LCD Panel FHD551-X/XG, FHD461-X

User Manual

CHRISTIE®

LCD Panel FHD551-X/XG, FHD461-X

User Manual

020-100713-07

NOTICES

COPYRIGHT AND TRADEMARKS

REGULATORY

The product 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 product is operated in a commercial environment. The product 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 the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

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.

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GENERAL

Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material.

The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!

GENERAL WARRANTY STATEMENTS

For complete information about Christie's limited warranty, please contact your Christie dealer. In addition to the other limitations that may be specified in Christie's limited warranty, the warranty does not cover:

a. Damage occurring during shipment, in either direction.
b. Damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
c. Damage caused by improper installation/alignment, or by product modification, if by other than a Christie authorized repair service provider.
d. Problems caused by combination of the equipment with non-Christie equipment, such as distribution systems, cameras, video tape recorders, etc., or use of the equipment with any non-Christie interface device.
e. Failure due to normal wear and tear.
f. Warranty does not cover image retention.

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Service Manual for specific maintenance items as they relate to your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

Addendum

The CD included with this printed manual contains an electronic copy in English. Please read all instructions before using or servicing this product.

Le DC fourni avec ce manuel imprimé contient une copie électronique en français. S'il vous plaît lire toutes les instructions avant d'utiliser ou de réparer ce produit.

Das CD, das mit diesem gedruckten Handbuch eingeschlossen ist, enthält eine elektronische Kopie auf in deutscher Sprache. Vor der Anwendung oder der Instandhaltung dieses Produktes lesen Sie bitte alle Anweisungen.

Il CD fornito con il manuale stampato contiene una copia elettronica in lingua italiano. Si prega di leggere tutte le istruzioni prima di utilizzare o riparare questo prodotto.

CD

매뉴얼과 함께 포함되어 있는 CD 에는 한글로 된 전자사본을 포함하고 있습니다 . 본 제품을 사용 혹은 서비스하기 전에 모든 지침 사항들을 읽어 보시기 바랍니다 .

O CD incluído com o impresso livro contém um eletrônico cópia em Português. Por favor lido todas as instruções antes de usar ou prestando serviço esse resultado.

Поставляемый в комплекте с документацией компакт-диск (CD) содержит электронную копию руководства пользователя на русском языке. Перед началом использования изделия или проведения сервиса пожалуйста прочтите все инструкции изложенные в руководстве.

El DC incluido con este manual impreso contiene una copia electrónica en español. Por favor, lea todas las instrucciones antes de usar o dar servicio a este producto.

Компакт диск, що постачається з цим друковане керівництво містить електронну копію українською мовою. Будь ласка, прочитайте всі інструкції перед використанням або обслуговуванням цього продукту.

5: Troubleshooting

6: Specifications

7: Timing Table

A: RS232 Command Format

B: Mechanical Drawings

1 Product Overview

Every effort has been made to make sure the information in this document is accurate and reliable; however, due to constant research, the information in this document is subject to change without notice. Christie assumes no responsibility for omissions or inaccuracies.

1.1 Safety Warnings and Guidelines

⚠ WARNING

Failure to comply with the following may result in death or serious injury:

• **This product is designed and manufactured to operate within defined design limits and misuse may result in electric shock or fire.**

• **Never push any object into the slot on the monitor cabinet. Do not place any objects on the top of the product. It could short circuit parts causing a fire or electric shock. Never spill liquids on the monitor.**

• **To avoid the risk of electric shock or component damage, disable power before connecting other components to the LCD panel.**

⚠ CAUTION

Failure to comply with the following could result in minor or moderate injury:

• **Do not place the monitor on an unstable cart, stand, or table. If the monitor falls, it can injure a person and cause serious damage to the appliance. Use only a cart or stand recommended by the manufacturer or sold with the monitor.**

• **Keep the monitor away from moisture. Do not expose this product to rain or moisture. If water penetrates the product, unplug the power cord and contact your dealer. Continuous use in this case may result in fire or electric shock.**

• **Do not use the product if any abnormality occurs. If any smoke or odor becomes apparent, unplug the power cord and contact your dealer immediately. Do not try to repair the product yourself.**

• **Avoid using dropped or damaged appliances. If the product is dropped and the housing is damaged, the internal components may function abnormally. Unplug the power cord immediately and contact your dealer for repair. Continued use of the product may cause fire or electric shock.**

• **Do not install the product in an area with heavy dust or high humidity. Operating the product in these environments may cause fire or electric shock.**

1.2 LCD Flat Panel Overview

Christie FHD551-X/XG and Christie FHD461-X LCD flat panels deliver full HD resolution (1920 x 1080) suitable for a variety of indoor environments. They feature a slim chassis design and use low-power components making them energy-efficient. Multiple video streams can be arranged on a single monitor to reduce installation power requirements.

