



Planar® WeatherBright™

LC3251 & LC4751

OUTDOOR DIGITAL SIGNAGE DISPLAYS

PRODUCT MANUAL

www.planar.com

This manual is designed for use with the Planar® WeatherBright™ LC3251 and LC4751 outdoor digital signage displays. 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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Precautions and Warnings

To maximize the life and safe use of your unit, always be sure to follow the warnings and precautions in this product guide as well as the maintenance recommendations as described in the Preventative Maintenance section.

Important Safety Instructions

1. Read, retain, and heed all warnings and instructions.
2. The WeatherBright™ open frame outdoor digital display products must be installed into an approved NEMA 3R enclosure for outdoor use. See [Installing the display in an Enclosure](#)
3. Perform preventative maintenance regularly on the WeatherBright Outdoor Digital Displays. See [Preventative Maintenance](#)
4. Do not defeat the safety purpose of the grounding type power plug. A grounding type plug has two blades and a third grounding prong. The grounding prong is provided for your safety. Consult an electrician for a fixed installation or if the outlet does not accommodate all connections to the plug.
5. Protect the power cord from being walked on or pinched particularly at plugs and receptacles.
6. Only use the accessories or spare parts specified by the manufacturer. See [Accessories and Field Replaceable Parts](#)
7. You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.
8. Refer all servicing to qualified service personnel. Servicing is required when any of the Outdoor Digital Display products have been damaged in any way. Examples of damage requiring service could include the AC power cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the products do not operate normally, or have been dropped.

Product Description

Planar® WeatherBright™ LC3251 and LC4751 displays are high bright, open-frame, liquid crystal, full color digital displays intended for extreme weather, outdoor use. The displays utilize interlaced LED backlights providing greater than 2000 nits of luminance for direct sunlight outdoor readability. The displays are 32" and 47" diagonal sizes utilized in portrait mode with a 9:16 aspect ratio and with a WXGA (1366x768) or FHD (1920x1080) native resolution, respectively. The WeatherBright displays come standard with Planar's ERO™ (Extended Ruggedness and Optics) technology, providing optically bonded tempered vandal-resistant cover glass that delivers the best optical and physical performance. Standard PC graphics DVI and VGA video inputs are accepted. An RS-232 serial connection enables full system control and smart monitoring. Both displays accept 120V AC input and have rated power consumption allowing them to run on a single 120V/15A standard electrical service.

The displays are designed to be field-serviceable with easy access for field cleaning or servicing. Field replaceable components include LEDs, fans, and power supplies. The fans and power supplies are redundant, allowing the displays to continue operating if these components fail with minimal effects to the end-user experience. The system self monitors for any component failures or over-limit events and continues operating in a safe but still functional mode until the unit can be serviced. In the event of a component failure, fault flags are raised and can be accessed through the RS-232 serial interface using a simple command set.

These LC3251 and LC4751 are open-frame displays intended to be mounted in NEMA 3R enclosures that provide basic protection from the elements. The displays are ruggedized to utilize outside air for cooling without the need for air conditioning. The enclosure is required to provide an intake and exhaust for the air cooling with a replaceable standard air filter. It is recommended that the enclosure provide a window opening for the display with no additional cover glass or window material in front of the display. The ERO™ optically bonded displays will not experience any fogging, contamination, or reflections that would otherwise compromise the image view ability over the life of the product.

Product Features

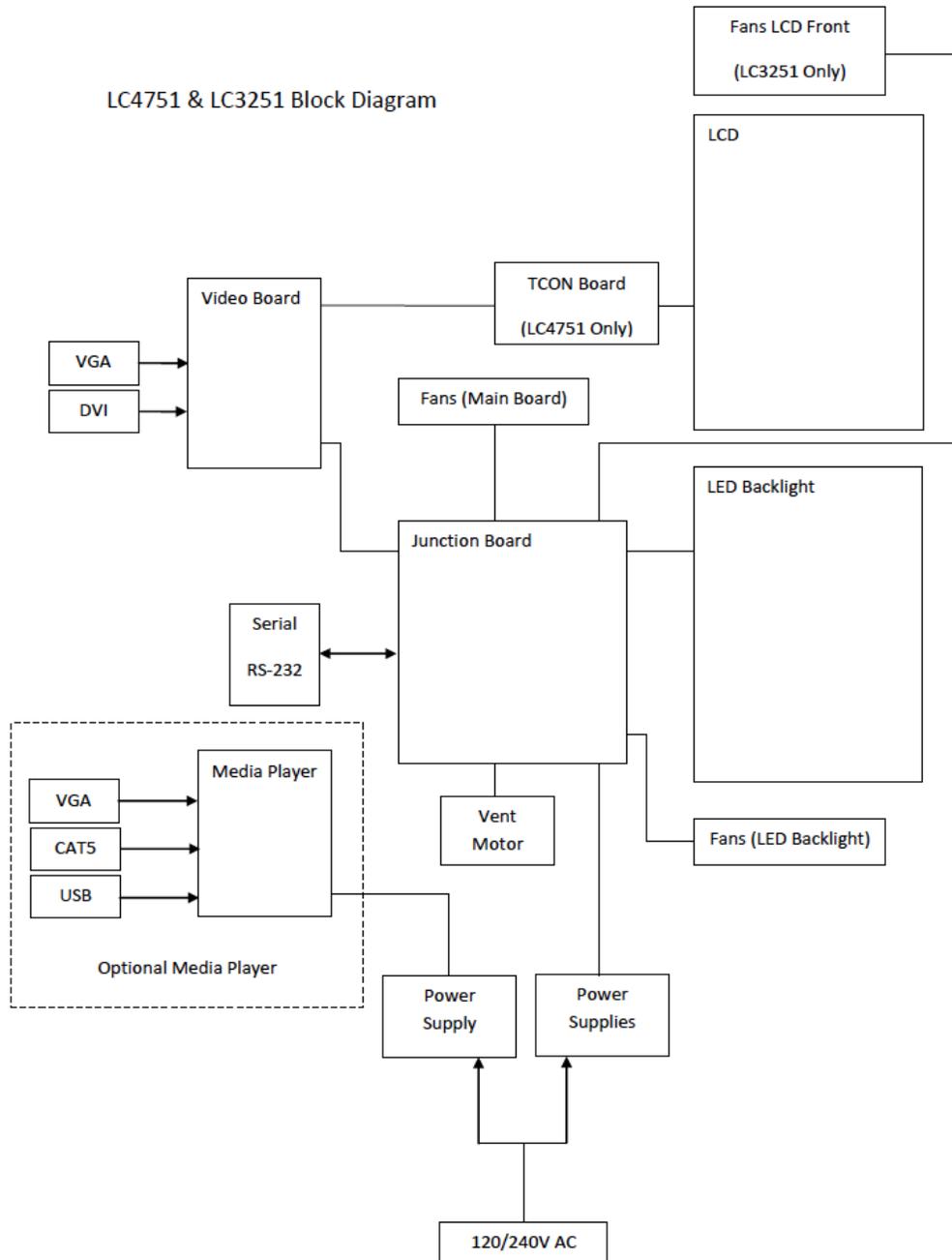
The following are features of the WeatherBright LC3251 and LC4751 outdoor digital signage displays, with best-in-class image quality, and 24/7 mission critical performance with fail-safe designs:

- True brightness of >2000 nits over 7 years
- Designed to withstand -40°F up to 122°F
- Optically-bonded ERO™ tempered cover glass
 - Dramatically improves contrast, viewability, and durability
 - No air gap between the display and cover glass
 - Glare and reflections are significantly reduced
 - No condensation or contamination can block display viewing
 - Image appears in the foreground instead of appearing to be recessed in a box
 - Tempered cover glass is durable and vandal-resistant
 - No front surface coatings, which can degrade over time
 - Air gaps in competing solutions result in more reflections reduced brightness, lower overall contrast and viewability, and increased potential for condensation and debris
- Components selected and ruggedized for 24/7 mission critical use
- Redundancy and interlaced LED back light design ensures power supply or fan failure doesn't result in system failure
- Field-serviceable with easy access for field cleaning or servicing
- Smart system self-monitoring and safe-mode ensures continuous operation
 - Automatic video input switching if one video source fails
 - Temperature, fan, power supply, and LED backlight monitoring
- No air conditioning required in all climates
- Standard installation using existing power supply – operates on single 120V/15A service

Product Architecture

The WeatherBright™ LC3251 and LC4751 displays are based upon a large-area LCD, using interlaced LED backlights. The Video Board provides an industry-standard video interface to the user. The Junction Board accepts the power and serial inputs and manages the system with smart monitoring and control. The system also incorporates a 12V power supply, fans, a diffuser, temperature sensor boards, and an open-frame metal framework that mechanically holds the assembly together. A block diagram of the primary system is shown in the following figure.

Figure 1 Block diagram of the LC3251/LC4751 display



System Status and Fault Monitoring

The WeatherBright™ LC3251 and LC4751 displays incorporate a microcontroller that monitors and controls overall display functionality without user intervention. The microcontroller provides thermal and power management of the display and continuous fault checking. It checks the status or looks for faults at a maximum interval of every 10 seconds. The display continues operating even with a failure unless directed otherwise. Fault tests are independent from each other. Actions taken in response to a particular fault will not stop fault monitoring and response for other faults. Faults remain stored in non-volatile memory even if conditions indicate resumption of normal operation. For further information on system control and status, see [Appendix 1 – RS-232 Serial Interface](#).

Product Part Numbers

This manual applies to these products:

| Planar Part Number | Planar Model Name | UPC |
|--------------------|--|-----------------|
| 997-6127-00 | Product, LC3251 (open frame) | 8 10689 06127 4 |
| 997-6609-00 | Product, LC4751 (open frame) | 8 10689 06609 5 |
| 997-6673-00 | Product, LC3251-MP (w/ruggedized media player) | 8 10689 06673 6 |
| 997-6674-00 | Product, LC4751-MP (w/ruggedized media player) | 8 10689 06674 3 |
| 997-6696-00 | Product, LC3251-Encl (enclosure) | 8 10689 06696 5 |
| 997-6697-00 | Product, LC4751-Encl (enclosure) | 8 10689 06697 2 |

Recommended Usage

The following is a list of Planar recommendations for using the LC3251 and LC4751 displays:

- The LC3251 and LC4751 displays are designed for 24/7 mission critical usage in extreme outdoor conditions
- Use the display in portrait orientation
- The displays are intended for use in NEMA 3R enclosures that provides basic protection from the elements
- The displays utilize outside air for cooling:
 - Allow adequate intake and exhaust air provisions without constricting airflow
 - Custom air-flow enclosures can be designed to allow for flush wall mounting applications. Top/bottom or side venting would need to be incorporated. If using the Planar free standing enclosure design for wall mounted applications, allow at least 6 inches between a wall and unit for adequate airflow
 - Utilize a suitable air filter for the environment and service it to ensure unimpeded airflow

Specifications

This section contains specifications for the LC3251 and LC4751 displays.

