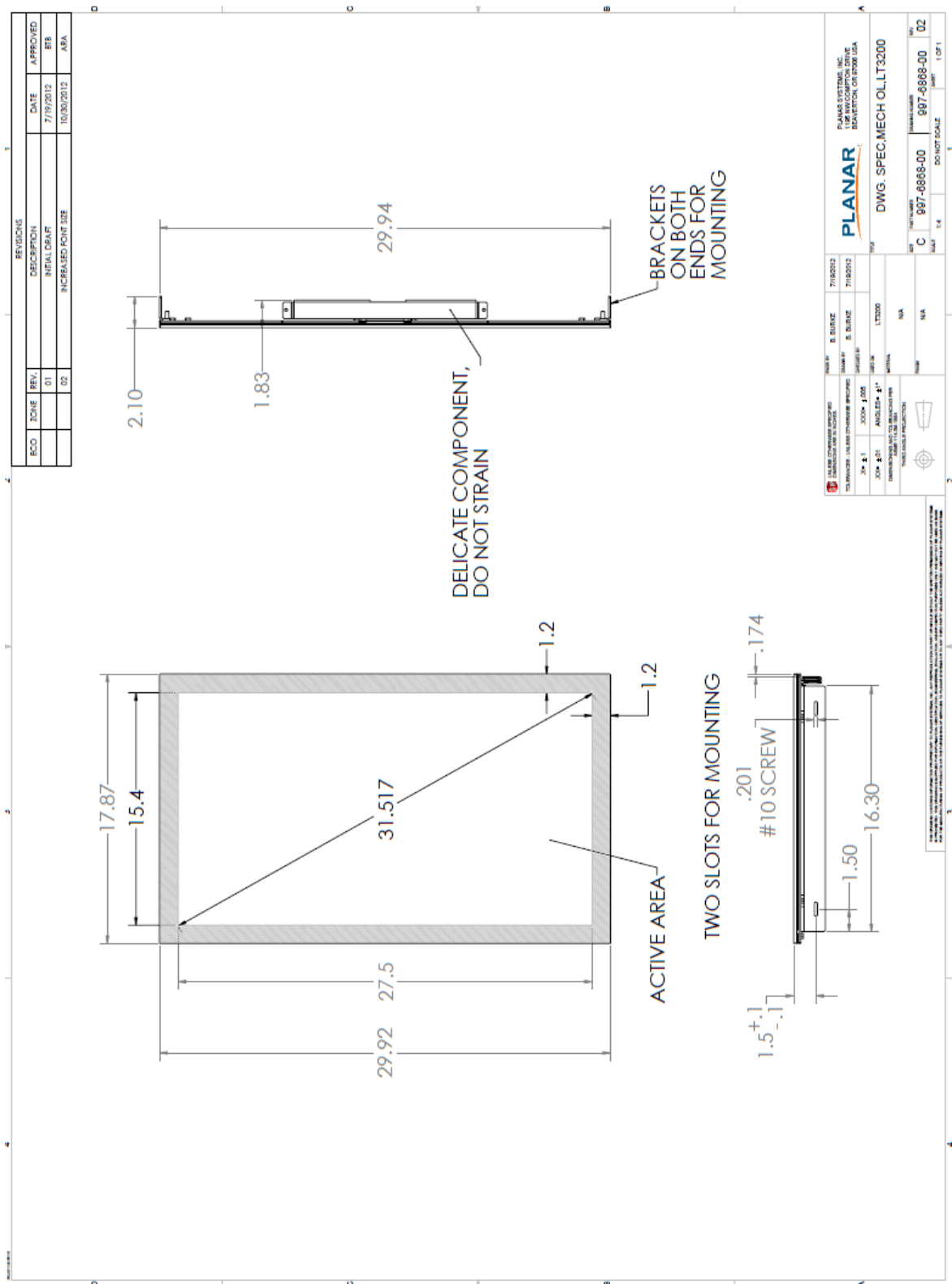
Most conventional digital signage video content can be used with the LT3200, but enhancements to the content are possible to optimize the attention-grabbing effect you and your customers will see in using the Planar transparent display. In preparing video content for the LT3200 driving the LCD to white will produce the highest transparency while black screen features will result in the most opacity. Intermediate colors will have intermediate transparency. Note that slide-show presentation software, such a Microsoft Powerpoint™, can be used to create simple but effective content for the LT3200.