Standard monitor display parameters can be adjusted with user-friendly, on-screen menus and side panel controls.

Christie FHD551-XG flat panels use an optically bonded Corning® Gorilla® Glass option making them scratch and damage resistant; ideal for touchscreen interactivity or high-traffic areas.

1.3 Standard Components

NOTICE: *Always use the accessories recommended by the manufacturer to guarantee compatibility.*

LCD Panel Components

Model	Part Number	Description
FHD551-X	135-001102-01	• 2m Ethernet Cable (RS-485)
FHD551-XG	135-002103-01	• 3m RS232 Cable
FHD461-X	135-003104-01	• DVI Cable
		• IR Extender Cable
		• Cable Tether Kit
		• IR Remote Control (includes 2, AAA batteries)
		• LCD Panel FHD User Manual
		(with CD containing translated languages of User and Service Manuals)

Power Cords

Part Number	Description
108-383105-01	Power Cord NA
108-390103-01	Power Cord EU
108-388100-01	Power Cord UK
108-376107-01	Power Cord JP
108-375106-01	Power Cord CN
108-392105-01	Power Cord AU
108-498102-01	Power Cord INDIA

1.4 Optional Hardware Components

Part Number	Description
135-101103-01	LCD Mount 40-65" ML10 (Landscape)
135-104106-01	LCD Mount 40-65" MP10 (Portrait)
135-102104-01	LCD Spacer Kit 55" ML10
135-107109-01	LCD Spacer Kit 55" MP10
135-105107-01	LCD Frame F100
135-106108-01	LCD Pedestal P100

1.5 Other Available Resources

Access the company website *www.christiedigital.com* to view the listed resources.

• ML10/MP10 LCD Video Wall Mount Instruction Sheet (P/N: 020-100726-xx)

• ML10/MP10 46" and 55" Spacer Kit Instruction Sheet (P/N: 020-100728-xx)

• P100 Pedestal and F100 Frame Installation Manual (P/N: 020-100734-xx)

1.5.1 Indicator Lights, Control and Connections

On-screen Display (OSD) Keypad Function List

Key	Description
Power	Power switch; Power ON/OFF
Source	Source selection; Activate selection
▶	Menu right/Increase value
◀	Menu left/Decrease value
▲	Menu UP
▼	Menu DOWN
Menu/Exit	OSD control menu button

LED Indicator Lights

Indicator	Description
Green	Normal operation
Blinking orange	No signal
Orange	Power saving
OFF	Power disabled
OFF	AC disabled