General LC3251 and LC4751 Specifications

| Product Name | | LC3251 | LC4751 |
|--------------|----------------------------|---|---|
| Display | Screen size | 32 inch diagonal | 47 inch diagonal |
| | Orientation | Portrait | Portrait |
| | Aspect Ratio | 16:9 | 16:9 |
| | Brightness (max) | 2500 nits | 2500 nits |
| | Contrast Ratio (typ.) | 3000:1 | 3000:1 |
| | Backlight | LED 10:1 dimming, ambient light sensor, field replaceable | LED 10:1 dimming, ambient light sensor, field replaceable |
| | Response Time (typ.) | 8 ms | 9ms |
| | Viewing Angle (typ.) | 176°H, 176°V | 178°H, 178°V |
| | Native Resolution | 1366 x 768 pixels | 1920 x 1080 pixels |
| | Display Colors | 8 bit - 16.7M | 8 bit - 16.7M |
| | Display Active Area | 392.26mm x 697.68mm (15.44in x 27.47in) | 5640mm x 1096mm (23.02in x 40.93in) |
| | Surface treatment | Anti-Glare 4.7mm optically bonded, tempered Vandal Glass | Anti-Glare 4.7mm optically bonded, tempered Vandal Glass |
| Connectivity | Video | DVI - DVI-D VGA - DB15 | DVI - DVI-D VGA - DB15 |
| | Data | RS-232 - DB9 | RS-232 - DB9 |
| | Power | IEC C14 | IEC C14 |
| Power | Line voltage | 120 VAC | 120 VAC |
| | Line current | 2A – 5A | 5A – 8A |
| | Power Consumption (max.) | 240 – 600W | 600 – 960W |
| Environment | Operating temperature | -40°C to +50°C | -40°C to +50°C |
| | Storage temperature | -40°C to +60°C | -40°C to +60°C |
| | Humidity | 95% RH | 95% RH |
| Mechanical | Product Weight | 32kg (70lbs) | 50kg (110lbs) |
| | Product Dimensions (WxHxD) | 22.8" W x 34.7" H x 11.1" D | 29.5" W x 46.8" H x 11.1" D |
| Media | Processor | 2.4 GHz Intel® Core® I5-520M | 2.4 GHz Intel® Core® I5-520M |
| | Memory | 2GB DDR3 SDRAM at 1066MHz | 2GB DDR3 SDRAM at 1066MHz |
| | Hard Drive | 40GB Solid-State Drive Intel 320 Series SATA 3.0 Gb-s | 40GB Solid-State Drive Intel 320 Series SATA 3.0 Gb-s |

| | | | |
|----------------------|------------------|--|--|
| Player (Optional) | Operating System | Windows® 7 Professional for embedded systems | Windows® 7 Professional for embedded systems |
| | Form Factor | Epic | Epic |
| | Connections | LAN x2 (RJ45) USB x4 (USB2.0) VGA output (DB15) for 2nd display VGA input (DB15) for media player by-pass/back-up | LAN x2 (RJ45) USB x4 (USB2.0) VGA output (DB15) for 2nd display VGA input (DB15) for media player by-pass/back-up |

PC Graphics Input Compatibility

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

| Item | Resolution | Vertical Refresh Rate | Standard |
|------|-------------|-----------------------|--------------|
| 1 | 640 x 480 | 60Hz | IBM VGA |
| 2 | 640 x 480 | 67Hz | Apple Mac II |
| 3 | 640 x 480 | 72Hz | VESA |
| 4 | 640 x 480 | 75Hz | VESA |
| 5 | 720 x 400 | 70Hz | IBM VGA |
| 6 | 800 x 600 | 56Hz | VESA |
| 7 | 800 x 600 | 60Hz | VESA |
| 8 | 800 x 600 | 72Hz | VESA |
| 9 | 800 x 600 | 75Hz | VESA |
| 10 | 832 x 624 | 75Hz | Apple Mac II |
| 11 | 1024 x 768 | 60Hz | VESA |
| 12 | 1024 x 768 | 70Hz | VESA |
| 13 | 1024 x 768 | 75Hz | VESA |
| 14 | 1280 x 720 | 60Hz | VESA |
| 15 | 1280 x 1024 | 60Hz | VESA |
| 16 | 1280 x 1024 | 60Hz | VESA |

| Item | Resolution | Vertical Refresh Rate | Standard |
|------|-------------|-----------------------|-------------|
| 17 | 1360 x 765 | 60Hz | No Standard |
| 18 | 1366 x 768 | 60Hz | No Standard |
| 19 | 1600 x 1200 | 60Hz | VESA |
| 20 | 1920 x 1080 | 60Hz | No Standard |

Reliability Specification

System is designed for 50,000+ hours of continuous 24/7 use with field replaceable LED backlights, and redundant replaceable fans, and power supplies.

Regulatory Compliance

UL879 and C22.2 No. 207-M89 for Electric Signs (US and Canada)

