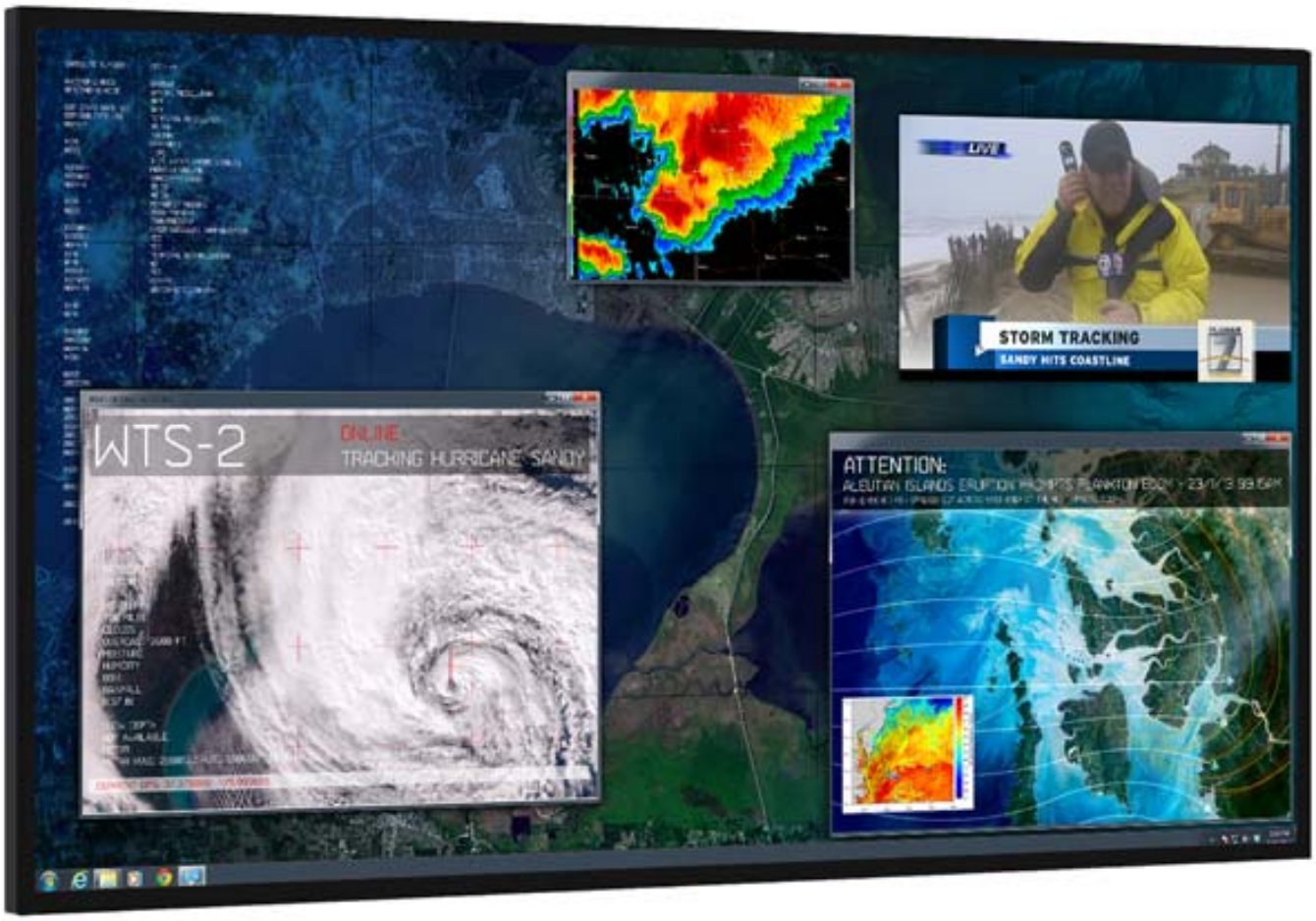
# Planar UltraRes™ User Manual




PLANAR™

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## RoHS Compliance Statement

The Planar UltraRes 4K professional displays are fully RoHS compliant.

## ADA Compliance Statement

All Planar UltraRes 4K professional displays are compliant with the Americans with Disabilities Act.

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# Introduction

Planar UltraRes 4K professional display is a family of 84" Ultra HD displays that produce resolution and picture quality not before seen in large format LCD displays. There are three different offerings: the UR8450-LX, UR8450-MX and the UR8450-3D. Designed specifically for resolution-rich commercial applications, Planar UltraRes displays offer the image quality, connectivity, industrial design and configuration options required in leading control rooms, collaboration rooms and digital branding installations.

Some of the features of the UltraRes display are:

- Ultra HD (3840 x 2160) resolution
- Outstanding picture quality - 4x pixel density of a comparably-sized Full HD display
- Slim design with Planar Profile™ Mounting System (about 3" deep when mounted)
- Supports range of 4K sources and timings
- Energy-saving features include LEDs, <0.5 watt standby mode and auto-off signal detection

**Caution:** This manual is intended for use by qualified service persons and end users with experience installing LCD displays.

## Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use any of the Planar UltraRes products near water.
6. Clean the LCD screens with an LCD screen cleaner or LCD wipes.
7. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
8. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.
9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from any of the Planar UltraRes products.
10. Only use the attachments/accessories specified by the manufacturer.
11. Unplug all Planar UltraRes displays during lightning storms or when unused for long periods of time.
12. You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.
13. Refer all servicing to qualified service personnel. Servicing is required when any of the Planar UltraRes products have been damaged in any way, such as the AC power cord or plug is damaged, liquid has been spilled or objects have fallen into a product, the products have been exposed to rain or moisture, do not operate normally or have been dropped.
14. Keep the packing material in case the equipment should ever need to be shipped.
15. Wall mounts must be secure. The wall must be strong enough to hold the UltraRes display, mounts and cables.

16 Slight pressure on the LCD will cause distortion of the image. Heavier pressure will cause permanent damage. Planar UltraRes configurations should be mounted where viewers cannot touch the screen or insert small objects in the openings that will create hazards by contacting bare conductive parts.

**Caution:** The front polarizer is soft and subject to scratches from sharp objects.

17 The polarizer is a thin sheet of film laminated to the outside layer of glass on the LCD screen. Take care when handling items near the screen.

# European Union Disposal Information

English

Disposal of old Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)

This symbol found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources.

This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Français

Mise au rebut des équipements électriques et électroniques usagés (Valable dans l'ensemble de l'Union Européenne ainsi que dans les pays européens disposant de programmes distincts de collecte des déchets)

Ce symbole appliqué sur votre produit ou sur son emballage indique que ce produit ne doit pas être traité comme un déchet ménager lorsque vous voulez le mettre au rebut. Il doit au contraire être remis à un site de collecte agréé pour le recyclage des équipements électriques et électroniques. En veillant à ce que ce produit soit mis au rebut de façon adéquate, vous contribuerez à prévenir les conséquences potentiellement négatives sur l'environnement et sur la santé humaine qui risqueraient de se produire en cas de mise au rebut inappropriée de ce produit. Le recyclage des matériaux contribuera également à économiser les ressources naturelles.

Ce symbole n'est valable que dans l'Union Européenne.
Si vous souhaitez mettre ce produit au rebut, veuillez prendre contact avec les autorités locales ou avec votre revendeur et renseignez-vous sur la méthode de mise au rebut correcte.

Deutsch

Entsorgung von elektrischen & elektronischen Altgeräten (geltend für die europäische Gemeinschaft und andere europäische Länder mit separaten Sammelprogrammen)

Dieses Symbol, zu finden auf Ihrem Produkt oder dessen Verpackung, macht Sie darauf aufmerksam, dass dieses Produkt bei der Entsorgung nicht als Hausmüll behandelt werden darf. Statt dessen sollte es an eine Sammelstelle zum Recycling von elektrischen und elektronischen Altgeräten gegeben werden. Helfen Sie mit, potenziell schädliche Einflüsse auf Umwelt und Gesundheit, die durch eine unsachgemäße Entsorgung dieses Produktes entstehen können, zu vermeiden und entsorgen Sie dieses Produkt ordnungsgemäß. Recycling hilft, natürliche Rohstoffe einzusparen.

Dieses Symbol ist nur innerhalb der europäischen Gemeinschaft gültig.
Wenn Sie dieses Produkt entsorgen möchten, wenden Sie sich bitte an Ihre örtliche Behörde und fragen Sie nach der ordnungsgemäßen Entsorgungsmethode.

Español

Deshecho de equipos eléctricos y electrónicos (aplicable a la Unión Europea y a otros países europeos con programas de reciclaje independientes)

La presencia de este símbolo en el propio producto o en su material de embalaje, indica que no se debe tratar como residuo doméstico cuando desee deshacerse de él. En su lugar, debe entregarlo en el punto limpio correspondiente de reciclaje de equipos eléctricos y electrónicos. Asegurándose de que este producto se desecha de forma correcta, ayudará a evitar posibles consecuencias negativas para la conservación del medioambiente y la salud humana, consecuencias que podrían darse si se deshace del producto de forma inadecuada. El reciclado de materiales ayuda a conservar los recursos naturales.

Este símbolo solamente es válido en la Unión Europea.
Si desea deshacerse de este producto, póngase en contacto con las autoridades locales o con su distribuidor y pida información sobre el método de disposición adecuado.

Italiano

Smaltimento delle attrezzature elettriche ed elettroniche usate (applicabile in tutta la Comunità Europea ed altri Paesi Europei che applicano programmi di raccolta differenziata)

Il simbolo trovato sul prodotto, o sulla sua confezione, indica che il prodotto non può essere trattato come i domestici quando è il momento di smaltirlo. Al contrario, deve essere consegnato ad un centro di raccolta specializzato nel riciclaggio di attrezzature elettriche ed elettroniche. Assicurando che il corretto smaltimento di questo prodotto, si aiuterà a prevenire potenziali conseguenze negative sull'ambiente e sulla salute umana, che possono essere provocate da uno scorretto smaltimento di questa attrezzatura. I materiali riciclati aiuteranno a conservare le risorse naturali.

Questo simbolo è valido solo nell'Unione Europea.
Per smaltire questo prodotto, mettersi in contatto con le autorità locali – o con il rivenditore – e chiedere informazioni sul corretto metodo di smaltimento.

Nederlands

Verwijderen van oude elektrische en elektronische apparatuur (toepasselijk in de volledige Europese Unie en andere Europese landen met afzonderlijke programma's voor afvalverzameling)

Dit symbool dat op het product of zijn verpakking is aangebracht, geeft aan dat dit product niet mag worden behandeld als huishoudelijk afval als u het wilt wegwerpen. U moet het afgeven bij een specifiek verzamelpunt voor de recyclage van elektrische en elektronische apparatuur. Door te garanderen dat u dit product op de correcte manier wegwerpt, helpt u potentiële negatieve gevolgen voor het milieu en de menselijke gezondheid, die zouden kunnen worden veroorzaakt door een onrechtmatig wegwerpen van het product, te voorkomen. De recyclage van materialen helpt het behoud van natuurlijke bronnen.

Dit symbool is alleen geldig in de Europese Unie.
Als u dit product wenst weg te gooien, dient u contact op te nemen met uw lokale instanties voor details over de gepaste methode voor afvalverwijdering.

Português

Eliminação de equipamentos eléctricos e electrónicos usados (aplicável na União Europeia e noutros países europeus com programas próprios de recolha destes equipamentos)

Este símbolo, colocado no produto ou na respectiva embalagem, indica que o produto não deve ser tratado como lixo doméstico aquando da sua eliminação. Em vez disso, deve ser entregue num ponto de recolha de equipamentos eléctricos e electrónicos para posterior reciclagem. Ao garantir a correcta eliminação deste produto, estará a evitar consequências potencialmente negativas tanto para o ambiente como para a saúde humana. A reciclagem de materiais ajuda a preservar os recursos naturais.

Este símbolo apenas é válido na União Europeia.
Se quiser eliminar este produto, contacte as entidades locais ou o seu fornecedor para ficar a saber qual o método de eliminação correcto.

Polski

Usuwanie zużytego sprzętu elektrycznego i elektronicznego (Dotyczy krajów Unii Europejskiej i innych krajów europejskich z oddzielnymi programami zbiórki odpadów)

Obecność tego symbolu na produkcie lub na opakowaniu z produktem oznacza, że tego produktu nie można wyrzucać razem z odpadkami domowymi. Należy go przekazać do punktu zbiórki w celu poddania recyklingowi podzespołów elektrycznych i elektronicznych. Usunięcie tego produktu w prawidłowy sposób, pomoże w zabezpieczeniu przed negatywnym wpływem odpadów na środowisko i zdrowie ludzi, powodowanym przez niewłaściwe usuwanie produktu. Przetwarzanie materiałów pomaga w zachowaniu zasobów naturalnych.

Ten symbol obowiązuje wyłącznie w krajach Unii Europejskiej.
Informacje dotyczące prawidłowej metody usunięcia tego produktu, można uzyskać u władz lokalnych lub u dostawcy.

Waste Electrical and Electronic Equipment (WEEE) Directive In the European Union, this label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling. EEE complies with Directive 'Regulation on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment'

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Svenska

Avfall av förbrukad elektrisk och elektronisk utrustning (Tillämpbart i hela Europeiska unionen och andra europeiska länder med separata samlingsprogram)

Den här symbolen som finns på din product eller på dess förpackning påvisar att produkten inte ska behandlas som hushållsavfall när du vill slänga bort den. Istället ska den lämnas över till en lämplig uppsamlingspunkt för återvinning av elektriska och elektroniska utrustningar. Genom att tillförsäkra att den här produkten återvinns på ett riktigt sätt hjälper du till med att förhindra möjliga negativa konsekvenser för miljön och mänsklig hälsa. Det kan annars orsakas på grund av olämplig sophantering av den här produkten. Återvinning av material kommer att hjälpa till att bevara naturtillgångar.

Den här symbolen är endast giltig inom den Europeiska unionen.
Om du vill slänga bort den här produkten ska du kontakta lokala myndigheter eller återförsäljar, och fråga efter lämplig avfallsmetod.

Suomi

Vanhojen sähkö- ja elektroniikkalaitteiden hävittäminen (Soveltuva kaikkialla Euroopan unionin alueella, sekä muissa Euroopan maissa, joilla on erilliset keräysohjelmat)

Jos tuotteessa tai sen pakkauksessa on tämä symboli, sitä ei pidä hävitettäessä käsitellä tavallisena kotitalousjätteenä, vaan se kuuluu toimittaa sähkö- ja elektroniikkalaitteiden kierrätyspisteeseen. Varmistamalla, että tämä tuote hävitetään asiaankuuluvalla tavalla autat estämään mahdollisia ympäristölle ja ihmisille koituvia negatiivisia seuraamuksia, joita sen vääränlainen hävittäminen voi aiheuttaa. Materiaalien kierrättäminen auttaa säilyttämään luonnonvaroja.

Tämä symboli on voimassa ainoastaan Euroopan unionin alueella.
Jos haluat hävittää tämän tuotteen, ota yhteyttä paikallisiin viranomaisiin tai jälleenmyyjään ja tiedustele asiaankuuluvia hävittämistoimenpiteitä.

Waste Electrical and Electronic Equipment (WEEE) Yönergeleri Avrupa Birliği'nde bu etiket, ürünün ev elektroniği aletleri atıkları ile imha edilemeyeceğini gösterir. Kurtarmak ve geri dönüşümünü sağlamak için uygun şartlarda saklanması gerekir. EEE Yönetmeliğine Uygundur Ve Elektronik Eşyalarda Bazi Zararli Maddelerin Kullaniminin Sinirlandirilmasina Dair Yönetmelik.

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# Recommended Usage

In order to get the most out of your LCD modules, use the following recommended guidelines to optimize the display.

## Burn-In Versus Temporary Image Retention

Burn-in causes the screen to retain an image essentially forever, with little or no way to correct the problem. Under normal use, an LCD module will not experience burn-in, as plasma displays do, nor will it retain images in any way.

Normal use of an LCD module is defined as displaying continuously changing video patterns or images. However, LCD modules can experience *temporary* image retention when recommended usage guidelines are not followed.

### What is Temporary Image Retention?

Temporary image retention (TIR) can occur when a static image is displayed continuously for extended periods of time. An electrical charge differential may build up between the electrodes of the liquid crystal, which causes a negative-color video image (color-inverted and brightness-inverted version of the previous image) to be retained when a new image is displayed. This behavior is true for any LCD device from any LCD manufacturer.

TIR is not covered under warranty. See standard warranty terms and conditions for details. Here are some guidelines to help you avoid TIR:

- Use the LCD module to show a screen saver, moving images or still pictures that change regularly. When using high-contrast images, reposition the images frequently.
- Turn off the Planar UltraRes when it is not in use. There are a few ways to do this automatically.

**Caution:** For optimal performance, we suggest turning off the LED power on the Planar UltraRes for four hours per day.

## Normal Use Thermal Guidelines

Normal use of the LCD module is defined as operating in the open air to prevent heat buildup, and without direct or indirect heat sources such as lighting fixtures, heating ducts, or direct sunlight that can cause the modules to experience high operating temperatures. If the LCD module will be installed in a recessed area with an LCD surround or enclosure, ensure adequate openings are applied for proper air flow and ventilation.

At 3000 meters or below, the maximum ambient operating temperature for the LCD module cannot be above 40° C nor below the minimum ambient operating temperature of 10° C. If one of these conditions exists, it is up to the installer to ensure that module placement is changed, thermal shielding is provided and/or additional ventilation is provided to keep the display within its nominal operating parameters.

### Cooling Requirements

For optimal performance, active cooling by the installer should be planned for when the ambient temperature anywhere in the wall is predicted to be above the specified ambient temperature for the display.

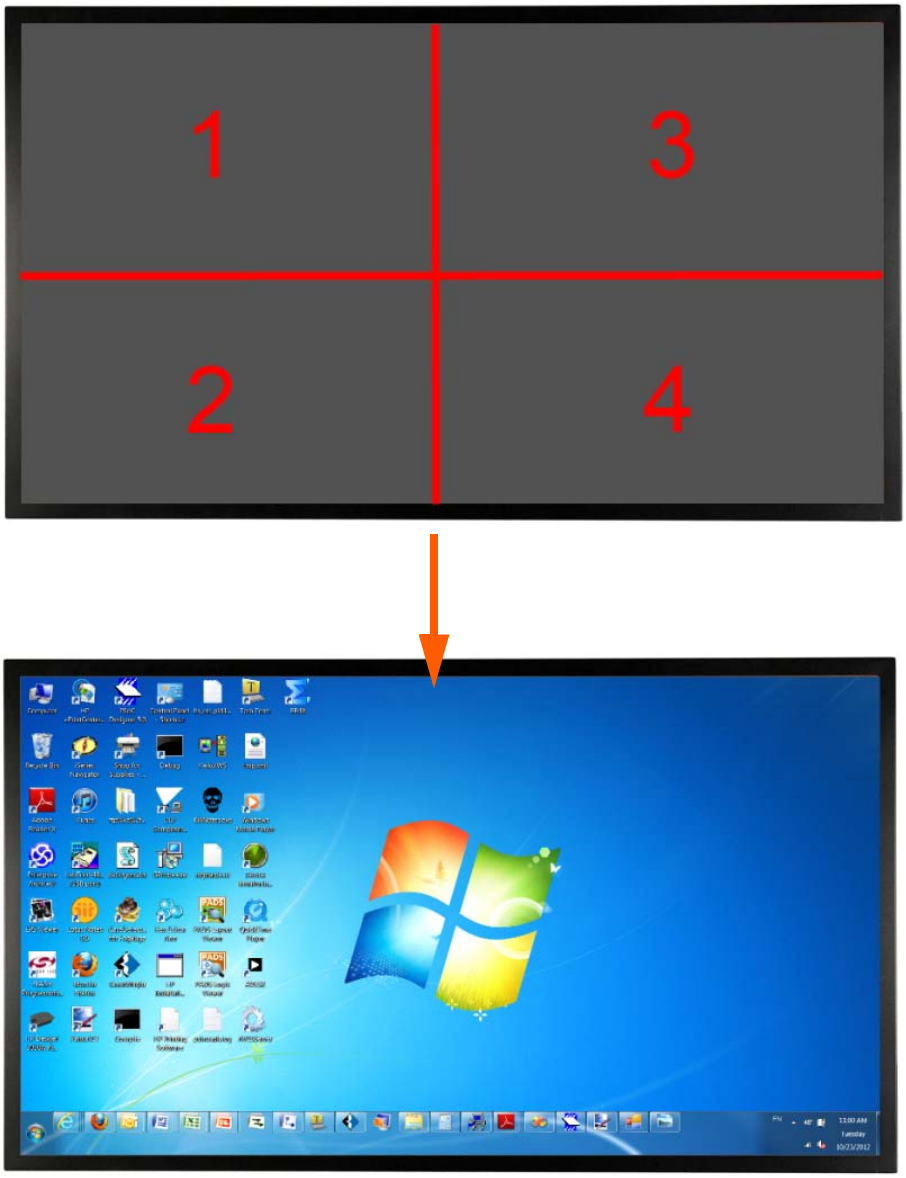
# Basic Concept of Planar UltraRes Display

The Planar UltraRes display uses four separate outputs that feed into the 84" display as one image. You can use any combination of HDMI, DisplayPort or DVI.

There are two main modes of operation for the UltraRes Display:

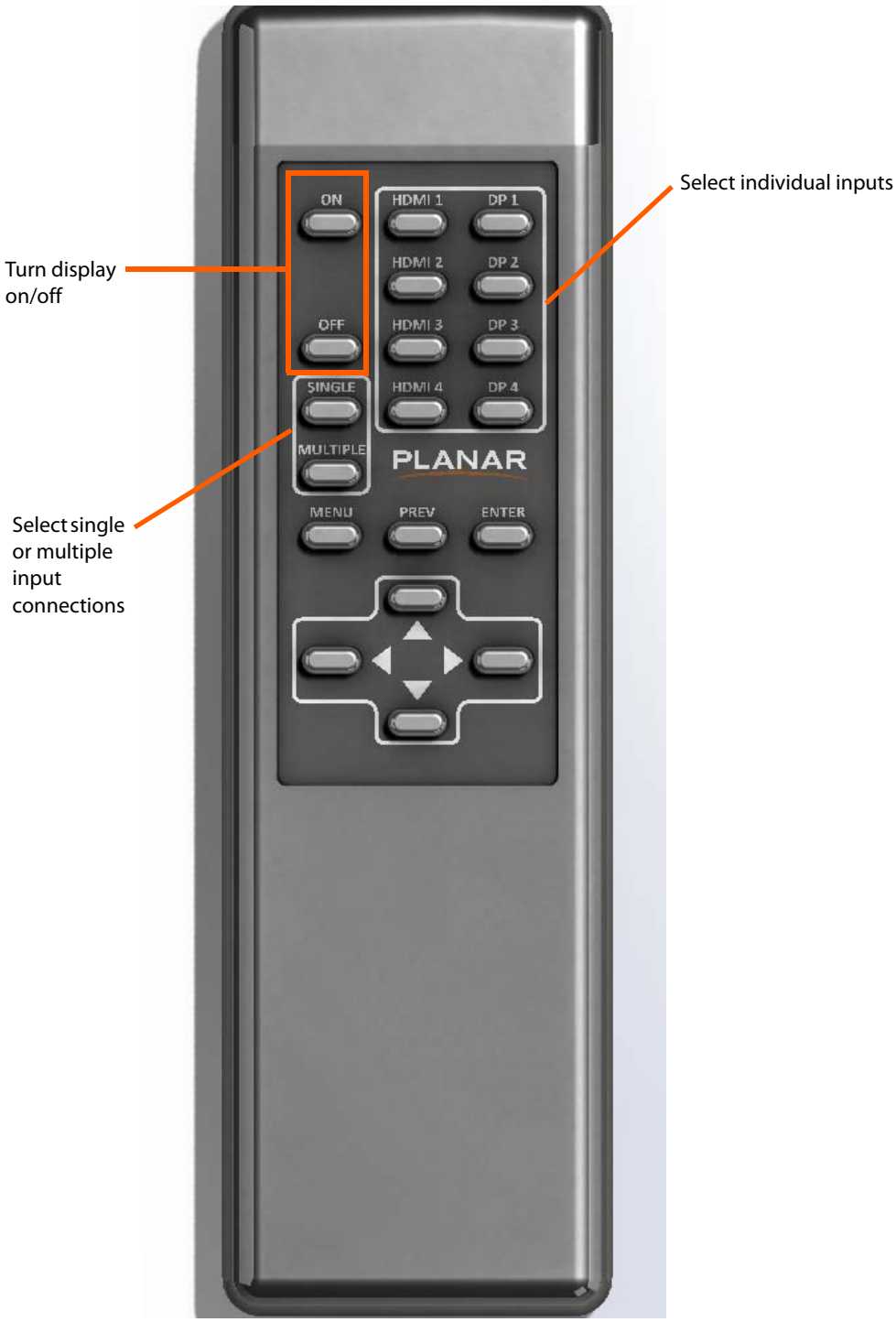
- Single 4K inputs @ 24/25/30Hz
- Four headed input (4K @ 60Hz)

Using four separate outputs provides the ultra HD resolution needed for superior image quality. In the following example, each number represents an output. All four "quadrants" (outputs) are fed into the 84" display and turned into one ultra high-resolution image.