Shown: FHD551-X, FHD551-XG

Indicator Lights
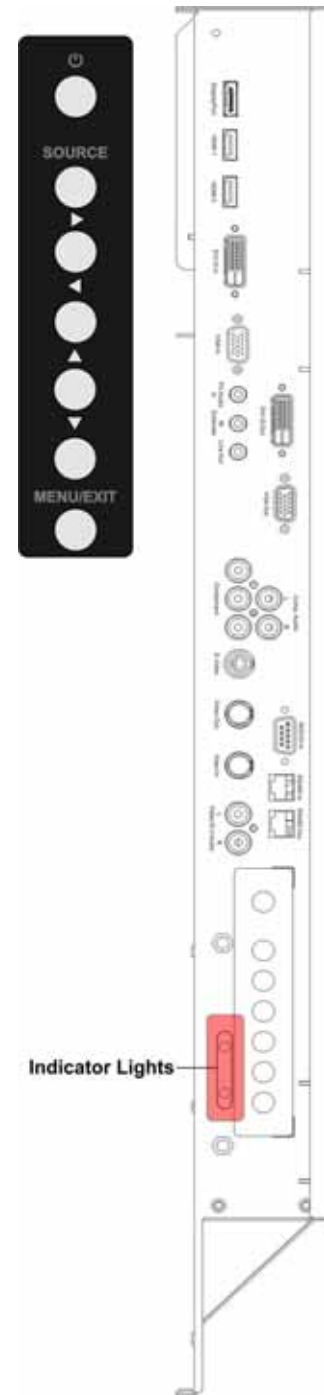
1.5.2 Connection Panel

Shown: FHD551-X, FHD551-XG

	Name	Connector
A	Display Port x1	Display Port
B/C	HDMI input x2	HDMI
D	DVI-D input x1	D-sub 24 pin
E	VGA (PC) input x1	D-sub 15 pin
F	Line Out x1	Mini jack
F	IR Extender x1	Mini jack
F	PC Audio IN x1	Mini jack
G	DVI-D output x1	D-Sub 24 pin
H	VGA (PC) output x1	D-Sub 15 pin
I	Y-Pb-Pr (Y-Cb-Cr) input x1	RCA G/B/R
I	Audio for Component input x1	RCA L/R
J	S-video input x1	Mini Din 4 pin
K	Video input/output	BNC
L	RS232 input x1	D-Sub 9 pin
M	Video input/output	BNC
N	RS485 Input x1 RS485 Output x1	RJ45
O	Audio for S-video/Video input x1	RCA L/R

Shown: FHD461-X

	Name	Connector
A	RS485 Input x1 RS485 Output x1	RJ45
B	RS232 input x1	D-Sub 9 pin
C	Audio for S-video/Video input x1	RCA L/R
D	Video input/output	RCA
E	S-video input x1	Mini Din 4 pin
F	Audio for Component input x1	RCA L/R
G	Y-Pb-Pr (Y-Cb-Cr) input x1	RCA G/B/R
H	Line Out x1 IR Extender x1 PC Audio IN x1	Mini jack
I	VGA (PC) input x1	D-sub 15 pin
J	DVI-D input x1	D-sub 24 pin
K	HDMI input x2	HDMI
L	Display Port x1	Display Port
M	VGA (PC) output x1	D-Sub 15 pin
N	DVI-D output x1	D-Sub 24 pin
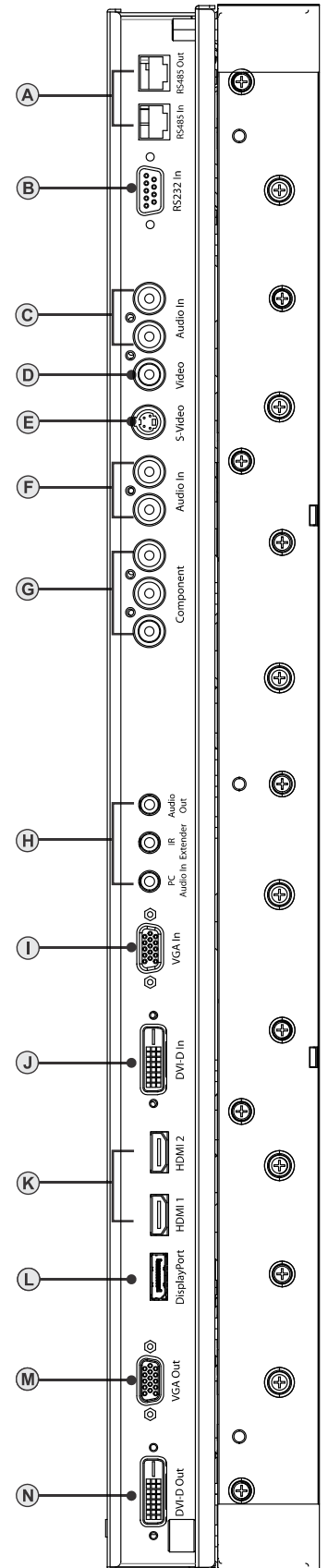
1.5.3 Power Connection Panel