LC3251 and LC4751 Display Drawings

Figure 2 Front and Side Rendering of the LC3251 display

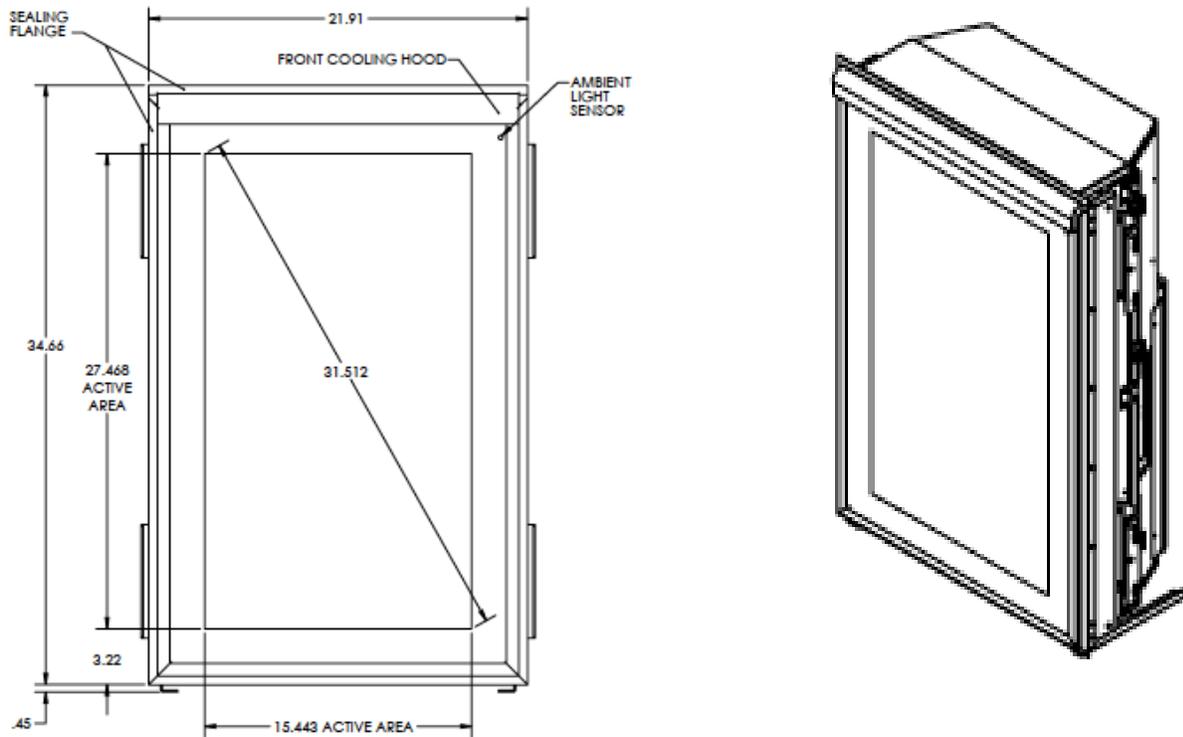


Figure 3 Back and Side Rendering of the LC3251 display

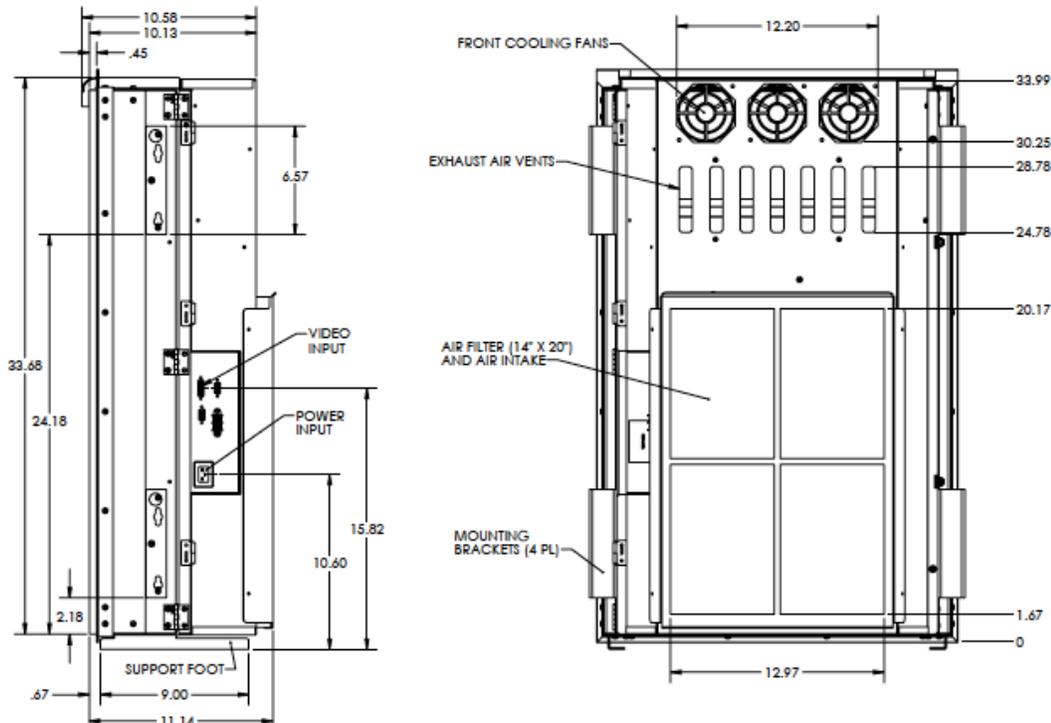


Figure 4 Front and Side Rendering of the LC4751 display

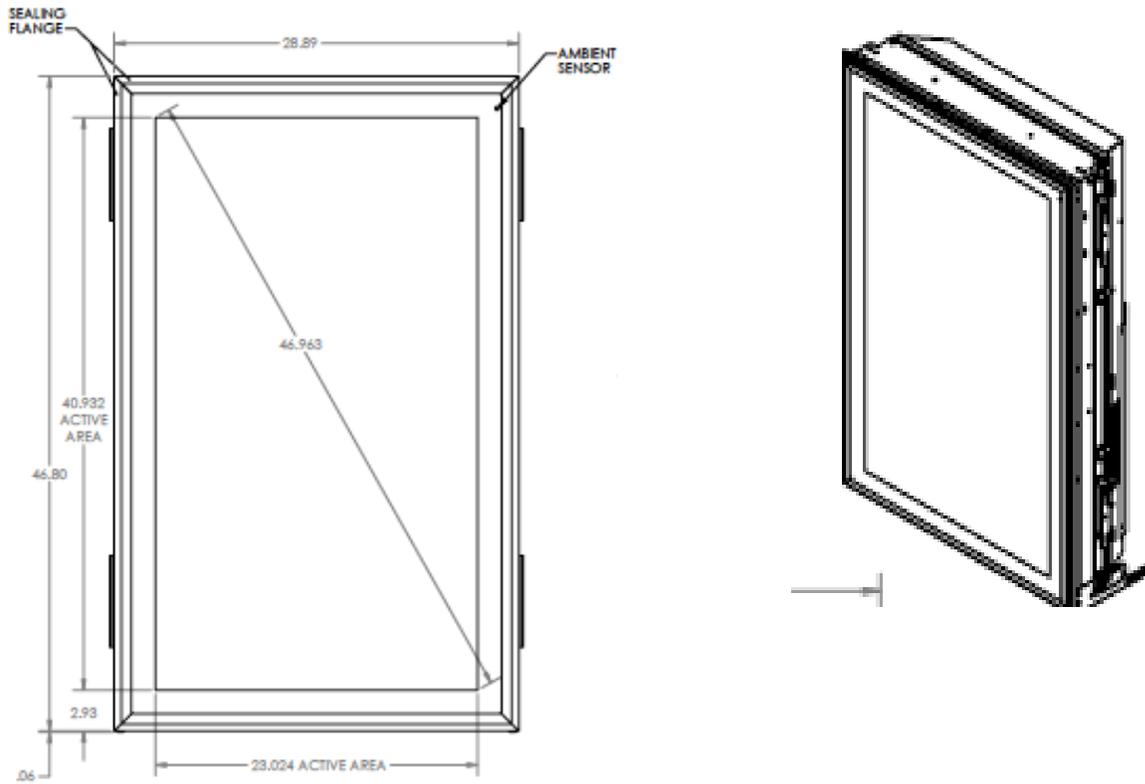
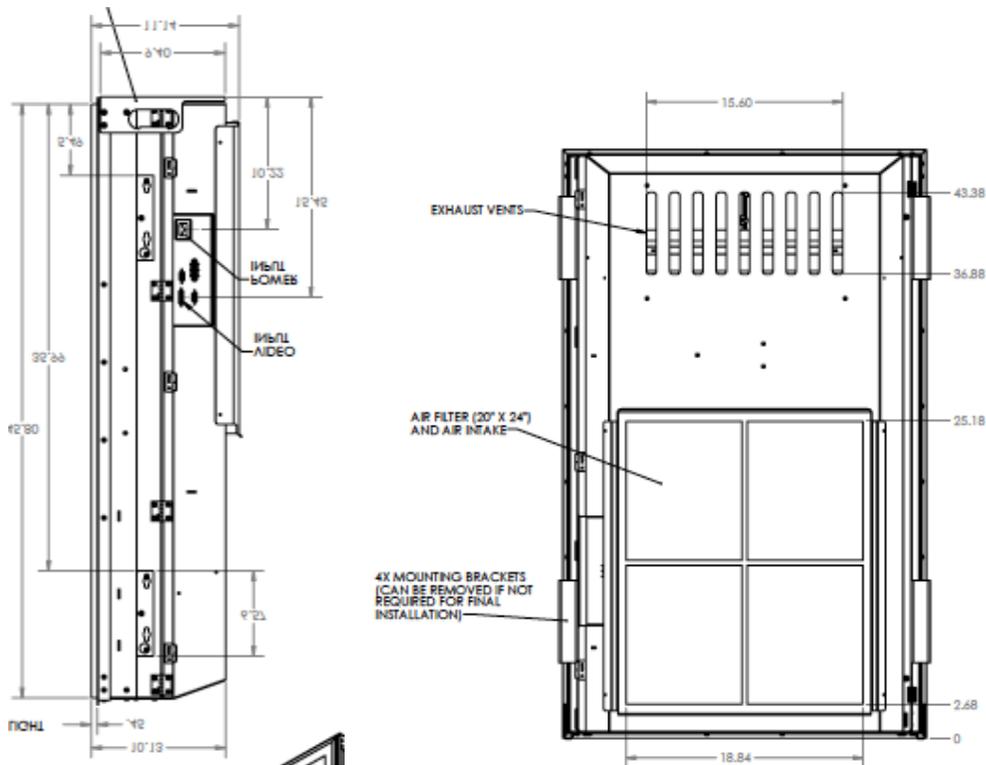


Figure 5 Back View of the LC4751 display



Installation, Turn-On, Troubleshooting

Installing the display in an Enclosure

The WeatherBright LC3251 and LC4751 are open-frame displays intended to be mounted in a NEMA 3R enclosure that provides basic protection from the elements. The displays are ruggedized to utilize outside air for cooling without the need for air conditioning. The enclosure is required to provide an intake and exhaust for the air cooling with a replaceable air filter. The displays are optically bonded to 4.7mm tempered vandal-resistant cover glass intended for exposure to the elements while providing the best viewability. It is recommended that the enclosure provide a window opening for the display with no additional cover glass or window material in front of the display. The ERO™ optically bonded displays will not experience any fogging, contamination, or reflections that would otherwise compromise the image viewability over the life of the product.

Reference: [Appendix 2 – Installing the Display in a Typical Enclosure](#)

Connection and Display Power Up

Follow these steps to hook up and power on a LC3251 or LC4751 display.

1. Attach a DVI-D or VGA cable to the corresponding video input of the display.
2. Attach a RS-232 null serial cable to the serial input of the display. A null modem serial cable or a standard serial cable using a null mode adaptor is required.
3. Attach IEC C14 power cable to the power input of the display. A 6 foot power cable is provided with the display.
4. Provide power to the display.

Note: The displays do not have an on/off switch. It is acceptable to plug/unplug the IEC C14 power cable at the display to turn power on and off.

On power-up the display backlight will turn on and a Planar splash screen will appear on the display for 10 seconds. The display will then auto-sync to a connected video signal. The display is then ready to use.

If a video input signal does not exist or there are problems with it a 'No Input Signal – Going to Sleep' message will be displayed and the display will go to sleep turning off the backlight. If a valid video input signal is provided the display will auto-sync to that signal and come out of sleep mode.

Figure 6 No Input Signal message



Troubleshooting Tips and Fundamentals

Video Input & Connections

A basic first step troubleshooting for displays is to verify the video input to the display. The display will auto-sync to an available DVI-D or VGA video input. If no video input is detected the display will go into sleep mode; turning the backlight off and resulting in a black screen. If a video input signal is provided the display will come out of sleep mode and display the image.

Verify display is getting power. Cycle the power to the display and verify per normal operation the backlight turns on and the Planar splash screen appears for 10 seconds.

Fault Conditions – Read Through RS-232 Serial

The LC3251 and LC4751 displays are designed to self monitor and self regulate to do everything possible on their own to remain functional even with a fault condition present. Redundancy in lamps, ballasts, fans, and temperature sensors are designed into the product to enable this. In the event of an issue the unit will raise a fault flag that can be accessed through the RS-232 serial interface.

The best first step for troubleshooting is to connect to the RS-232 serial interface and query the unit for any faults. See [Appendix 1 – RS-232 Serial Interface](#) for information on connecting through the RS-232 serial interface and for commands to access fault codes and to troubleshoot further using this interface. Note the Planar Control Panel utility is also available for one-to-one display RS-232 Serial troubleshooting.

Replace Failed Components

If the problem or fault condition is identified as a component failure then replace the faulty component(s). See [Accessories and Field Replaceable Parts](#) for a list of available replacement parts. After replacing components, reset the fault flags on the unit using the RS-232 Serial Interface and query the status of the unit again to ensure no other faults exist.

Contact Support

If the problem cannot be resolved, contact Planar Support at www.planar.com/support or your place of purchase for further troubleshooting assistance.

Preventative Maintenance

Planar recommends preventative maintenance every 6 months as a conservative estimate depending on environmental conditions. However, your environment is going to dictate the practical frequency of preventative maintenance. Locations with particulates such as dust or smog, and possibly very high humidity are more likely to need more frequent preventative maintenance.

As part of your preventative maintenance for the LC3251 or LC4651 display, we recommend doing the following:

1. Wipe down/clean the inside back of the display and diffuser glass with any standard glass cleaner product. With the back cover of the enclosure removed the door of the display hinges open for access to the back of the display and optical diffuser glass. Close the door of the display and turn it on for a visual inspection. It is possible that inadequate cleaning may have left streaks on the optical surfaces . If streaking exists re-clean the surfaces and re-inspect. Clean the outside customer-facing surface of the LCD. Clean the outside of enclosure, if necessary.
2. Clean or replace the air filter. (can be cleaned with water hose).
3. Check the system status locally using a PC plugged directly into the unit via the RS-232 serial interface. If there are any error flags, then troubleshooting should occur to fix the unit until no errors register. See the Troubleshooting Tips and Fundamentals section for information on troubleshooting. If errors cannot be cleared consider replacing failed components or the entire unit.

Items Required for Field Service and Preventative Maintenance

The following is a list of items and tools Planar recommends having on hand prior to a technician going out to perform Preventative Maintenance (PM) services on LC3251 and LC4751 products. Expectations for the quantities of parts that may be used on preventative maintenance calls under typical conditions are included in parentheses:

1. 1 backlight (PM 1 backlight)
2. 6 fans (127mm: main cooling) (PM 2 – 3 fans)
3. 3 fans (80mm: electronics cooling) (PM 1 – 2 fans)
4. 6 fans (92mm: LC3251 front cooling) (PM 2 – 3 fans)
5. Standard glass cleaner and cloths for wiping glass (PM)
6. 2 - 3 filters (PM 1 filter)
7. Remote PC with serial cable to connect locally to unit to diagnose system status or help determine if image issues are with media player or display (PM). A USB to serial cable is okay as long as the user manages the USB driver installation from their remote PC.

Customers may consider sparing a unit for larger deployments or deployment in a business critical environment. Preventative maintenance parts can be ordered as needed or purchased in advance and stored at a location convenient for deployment.

Shipping and Packaging

Unpacking List:

- LC3251 or LC4751 display
- 6 ft. power cord

Note: An enclosure, DVI video cable, and serial cable are not included with this Planar product. (enclosure is shipped separate if ordered with the open frame displays)

Package dimensions and weights:

| Product | Unit Weight | Shipping Weight | Package Dimensions |
|---------------|-------------|-----------------|-----------------------|
| LC3251 | 67 lb. | 85 lb. | 17 in x 28 in x 42 in |
| LC3251-MP | 72 lb. | 90 lb. | 17 in x 28 in x 42 in |
| LC4751 | 109 lb. | 129 lb. | 17 in x 35 in x 53 in |
| LC4751-MP | 114 lb. | 134 lb. | 17 in x 35 in x 53 in |
| 47" Enclosure | 75 lb. | 150 lb. | 35 in x 35 in x 59 in |
| 32" Enclosure | 60 lb. | 135 lb. | 30 in x 35 in x 46 in |

Accessories and Field Replaceable Parts

Optional accessories and field replaceable parts are available for the LC3251 and LC4751 as noted below.