# Using the Remote Control

The UltraRes remote control can be used for a variety of functions, including turning the display on and off and assigning individual inputs.



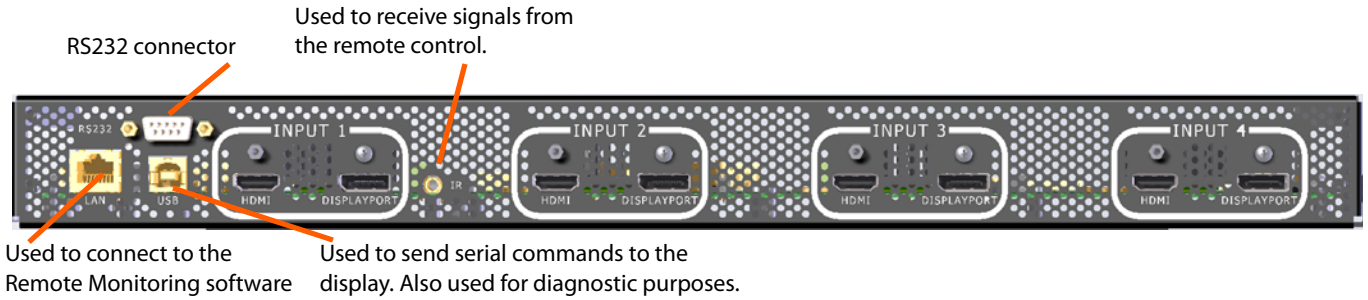
# Turning Power On/Off

There are several ways to turn the power on and off:

- Using the **On/Off** buttons on the remote control. See "Using the Remote Control" on page 8 for more information.
- Using the **Power On/Power Off** buttons in the UltraRes Control software tool. See "Using the UltraRes Control Software" on page 42 for detailed information about the UltraRes Control software.
- Use the UltraRes Remote Monitoring software. See "Planar UltraRes Remote Monitoring Software" on page 61.

# Input Setup

You can set up your Planar UltraRes display using multiple or single inputs. Both are explained below. You can select multiple or single input mode using the remote control, the UltraRes Control tool or by using RS232 commands. For more information see "Setting Up UltraRes Using Multiple Inputs" on page 32 and "Setting Up UltraRes Using Single Inputs" on page 34.




## Supported Formats for Multiple Inputs

The following formats for multiple inputs are supported:

- (4x) DisplayPort or HDMI/DVI 1080p @ 24/50/60Hz
  - PC with DisplayPort or HDMI/DVI (or mix of both)
  - External video processors
- (4x) DisplayPort or HDMI/DVI 960 x 2160 @ 60Hz
  - Needs a PC with a special graphics card setup

## Supported Formats for Single Inputs

The following formats for single inputs are supported:

- (1x) DisplayPort or HDMI/4K@ 24/25/30Hz
  - PC with DisplayPort 1.1a or 1.2 output
  - 4K Blu-ray player (for example, Sony BDP-S790)

# Installing a Planar UltraRes Display

This section explains how to install a Planar UltraRes display. We suggest that you read this entire section before you attempt to install a display.

## Before You Begin

Make sure you have all the items in the following lists before you begin unpacking and installing your display.

### Tools/Equipment List

Depending on your installation, you may need one or more of the following items:

- #1 and # 2 Phillips screwdriver
- Drill and bits
- Pencil
- Digital/laser level
- Ladders/lift
- Back brace
- Stud finder (if hanging on a wall)

### Other Things You May Need

- LCD screen cleaner or LCD wipes - available at most electronics stores
- At least two capable people to lift display into place

### Plan Your Installation

You should have a detailed plan of how the Planar UltraRes display is to be configured. The plan should include calculations for the following:

- Floor/wall load. Make sure the floor/wall is strong enough to support the weight of the Planar UltraRes.
- For passive cooling, it is recommended that a minimum of 1" of top clearance is provided. This can be reduced if the LCD is actively cooled.
- Ventilation and cooling requirements. Although the rear cover of the display is perforated and provides better airflow than other displays, it is still important that you consider room cooling and ventilation.

# Supported Graphics Cards

UltraRes supports a variety of graphics cards from leading manufacturers, such as Nvdia and AMD. In general, you should be looking for graphics cards that have the following features:

- Can output 3840 x 2160 at 24 Hz or 30 Hz over a single DisplayPort of HDMI connection.
- Four-output graphics cards that can output synchronized (genlocked) 1920 x 1080 outputs at up to 60 Hz.
- Cards that support Planar's support timings, as listed in the following section "Compatible Video Sources" on page 83.

**Caution:** Before you purchase a graphics card for your source, contact your Sales Representative to get the most current information on Planar's compatibility with leading graphics cards.

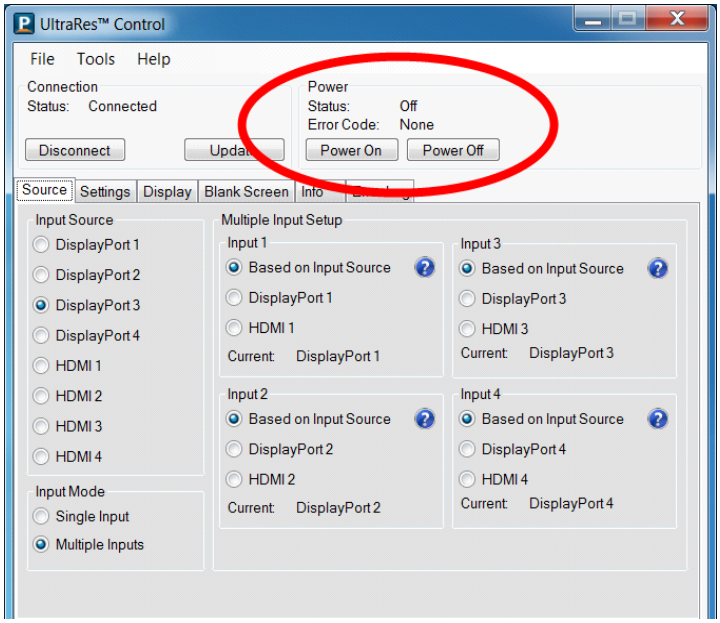
# Recommended PCs

In order to use 4K video, it is crucial that you have a high-powered PC. We also recommend using a single 4K output whenever possible, so that you eliminate the requirement of multi-output synchronization.

# Powering On/Off Planar UltraRes Displays

There are several different ways to turn on or off the Planar UltraRes Display:

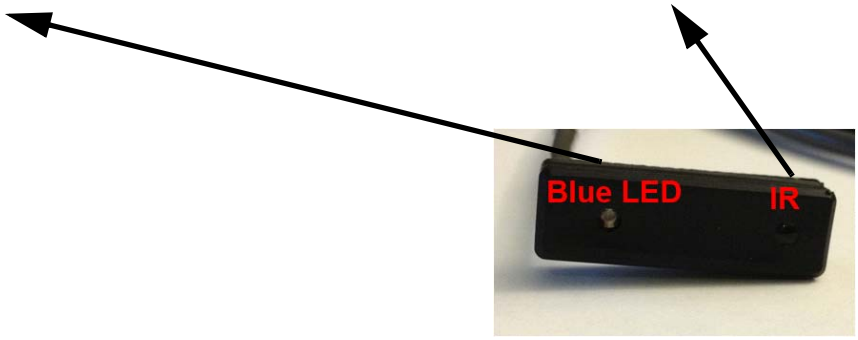
- Using the **On/Off** buttons on the remote control. See "Using the Remote Control" on page 8 for more information.
- Using the **Power On/Power Off** buttons in the UltraRes Control software tool. See "Using the UltraRes Control Software" on page 42 for detailed information about the UltraRes Control software.




- Use the UltraRes Remote Monitoring software. See "Planar UltraRes Remote Monitoring Software" on page 61.

## Planar UltraRes in Standby Mode

If you are unsure about whether or not the display is on but in standby mode, look for the small Standby LED. If it is off, you will not see the LED. If it is on but in Standby mode, you will see a blue LED. As the display starts, the LED blinks until it is on. Once it is on, the LED turns off.




Insert IR sensor cord into the IR input on the bottom of the display.

If an image is present on the current input, it will be displayed on the UltraRes display. Otherwise, you will see a blank screen color (the default is black).

# Unpacking and Checking Accessories

## LCD Module Box

The following items are included in the LCD module box.

| Part | Description | Number | Picture |
|---|---|---|---|
| LCD module | One per box. | 1 | |
| LCD mounts (optional) | If ordered, this will be inside a separate box inside the LCD box.<br><br>**Note:** If you do not use Planar's mounts, you need to ensure the mounts that you purchase can adequately support the display. | 1 | |
| Mounting template | Used to line up where the wall mounts will be installed. This is included with Planar's optional LCD mounts. | 1 | |

| Part | Description | Number | Picture |
|---|---|---|---|
| Kickstand bracket | Mounts to the display when Planar mounts are purchased. | 1 | |
| M4 x 8 Panhead screws | Used to mount the kickstand bracket. | 4 | |

## Accessory Kit

The following items are included in the accessory kit.

| Part | Description | Number Included | Picture |
|---|---|---|---|
| AC power cord | Power cord. | 1 | |
| IR sensor | Used to receive signals from the remote control. | 1 | |
| Double-sided tape | Used to help in mounting the IR sensor module. | 2 | |
| USB drive | Contains the User Manual and setup software. | 1 | |
| Passive USB cable | Used to set up display software. | 1 | |
| Remote control | Used to power the display on/off, select multiple or single inputs.<br><br>**Note:** Batteries are included but not installed. | 1 | |

# LCD Installation

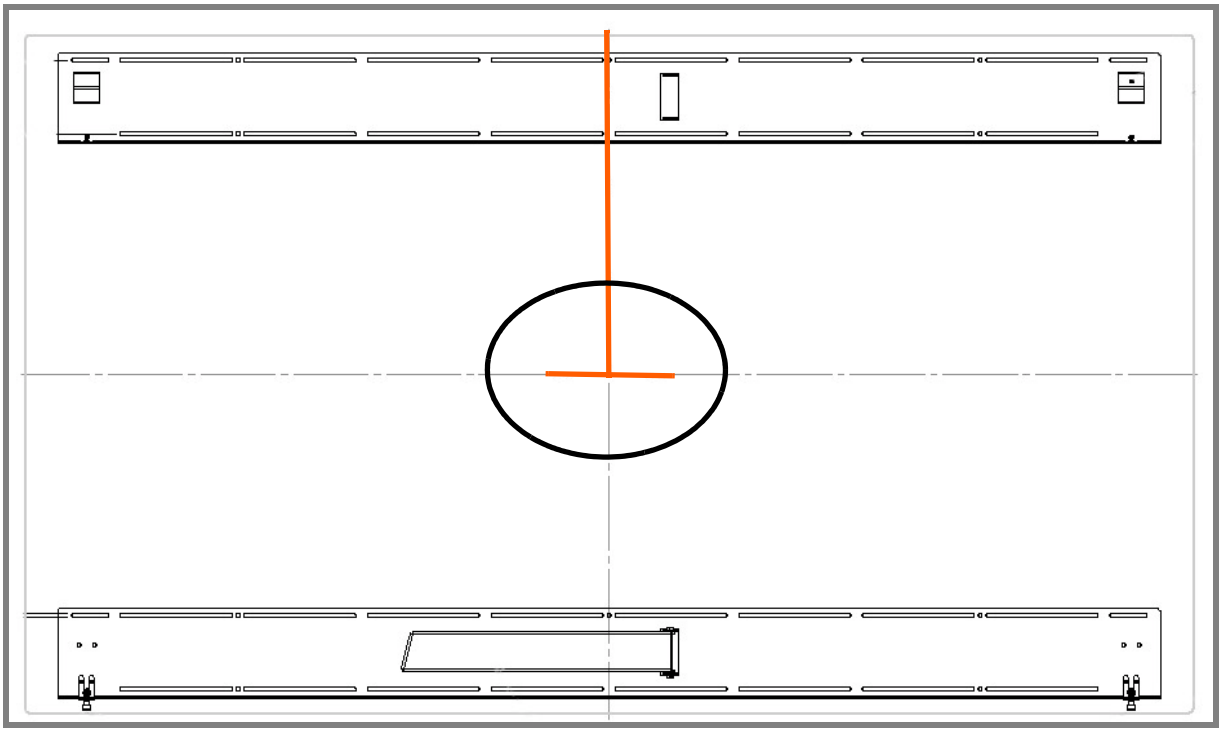
Before installation, keep the following points in mind:

- These displays are heavy. Make sure that you have an adequate studs to support the weight of each display if installing on a wall.
- The UltraRes must be installed on a flat surface.
- If you ordered the optional wall mounts, use the supplied UltraRes mounting template for the center point of the display, as well as top and bottom bracket installation.
- The wall mounts for a landscape and portrait installation look very similar. The process to install them is almost exactly the same. The only difference is the way in which you use the wall mount template. This will be pointed out in the relevant step.

# Installing an UltraRes Display on a Wall

**Caution:** For whatever structure is used to mount the display, be sure that it is sufficiently engineered to handle the weight of the display. Also be sure to purchase the correct hardware needed to support the display mounted to that structure.

1 Find the center point of the display on the wall where you intend to install it.



2 Draw a short (about 1") horizontal line and a vertical line to match the edge of the display.

3 Use the provided template to determine the center points of the wall mounts. The “V” notches are labeled “L” for a landscape display or “P” for a portrait display. Use the appropriate “V” notch to align with the horizontal line drawn in the previous step.

4 In the hole marked “Top” on the template, mark the center of the hole on the wall.

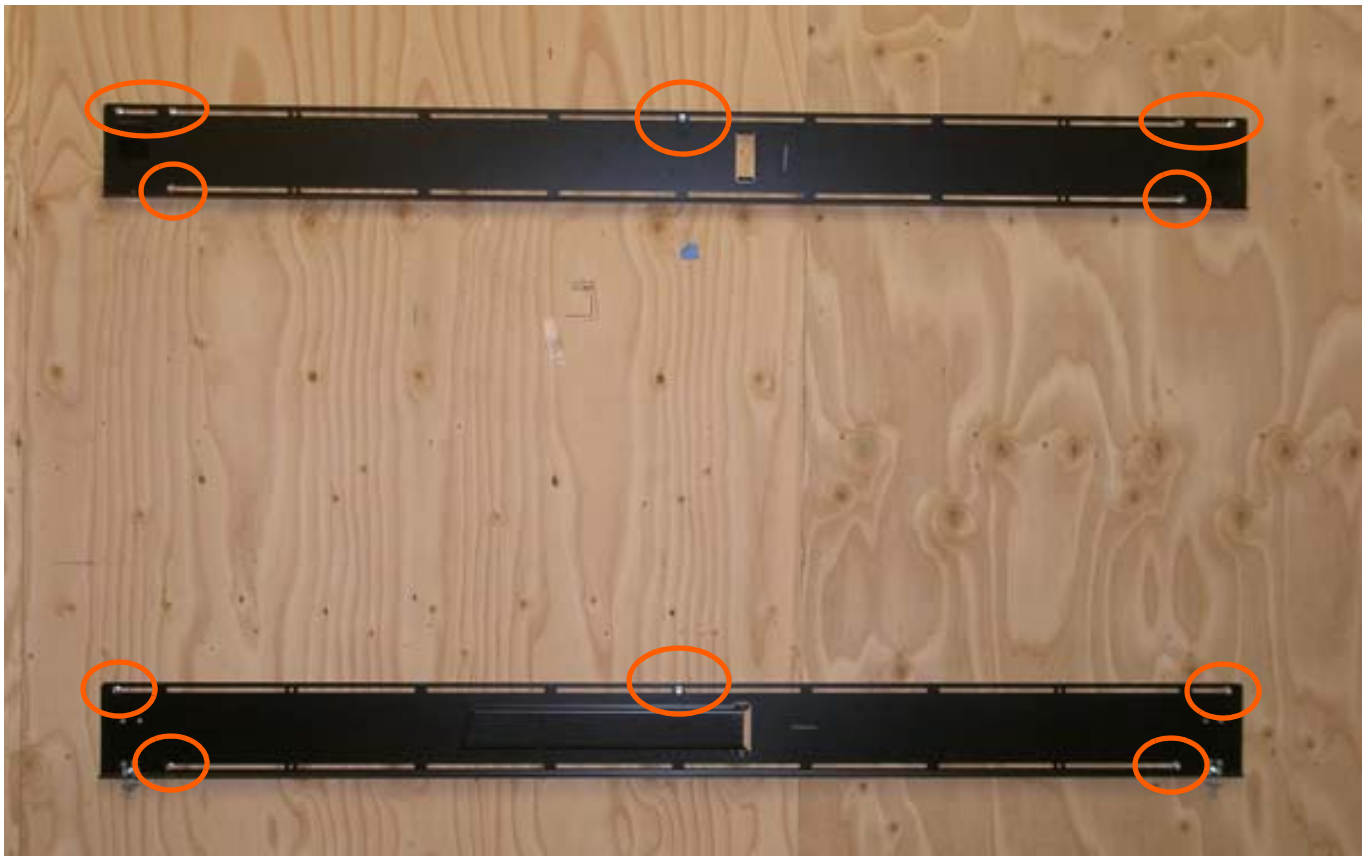
**Note:** If you are installing a landscape display and the template is too long, you can break the template at the notch labeled “P.”

5 Let the template hang vertically so it is plumb, as the bottom hole in the template determines where the bottom mount will be installed.

6 Screw in the appropriate hardware in the bottom hole of the template that corresponds with your display orientation.

7 Remove each screw and the template.

8 Line up the middle hole of the top wall mount with the screw hole drilled from the template.



**Note:** This picture shows mounts for a landscape installation.

9 Tighten the screw into the mount.

10 Use a level to make sure the mount is level.

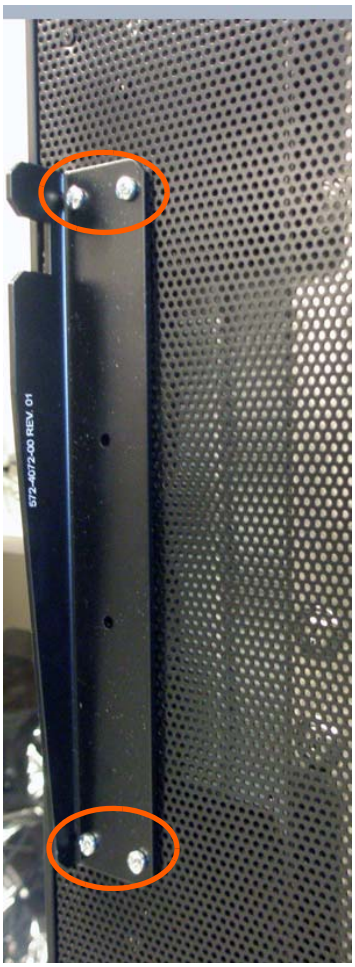
11 Then install additional screws as needed.

**Note:** Screws installed near the hooks provide the best support.

12 Install the center screw in the bottom mount and repeat steps **10**-**11** for any additional screws that you want to install. Note that there are open mount channels on the brackets. So you can install the screws wherever necessary along those channels.

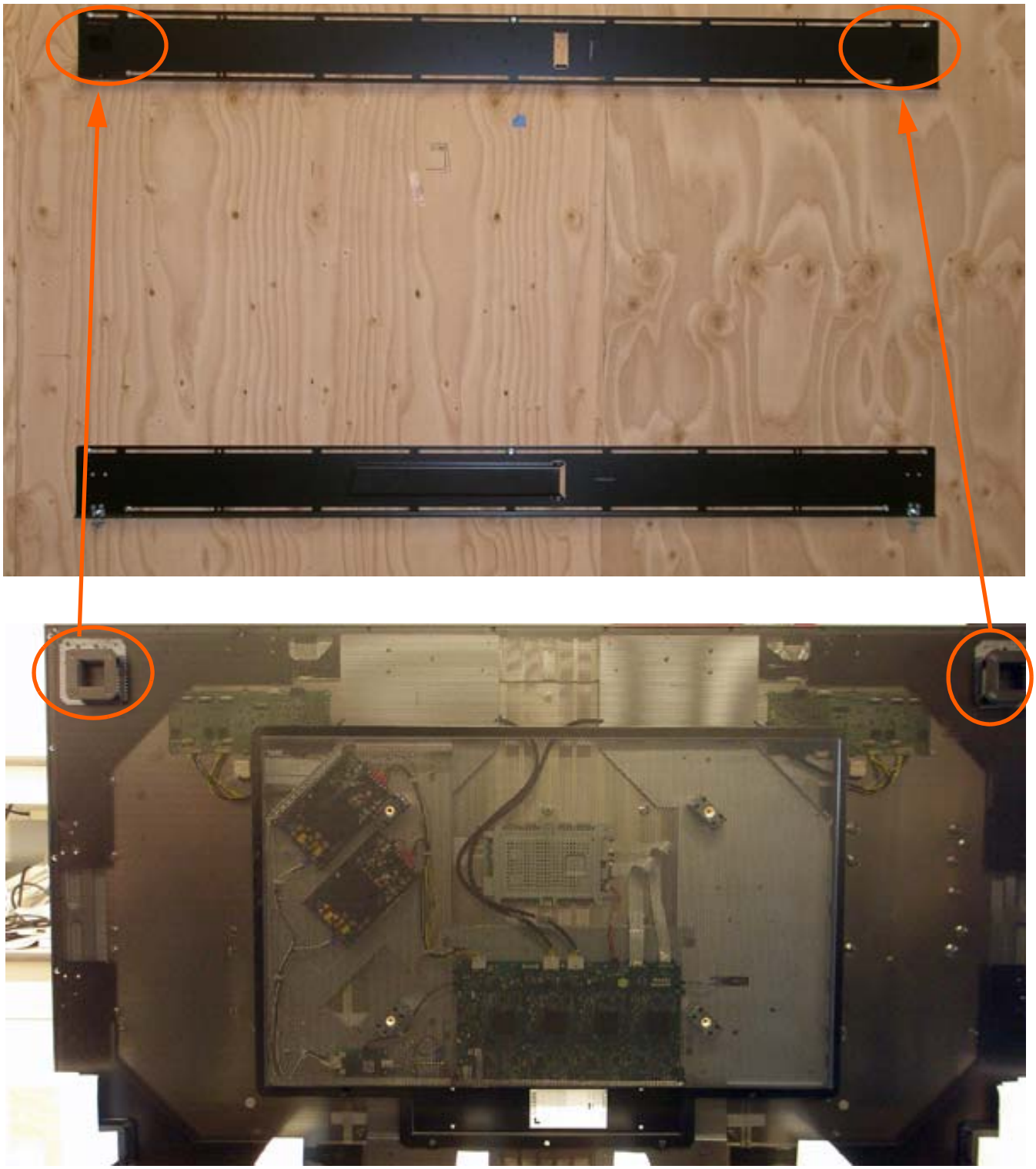
**13** Install the kickstand bracket to the back of the display using four M4 x 8 Panhead screws.

Landscape holes for kickstand bracket installation



Portrait kickstand installed on display

**14** Using two people, carefully hang the back display onto the top wall mount bracket using the square brackets on the back of the display.



**Caution:** Be sure that these are securely hung, as the top of the wall mount will hold most of the weight of the display.

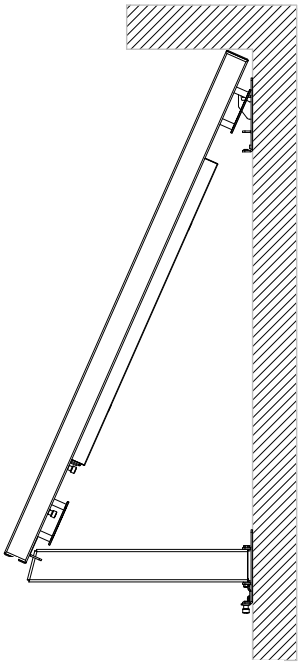
**15** On the bottom wall mount, there is locking hardware in the bottom corners of the mount. Push the hardware up and finger tighten the captive screws on the bottom to secure the display to the wall.

## Using the Kickstand Bracket

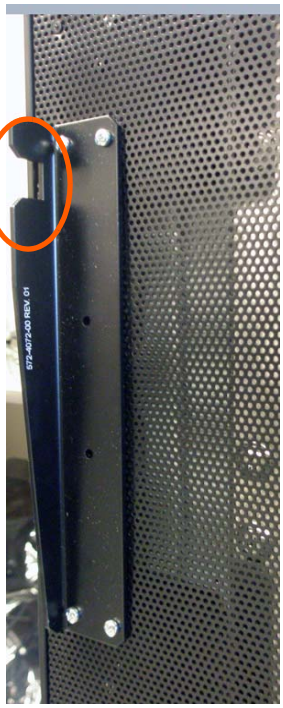
The kickstand bracket is used for service mode, without having to remove the display from the wall. Use the following instructions to put the display in service mode.