FHD551-X/XG   **FHD461-X**
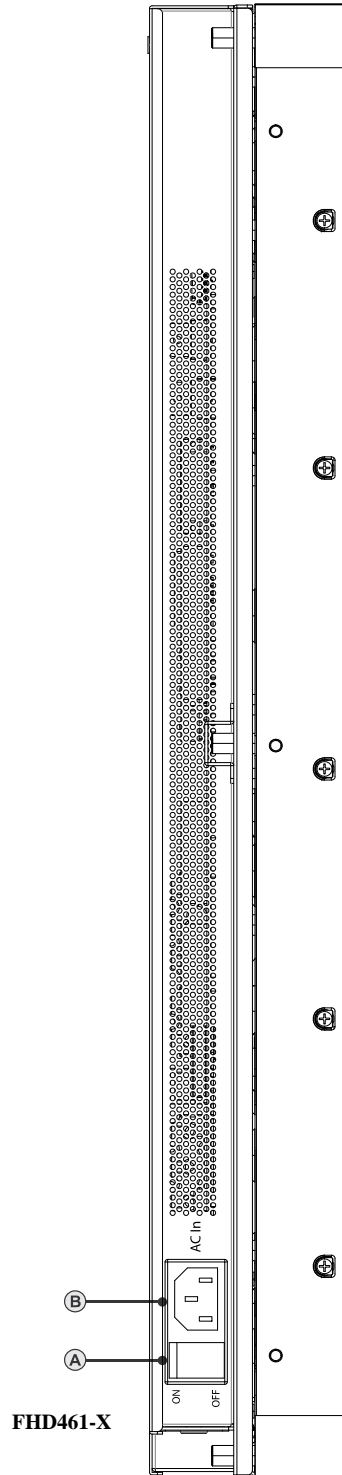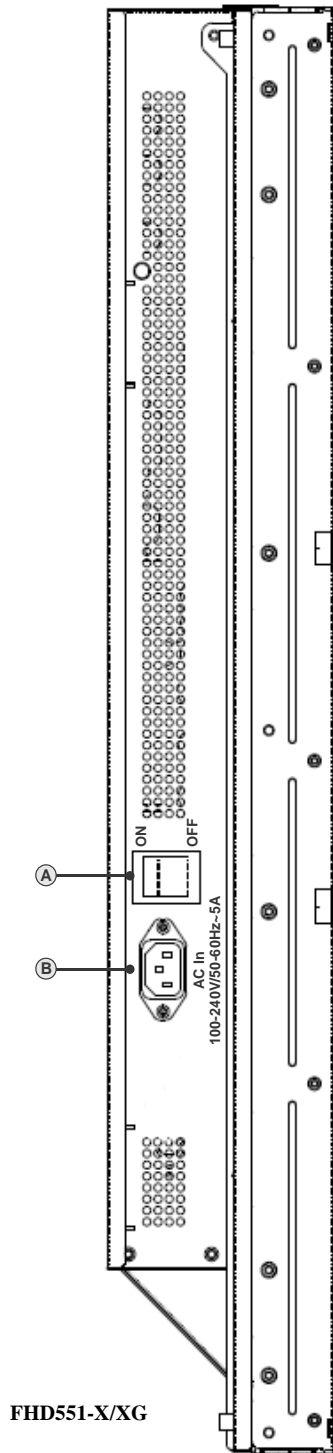
	Name	Connector
A	Power Switch	Rocker switch
B	Power Inlet	IEC C14

![Christie logo]

2 Package Handling

⚠ **WARNING**

Failure to comply with the following could result in death or serious injury:

• **Do not drop the panel (even a short distance), or apply pressure to the sides of the bezel. The small size of the bezel, which enables minimal image-to-image gaps, means there is reduced protection of the LCD glass and components. Dropping the panel or applying unnecessary force to the sides of the bezel will result in permanent damage.**

• **To avoid serious injury and/or serious damage to the LCD panel, moving the panel requires at least two people. Hold the white handles on the shipping package when moving/shipping. Failure to properly handle the package may result in serious injury.**

• **Extreme care must be taken when pushing the mounted display into its locked position. Always handle the display on the opposing corners of the frame to avoid direct contact with the LCD glass.**
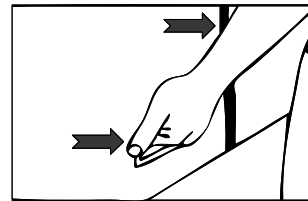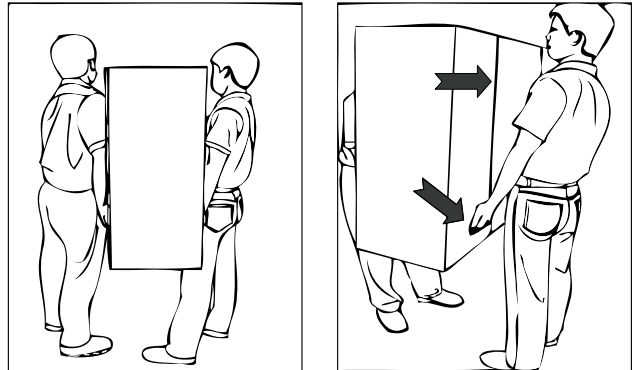
2.1 Unpacking

Each LCD panel is packed inside a box carton. To protect the panel during transportation, additional packing material has been placed within the carton. Before unpacking, prepare a stable, level and clean surface near a wall outlet for your LCD panel. Set the box in an upright position and pull out the white carton locks. Lift up the top cover carton. Remove the ESD bag before removing the display from the bottom tray carton.