Field Replaceable Parts List:

| Part Number | Product Manual Description |
|-------------|--|
| 997-6874-00 | Backlight – LC3251 |
| 997-6875-00 | Backlight – LC4751 |
| 902-0707-01 | Power Supply – LC3251 – 380W, 48V, CC |
| 902-0711-01 | Power Supply – LC4751 – 650W, 48V, CC |
| 170-0292-03 | Fan Assembly – 48V, 127mm, PWM, IP55 (LC3251/LC4751) |
| 170-0299-03 | Fan Assembly – 48V, 92mm, PWM, IP55 (LC3251) |
| 170-0300-03 | Fan Assembly – 48V, 80mm, Low, IP55 (LC3251) |
| 170-0304-00 | Fan Assembly – 48V, 80mm, Low, IP55 (LC4751) |
| 944-2749-00 | ECA, Temp and Photo Sensor – Top |
| 944-2748-00 | ECA, Temp Sensor Board – Bottom |
| 259-0122-00 | Air Filter (LC4751) |
| 259-0121-00 | Air Filter (LC3251) |

How You Get Parts

Contact Planar Support at www.planar.com/support or your place of purchase to order optional accessories or field replaceable parts.

Warranty

Planar warranty and service plans will help you maximize your investment by providing great support, display uptime, and performance optimization. From post-sale technical support to a full suite of depot services, our services are performed by trained Planar employees. When you purchase a Planar product, you get more than a display, you get the service and support you need to maximize your investment.

To find the latest warranty and service information regarding your Planar product, please visit:
<http://www.planarcontrolroom.com/support>

Appendix 1 – RS-232 Serial Interface

RS-232 Serial Interface Introduction

The RS-232 Serial interface allows for remote control and access to overall status of the display. A series of intuitive ASCII formatted commands are used for bi-directional communication with the display. This section provides specific information on the RS-232 Serial command format with a table of fault codes and commands to manage the displays.

RS-232 Interfaces

The display includes two RS-232 interfaces. The primary RS-232 interface allows a remote PC to control and obtain status of the display. The secondary RS-232 interface provides communication between the Junction Board and the Video Interface and is internal to the display.

RS-232 Hardware Interface to the Remote PC

This is the external interface to the Remote PC. No handshaking is used. Pin 3 of the DB-9 connector on the display is data transmitted from the host (Tx); pin 2 is data transmitted from the display and received by the host (Rx). Baud Rate = 19200, 1 Stop Bit, No Parity.

RS-232 Hardware Interface to the Video Interface Board

This is the internal interface between the Junction Board and the Video Interface Board. No handshaking is used. Baud Rate = 19200, 1 Stop Bit, No Parity.

RS-232 Serial Communication Formats

This section provides general RS-232 communication format rules and samples of commands to use when communicating with the LC3251 and LC4751 displays. See the [RS-232 Serial Commands](#) table for a list of commands.

General Rules

- RS-232 commands consist of a string of ASCII characters
- All numeric values are decimal; you do not need to use hex or binary digits in the commands
- Spaces or tabs may be used in the commands to separate the parts and make them easier for users to read. This "white space" is ignored by the command reader
- You cannot use commas, slashes, or other punctuation as separators. Periods have a special purpose in commands
- Commands are not case sensitive, so you can use upper and lower case letters as you wish
- Limited editing of the command is supported – backspace may be used to correct errors in the command text, but not in the command type
- When a command requires a response, wait for the response before sending another command to another display
- All commands must end with a carriage return character, shown as [CR] in the rest of this document. Depending on your serial communications program, commands may automatically be ended with a [CR]

Port Settings

Baud Rate: 19200

Data bits: 8

Parity: None

Stop bits: 1

Command Format

All commands fit the following structure, where parameters in brackets [] are optional:

Command_Type *Command_Text* [*Function*] [*Value*]

No other parameters, such as addresses or targets, are supported.

Command_Type may be 'OP' or 'ST' (case insensitive) for Operations and String commands respectively.

Command_Text is the ASCII string that identifies the command (listed in command table).

Function is one of the following symbols:

| Symbol | Function | action on unit |
|--------|-----------|-------------------------------------|
| = | Set | makes the unit take that value |
| ? | Get | asks what the value is |
| + | Increment | adds 1 to the current value |
| - | Decrement | subtracts 1 from the current value |
| [none] | Execute | performs an action, such as a reset |

Value is only applicable for 'Set' commands and must be within the range listed in the command table for a particular command.

Response format

If the command is for the Junction Board, the response is in text format. Returned values, if applicable, are generally in decimal format, with the exception of fault codes, which are in hexadecimal format.

Sample commands and responses

Command: op temp.setpoint?

Response: Over temp limit 1: 70 deg C

Over temp limit 2: 80 deg C

Command: op temp.setpoint.limit1=65

Response: Over temp limit 1 set to: 65 deg C

Command: st product?

Response: Display ID: 00

Model: LCxxxx
Serial Number: 000000000
Date of manufacture: 01-01-2010
Part number: 000-0000-00
Junction board firmware version: 2.00.00
Video board firmware version: 0

Command: op contrast=100

Response: Video board opcode 0x4004 - value: 100

Command: op brightness?

Response: Video board opcode 0x4003 - value: 0

Command: st panel?

Response: Panel resolution: 1366 x 768

Command: op display.power=off

Response Errors

There are several situations where an error message will be returned. Below is a list of possible error messages and the likely cause of the error.

- Commands must start with 'op' or 'st'[CR] - This error code will be returned if the command is not prefixed properly with an 'op' or a 'st'
- Unknown command[CR] - Command set is not recognized
- Invalid operation[CR] – The operation type is not supported by that command or the operation is not recognized
- Invalid value[CR] – The argument value is not supported by that command
- No valid response from video board[CR] – The video board did not respond, try resending command

RS-232 Serial Fault Codes

This is a list of possible fault codes returned from a status query of the displays.

| | |
|-------------------------|---------|
| LED_OVP1 | = 0xA1, |
| LED_OVP2 | = 0xA2, |
| LED_OVP3 | = 0xA3, |
| LED_OVP4 | = 0xA4, |
| LED_OVP5 | = 0xA5, |
| LED_OVP6 | = 0xA6, |
| LED_OVP7 | = 0xA7, |
| LED_OVP8 | = 0xA8, |
| LED_OVP9 | = 0xB1, |
| LED_OVP10 | = 0xB2, |
| LED_OVP11 | = 0xB3, |
| LED_OVP12 | = 0xB4, |
| LED_OVP13 | = 0xB5, |
| LED_OVP14 | = 0xB6, |
| LED_OVP15 | = 0xB7, |
| LED_OVP16 | = 0xB8, |
| LED_OVP17 | = 0xC1, |
| LED_OVP18 | = 0xC2, |
| LED_OVP19 | = 0xC3, |
| LED_OVP20 | = 0xC4, |
| LED_OVP21 | = 0xC5, |
| LED_OVP22 | = 0xC6, |
| LED_OVP23 | = 0xC7, |
| LED_OVP24 | = 0xC8, |
| | |
| FanSpeed1 | = 0x21, |
| FanSpeed2 | = 0x22, |
| FanSpeed3 | = 0x23, |
| FanSpeed4 | = 0x24, |
| FanSpeed5 | = 0x25, |
| FanSpeed6 | = 0x26, |
| FanSpeed7 | = 0x27, |
| FanSpeed8 | = 0x28, |
| | |
| TempSensorJunctionBoard | = 0x31, |
| TempSensorIntakeAir | = 0x32, |
| TempSensorTopChassis | = 0x33, |
| | |
| OverTemp1JunctionBoard | = 0x34, |
| OverTemp1IntakeAir | = 0x35, |
| OverTemp1TopChassis | = 0x36, |
| OverTemp2JunctionBoard | = 0x37, |
| OverTemp2IntakeAir | = 0x38, |
| OverTemp2TopChassis | = 0x39, |
| | |
| LightSensorTop | = 0x41, |
| | |
| AcuatorTimeout | = 0x51, |
| | |
| PowerSupply1 | = 0x61, |
| PowerSupply2 | = 0x62, |

RS-232 Commands

| Function | Function Type | Default Value | Description | ASCII Command | Value/ Range | Possible Responses |
|-----------------------|-------------------------------|---------------|--|-------------------------|--------------|---|
| Power On/ Standby/Off | Set/Get | On | On – Backlight On; AMLCD On ; Fans Auto Off – Backlight Off; AMLCD Off; Fans Off (even with video input) Standby mode will be entered if the state is on but no video is detected. Standby -with video input – Backlight On; AMLCD On; Fans Auto -without video input - Backlight Off; AMLCD Off; Fans Auto | OP display.power | ON OFF | Set Responses: Display power on[CR] Display power off[CR] Get Responses: Display is on[CR] Display is off[CR] Display in standby[CR] |
| Contrast | Set/Get/ Increment/ Decrement | 50 | Adjusts the contrast of the display. | OP contrast | 0-40 | Contrast set to: XX[CR] Contrast: XX[CR] Contrast increased[CR] Contrast decreased[CR] XX = contrast value |
| Backlight Brightness | Set/Get/ Increment/ Decrement | 10 | Adjusts the brightness of the backlight. Backlight can either be set to full on or 50%. | OP backlight.brightness | 1-10 | Set Responses: Backlight brightness set to XX[CR] Backlight brightness: XX[CR] Backlight brightness set to XX[CR] Backlight brightness set to XX[CR] XX = Backlight brightness value |
| Red Temperature | Set/Get/ Increment/ Decrement | 50 | Adjusts the red color temperature when 'Color Temperature' is set to 'USER' | OP red.temp | 0-100 | Red temp set to: XXX[CR] Red temp: XXX[CR] Red temp increased[CR] Red temp decreased[CR] XXX = Red color temp value. |
| Green Temperature | Set/Get/ Increment/ Decrement | 50 | Adjusts the green color temperature when 'Color Temperature' is set to 'USER' | OP green.temp | 0-100 | Green temp set to: XXX[CR] Green temp: XXX[CR] Green temp increased[CR] Green temp decreased[CR] XXX = Green color temp value. |
| Blue Temperature | Set/Get/ Increment/ Decrement | 50 | Adjusts the blue color temperature when 'Color Temperature' is set to 'USER' | OP blue.temp | 0-100 | Blue temp set to: XXX[CR] Blue temp: XXX[CR] Blue temp increased[CR] Blue temp decreased[CR] XXX = Blue color temp value. |