1 Loosen the captive locking screws on both sides of the bottom mount.

2 Pull the display out and then swing out the kickstand to hold it in place. The kickstand will nest into the kickstand bracket notch.



Service position - with kickstand supporting display



# Connections

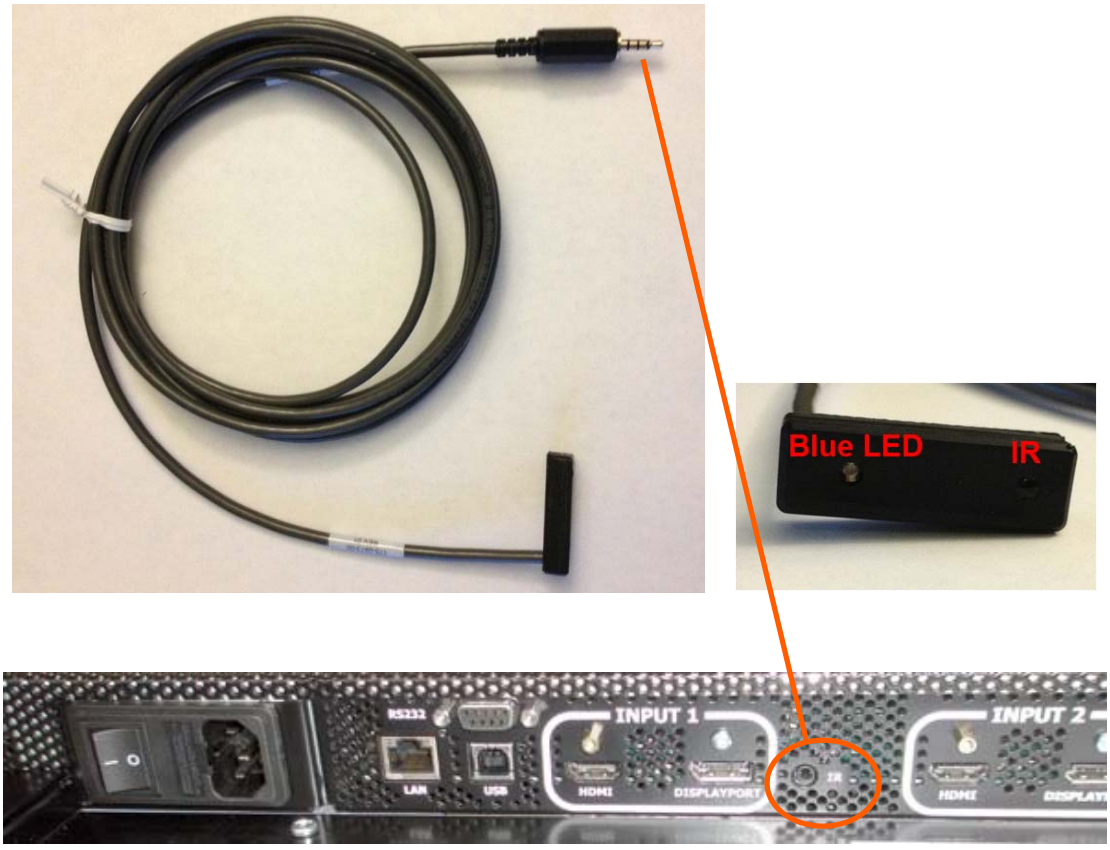
In order to get your UltraRes display up and running, you need to make three main connections: AC power to the display, the wired IR module and your sources.

## Connecting AC Power

Using the supplied AC power cord, connect one end to a grounded outlet and the other to the AC power input next to the I/O panel the bottom of the UltraRes display.

## Connecting the Wired IR Module

In order for the remote control to work, you need to connect the wired IR module to the display, also on the bottom of the I/O panel. Then place the IR receiver in the desired place on or near the display.



## Connecting Sources

The graphics card that you install on your main PC will determine what outputs will be plugged into the Planar UltraRes display. For example, some graphics cards have two HDMI outputs and two DisplayPort outputs. Any combination of these outputs is fine. Below is a visual example of how a basic connection might look.

In the example below, using four input channels on a computer, you would use one connector to connect to for each input on the I/O panel on the UltraRes display, as shown below.

As an example, you could use the following:

- Input 1 - HDMI 1
- Input 2 - DisplayPort 2
- Input 3 - DisplayPort 3
- Input 4 - HDMI 4

**Note:** You cannot plug into two ports on the same input channel. For example, you can't plug into HDMI 1 and DisplayPort 1 in Input 1 as shown above. You can only connect to **one** input for each input channel.

## Setting Up UltraRes Using Multiple Inputs

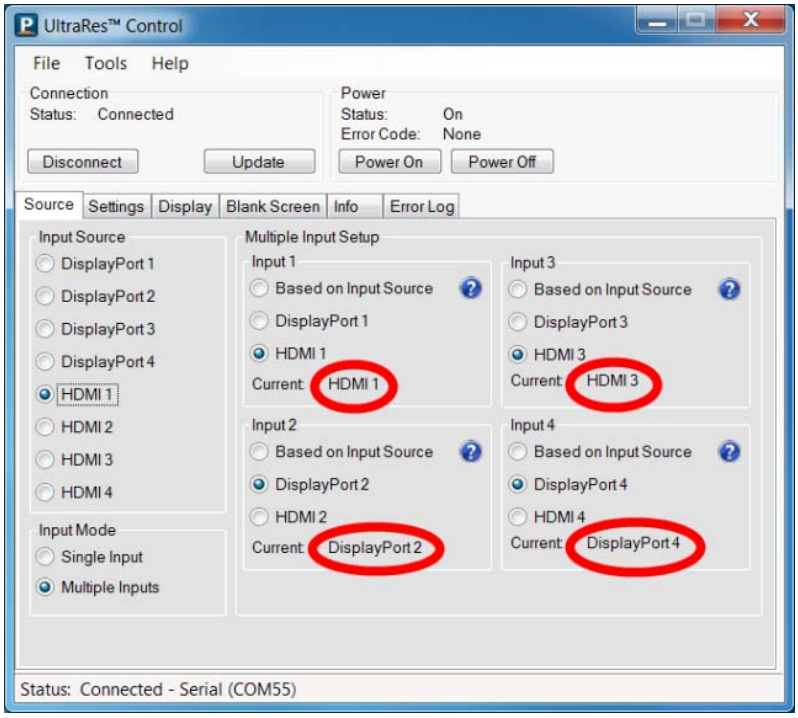
You will have a computer that contains four video outputs. All four outputs will then be connected to the UltraRes display. The following formats are supported for multiple inputs:

- (4x) DisplayPort or HDMI/DVI 1080p @ 24/50/60Hz
  - PC with DisplayPort or HDMI/DVI (or mix of both)
  - External processors (VCS, RGB Spectrum)
- (4x) DisplayPort or HDMI/DVI 960 x 2160 @ 60Hz
  - Needs a PC with a special graphics card setup

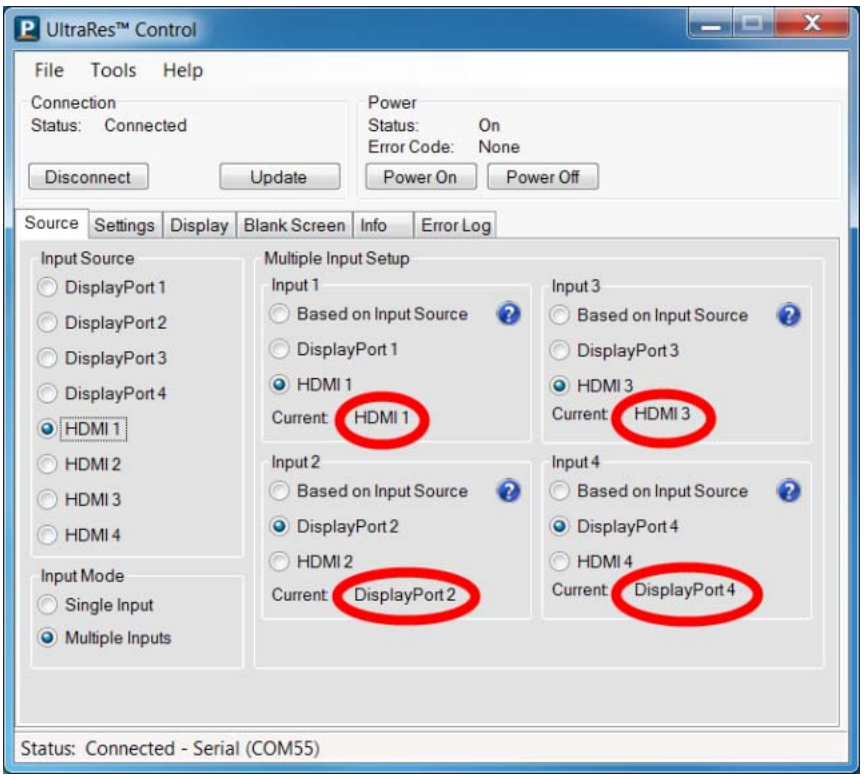
### Using UltraRes Control Software

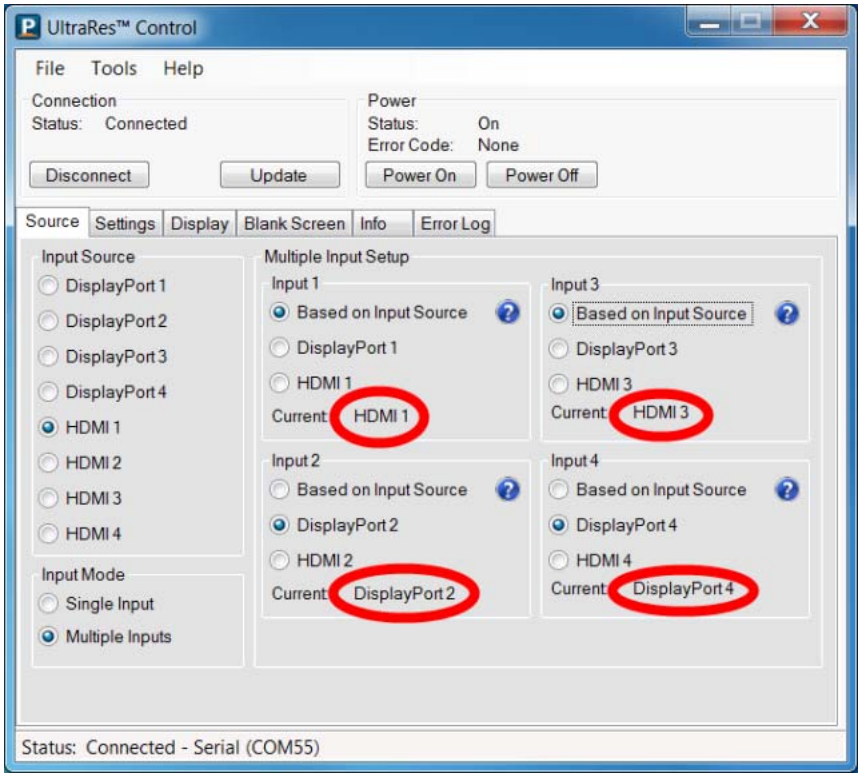
If you use the UltraRes Control software to set up multiple sources, there are three different settings per input channel. Before continuing, make sure you have selected the **Multiple Inputs** radio button in the lower left corner.

- Based on Input Source - This default option automatically selects the same type of input as the current Input Source setting. For example, if you have four HDMI input sources, this feature should detect that your sources are connected to HDMI 1-4.
- Select Individual Inputs - The example below shows the circled inputs that were selected individually.



Below are two examples of setups in UltraRes Control software that are acceptable.



## Setting Up UltraRes Using Single Inputs

Instead of having one central device into which you can connect and define your source inputs, single source setup requires connecting from a single-headed source to the display. For example, connecting one input directly from a Blu-ray player into the 84" display.

The example below uses the following:

- PC with 4K at 24/25/30HZ output
- 4K Blu-ray player, such as Sony BDP-S790

The following formats are supported for single inputs:

- (1x) DisplayPort or HDMI/4K@ 24/25/30Hz
  - PC with DisplayPort 1.1a or 1.2 output
  - 4K Blu-ray player (for example, Sony BDP-S790)

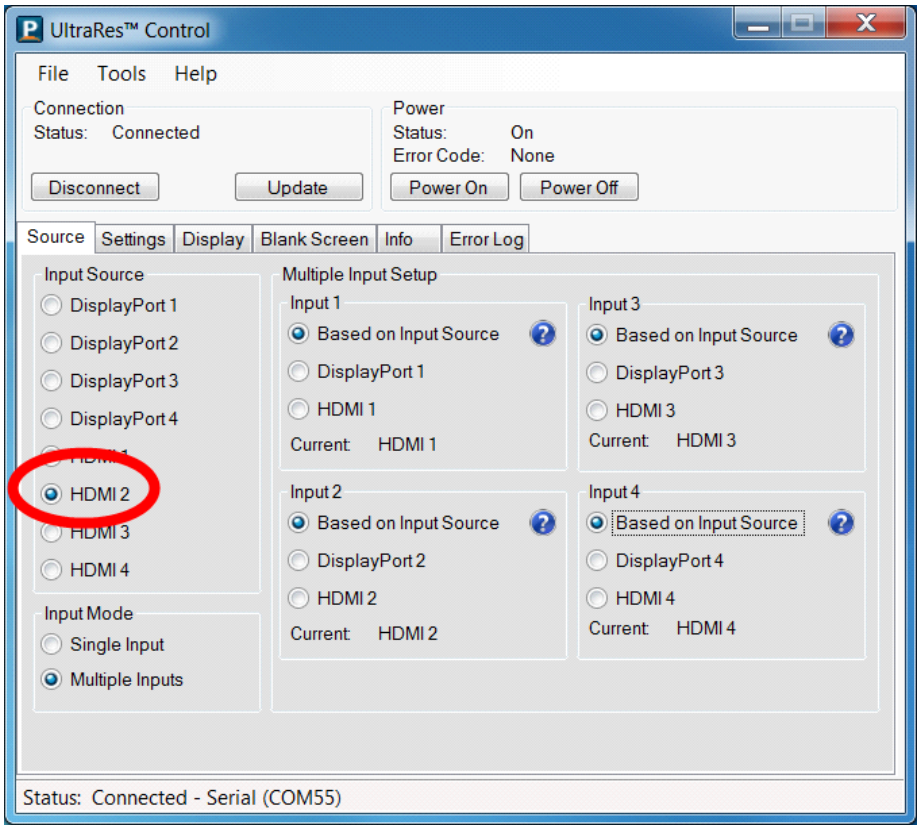
There are two preferred ways in which you can select individual inputs. They are described on the following pages.

## Using the Remote Control

The UltraRes remote control has individual inputs that can be selected. So if this UltraRes input is connected to HDMI 2, press the HDMI 2 button on the remote control.

## Using the UltraRes Control Software

On the Source tab, select the input that is connected to the UltraRes display. For example, if this UltraRes input is connected to HDMI 2, select the **HDMI 2** radio button in the Input Source section on the left.

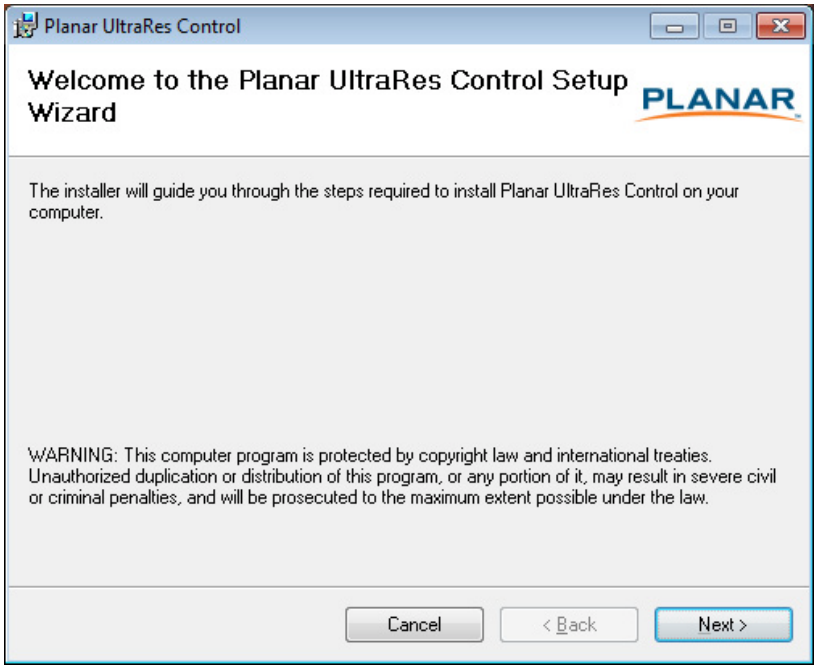


# Installing the UltraRes Control Software

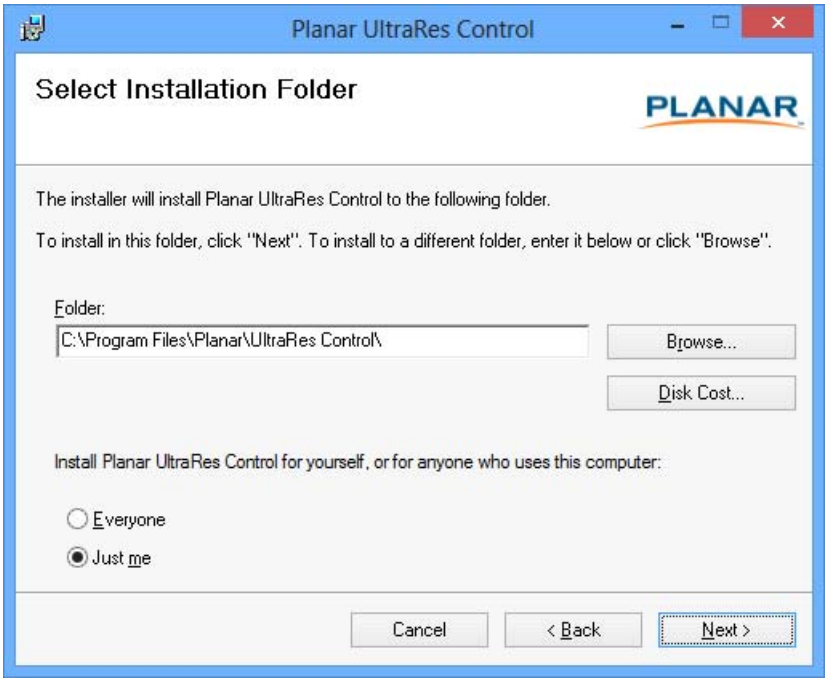
The UltraRes Control software is used as your primary tool for display setup. Use the following instructions to install the UltraRes Control software.

1 Save the UltraRes Control.exe program to your computer's hard drive.

2 Double click the .exe file to open the installer program.



3 Click **Next** to continue.



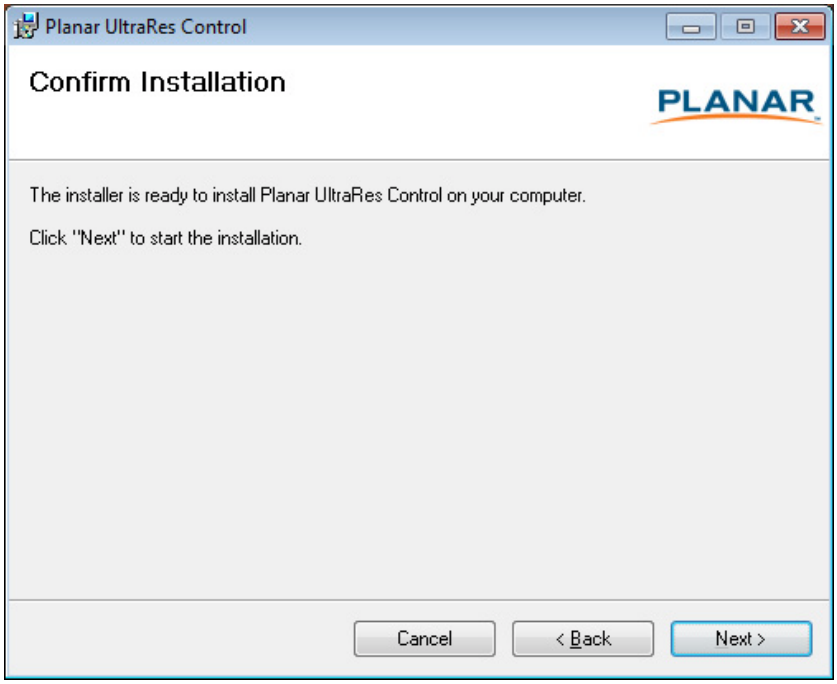

4 If you want to save the UltraRes Control files to a different location, click the **Browse** button and save to the folder of your choice.

5 If you want to see how much space is on your hard drive, click the **Disk Cost...** button to review storage capacity.

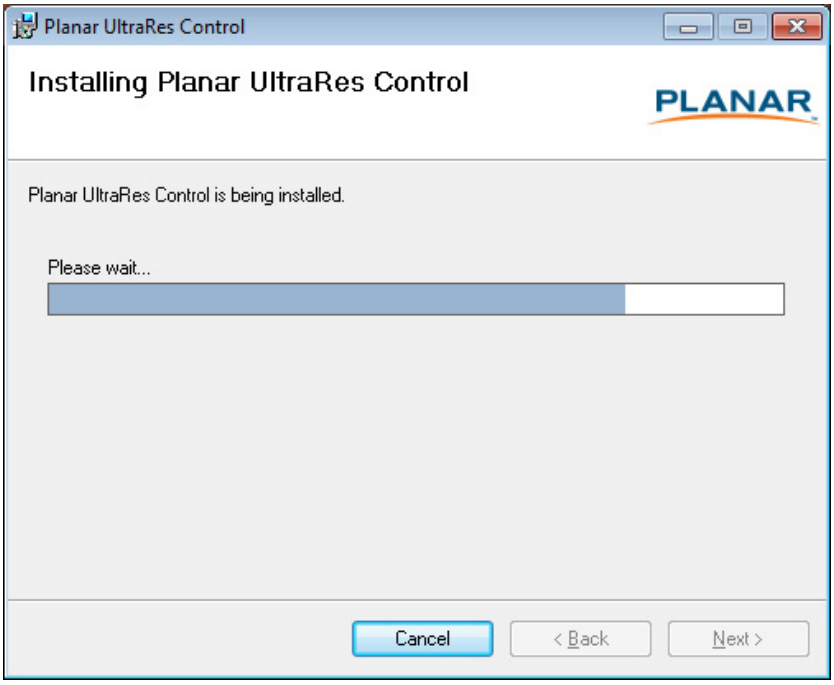
6 Do one of the following:
- If you want other users to have access to the UltraRes Control software, select the **Everyone** radio button.
- If you want to be the only user who can access the UltraRes Control software, select the **Just me** radio button.

7 Click **Next** to continue.

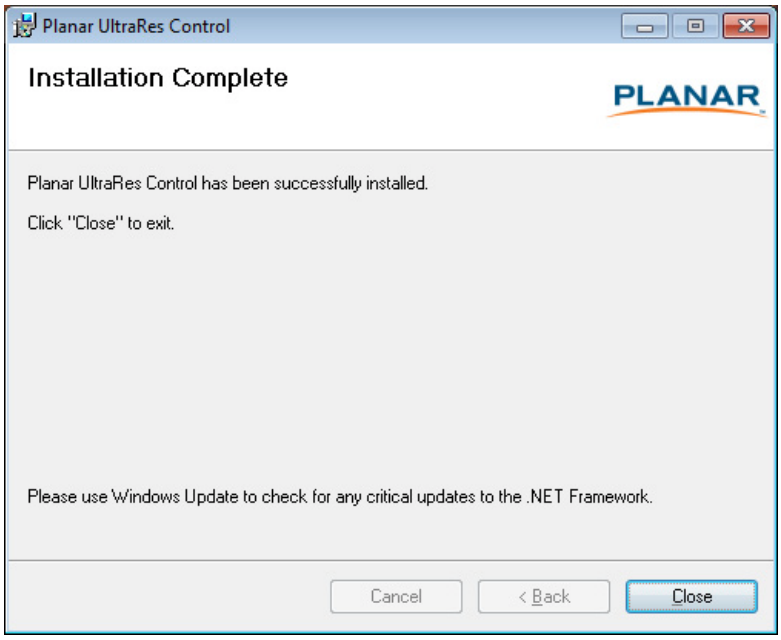
8 Click **Next** on the next window to continue.