2.2   Handling and Care

⚠ **CAUTION** **Make sure the power connector and any other cables are unplugged before moving the product. Failure to comply could result in minor or moderate injury.**

To avoid damaging your LCD panel, follow these guidelines when handling or moving the panel:

• Hold and support the LCD panel at each side and keep at an even height above the ground.

• Do not twist or bend the panel.

• Always use the handles on the back of the LCD panel. Do not hold onto the frame when transporting.

• Two people are required when moving or raising the LCD panel. Use both hands, one positioned on the top handle and the other on the bottom handle.

• Use a cart to move several panels at one time.

• When the panel is sitting on a surface, do not tilt it more than 10° to avoid damaging the screen.
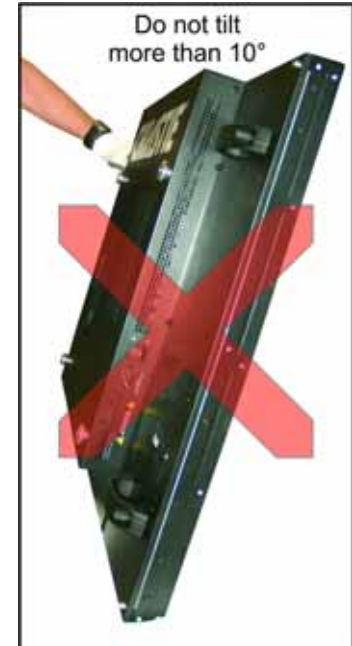
2.3   Cleaning

NOTICE: *Unplug the power cord before cleaning the LCD panel. Do not use a liquid, spray cleaners, or any abrasive cleaners to clean the LCD panel. Failure to comply may result in equipment damage.*

Use a cloth dampened with water or methyl alcohol to clean the screen surface. It is recommended you keep the protective plastic sheet shipped with the panel to replace it each time the panels are packed and shipped.

3 Installation Guidelines

3.1 Power

> ⚠ **WARNING**
>
> **Failure to comply with the following could result in death or serious injury:**
> - **Electrical Shock Hazard! Always power down and disconnect/disengage all power sources to the panel(s) before servicing or cleaning. Read and understand all product safety labels before installing/ operating this product.**
> - **Do not attempt to repair or service the product yourself. Opening or removing the back cover may expose you to high voltages, the risk of electric shock and other hazards. If repair is required, contact your dealer and refer all servicing to qualified service personnel.**

3.2 Remote Requirements

NOTE: *Due to the length limitations of the IR cables, if constructing arrays larger than 4x4, it is advised that you configure each monitor before assembling it into the video wall. For example, in a 3x3 array, the IR cable for the center monitor is long enough to reach the top and bottom of the video wall, but does not reach the sides.*

Connect the supplied IR extender cable to each monitor to access OSD features using the IR remote. One remote may be used to simultaneously access the OSD on all monitors providing there is line of sight to each IR receiver. For independent control of each monitor, aim the remote at the receiver connected to the monitor. When working with large arrays it is more practical to control the LCD monitors through RS232.

3.3 Tiling

⚠ **CAUTION** **Before installing, make sure the wall/structure is strong enough to withstand the weight of the display and mount. Failure to comply could result in minor or moderate injury.**

NOTICE: *To avoid damaging the LCD panels, do not stack on top of each other. Allow a minimum 1 mm (0.04") clearance between panels.*

To tile the LCD panels they must be mounted to an external mounting structure. The illustration below points out the 4 mounting positions on the back of the LCD panel. For details on how to correctly mount the panels to the wall mount, see ***ML10/MP10 Video Wall Mount Instruction Sheet (P/N: 020-100726-xx)***.

1. Carefully place the LCD Panel on a flat surface with the display side facing down. For details on how to properly handle the LCD panel, see *Section 2 Package Handling*.