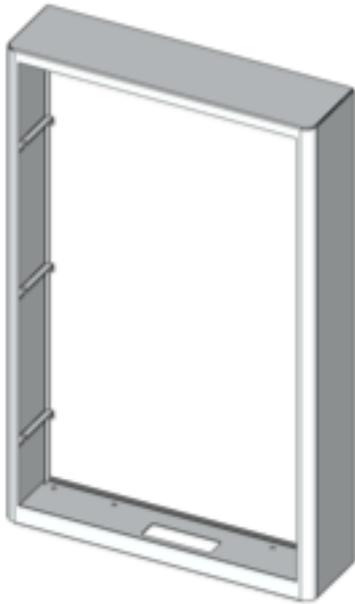
| Function | Function Type | Default Value | Description | ASCII Command | Value/ Range | Possible Responses |
|-------------------------|---------------|---------------|--|----------------------------|-----------------------------|--|
| Product | Get | | Returns Display ID, Model, Unit Serial Number, Date of Manufacture, Part Number, Master Board Firmware Version. | ST product | | Display ID: XX[CR] Model: XXXXX[CR] Serial Number: XXXXXXXX[CR] Date of manufacture: XX-XX-XXXX[CR] Part number: XXX-XXXX-XX[CR] Master board firmware[CR] version: X.XX.XX[CR] |
| Display ID | Set | 00 | Sets displays identification number | ST display.id | 00-ZZ | Display ID set to XX[CR] XX = Display ID |
| Runtime | Get | | Reports the runtime of the unit | OP runtime | | Days: XXX [CR] Hours: XXX [CR] Minutes: XXX [CR] XXX = Time |
| Backlight Runtime | Set/Get | | Reports the runtime of the backlight. | OP backlight.runtime | | Days: XXX [CR] Hours: XXX [CR] Minutes: XXX [CR] XXX = Time |
| Backlight Runtime Reset | Execute | | Resets the backlight runtime | OP backlight.runtime.reset | | Days: 0 [CR] Hours: 0 [CR] Minutes: 0 [CR] |
| Reset | Execute | | Hardware reset, all adjustable parameters remain unchanged. | OP hardware.reset | | System resetting... [CR] |
| Factory Reset | Execute | | Display restores all adjustable parameters back to the factory settings. | OP data.reset | | Adjustable parameters reset[CR] |
| Status | Get | | Returns operational status of display (OK or Alarm) and any alarm or failure flags. | ST status | | No faults[CR] Faults: 0xxx, 0xxx, 0xxx ...[CR] XX = fault code, see table 1.3.1 of fault codes for possible values. The number of fault codes returned could be anywhere from 1 to 19 |
| Status Reset | Execute | | Resets fan status register | OP status.reset | | Faults cleared[CR] |
| Fan Control | Set | Auto | Set or read fan control status. Turn fans full ON/OFF set to manual speed control or place in auto mode. Note: Fans will default to auto mode on power up. | OP fan.control | AUTO ON OFF MANUAL | Fans AUTO[CR] Fans ON[CR] Fans OFF[CR] Fans MANUAL[CR] |
| Main Fan Speed | Set/Get | 50 | Set the speed of the main cooling fans when they are in manual mode | OP main.fan.speed | 20-100 | Main cooling fan speed set to XXX[CR] XXX = Fan speed 20-100 |

| Function | Function Type | Default Value | Description | ASCII Command | Value/ Range | Possible Responses |
|-----------------------------|-------------------------------------|---------------|--|--------------------------------|--------------|--|
| Front Fan Speed | Set/Get | 50 | Set the speed of the front cooling fans when they are in manual mode | OP front.fan.speed | 30-100 | Front cooling fan speed set to XXX[CR] XXX = Fan speed 30-100 |
| Temperature Sensors | Get | | Read the values of the internal temperature sensors. Returns value at all 3 sensors | OP temperature.c | | Electronics: XX deg C[CR] Intake air: XX deg C[CR] Top chassis: XX deg C[CR] XX = Temperature |
| Get Thermal Set Points | Get | | Returns the upper and lower thermal set points | OP temp.setpoint | | Over temp limit 1: XXX deg C[CR] Over temp limit 2: XXX deg C[CR] XXX = Temperature limit |
| Input Source Selection | Set/Get | | Set or read primary video input. This input would be displayed as a priority. If the primary input is missing auto-search will search for another input. | OP select.source | VGA DVI | Input set to VGA[CR] Input set to DVI[CR] |
| Panel | Get | | Returns the native panel resolution | ST panel | EX:1366x768 | Panel resolution: 1366 x 768 [CR] |
| Auto Dimming | Set/Get | ON | Controls backlight based off the ambient light sensor | OP auto.dimming | OFF ON | Auto Dimming OFF[CR] Auto Dimming ON[CR] Auto dimming is OFF[CR] Auto dimming is ON[CR] |
| Minimum Dimming Level | Set/Get/ Increment/ Decrement | 5 | Sets the lowest brightness level the display will go when placed in auto dimming mode | OP minimum.dimming.level | 1-10 | Minimum dimming level set to XX[CR] Minimum dimming level: XX[CR] Minimum dimming level set to XX[CR] Minimum dimming level set to XX[CR] XX = Dimming level |
| Motion Sense Control | Set/Get | OFF | Have panel respond to an external motion sensor. | OP motion.sense | OFF ON | Motion Sensing OFF[CR] Motion Sensing ON[CR] Motion Sensing is OFF[CR] Motion Sensing is ON[CR] |
| Motion Sense Polarity | Set/Get | High | Determines if the motion sense input is active high or active low. | OP motion.sense.polarity | HIGH LOW | Motion Sense Polarity set to Active High[CR] Motion Sense Polarity set to Active Low[CR] Motion Sense Polarity is Active High[CR] Motion Sense Polarity is Active Low[CR] |
| Motion Sense Off Brightness | Set/Get | 5 | Sets the brightness level the display will dim to when no car is detected | OP motion.sense.off.brightness | 1-10 | Motion Sense Off Brightness set to XX[CR] Motion Sense Off Brightness: XX[CR] Motion Sense Off Brightness set to XX[CR] Motion Sense Off Brightness set to XX[CR] |
| Ambient Light | Get | | Returns the value read from the ambient light sensor | OP ambient.light | 0-4015 | Ambient Light: XXXX[CR] XXXX = Ambient Light |

| Function | Function Type | Default Value | Description | ASCII Command | Value/ Range | Possible Responses |
|----------------|---------------|---------------|---|-------------------|-----------------------|---|
| Louver Control | Get/Set | Auto | Set or get the state of the louver | OP louver.control | Open Close Auto | Louver Opening[CR] Louver Closing[CR] Louver Control set to Auto[CR] Louver is Opening[CR] Louver is Closing[CR] Louver Control is set to Auto[CR] |
| Video Firmware | Get | | Display video board firmware on the display | OP video.firmware | | Check firmware version displayed on screen[CR] |

Appendix 2 – Installing a Planar Enclosure

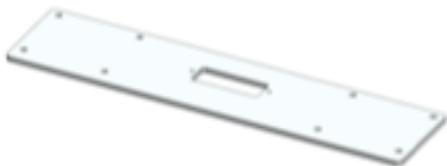




Front Enclosure



Pedestal



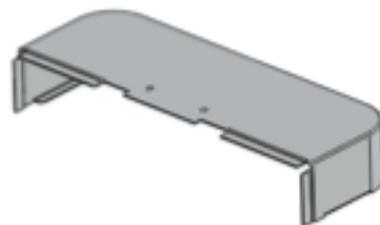
Stiffener Plate



Support Block (x2)