9 As the installation is occurring, you will see the status bar for up to a couple of minutes.



10 Once the installation is complete, click **Close** to close the program.

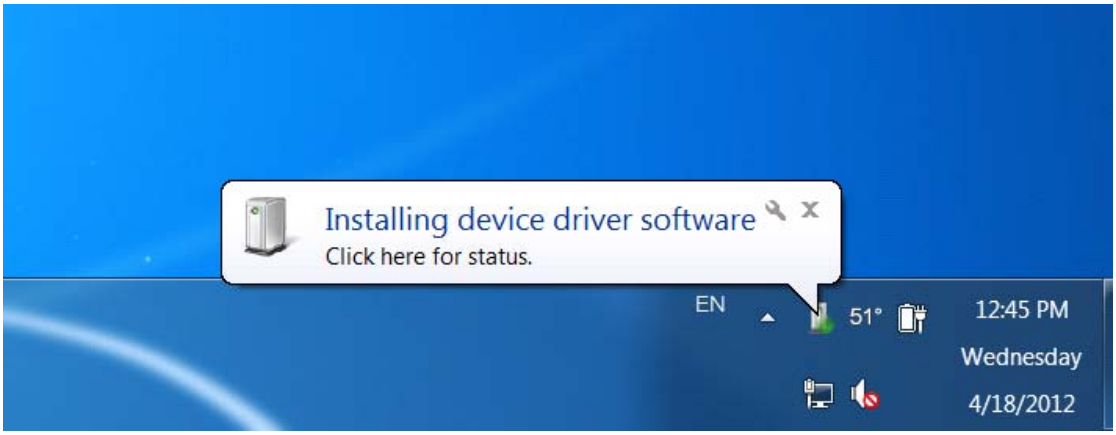



# Installing USB Drivers

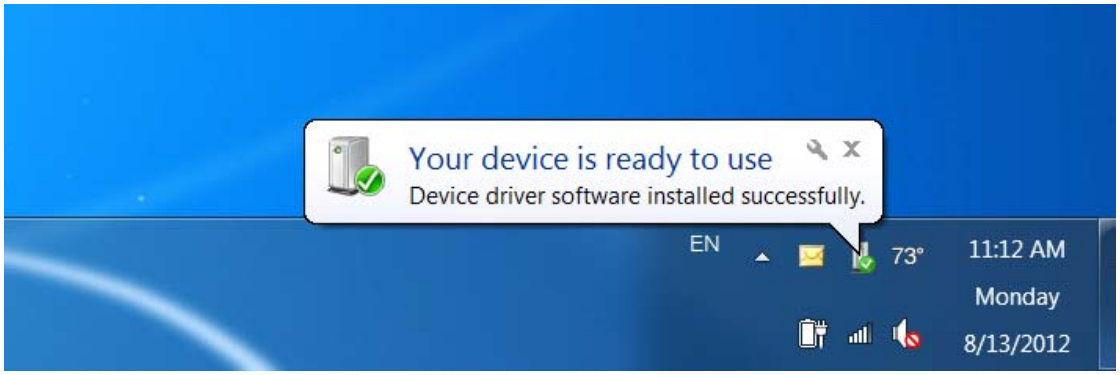
When you install the UltraRes Control software, it will automatically install the necessary USB drivers needed for communication between your computer and to the UltraRes display. You only need to complete a few steps to finish the installation process.

1 Plug one end of the USB cable into your computer and the other into the UltraRes display.

2 Windows will detect the new hardware and attempt to install the drivers. If this occurs, you should see a message similar to the following example.

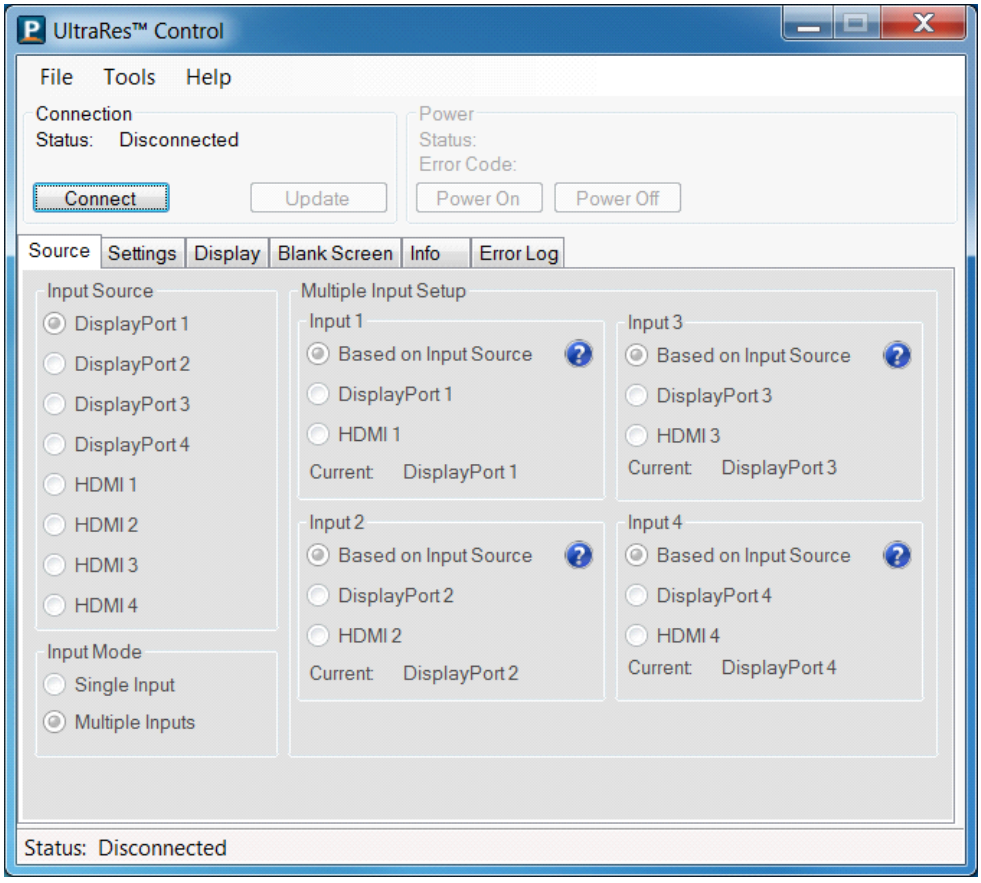


3 If the USB driver installation is successful, you will see a message similar to the example below. You are now done with the USB driver installation process.



# Using the UltraRes Control Software

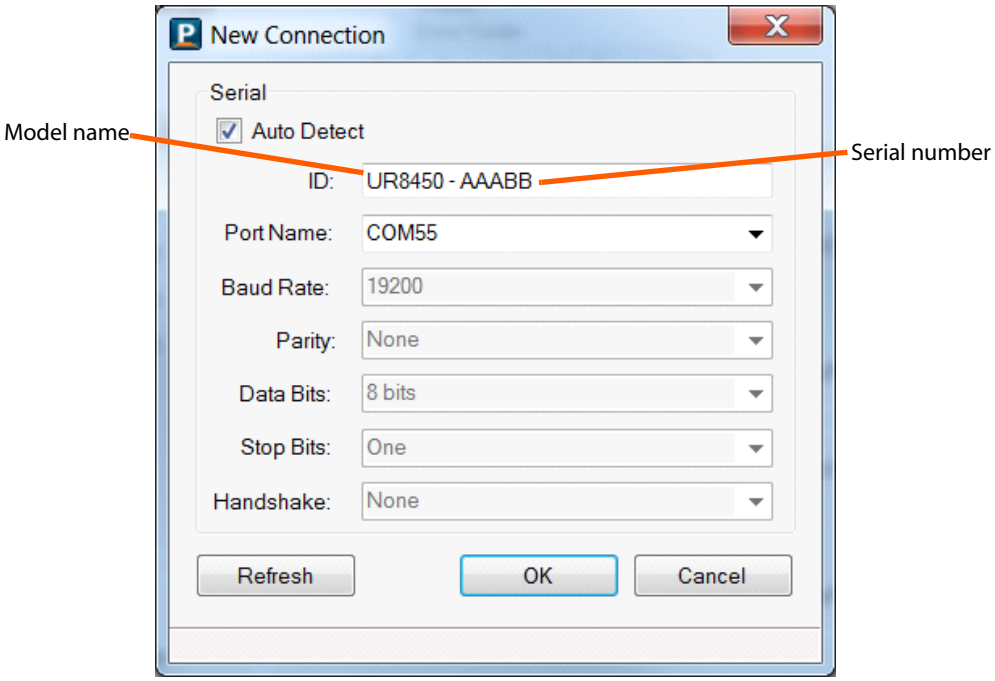
When you first open the UltraRes Control software, you will see a window similar to the following. Notice that until you connect the inputs to the display, the “Status” at the top of the window will show “Disconnected.”



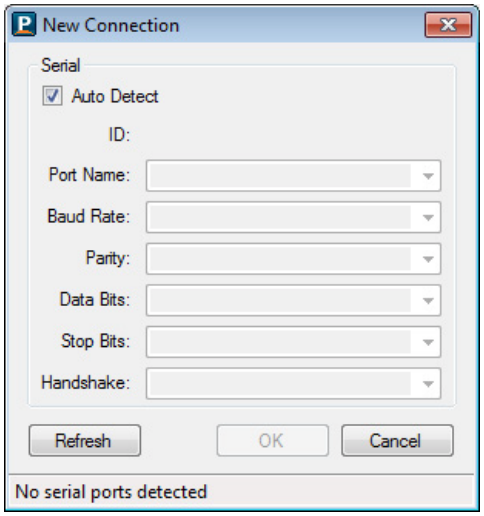

1. Connect from the PC on which the software is installed to the UltraRes display using a USB connection.

2. Click the **Connect** button to start the connection process.

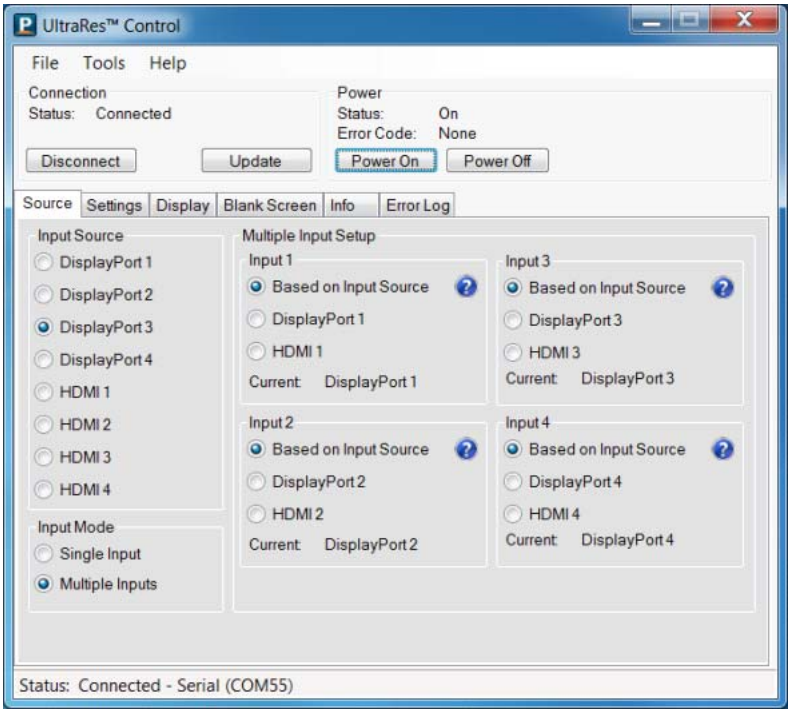
3 The tool will then attempt to auto detect any inputs that are already connected. If one is detected, the following window appears with information already filled in.




If no inputs are auto-detected, you will see a window similar to the following. Notice all fields are grayed out and cannot be changed.



4 If the connection is successful, the “Status” at the top of the window will show “Connected.” Note that all tabs are now accessible and can now be changed if needed.

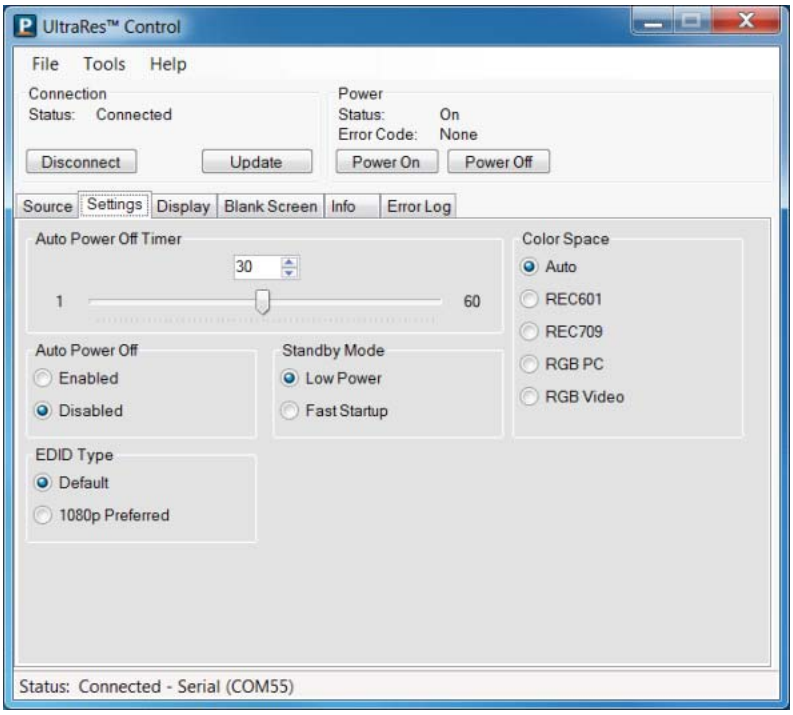



# Setting Up Sources

This information is covered earlier in the manual. Please see "Setting Up UltraRes Using Multiple Inputs" on page 32 and "Setting Up UltraRes Using Single Inputs" on page 34 for setup information.

# Auto Power Off Timer

If you want the power to automatically turn off if there is no incoming source for a certain amount of time, use the AUTO POWER OFF TIMER slider on the Settings tab and select between 1-60 seconds.



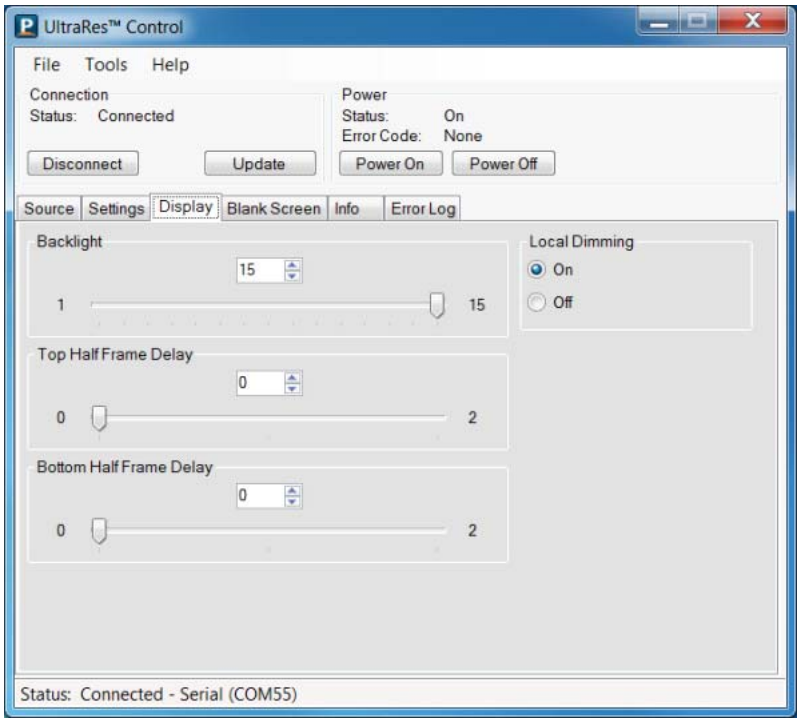

# Standby Mode

This mode allows you to choose between a low power setting, which saves energy, or a "fast startup" mode that keeps the AC power supplies running. Below each option is described and why you might want to select it.

- Low Power - Powers off every component and board possible, which helps conserve energy. In standby mode, the low power option only uses 0.5W of power.
- Fast Startup - Keeps AC power supplies running takes a little less time to power up and it is also needed if you intend to continually use networking capabilities.

# Changing Backlight Intensity

To change the brightness of the display, use the BACKLIGHT slider on the Display tab. If you want a brighter display, move the slider towards a higher number. If you want to conserve power and increase backlight life, move the slider towards a lower number.




# Turning Local Dimming On or Off

Local Dimming allows the LED edge lighting to dynamically adjust based on the source content. Turning this feature on shows darker black levels, which in turn has a higher contrast ratio. Because this feature dims a large area at once, the performance may not be as good as direct array LED backlighting.

# Changing Frame Delay

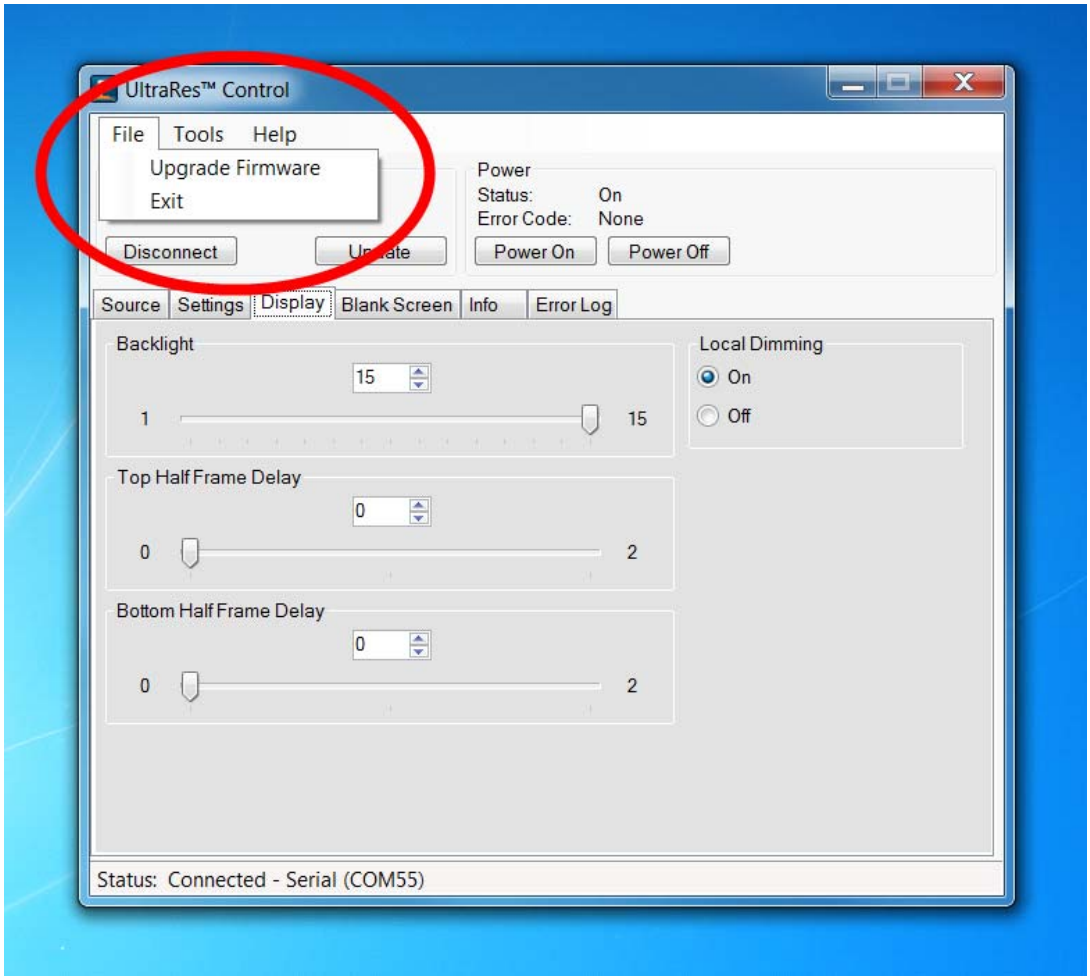
With some quadrant sources, the top and bottom halves of display can show frame tearing, at a delay of one frame per second. If you see frame tearing, use the TOP HALF FRAME DISPLAY and BOTTOM HALF FRAME DELAY sliders to compensate.

# Upgrading Firmware

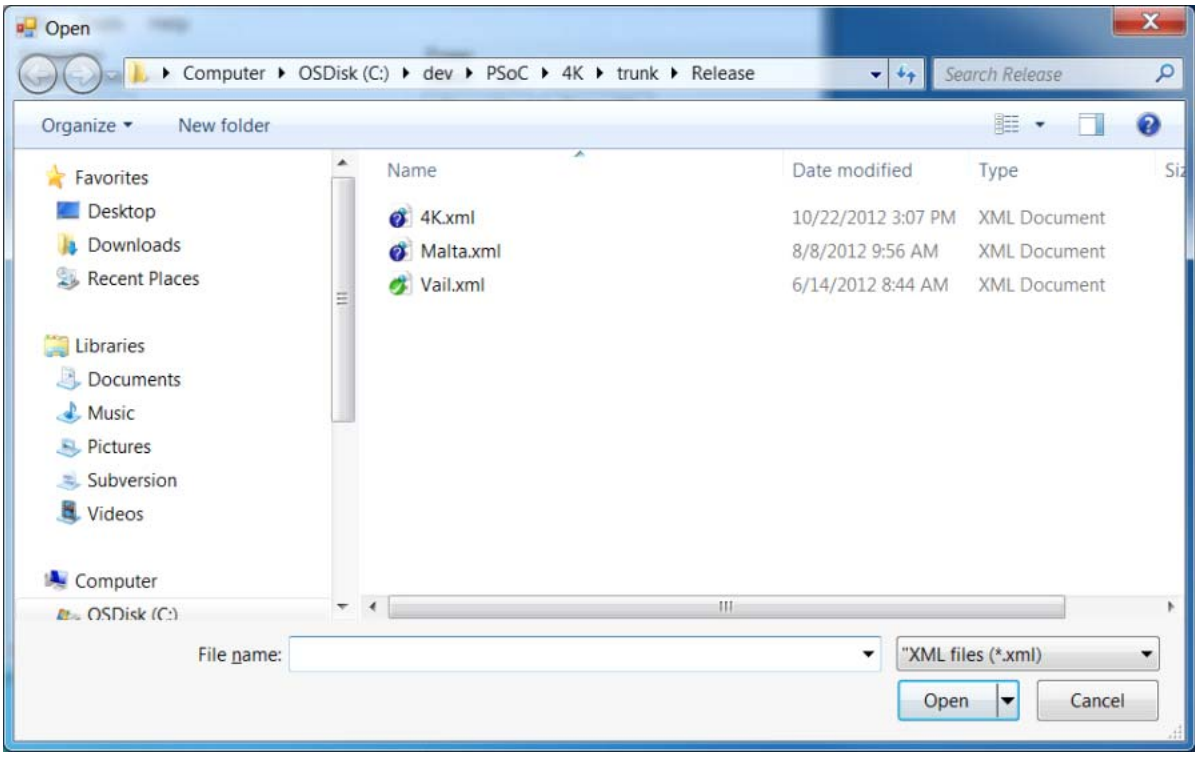
Upgrading software can only be done through the UltraRes Control software.

**Note:** Firmware upgrades can only be done over a USB connection.

1 Select the File menu bar and then **Upgrade Firmware**.

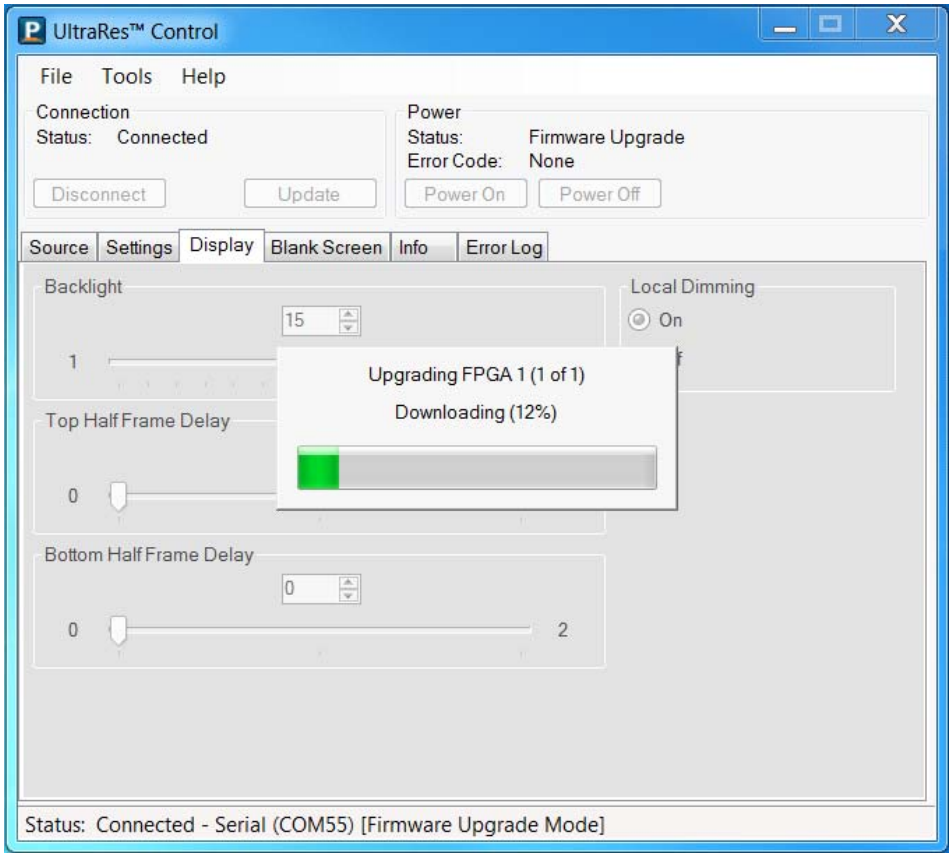


2 A file called **4K.xml** will be part of the release package. Navigate to this section and click **Open** to begin the upgrade process.