In order to maximize the brightness of the LT3200 we have provided an extremely high level of white light illumination for your display box design. In addition to enhancing the appearance of objects inside the box and of the LCD display, this intense light level can be used to drive a photovoltaic turntable to further enhance the eye-catching performance of your Planar transparent display box by rotating your interior content. These light-driven turntables are available online: search using the keywords: "solar turntable". Most of these turntables have a limited weight capacity.
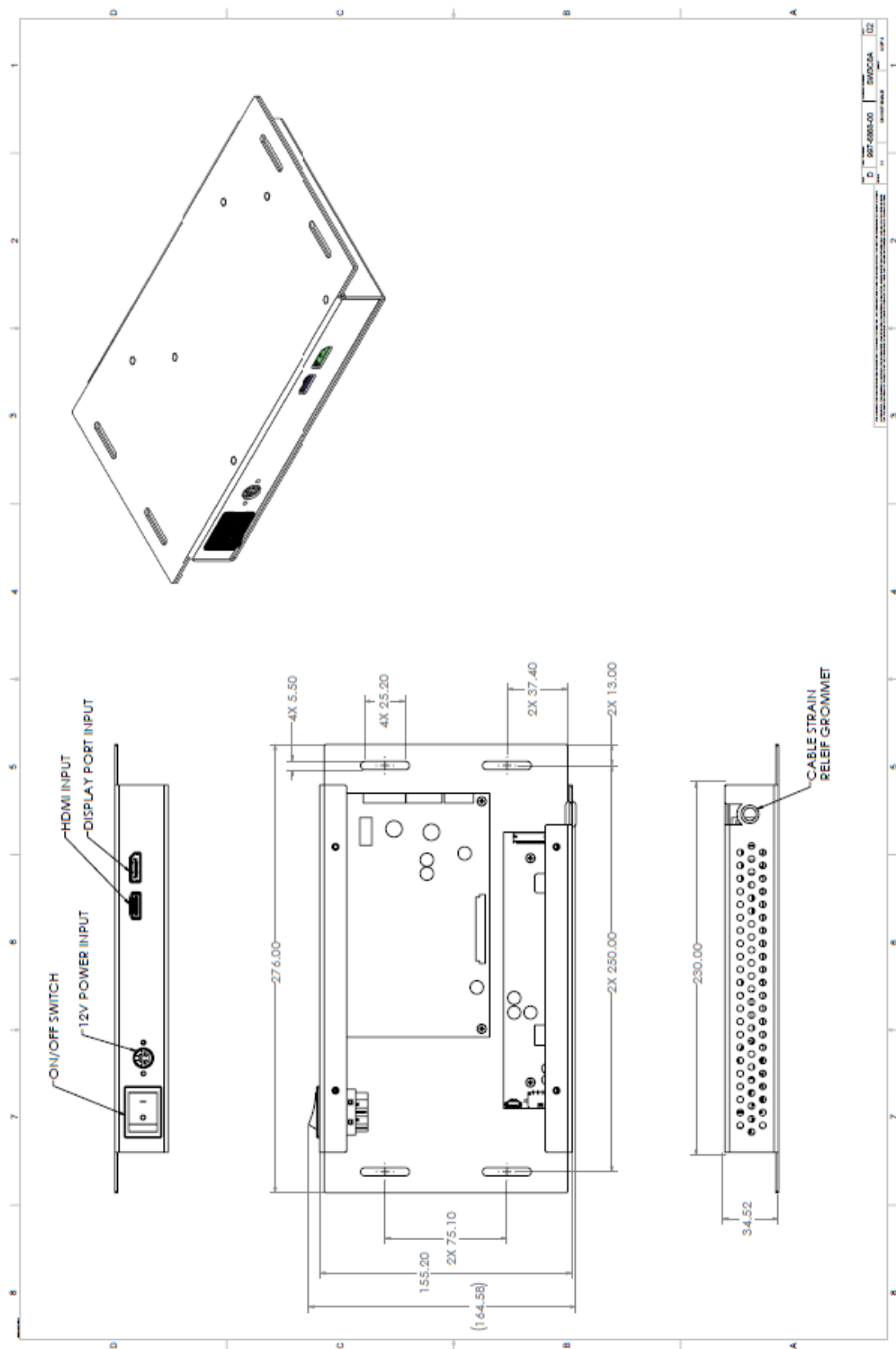
We recommend testing of materials to be displayed for an extended period (weeks to months) in the display box for their color stability. The intense white light illumination required inside the box can cause color fading due to photobleaching, similar to what can happen to vulnerable colored materials due to exposure to sunlight.