Foot Bezel Front



Foot Bezel Rear



Pedestal Cover



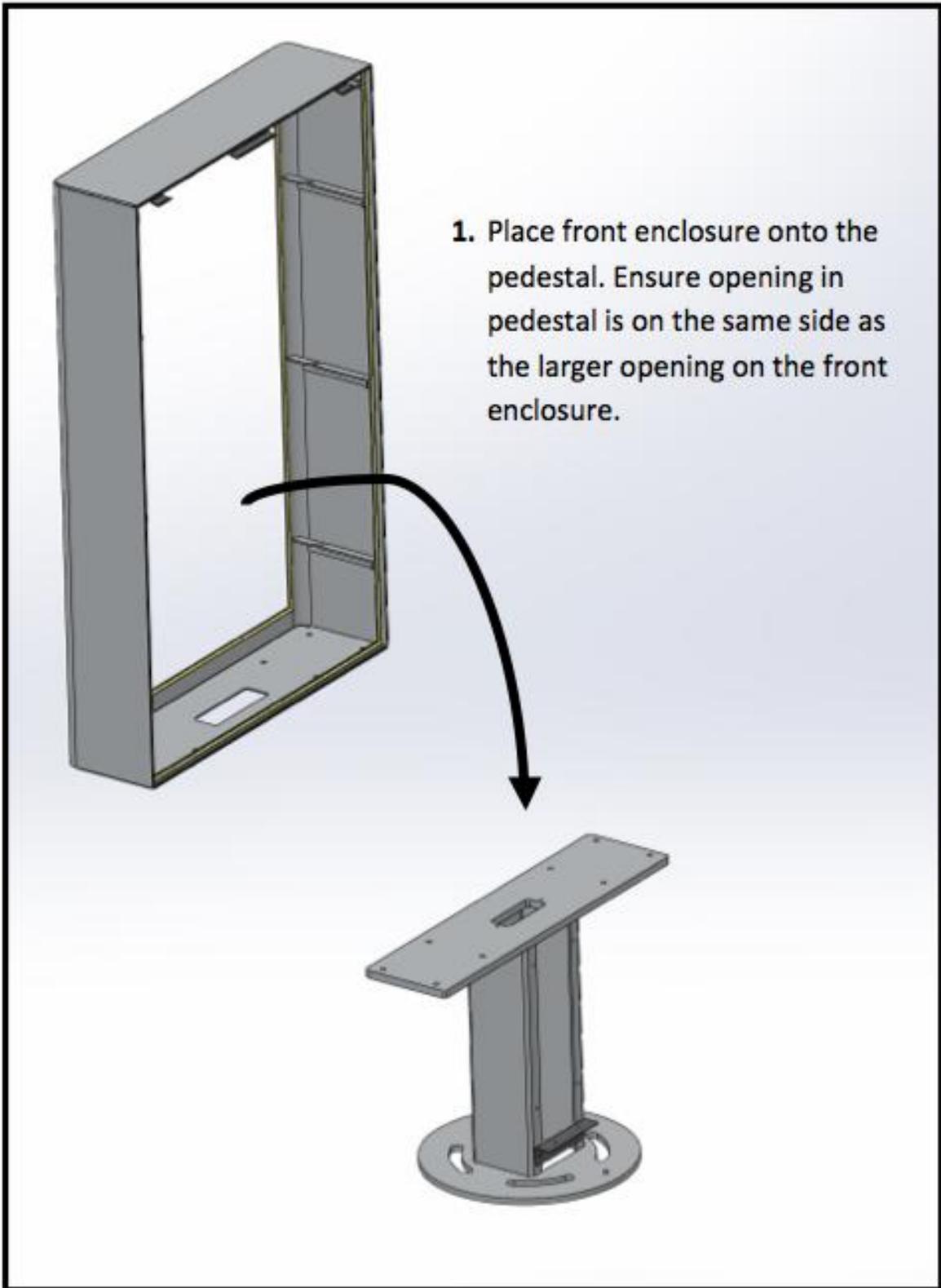
Junction Box Mount



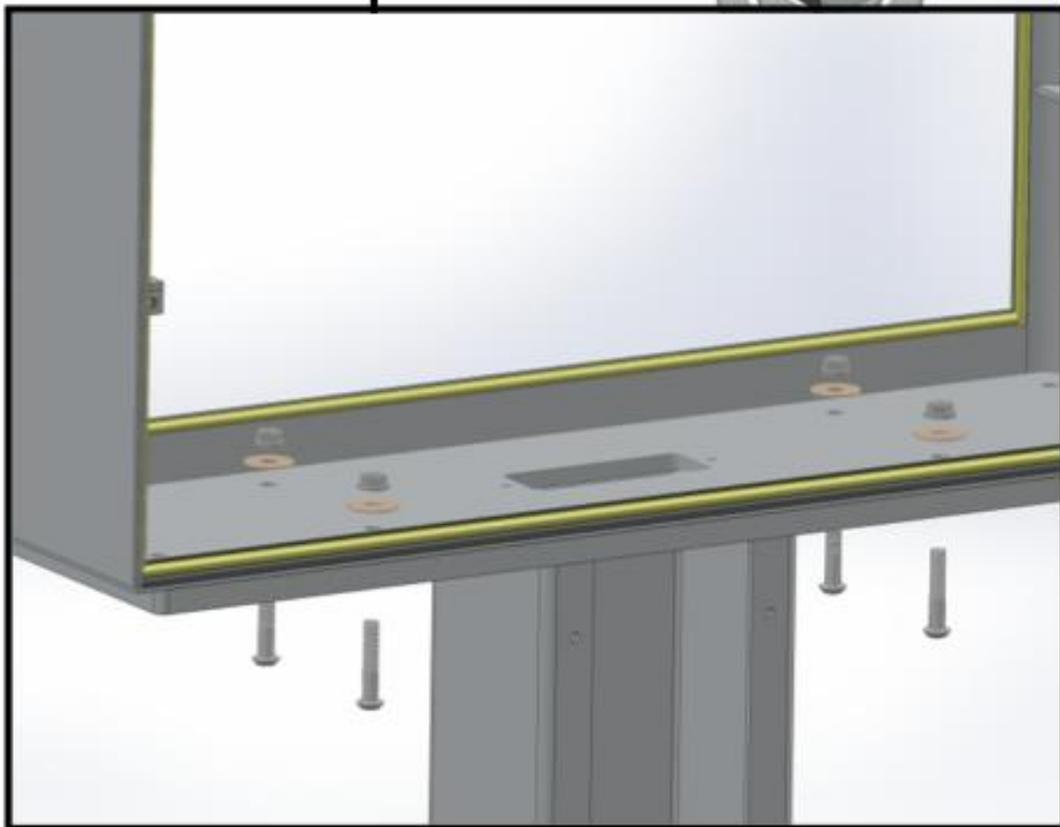
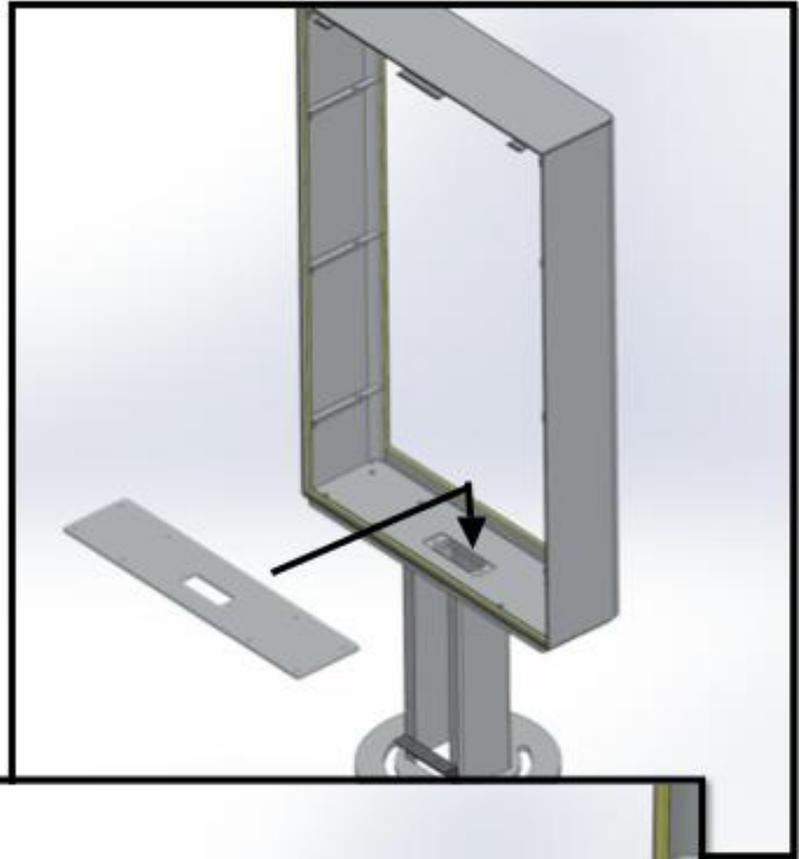
Rear Cover



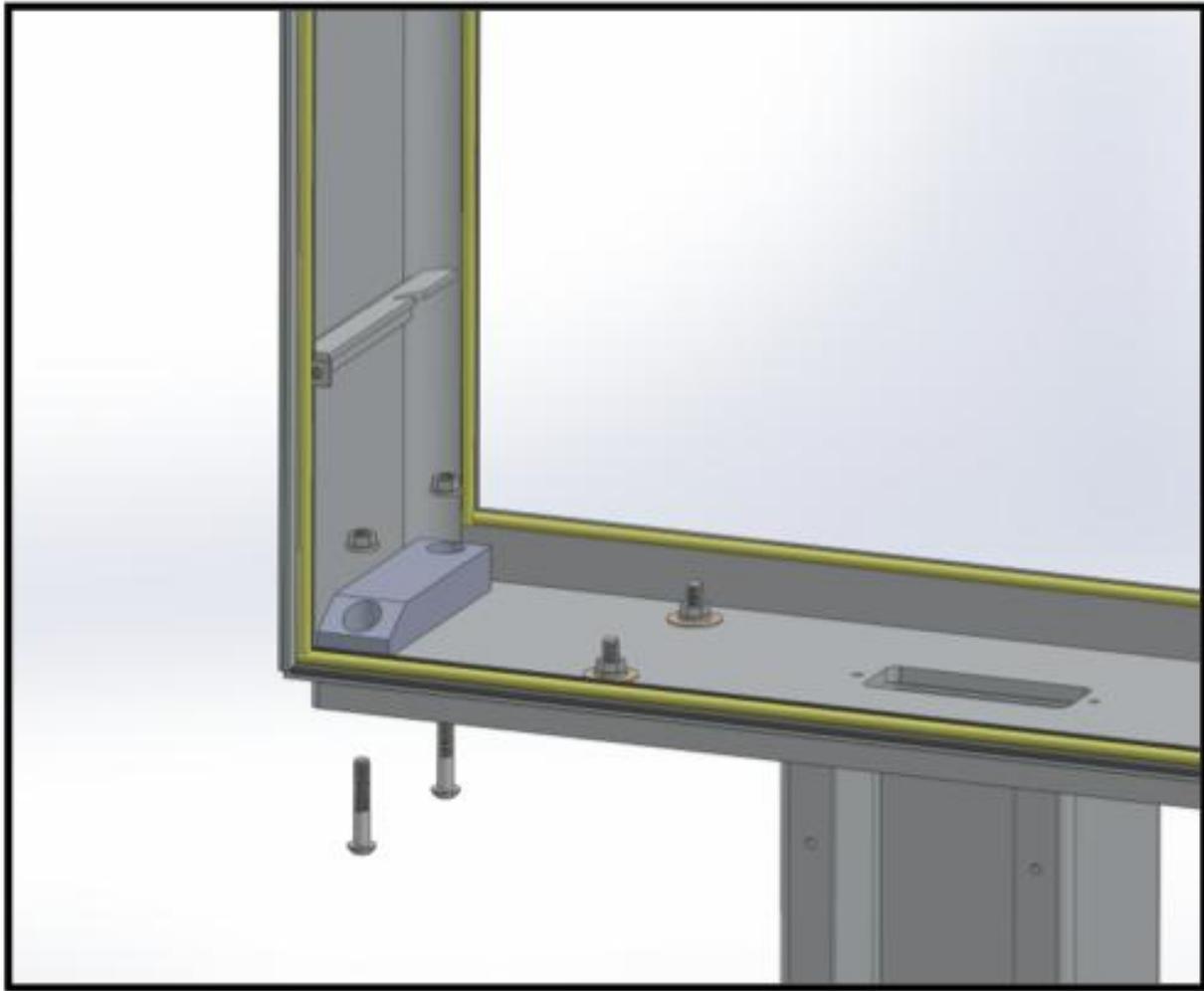
Installation Bracket (x4)

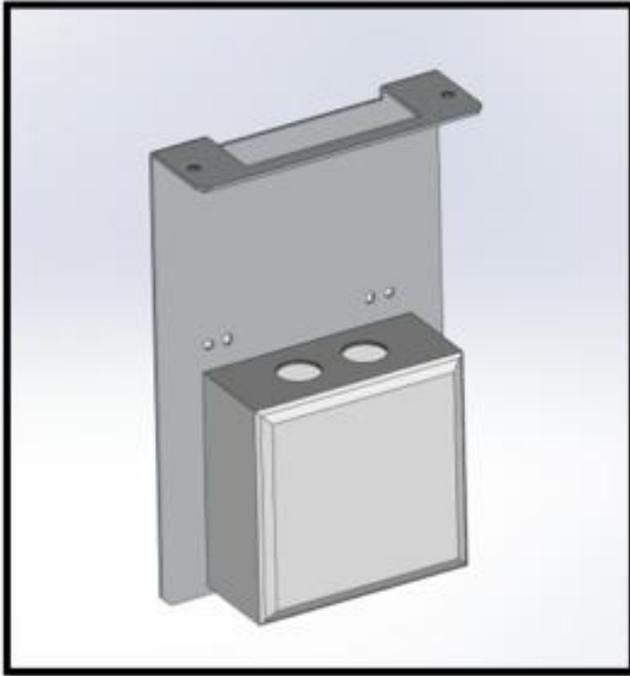


2. Put the stiffener plate inside the front enclosure. Ensure holes and cutouts line up. Secure with 1-3/4" bolt, washer and nut at the four inner positions.



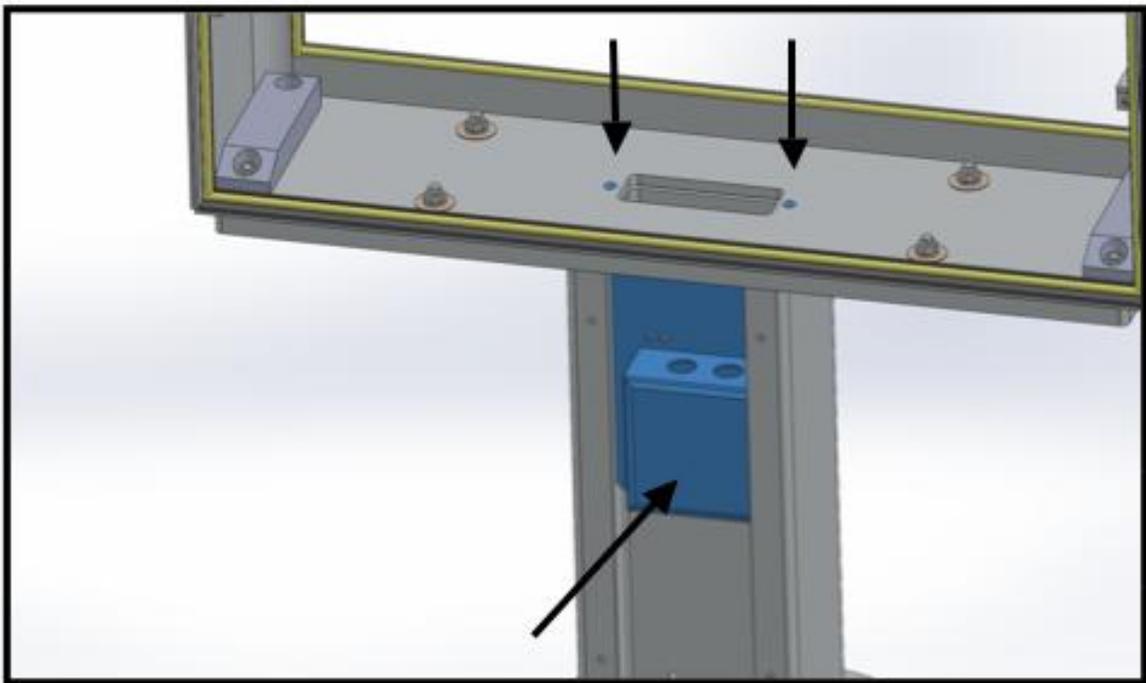
3. Install the Support blocks using 1-3/4" bolts and nuts. The sloped surface of the block should face out the larger opening in the enclosure.