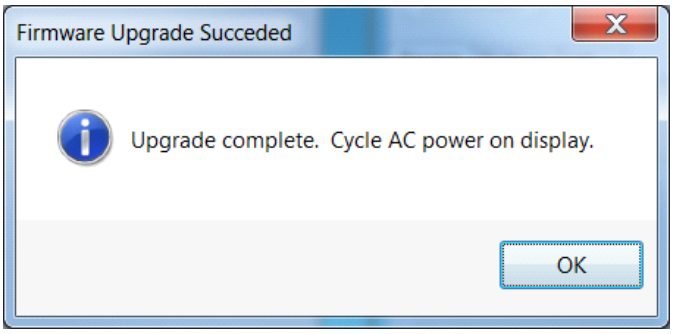

**Note:** The upgrade can be initiated from ON or standby mode.

3 The upgrade process will take about **40 minutes**. Be sure you are prepared for this amount of time before you initiate the upgrade process.



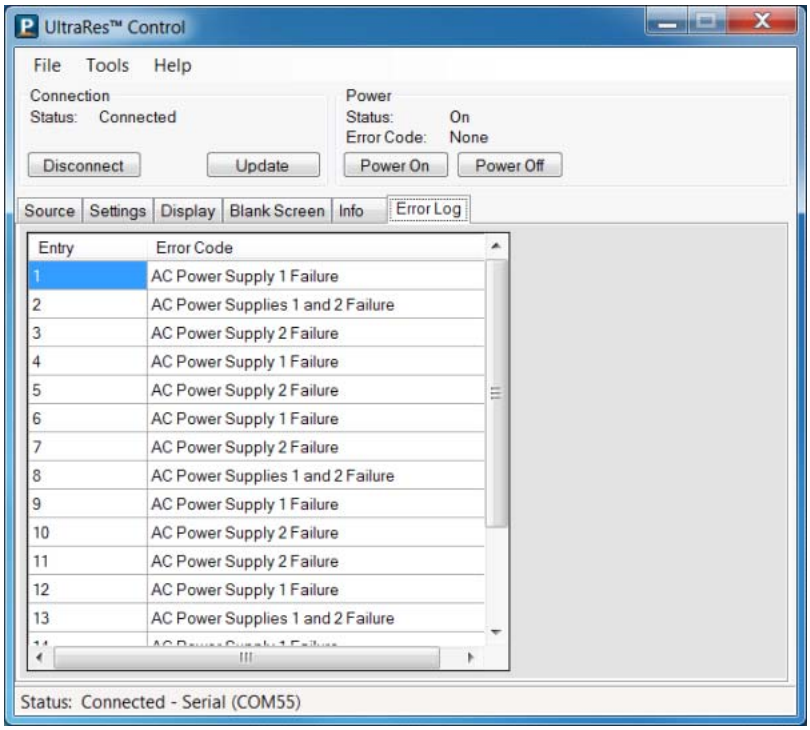

4 The upgrade process status bar will show where you are in the upgrade process as the upgrade proceeds.

5 When the upgrade is complete, you will see a message box similar to the following example.



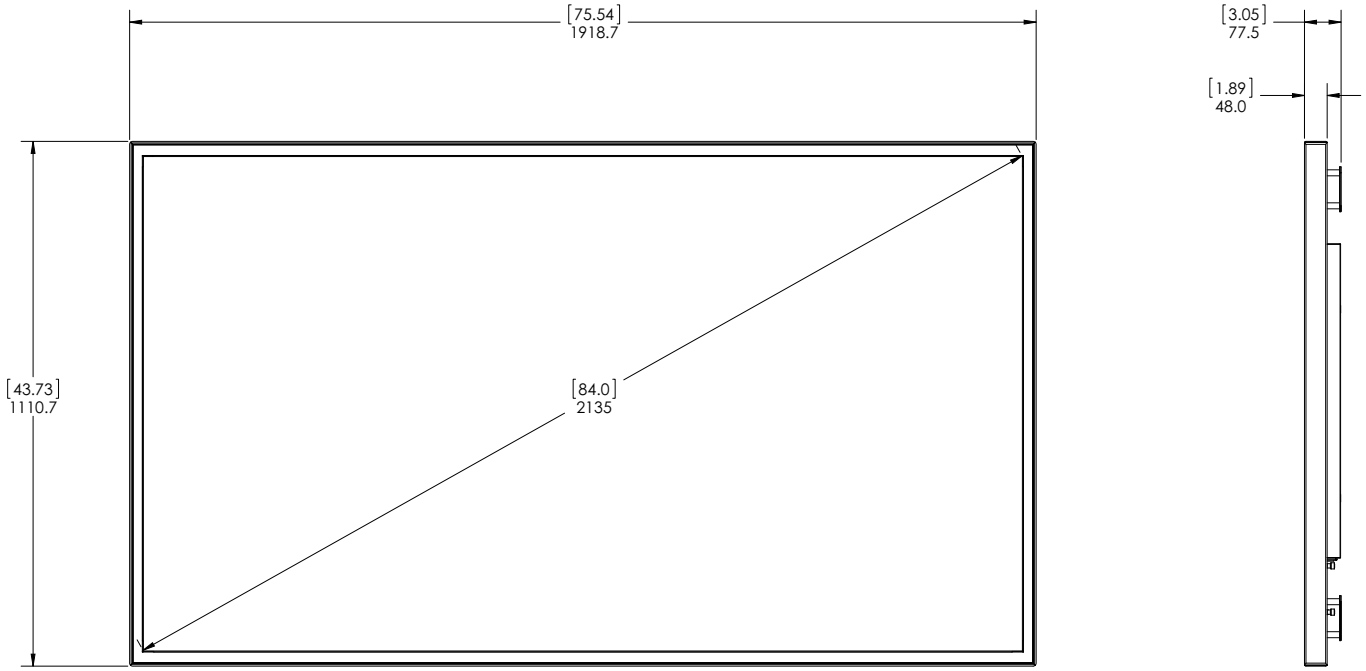
# Error Codes

To see the last 50 errors that have occurred, select the Error Log tab in the UltraRes Control software, as shown below. For a complete list of the error codes, see "Error Codes in the UltraRes Control Software" on page 85.

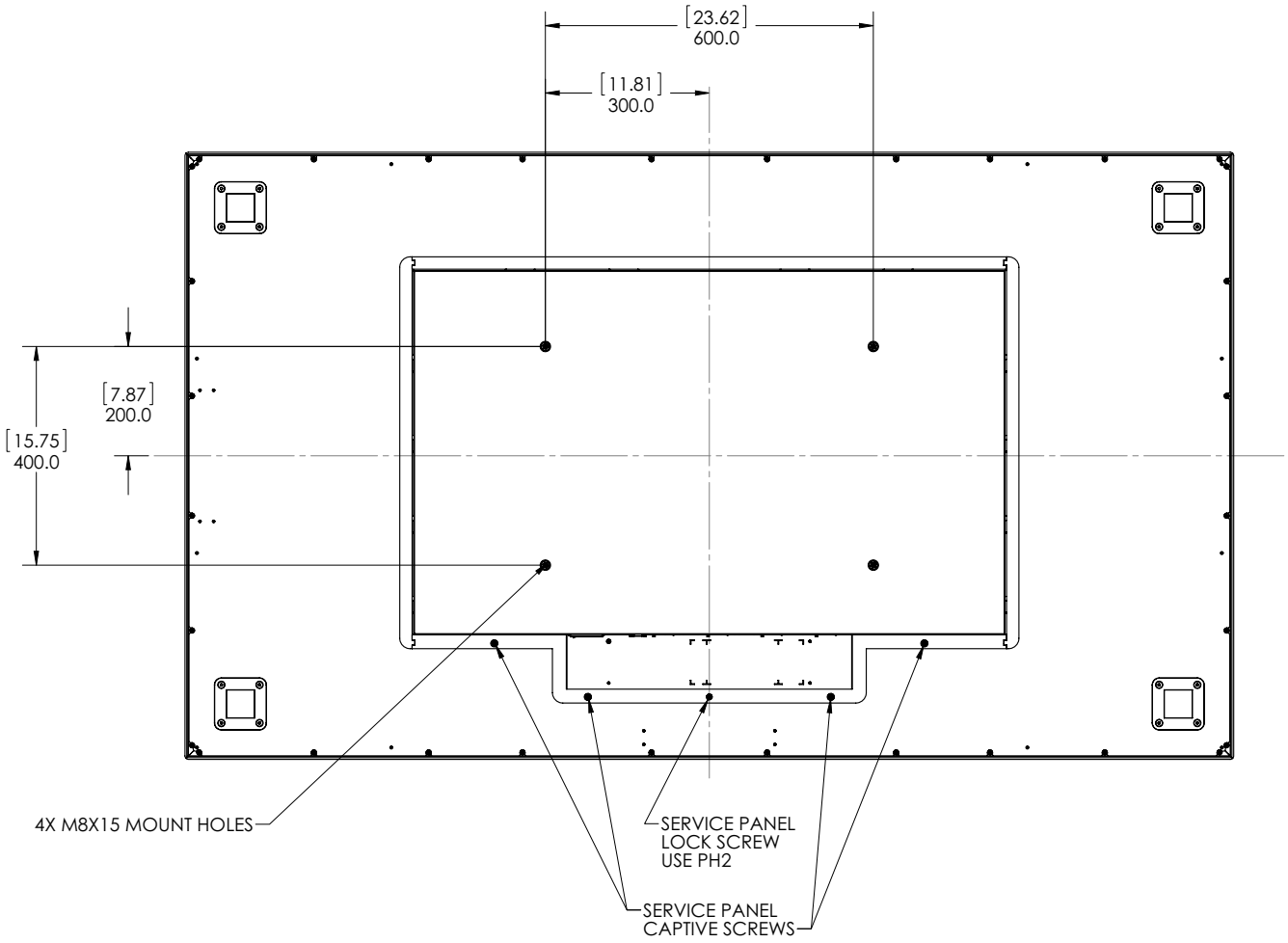


# UltraRes Dimensions

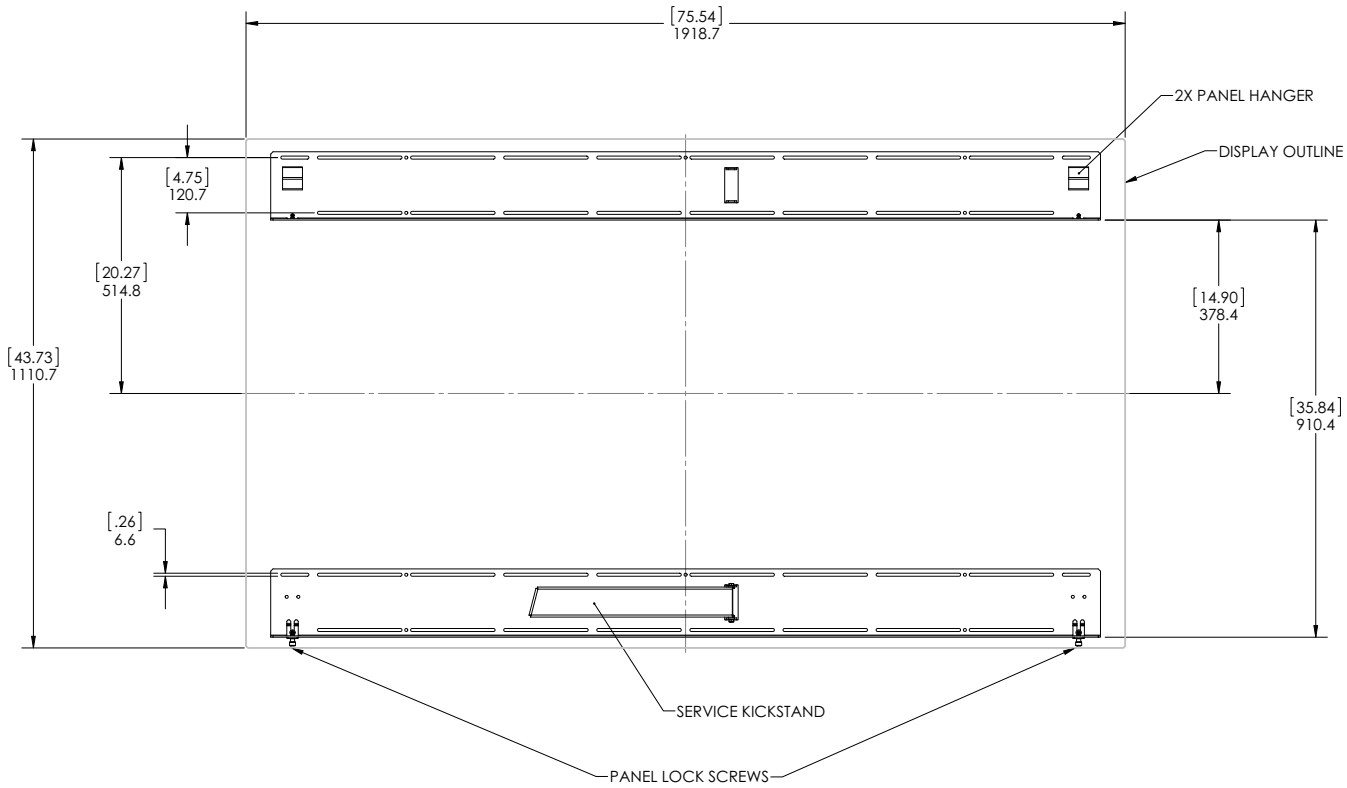
## Display Dimensions - Front and Side Views