2. Remove the 4 M8/15 screws from the back of the LCD monitor.

3. Align the wall mount brackets with the mounting holes on the back of the panel and attach it using the screws removed in step 2.

   NOTE: *Using long screws will damage the monitor. Use maximum 15mm (0.59") screw lengths.*
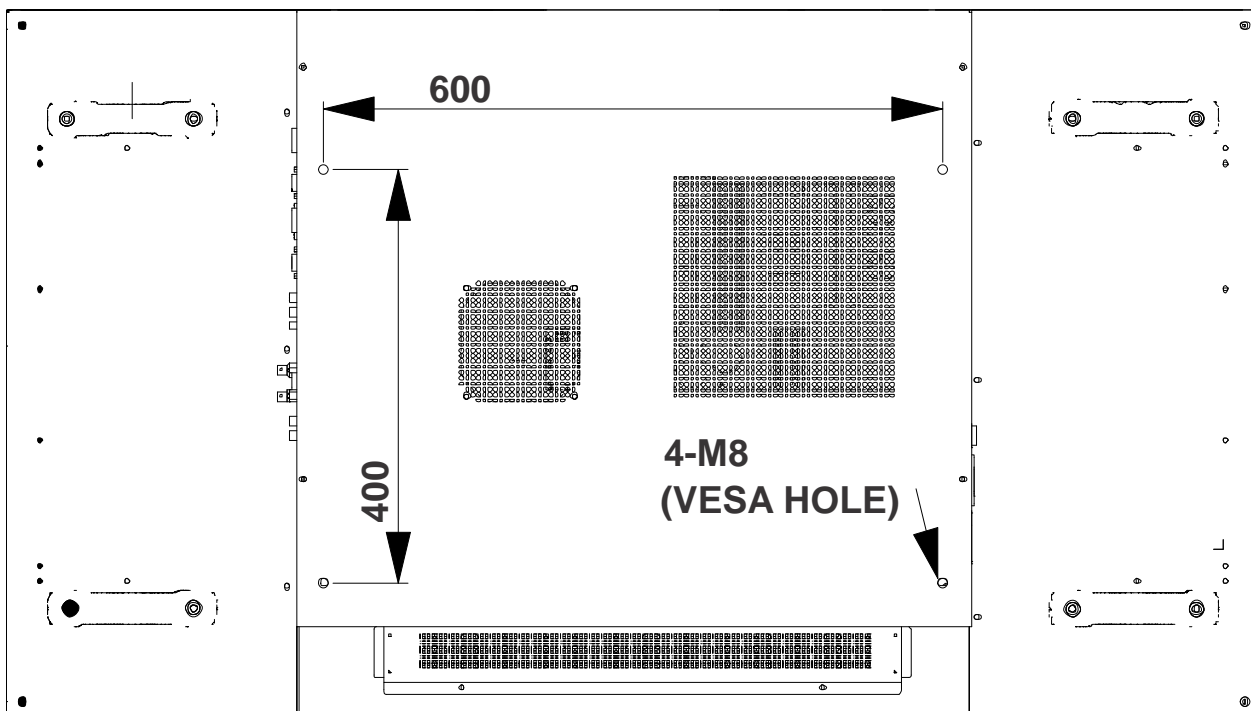
3.4 Cabling

3.4.1 RS232 Routing

The number of connecting devices for RS232 is a maximum of 25 connecting from top-left or bottom-left.