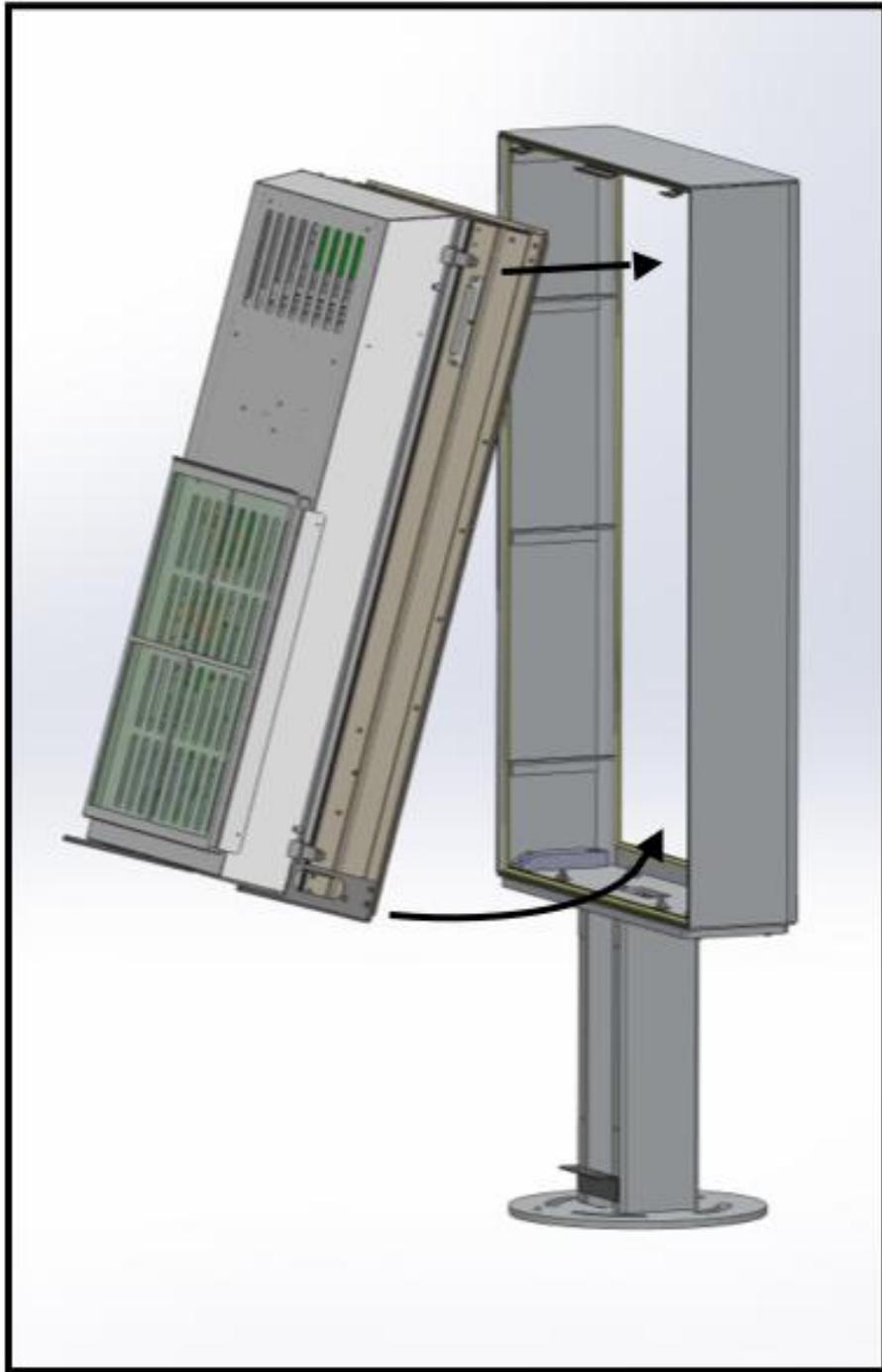
4. Assemble the Junction box and mount with box in lower position.

5. Install the Junction box mount into the pedestal assembly (drop screws in from top, inside enclosure)



6. With two people, carefully lift display into place inside enclosure.

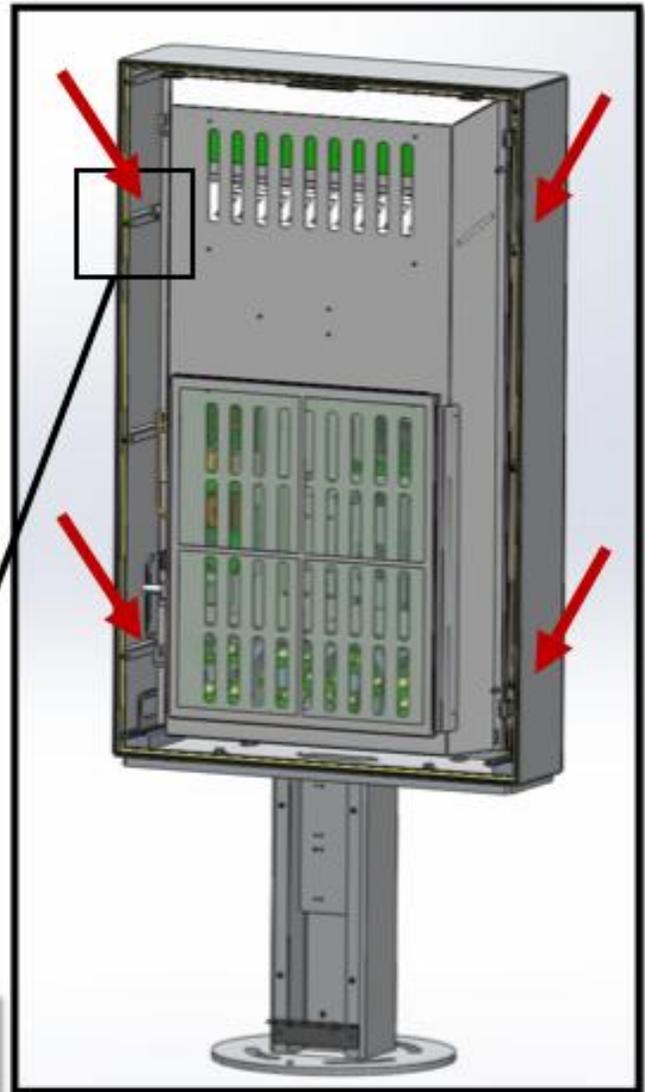
Tip: Clear top flange first, then swing bottom forward onto support blocks.



7. Slide installation brackets onto side rails (red arrows) and hook them in place. Tighten the screw to push the display forward.

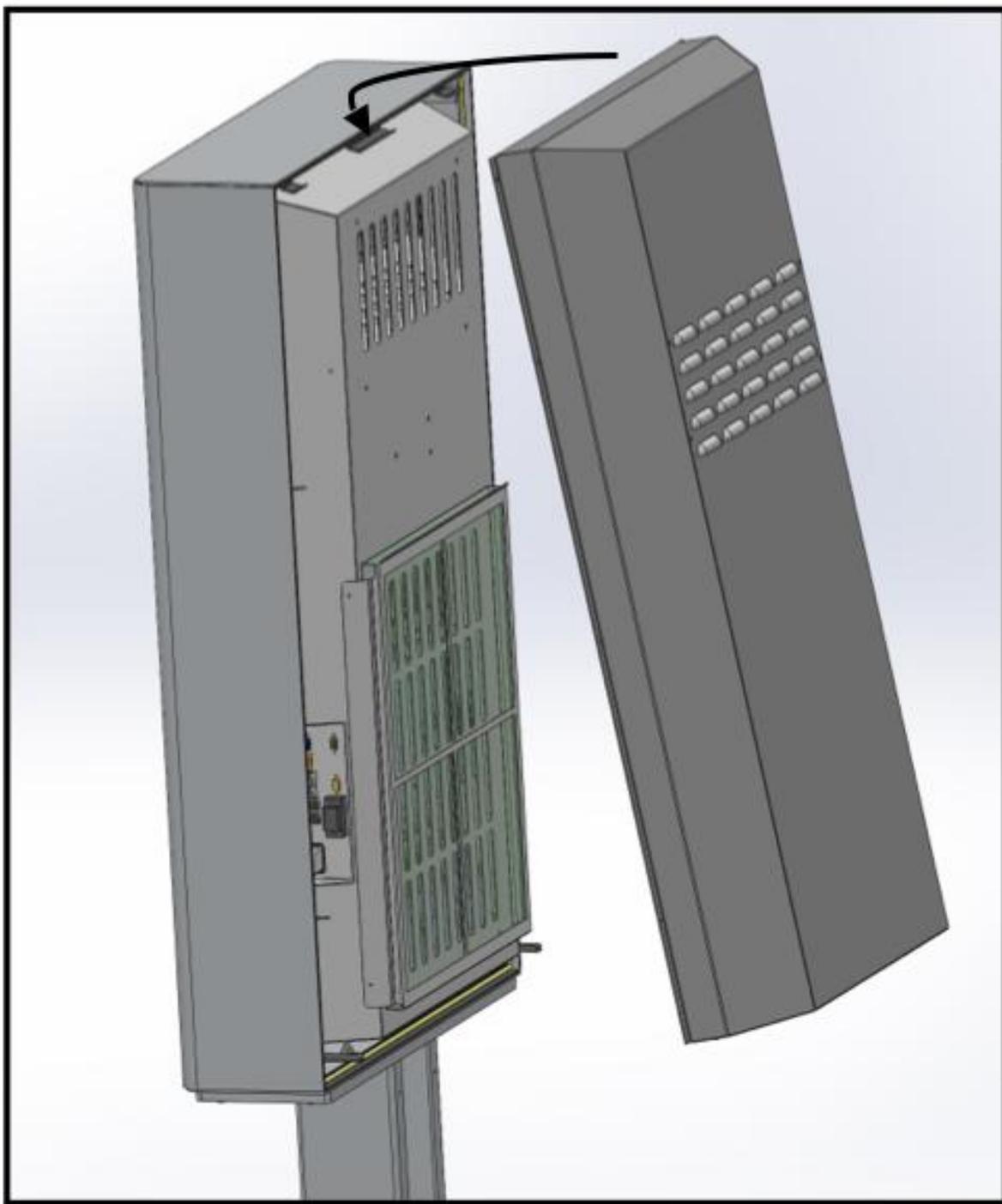
DO NOT OVERTIGHTEN!