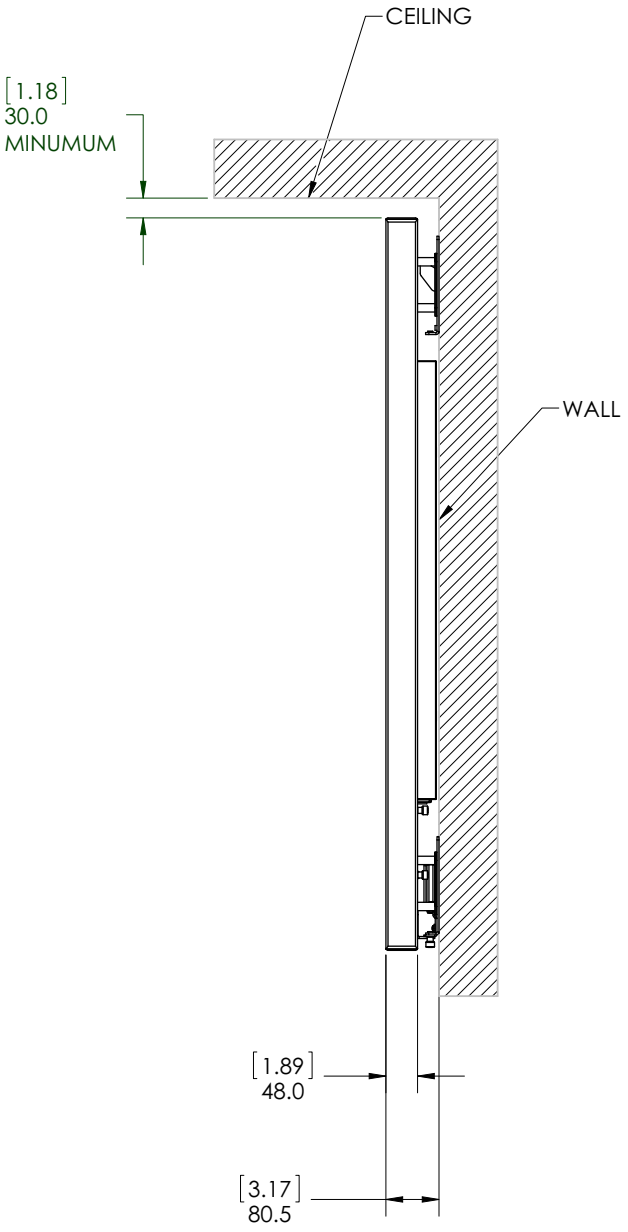
# Display Dimensions - Rear View



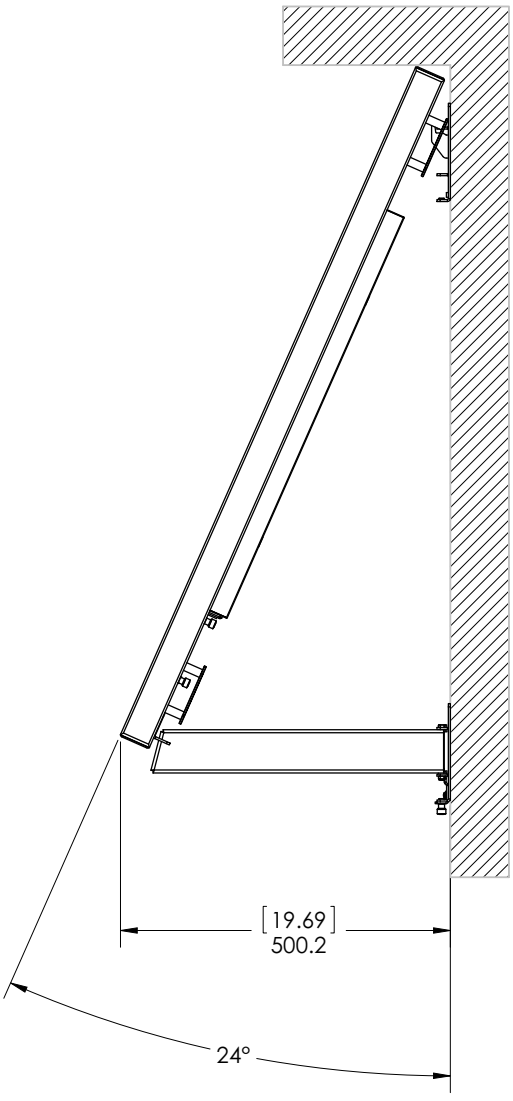
# Landscape Wall Mounts - Front View



# Landscape Wall Mounts - Sides Views

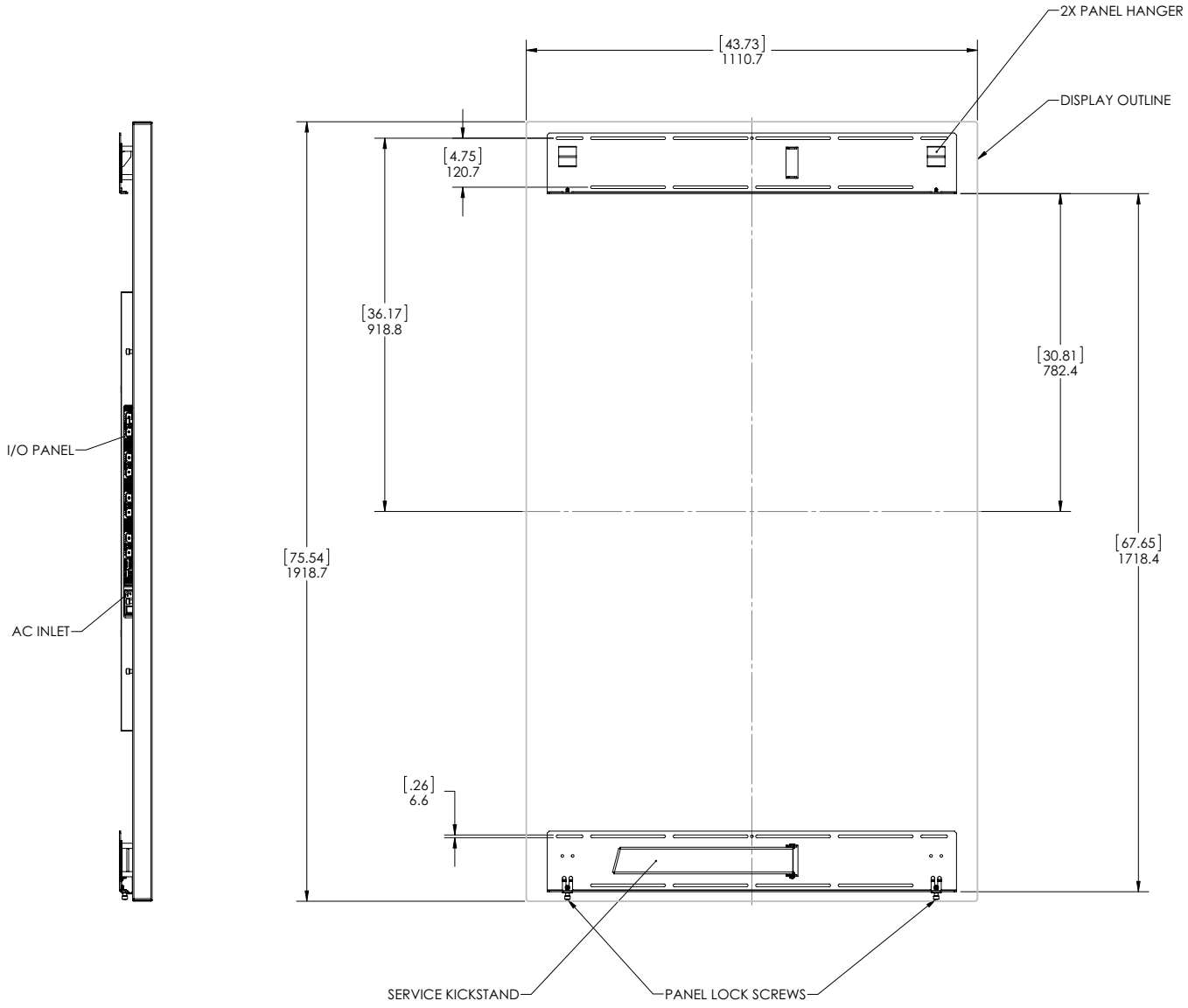



Installed position

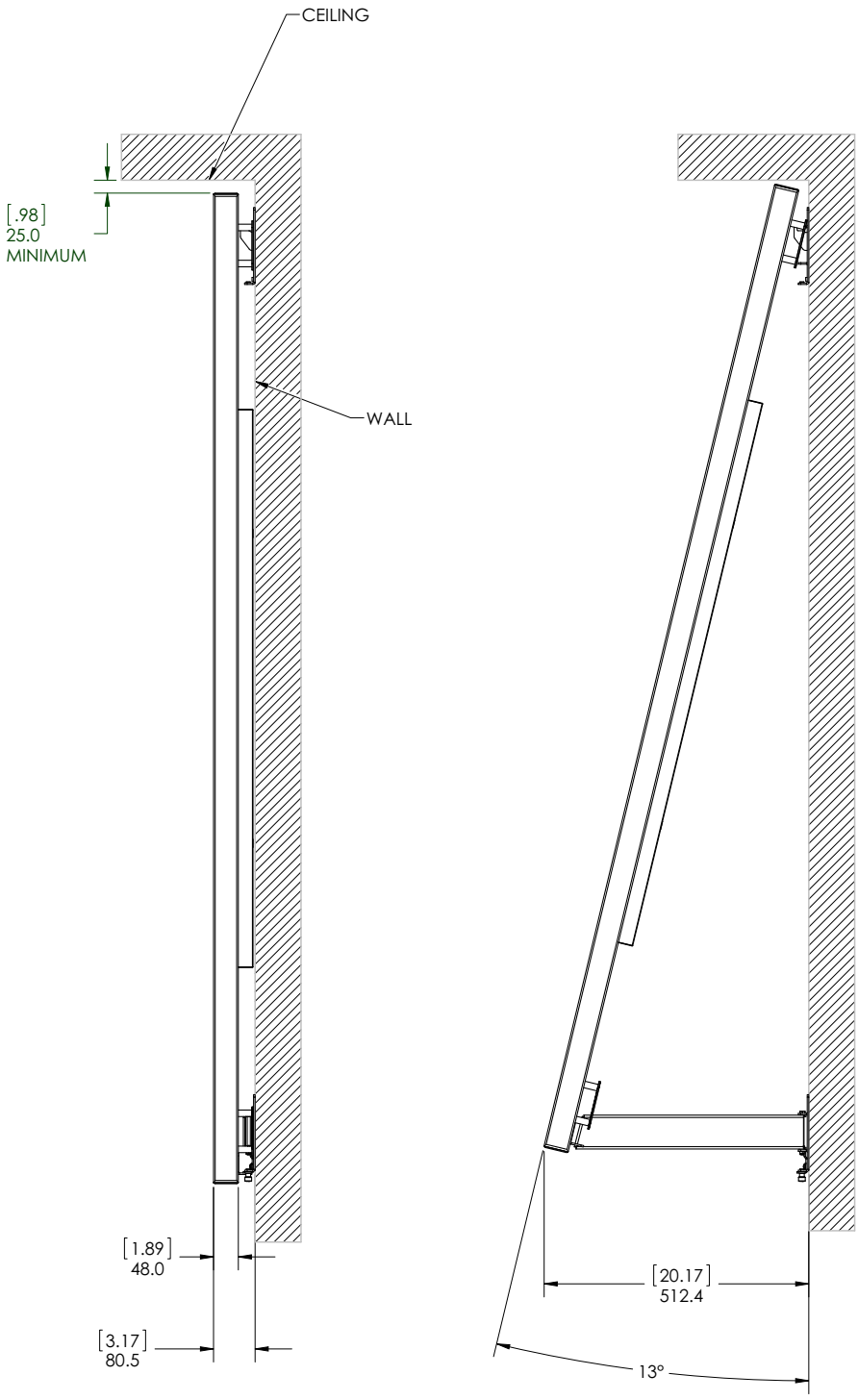



Service position - with kickstand supporting display

# Portrait Wall Mounts - Front View



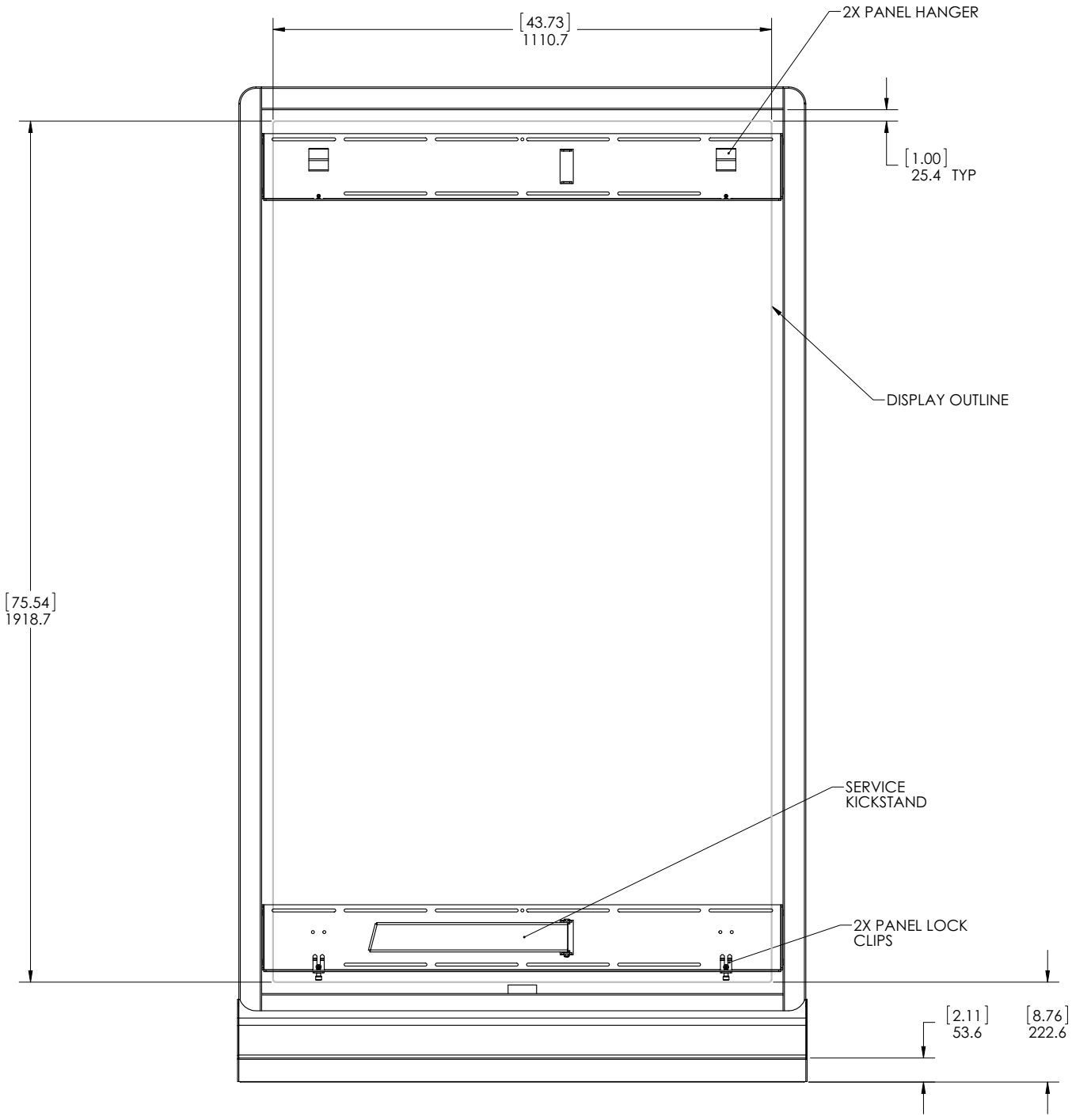
# Portrait Wall Mounts - Sides Views




Installed position

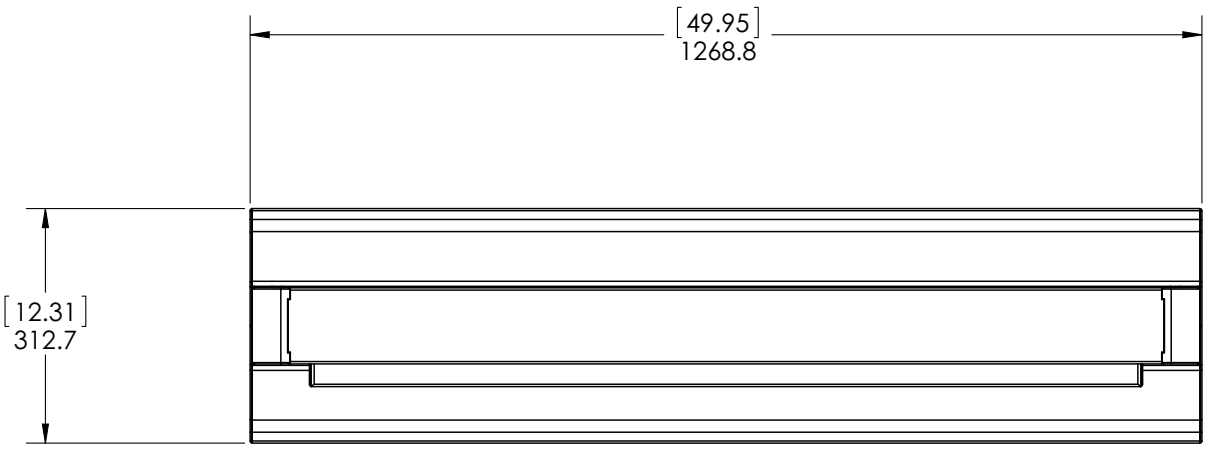
Service position - with kickstand supporting display

# Optional Pedestal Mount - Front View

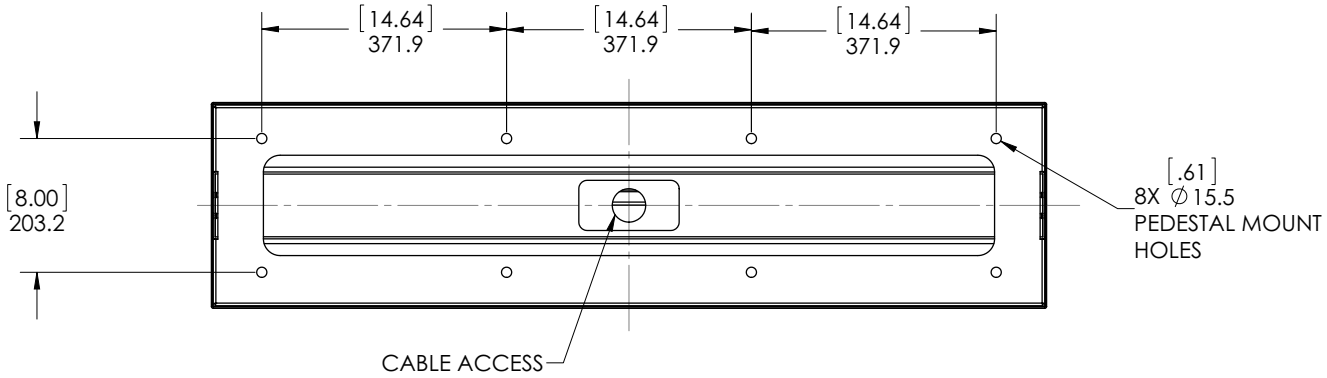



**Note:** This view shows the pedestal without the display mounted on it.

# Optional Pedestal Mount - Top and Bottom Views

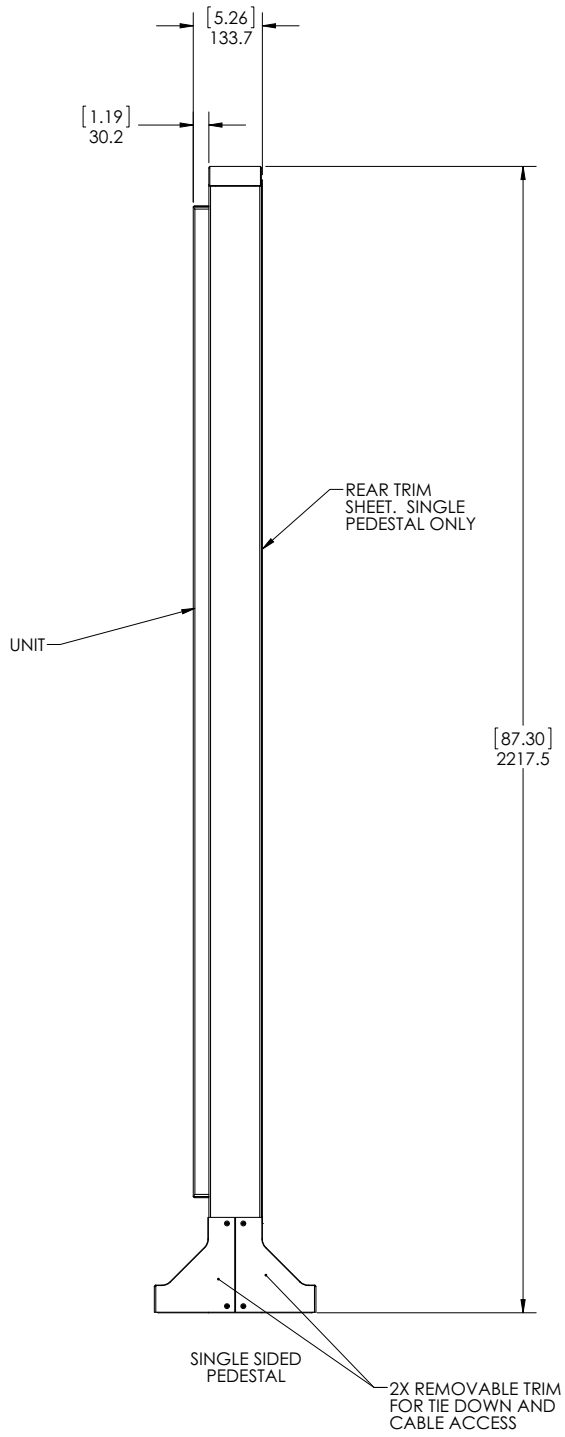



View is shown as if looking from above the top of the pedestal.

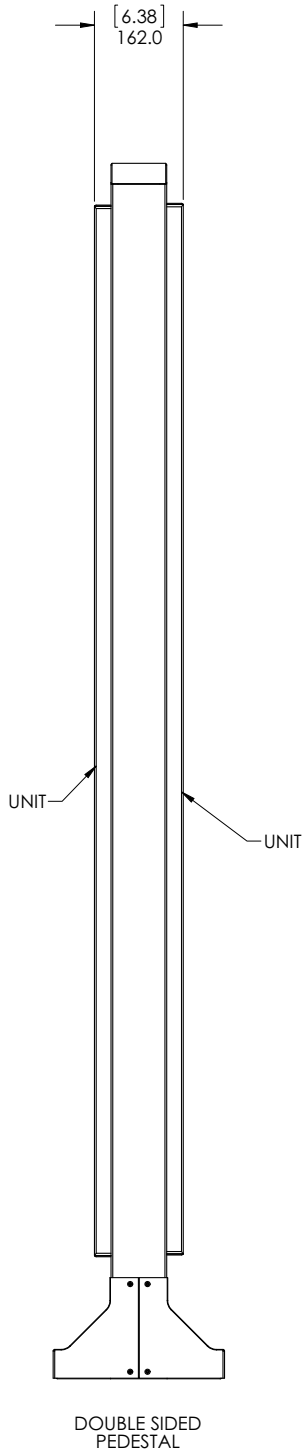



View is shown as if looking at the bottom of the pedestal.

# Optional Pedestal Mount - Single and Double Sided




Single sided pedestal with display installed on one side



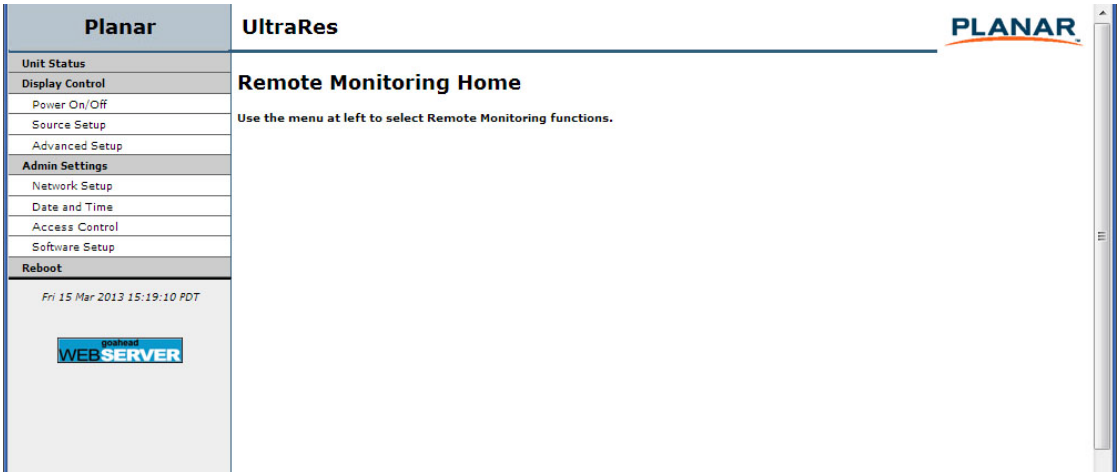

Double sided pedestal with display installed on each side

# Planar UltraRes Remote Monitoring Software

Planar UltraRes Remote Monitoring is software that displays information about the display via a web browser. It is used primarily for monitoring, reporting and some control (for example, manually powering the displays on and off).

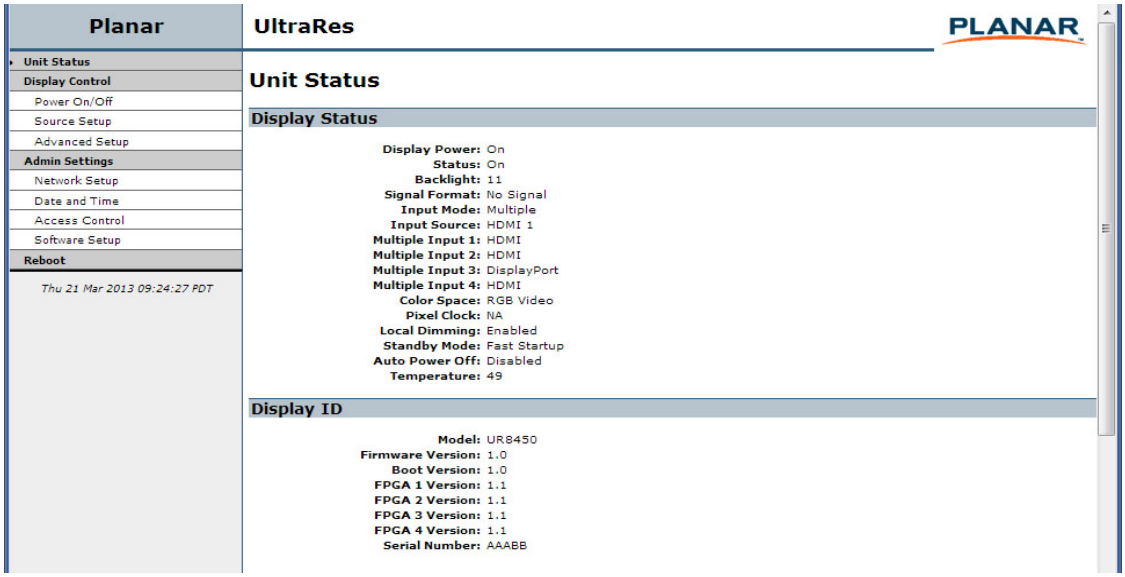
## Remote Monitoring Home

This is the first page you will see when you open the Planar UltraRes Remote Monitoring software.



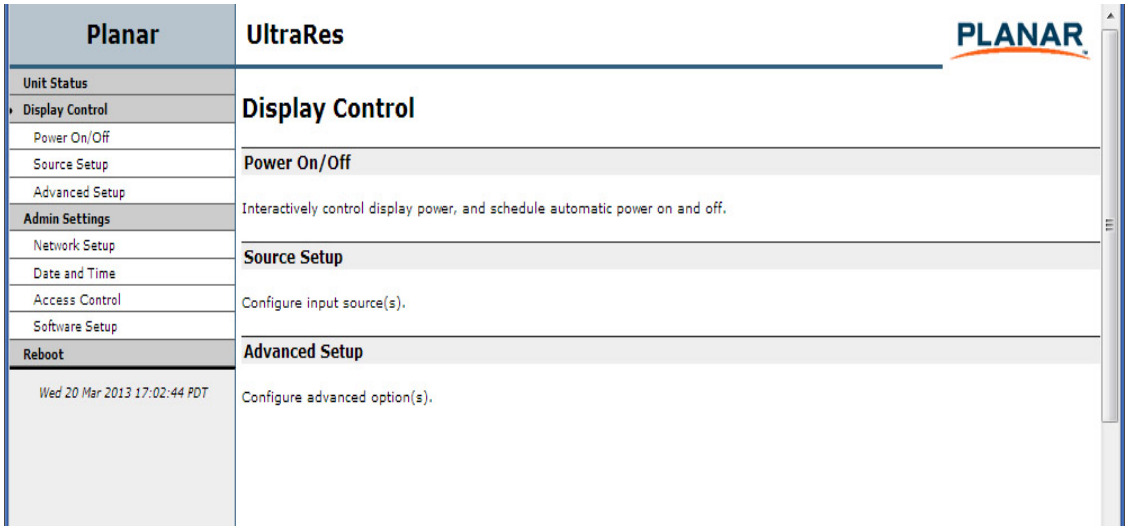
## Unit Status

The Unit Status page shows a list of the different system settings for the display, including power, signal format and which sources are connected with which inputs. It also shows all current firmware information, the display ID and the serial number of the specific display.




## Display Control

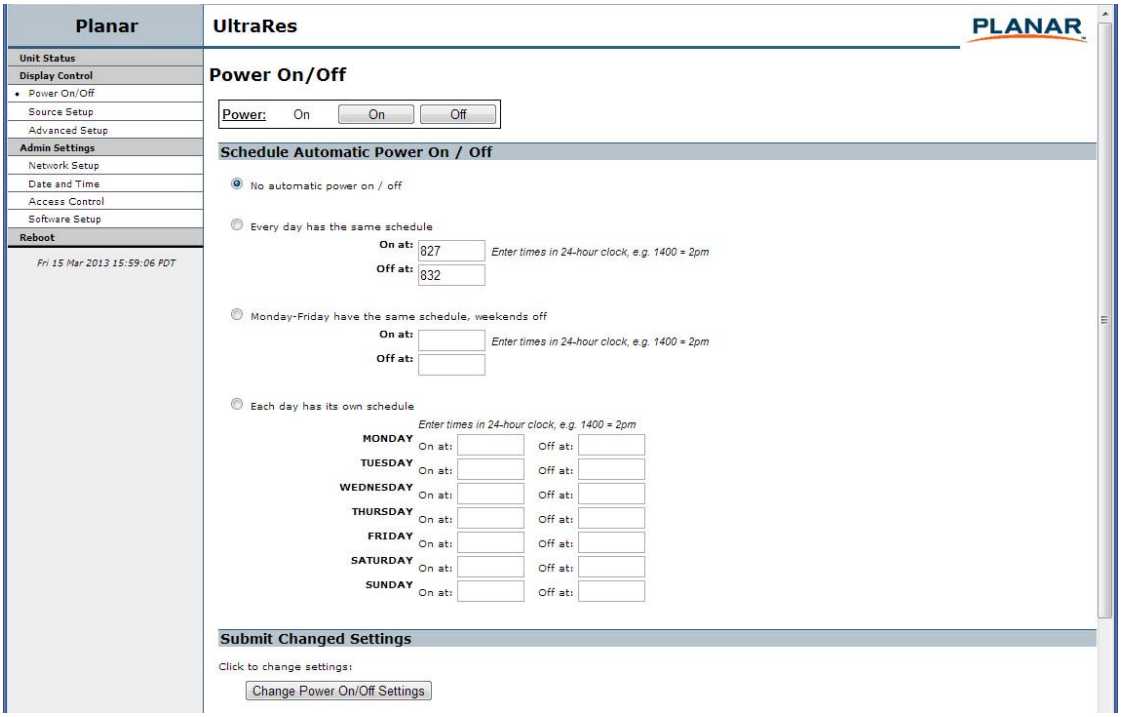
The Display Control page contains four sub-pages: Power On/Off, Source Setup, and Advanced Setup. These are described in the following pages.



## Power On/Off

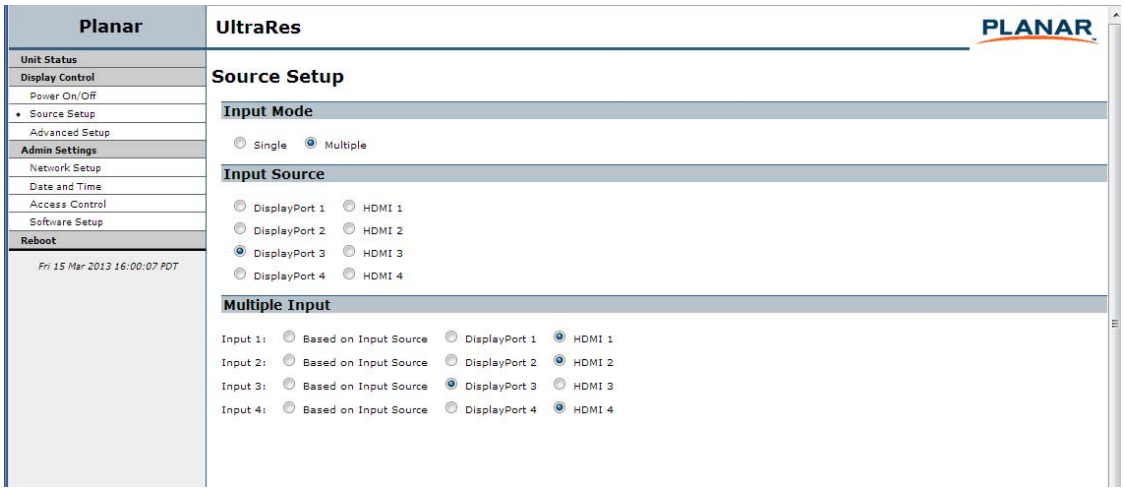
Power On/Off buttons control the LED power, not the AC power. You cannot control AC power through Planar UltraRes Remote Monitoring.

This section has four options for which you can schedule an automatic power on/off. The options are: no automatic power on/off, same daily schedule, Monday-Friday same schedule and weekends off. Or each day has its own schedule. You can only select one of the schedule types. The default is No automatic power on/off.