VIII. Appendix

Display Module Drawing

Driver Box Drawing

HDMI INPUT
DISPLAY PORT INPUT
ON/OFF SWITCH
12V POWER INPUT
CABLE STRAIN RELEIF GROMMET

4X 5.50
4X 25.20
2X 37.40
2X 13.00
276.00
2X 250.00
230.00
2X 75.10
155.20
(164.58)
34.52

Troubleshooting

A properly-functioning LT3200 will show a "splash screen" when power is first applied. If a suitable video source is attached, the screen will then display whatever video image is being sent to the LT3200 shortly after the splash screen appears. Note that when power is applied you should also see light from the LEDs located around the perimeter of the AMLCD screen. When power is being supplied to the LT3200 power supply, the indicator light on the power brick will glow.

Possible Problem – After setup, the switch on the Driver Box has been turned on and no image appears. In addition, the LEDs in the box are not functioning. This probably means no power is being applied to the display box.

- Items to check:
  - Make sure the power switch is in the on position.
  - Verify the power brick is plugged into a power source. Note: if the power brick is receiving power, an LED on the brick will be lit.
  - Make sure the power cord is securely attached to the power brick.
  - Check to see the output plug from the power brick is properly inserted in the plug located in the Driver Box.

Possible Problem – The splash screen appears after power is turned on, but a "no sync" message appears on the screen and afterward the monitor shows no image. This usually means no recognizable video signal is being received by the display box.

- Items to check:
  - Make sure the video cable is properly plugged in at the video source (computer or media player).
  - Verify the other end of the same video cable checked previously is securely plugged into either the HDMI or DisplayPort receptacle in the Driver Box
  - If an adapter is being used as part of the video cable, check to confirm the two plugs are properly seated.
  - If you are using a DVI plug from the video source, check to make sure there are no bent pins in the plug.
  - Verify that the output of your computer or player is one of the formats listed on page 19 of this document.
  - If signal is from a laptop, verify from the computer settings panel that the display is active.
  - Make sure your video source is turned on and the output software is running (may require a second, known good monitor).

If these troubleshooting instructions do not resolve the problem, please contact Planar Support at www.planar.com/supportat or call 1 866 PLANAR1 and select option 1 to determine the next steps.

LT3200 Specifications

This section contains specifications for the LT3200 display.

Product Name	LT3200
Planar Part Number	997-6868-00
Viewable Size	31.25" diagonal (27.3" x 15.2")
Viewing Angle (Typical)	178° Horizontal and Vertical
Response Time (G-to-G, Typical)	8 msec
Brightness (Typical)	Dependant on customer enclosure design
Native Display Resolution	1366 x 768
Aspect Ratio	16:9
Color Palette	16.7 million colors
Pixel Pitch	0.511 mm
Refresh Rate	50 to 60 Hz
Exterior Dimensions (W x H x D)	29.9" (760 mm) x 17.9" (455 mm) x 2.1" (53.3 mm)
Module Weight, less Driver Box	12.2 lbs (5.55 kg)
Driver Box Dimensions	9.19" (233 mm) x 7.50" (191 mm) x 1.38" (35.1mm)
Video Inputs	Digital (HDMI, DisplayPort)

Power Supply	External AC adapter, 48V DC
Power Requirements	100-240 VAC (50/60 Hz)
Power Consumption	125W
Module Mounting	Built-in mounting bracket, see outline drawing
Service and Support	3-Year Warranty
Product Approvals	NRTL Listed, FCC-Class A, CE, RoHS
Environmental - Operating Temperature	0° to 40°C
Environmental - Operating Temperature	-10° to 50°C
In the Box	LT3200 32" LookThru LCD module, Driver Box, Power Brick and Cord, HDMI Cable, User's Manual

Graphics Input Compatibility

The LCD monitor has been tested to synchronize to, and scale the following digital signal graphics inputs and generate a stable display that has a similar geometry.

Mode	Resolution	V-Frequency (Hz)
VGA	640 x 480	60
WVGA	800 x 480	60
SVGA	800 x 600	60
XGA	1024 x 768	60
WXGA	1280 x 720	60
WXGA	1280 x 768	60
HD	1366 x 768	60

Regulatory Compliance

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference with the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

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