Hand screw driver is recommended.



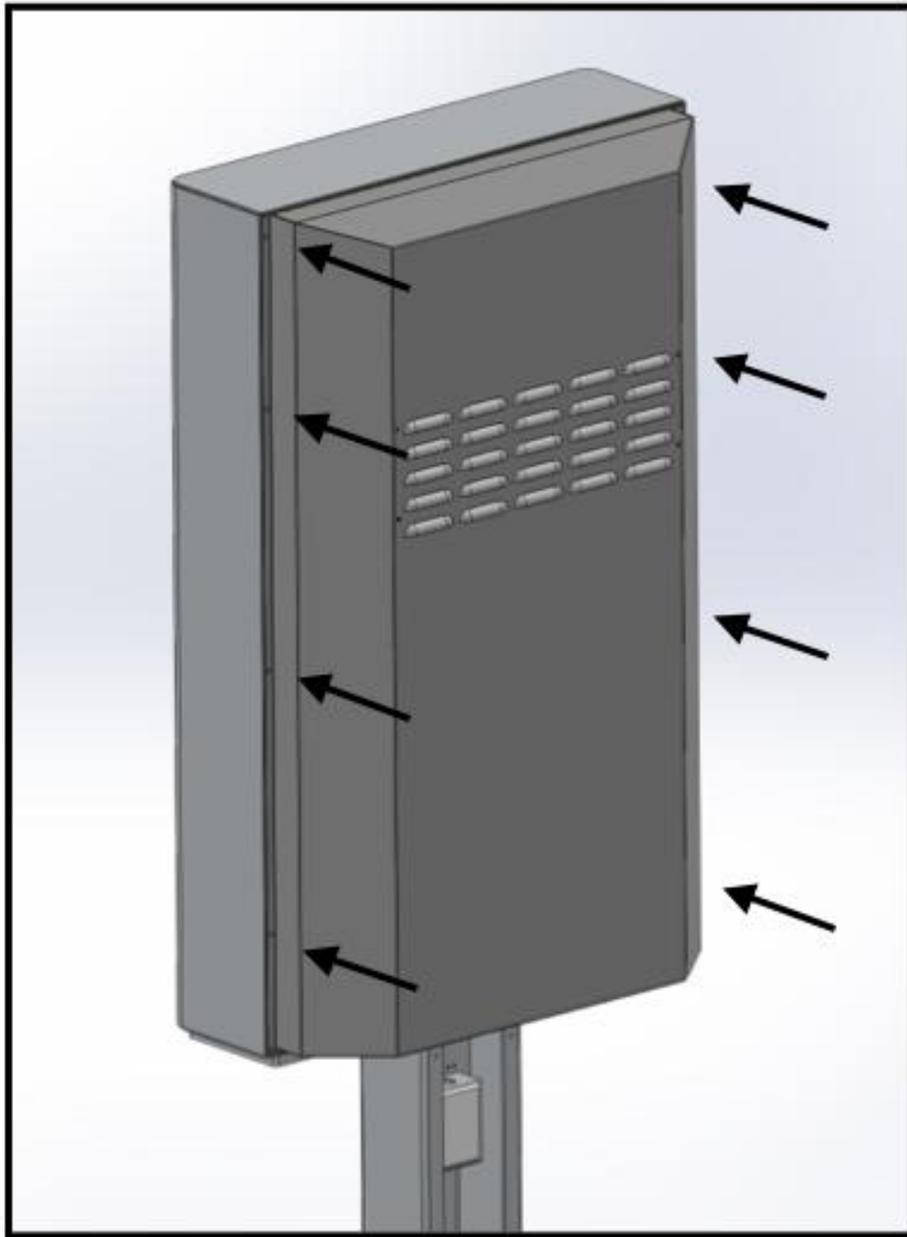
Setup electrical components and ensure display functions properly before continuing to install rear cover.

8. Hang rear cover from hooked flanges at top of enclosure and align holes along sides of rear cover.

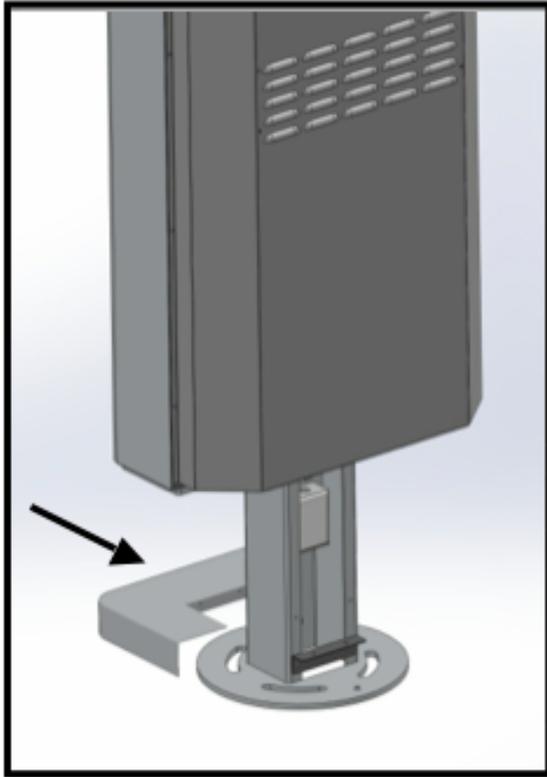


9. With a torx hand screwdriver, carefully drive in eight 1" torx screws to secure the rear cover.

DO NOT CROSS THREAD SCREWS!

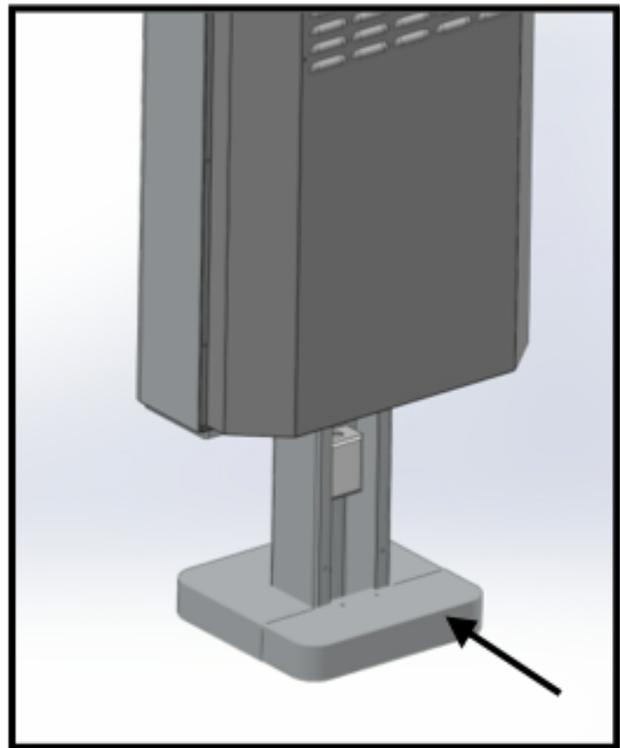


10. Install the front and back foot bezels

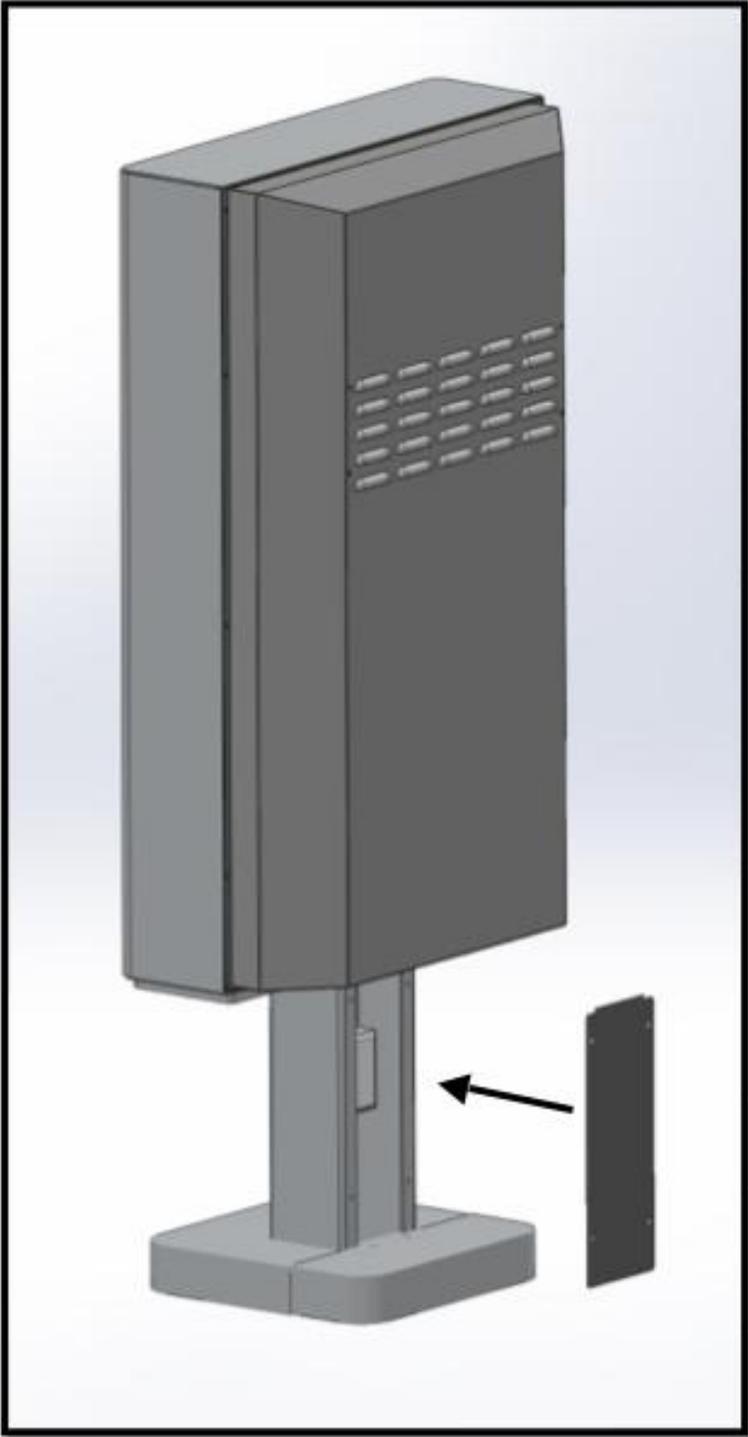


- i. Slide on the front foot bezel (the larger one). Use two 1" torx screws to secure it to the pedestal. Start screws from inside pedestal.

- ii. Screw in the rear bezel cover by putting two 1" torx screws in through the top surface.



- 11.** Complete the installation by securing the pedestal cover with four 1" torx screws.



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