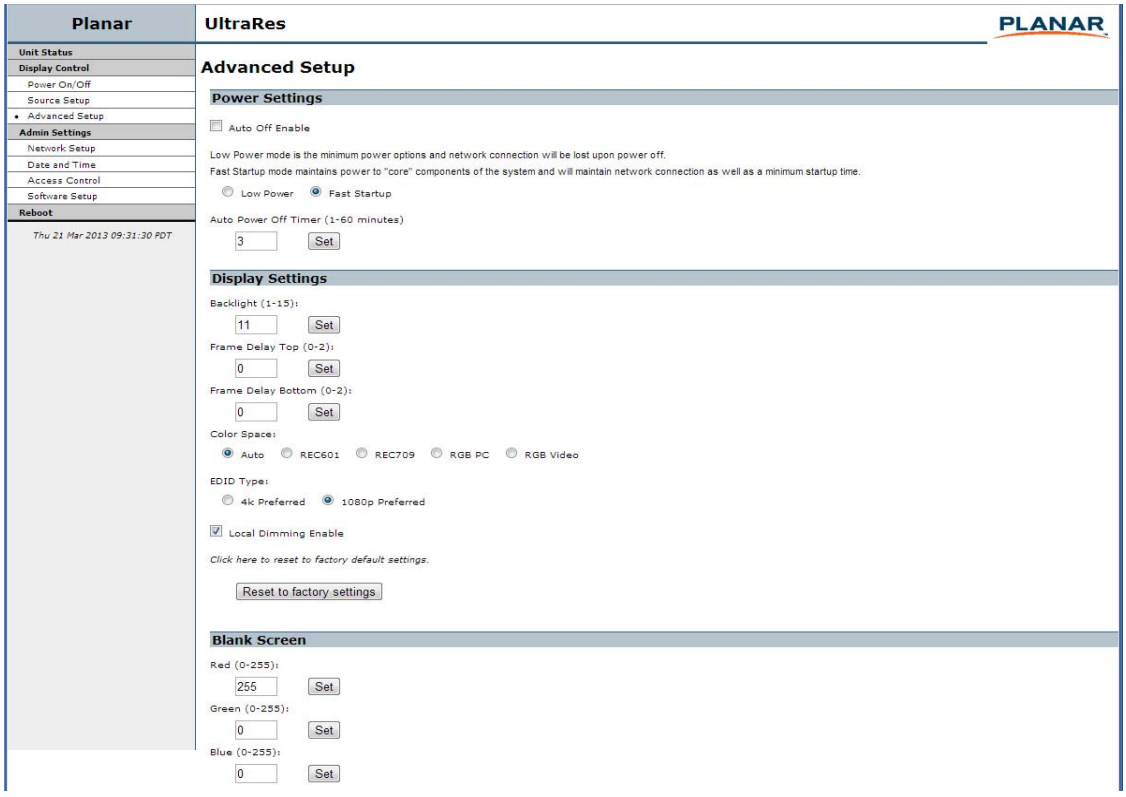
## Source Setup

The Source Setup page allows you to perform the same tasks that you can using the UltraRes Control software: select single or multiple input model, select an input source for each input in single input mode, and different options for selecting inputs in multiple input mode.



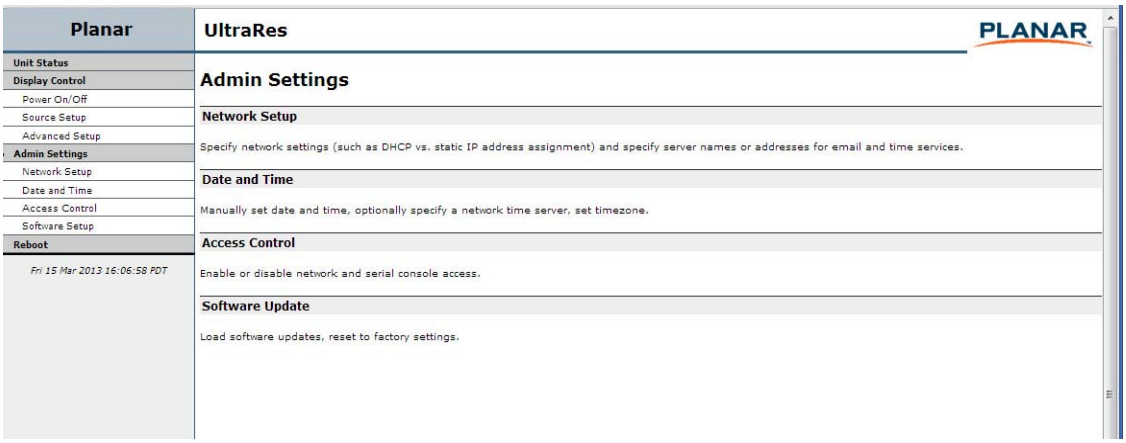
## Advanced Setup

The Advanced Setup page allows you to perform many of the same tasks that you can on the UltraRes Control software program, including selecting the power mode that works best for your display, which includes low power or fast startup. You can also select many display settings such as backlight intensity, frame delay, color space definitions and RGB settings.



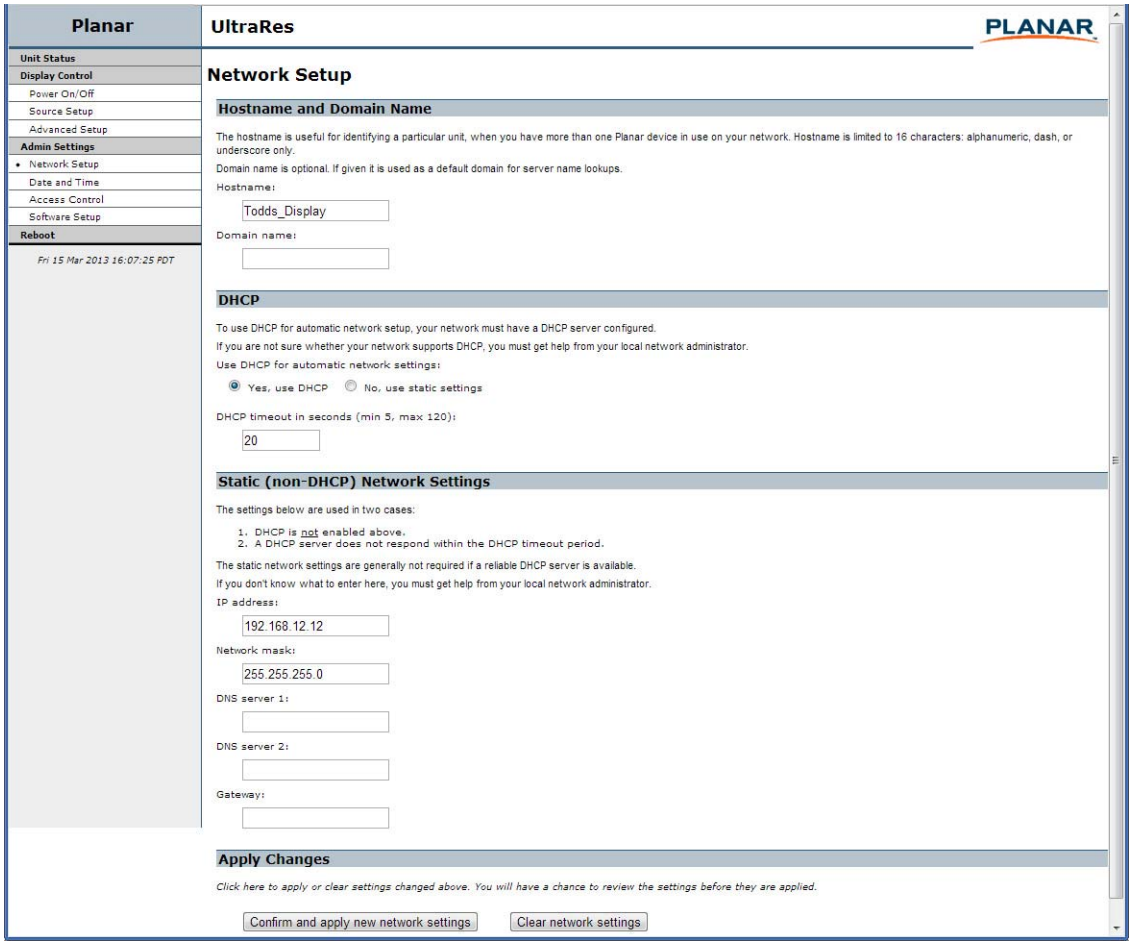
# Admin Setup

The Admin Setup page contains four sub-pages: Network Setup, Date and Time, Access Control and Software Setup. These are described in the following pages.



## Network Setup

This page allows you to configure network settings and whether or not you use DHCP.




1 In the **Hostname** box it now says Planar. Change this name to something more appropriate. This will be the name for this particular server. The hostname is limited to 16 characters: alphanumeric, dash, or underscore only.

2 If you want to enter a domain name for server name lookups, type it in the **Domain name** box.

3 Do one of the following:
- If you will use DHCP, go to step **4**.
- If you will **not** use DHCP, go to step **5**.

4 Under the DHCP section, choose **Yes, use DHCP**.

a Change the default DHCP timeout (ten seconds) only if instructed by your network administrator.

b You do no need to fill in anything under the Static (non-DHCP) Network Settings section. However, if you do, these settings will be used in the event that the DHCP attempts to time out.

c Go to step **6**.

**5** Under the DHCP section, choose **No, use static settings**.

a In the Static (non-DHCP) Network Settings section, enter the **IP address** given to you by the network administrator.

b Enter the **Network mask, DNS server**(s), and **Gateway** as instructed by the network administrator.

c Go to step **6**.

**6** Scroll to the bottom of the page and click **Confirm and apply new network settings** to receive the Confirm Network Change page.

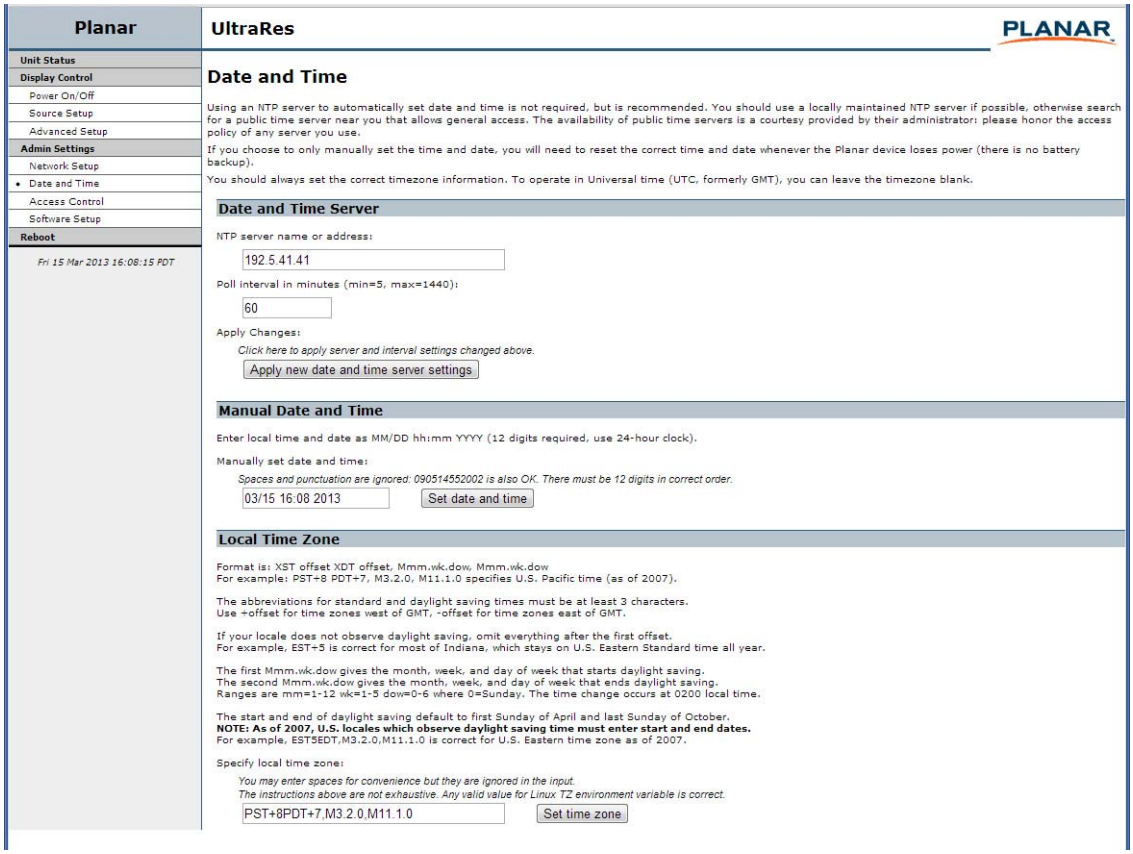
**7** Review the settings to make sure they are correct. Click **OK, apply changes now** to receive the Applying Network Changes page. This shows the network settings to be used.

**Note:** If you have changed the static IP address or changed from static to DHCP setup, you may need to point your browser at the new address.

**8** You may have to click the **Refresh** button on your browser to see the new name in the upper left corner of the page.

## Date and Time

Use this page to change date and time information as needed.




1. Set the date and time manually in the box under the Manual Date and Time section. The date format is very exact. Fill in the current date and time using exactly the format shown on the page. Click **Set date and time**.

2. If you want to have the server periodically check the time from a network source, fill in the NTP server name or address, and poll interval in the Date and Time Server section. Click **Apply new date and time server settings**.

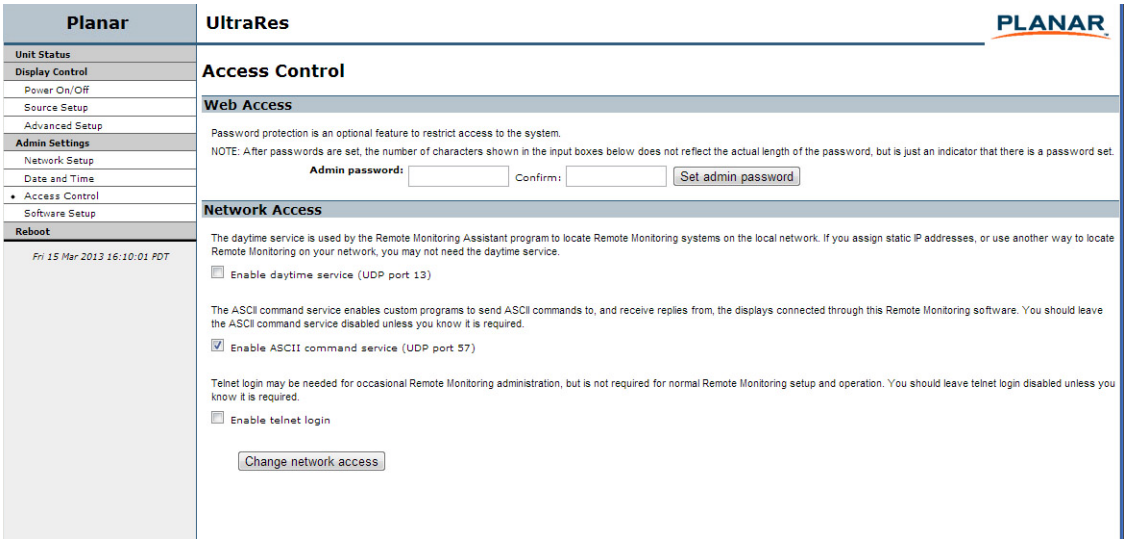
**Note:** If you don't have a preferred NTP server, then www. pool.ntp.org is a reasonable choice for most installations.

3. Carefully read the instructions in the Local Time Zone section. Fill in the text box and click **Set time zone**.

**Note:** The start and end of daylight saving time default to the first Sunday of April and the last Sunday of October. As of 2007, U.S. locales that observe daylight saving time must enter start and end dates in this section. For example, EST5EDT,M3.2.0,M11.1.0 is correct for U.S. Eastern time zone as of 2007.

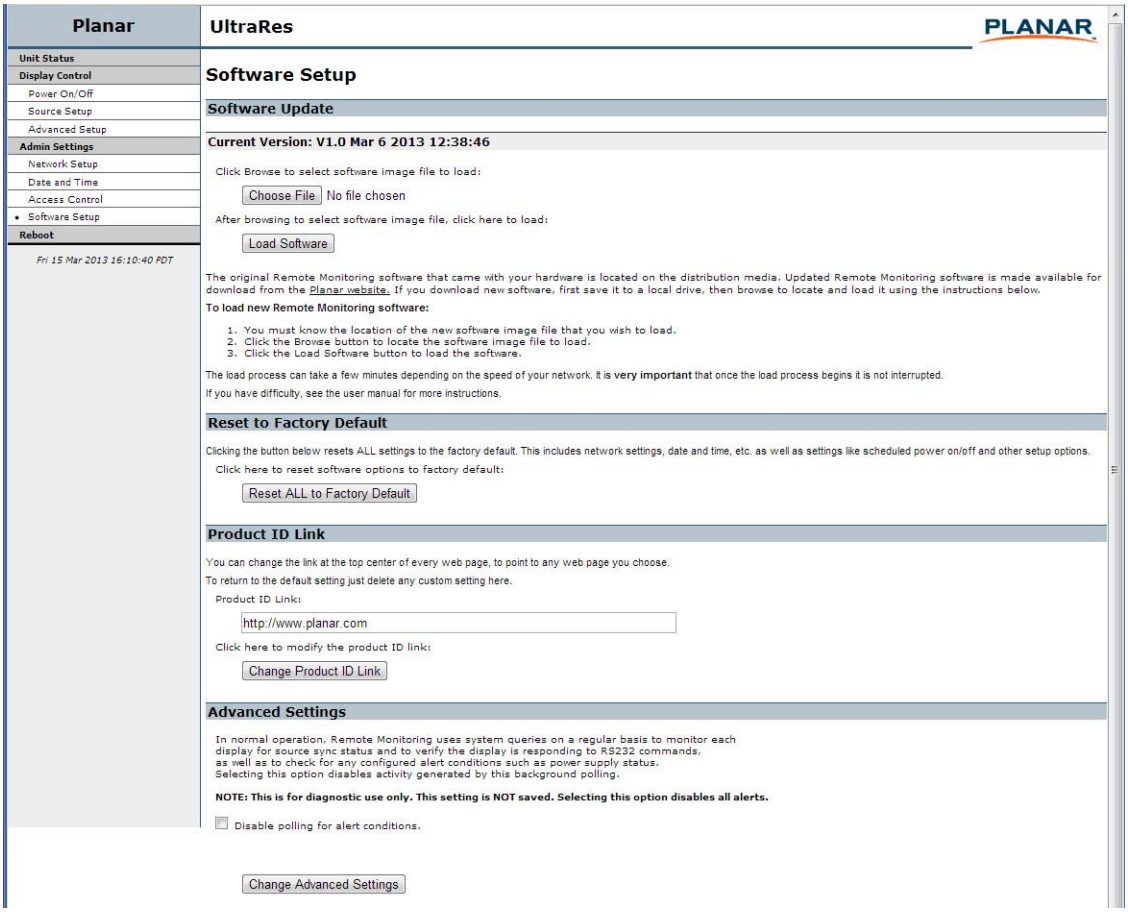
## Access Control

The Access Control page allows you to set parameters needed to access the web, the Remote Monitoring network, RS232 commands, as well as select the correct baud rate.



## Software Setup (Upgrading Network Firmware)

This page allows you to upload the latest UltraRes Remote Monitoring software. You can also reset all of your settings to the factory defaults, as well as choose the web page link that is associated with the Planar logo in the top right corner of the page.




1 Click the **Choose File** button to locate the latest UltraRes software that you downloaded from Planar's website.

**Note:** Make sure the software is downloaded to a local drive.

2 Click the **Load Software** button to load the new software. This process can take a few minutes, depending on the speed of your network. It is **very important** that you do not interrupt the load process once it begins.

3 If you want to reset **ALL** settings to the factory default, click the **Reset ALL to Factory Default** button. This includes network settings, date and time, etc., as well as display settings.

**Caution:** Using this option will reset all of your configurations and reboot the remote monitor. Because this includes network settings, be aware that the UltraRes Remote

Monitoring software may not configure to the same network address after the system reboots.

4 When you click **Reset ALL to Factory Default**, you receive the Confirm Factory Reset page. Click **OK, Reset to Factory Defaults and Reboot** if you are sure you want to reset ALL settings to the factory default.

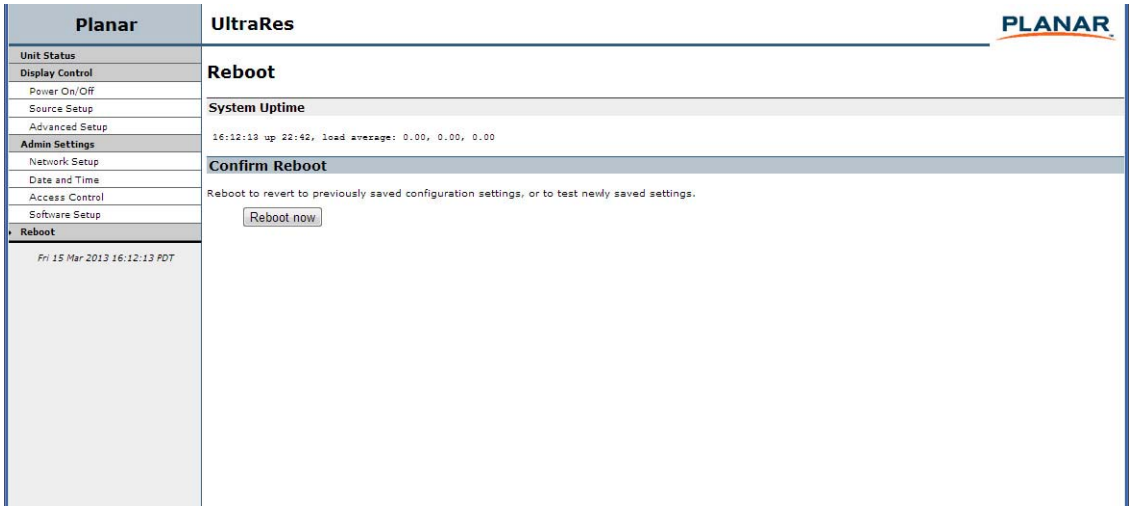
5 The top of each page shows the Planar logo, which is a link to http://www.planar.com. You can change this link to refer to any URL that you find useful by typing it into the **Product ID Link** box.

6 To make this link live, click **Change Product ID Link**.

7 In normal operations, Remote Monitoring polls the displays at a rate of one per second to look for user requests that have been made using the IR remote control and the on-screen menus. In some situations, this polling can have a noticeable performance impact. If you want to disable this polling, select the **Disable polling for alert conditions** checkbox. When you are finished, click **Change Advanced Settings**.

## Reboot

Click **Reboot now** to reboot your system. The reboot takes about 90 seconds.



# RS232 Communication

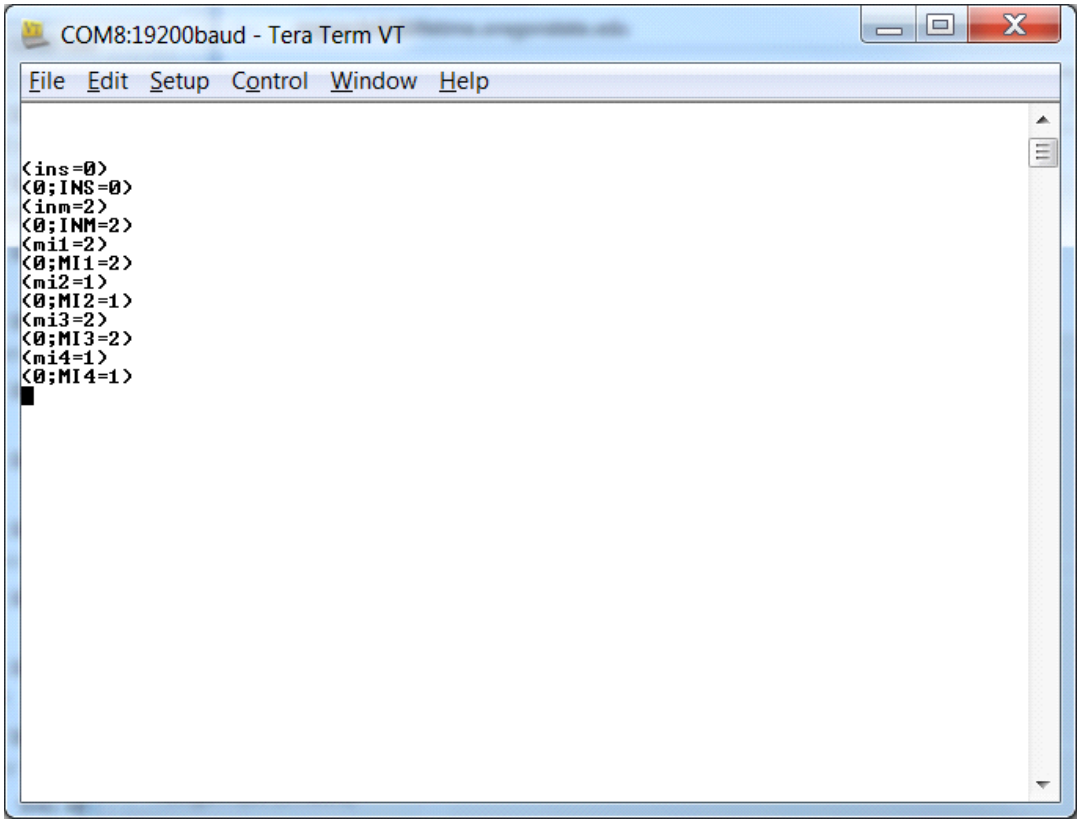
RS232 control is not necessary for operation, but is a convenient way to control displays from a computer at a distance. If your installation will not use RS232 control, skip this section. Most things you can do with the remote, you can do with RS232 commands. Plus, you can send inquiries to the displays and find out the current settings and values. RS232 connections are made with standard straight-through cables.

## Connecting the RS232 Cable

The RS232 cable will connect to a PC or control system, depending on your setup.

## Setting Up Multiple Inputs

You can also set up multiple inputs using RS232 commands. As is typical with using RS232 commands, you can pull up a basic program such as Tera Term to send commands. Below is an small example.



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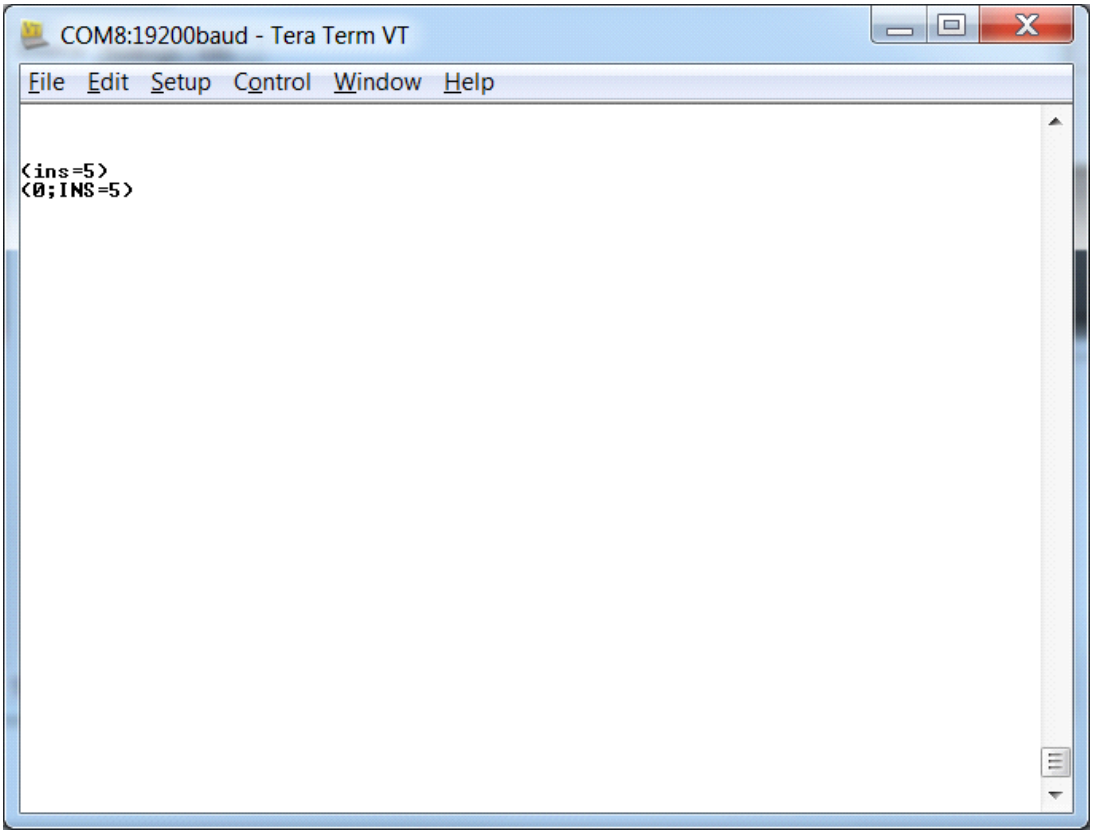


# RS232 Commands

The RS232 connection must use the following settings:

- 19200 baud rate
- 8 data bits
- 1 stop bit
- No parity bit
- No HW (RTS/CTS) or SW (XON/XOFF) flow control

# Command Format

Commands sent from the initiator to the follower must have the following format:

```
(www:xyz) [CR]
```

Where:

- '(' and ')' indicate the start and end of the command data. If these characters are present, the CLI processor shall assume that "valid" CLI data is present in the command string. If these characters are not present in the command, the CLI processor shall assume the data is not valid CLI data and ignore it.
- "www" indicates the command code. This field is case insensitive (i.e. "PWR", "pwr" and "PwR" should all be treated as "PWR").
- ":x" is the destination parameter. This is an optional parameter that indicates which memory the command is referencing. This parameter is reserved and shall not be used at this time.
- "y" is the operand, which can have one of the following values:
  - '?' = "Get" operand
  - '=' = "Set" operand
  - '+' = "Increment" operand (not supported on 4K)
  - '-' = "Decrement" operand (not supported on 4K)
- "z" is the value to set for this parameter. It can have one of two formats:
  - Integer value: Any positive or negative number (example: 100)
  - String value: Any string surrounded by double quotes (example: "This is a string")
- "[CR]" is the ASCII carriage return key (0x0D).

# Response Format

Responses sent from the follower to the initiator shall have the following format:

```
(u;www:x=z) [CR]
```

Where:

- '(' and ')' indicate the start and end of the command data. If these characters are present, the CLI processor shall assume that "valid" CLI data is present in the command string. If these characters are not present in the command, the CLI processor shall assume the data is not valid CLI data and ignore it.
- "u;" indicates the response code. This is only used by followers responding to a valid CLI command received. For any response code other than 0, the follower shall echo back the command received rather than filling in the fields listed below. The following response codes can be used:
  - 0 = Command successfully processed
  - 1 = Unknown command code
  - 2 = Invalid operator
  - 3 = Destination parameter not supported
  - 4 = Setting not available
  - 5 = Setting value not available
  - 6 = Setting value not supported
  - 7 = String too long
  - 8 = Command not supported in standby mode
  - 9 = Invalid parameter
  - 10 = Error processing command
  - 11 = Password not entered
- "www" indicates the command code sent by the follower. This field is case insensitive (i.e. "PWR", "pwr" and "PwR" should all be treated as "PWR").
- ":x" is the destination parameter. This is an optional parameter that indicates which memory the response is referencing. This parameter is reserved and shall not be used at this time.
- "z" is the new value (for set/increment/decrement commands) or the current value (for get commands) for this parameter. It can have one of two formats:
  - Integer value: Any positive or negative number (example: 100)
  - String value: Any string surrounded by double quotes (example: "This is a string")
- "[CR]" is the ASCII carriage return key (0x0D).

## Command/Response Examples

The following section gives examples of commands and their responses:

```
Example:   Power query when unit is powered on
Command:   (PWR?) [CR]
Response:  (0;PWR=1) [CR]

Example:   Set power to 0 (off)
Command:   (PWR=0) [CR]
Response:  (0;PWR=0) [CR]

Example:   Increment brightness from 24 to 25
Command:   (BRT+) [CR]
Response:  (0;BRT=25) [CR]

Example:   Invalid command code
Command:   (ZZZ=0) [CR]
Response:  (1;ZZZ=0) [CR]

Example:   Invalid parameter (string instead
of int)
Command:   (CON=”Some string”) [CR]
Response:  (9;CON=”Some string”) [CR]
```

# Supported UltraRes 4K Commands

The following section lists the commands that are currently support on the UltraRes display.

| Setting | Command Code | Read/ Write | Inc/Dec | Min Value | Max Value | String? | Password Protected? | Notes |
|---|---|---|---|---|---|---|---|---|
| Auto Power Off Enable | APE | R/W | No | 0 | 1 | No | No | 0 = Off<br>1 = On |
| Auto Power Off Timer | APT | R/W | No | 1 | 60 | No | No | Value is in minutes |
| Backlight | BKL | R/W | No | 1 | 15 | No | No | |
| Blank Screen Blue | BSB | R/W | Yes | 0 | 255 | No | No | |
| Blank Screen Green | BSG | R/W | Yes | 0 | 255 | No | No | |
| Blank Screen Red | BSR | R/W | Yes | 0 | 255 | No | No | |
| Color Space | CLS | R/W | No | 0 | 4 | No | No | 0 = REC601<br>1 = REC709<br>2 = RGB<br>3 = RGB Video<br>4 = Auto |
| EDID Type | EDT | R/W | No | 0 | 1 | No | No | 0 = Default EDID<br>1 = 1080p EDID |
| Error Log 1 | EL1 | R | No | N/A | N/A | Yes | No | Response contains 50 hex digits representing the first 25 entries in the error log |
| Error Log 2 | EL2 | R | No | N/A | N/A | Yes | No | Response contains 50 hex digits representing the second 25 entries in the error log |
| Error Code | ERR | R | No | 0 | TBD | No | No | 0 = None<br>1 = AC Power Supply 1 Failure<br>2 = AC Power Supply 2 Failure<br>3 = AC Power Supplies 1 and 2 Failure<br>4 = AC Power Supply 3 Failure<br>5 = AC Power Supplies 1 and 3 Failure<br>6 = AC Power Supplies 2 and 3 Failure<br>7 = AC Power Supplies 1, 2 and 3 Failure<br>8 = AC Power Status Cable Disconnected<br>9 = DC Power Supply Failure<br>10 = FPGA Initialization Failure<br>11 = Calibration EEPROM Failure<br>12 = Overtemp |
| Bottom Frame Delay | FDB | R/W | No | 0 | 2 | No | No | |
| Top Frame Delay | FDT | R/W | No | 0 | 2 | No | No | |
| Firmware Upgrade | FWU | W | No | N/A | N/A | No | No | Action will be performed on any setting value |
| Information Boot Version | IBV | R | No | N/A | N/A | Yes | No | |
| Information Current Color Space | ICC | R | No | 0 | 3 | No | No | 0 = REC601<br>1 = REC709<br>2 = RGB<br>3 = RGB Video |

| Setting | Command Code | Read/ Write | Inc/Dec | Min Value | Max Value | String? | Password Protected? | Notes |
|---|---|---|---|---|---|---|---|---|
| Information FPGA 1 Version | IF1 | R | No | N/A | N/A | Yes | No | |
| Information FPGA 2 Version | IF2 | R | No | N/A | N/A | Yes | No | |
| Information FPGA 3 Version | IF3 | R | No | N/A | N/A | Yes | No | |
| Information FPGA 4 Version | IF4 | R | No | N/A | N/A | Yes | No | |
| Information Firmware Version | IFV | R | No | N/A | N/A | Yes | No | |
| Input Mode | INM | R/W | No | 0 | 2 | No | No | 0 = Single Input (Scaled)<br>1 = Single Input (Unscaled)<br>2 = Multiple Inputs |
| Input Source | INS | R/W | No | 0 | 15 | No | No | 0 = DisplayPort 1<br>1 = DisplayPort 2<br>2 = DisplayPort 3<br>3 = DisplayPort 4<br>4 = HDMI 1<br>5 = HDMI 2<br>6 = HDMI 3<br>7 = HDMI 4 |
| IP Address | IPA | R | No | N/A | N/A | Yes | No | |
| Information Pixel Clock | IPC | R | No | N/A | N/A | Yes | No | |
| Information Signal Format | ISF | R | No | N/A | N/A | Yes | No | |
| Information Serial Number | ISN | R | No | N/A | N/A | Yes | No | |
| Information Temperature Sensor | ITS | R | No | N/A | N/A | No | No | Value returned is in Celsius |
| Remote Key | KEY | W | No | 0 | 92 | No | No | 1 = On<br>2 = Off<br>3 = Menu<br>4 = Enter<br>5 = Up<br>6 = Down<br>7 = Left<br>8 = Right<br>19 = HDMI 1<br>20 = HDMI 2<br>21 = HDMI 3<br>22 = HDMI 4<br>85 = DisplayPort 1<br>87 = DisplayPort 2<br>88 = DisplayPort 3<br>89 = DisplayPort 4<br>90 = Single Input<br>91 = Multiple Inputs<br>92 = Previous |
| Local Dimming | LDM | R/W | No | 0 | 1 | No | No | 0 = Off<br>1 = On |
| Model Name | MDL | R | No | N/A | N/A | Yes | No | |
| Multiple Input 1 | MI1 | R/W | No | 0 | 2 | No | No | 0 = Auto<br>1 = DisplayPort 1<br>2 = HDMI 1 |
| Multiple Input 2 | MI2 | R/W | No | 0 | 2 | No | No | 0 = Auto<br>1 = DisplayPort 2<br>2 = HDMI 2 |

| Setting | Command Code | Read/ Write | Inc/Dec | Min Value | Max Value | String? | Password Protected? | Notes |
|---|---|---|---|---|---|---|---|---|
| Multiple Input 3 | MI3 | R/W | No | 0 | 2 | No | No | 0 = Auto<br>1 = DisplayPort 3<br>2 = HDMI 3 |
| Multiple Input 4 | MI4 | R/W | No | 0 | 2 | No | No | 0 = Auto<br>1 = DisplayPort 4<br>2 = HDMI 4 |
| Power | PWR | R/W | No | 0 | 1 | No | No | 0 = Off<br>1 = On |
| Status | STA | R | No | 0 | 4 | No | No | 0 = Standby<br>1 = Powering Up<br>2 = On<br>3 = Powering Down<br>4 = Error |
| Standby Mode | STB | R/W | No | 0 | 1 | No | No | 0 = Low Power<br>1 = Fast Startup |
| System Reset | SYS | W | No | N/A | N/A | No | No | Action will be performed on any setting value |

# Specifications

## LCD Module Specifications

| Specification | UltraRes Display | |
|---|---|---|
| Dimensions | in/lbs | mm/kg |
| Width | 75.5" | 1918.7mm |
| Height | 43.7" | 1110.7mm |
| Diagonal overall | 87.28" | 2217mm |
| Depth - without mount | 3.05" | 77.5mm |
| Depth - with mount | 3.17" | 80.5mm |
| Weight | | |
| LCD only | 180lbs | 82kg |
| Landscape mounts | 32lbs | 14.5kg |
| Portrait mounts | 20lbs | 9kg |
| Orientation | Landscape (3D, LX, MX) or Portrait (MX version only) | |
| Rear clearance required | None if using Planar's mount system | |
| Aspect ratio | 16:9 (landscape)<br>9:16 (portrait | |
| LED life | 30,000 (half brightness) | |

## LCD Optical Specifications

| Specification | Maximum | Minimum | Typical |
|---|---|---|---|
| Screen brightness | | | |
| UR8450-3D | | 336 cd/m$^2$ | 420 cd/m$^2$ |
| UR8450-LX | | 280 cd/m$^2$ | 350 cd/m$^2$ |
| UR8450-MX | | 400 cd/m$^2$ | 500 cd/m$^2$ |
| Sequential contrast (local dimming enabled) | | | |
| UR8450-3D | | | 20,000:1 |
| UR8450-LX | | | 20,000:1 |
| UR8450-MX | | | 20,000:1 |
| Sequential contrast (local dimming disabled) | | | |
| UR8450-3D | | 1100:1 | 1600:1 |
| UR8450-LX | | 1100:1 | 1600:1 |
| UR8450-MX | | 1100:1 | 1400:1 |
| Uniformity | | 70% | |
| Viewing Angle | | | |
| 2D content | | 89° in all directions | |
| 3D content | | 10° in all directions | |

## LCD Optical Specifications (Continued)

| Specification | Maximum | Minimum | Typical |
|---|---|---|---|
| Color gamut | | | 72% NTSC<br>100% REC709 |
| Red (x,y)<br>Green (x,y)<br>Blue (x,y)<br>White (x,y) | | | 0.645, 0.335<br>0.300, 0.620<br>0.150, 0.060<br>0.279, 0.292 |
| Native color temperature | | | 10,000K |
| Number of colors | | | 16.7M |
| Native resolution | | | 3840 x 2160 |

## Environmental Specifications

| Specification | Maximum | Minimum | Optimal | Notes |
|---|---|---|---|---|
| Temperature<br>operating | 40° C<br>104° F | 0° C<br>32° F | 20-25° C | All performance specifications are maintained within this temperature range. |
| non-operating | 60° C<br>140° F | –20° C<br>–4° F | 20° C<br>+/- 10° C | |
| Altitude (barometric pressure) | 3000m | | | |
| Humidity<br>operating | 85% R.H. | | | non-condensing |
| Low line voltage range | | | 100-120V | |
| High line voltage range | | | 200-240V | |
| Line frequency range | | | 49-61Hz | |
| Power consumption<br>Standby<br>Normal operation | <br><br>550W | | <br>< 0.5W<br>460W typ. | <br><br>550W x 3.42 BTU = 1881 BTU/hr max.<br>460W x 3.42 BTU = 1573.2 BTU/hr typ. |

# Signal Compatibility

The UltraRes display supports the following video modes.

## Compatible Video Sources

| Signal Type | Resolution | Frame Rate (Hz) | Line Rate (kHz) | Pixel Rate (MHz) |
|---|---|---|---|---|
| PC | 960 x 2160 | 60 | 135.000 | 148.500 |
| HDTV | 1080p | 24 | 27.000 | 74.250 |
| | 1080p | 25 | 28.125 | 74.250 |
| | 1080p | 30 | 33.750 | 74.250 |
| | 1080p | 50 | 56.250 | 148.500 |
| | 1080p | 60 | 67.500 | 148.500 |
| UHDTV | 3840 x 2160 | 24 | 54.000 | 297.000 |
| | 3840 x 2160 | 25 | 56.250 | 297.000 |
| | 3840 x 2160 | 30 | 67.500 | 297.000 |

## Multiple Input Compatibility

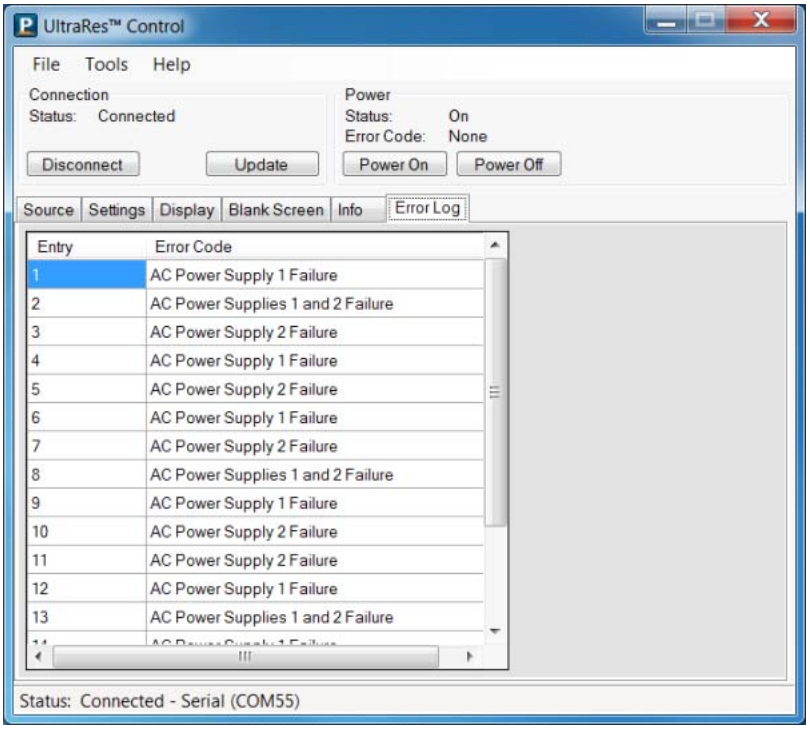
| Signal Type | Resolution | Frame Rate (Hz) | HDMI -1 Input | HDMI -1-4 | DisplayPort -1 Input | DisplayPort 1-4 |
|---|---|---|---|---|---|---|
| PC | 960 x 2160 | 60 | | ✓ | | ✓ |
| HDTV | 1080p | 24 | ✓ | ✓ | | ✓ |
| | 1080p | 25 | ✓ | ✓ | ✓ | ✓ |
| | 1080p | 30 | ✓ | ✓ | ✓ | ✓ |
| | 1080p | 50 | ✓ | ✓ | ✓ | ✓ |
| | 1080p | 60 | ✓ | ✓ | ✓ | ✓ |
| UHDTV | 3840 x 2160 | 24 | ✓ | | ✓ | |
| | 3840 x 2160 | 25 | ✓ | | ✓ | |
| | 3840 x 2160 | 30 | ✓ | | ✓ | |

# Troubleshooting During Installation

This section includes troubleshooting information about different issues you may encounter during the installation process or after your display has been running for some time. If you are not able to solve your issue in this section, please contact Planar's Technical Support team for assistance.

## Error Codes in the UltraRes Control Software

To see the last 50 errors that have occurred, select the Error Log tab in the UltraRes Control software, as shown below. For a complete list of the error codes that may appear in the error log, see the table below.



| Error Code | Meaning | Display Behavior and Solution |
|---|---|---|
| AC Power Supply 1 Failure<br><br>AC Power Supply 2 Failure | One of the two AC power supplies is not working properly. | The backlight will be dimmed to a maximum setting of 10, which is necessary in order to reduce power consumption.<br><br>**Solution**: Replace the failing power supply. |
| AC Power Supplies 1 and 2 Failure | Both power supplies are not working. | The issue could be either the AC power supplies or the standby power board.<br>**Solution**: First check the AC power status cable to make sure it's connected.<br>**Solution**: If you have checked the connections and both power supplies are still not working, we recommend replacing the entire power tray. |
| DC Power Supply Failure | One of the DC-DC converters on the main board of the display has failed. | The display will not start up if this occurs.<br>**Solution**: The main board needs to be replaced. |
| FPGA Initialization Failure | One of the FPGAs on the main board did not start up correctly. | There are two possible causes: one of the FPGAs has corrupt code or is damaged.<br>**Solution**: First check the FPGA status LEDs on the main board. If one is not blinking, that FPGA didn't start up. The FPGA code may need to be programmed again.<br>**Solution**: If reprogramming an FPGA doesn't work, it is likely the FPGA is damaged. If this is the case, the main board needs to be replaced. |
| Calibration EEPROM Failure | The main board could not communicate with the calibration EEPROM. | It is likely that the calibration EEPROM cable is disconnected.<br>**Solution**: Connect the EEPROM cable. |

# Symptoms, Possible Causes and Solutions

Below are different symptoms that you might encounter as you install your UltraRes display. First look at the different symptoms to see if you can find your issue. And then look at the possible cause and try the suggested solution(s). If you still are not able to resolve your issue, please contact Planar's Technical Support Department.

## Symptom: Can't Get PC to Output 4K @ 24/30Hz

### Possible Cause

Your graphics card may not support a 4K output.

### Solution

Make sure that your graphics card can support a 4K output. See "Supported Graphics Cards" on page 12 for a list of the current graphics cards that Planar supports for the UltraRes display.

### Solution

Confirm that you are using a DisplayPort output. You can't use a DisplayPort-to-HDMI adapter to output 4K content.

### Solution

Verify that the EDID Type setting in the Remote Monitoring software (Advanced Setup page) for the connector is **4K Preferred**. Once you change the EDID setting, you may need to disconnect and reconnect the cable.

# Accessing Planar's Technical Support Website

1. Go to www.planarpartners.com
2. Once you enter your login and password, you can access downloadable utility software, new firmware, user manuals, and service manuals.

## Downloading Additional Documentation and Firmware

Some of the other documents for the UltraRes 4K professional display, which are or will be available on www.planar.com.

## Downloading Utility Software

1. Go to www.planarpartners.com.
2. Enter your login and password information.
3. Navigate to the section that contains software updates and then look for Planar UltraRes.
4. From the list of available software, click on the tool you need.

# Regulatory Information

Manufacturer's Name: Planar Systems, Inc.
Manufacturer's Address: 1195 NW Compton Drive
Beaverton, OR 97006

Declares that the products Model Numbers: Planar UR8450-3D, UR8450-LX, UR8450-MX

Conforms with the provisions of:

Council Directive 2004/108/EC on Electromagnetic Compatibility;

EN55022:2010 Radiated and Conducted Emissions from IT Equipment

EN55024:2010 Immunity of IT Equipment

| | | |
|---|---|---|
| Including: | EN61000-4-2 | Electrostatic Discharge |
| | EN61000-4-3 | Radiated Immunity |
| | EN61000-4-4 | Electrical Fast Transients |
| | EN61000-4-5 | Line Surge |
| | EN61000-4-6 | RF Conducted Susceptibility |
| | EN61000-4-8 | Magnetic Field Immunity |
| | EN61000-4-11 | Voltage Dips and Interrupts |
| And: | EN61000-3-2 | Harmonic Current Emissions |
| | EN61000-3-3 | Voltage fluctuations and Flicker |

Council Directive 2006/95/EC on Low Voltage Equipment Safety:

EN60950:2006+A11+A1+A12 Safety of IT Equipment

The Technical Construction File required by this Directive is maintained at the corporate headquarters of Planar Systems, Inc., 1195 NW Compton Drive, Beaverton, OR 97006.

Note: 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 when 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 his own expense.

Industry Canada (ICES-003): This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
Any changes or modifications to the display not expressly approved by Planar could void the user's authority to operate this equipment.

Other Certifications

CISPR 22

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