Example 1: 3x3 Screen Matrix connecting from top-left
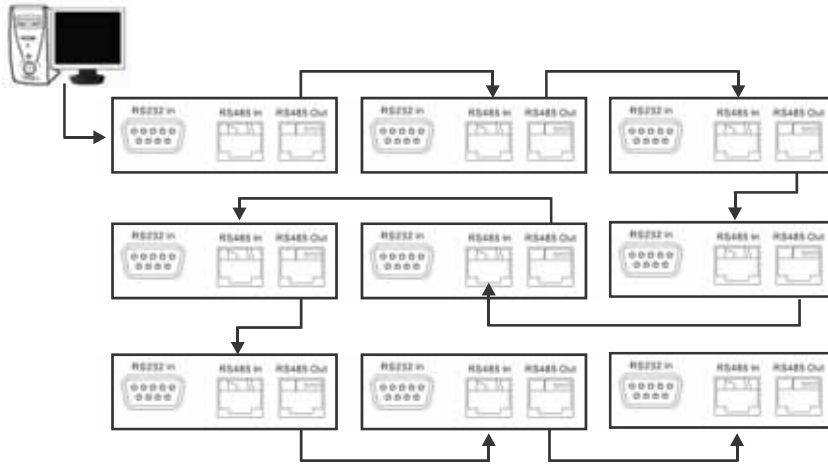
Example 2: 3x3 Screen Matrix connecting from bottom-left
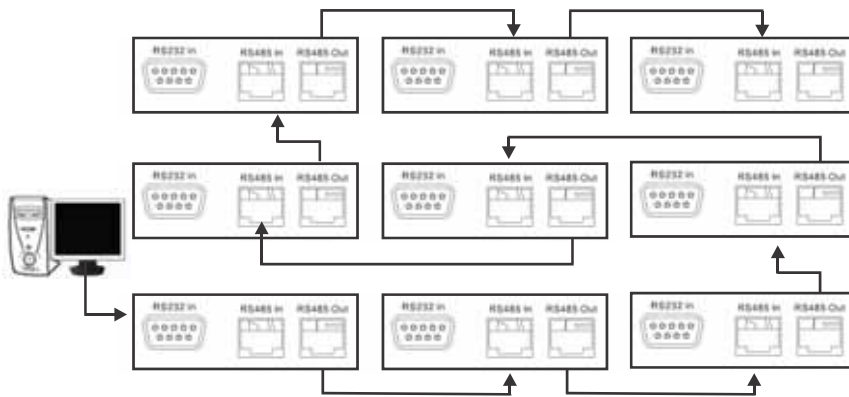
3.4.2 DVI/VGA Loop Through

DVI Routing

A maximum daisy chain of 9 DVI connections from a single source is supported. The illustration below is an example of a typical DVI daisy chain configuration. A DVI/VGA splitter may be used to distribute the video signal to support larger video wall configurations.

NOTE: *No routing order is required.*
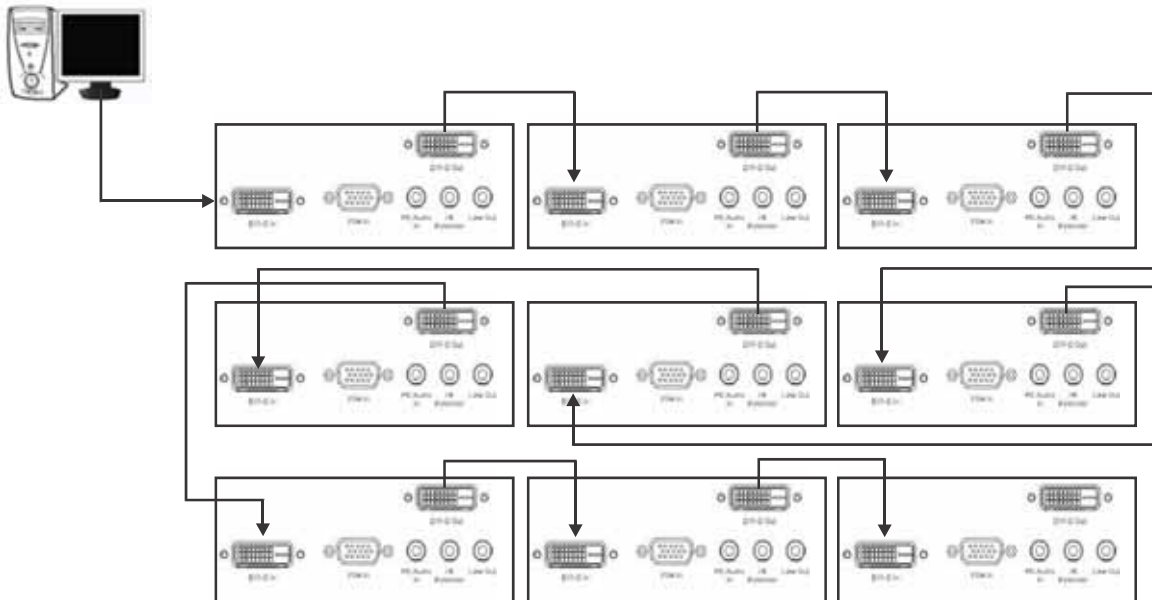
VGA Routing

A maximum daisy chain of 4 VGA connections from a single source is supported. The illustration below is an example of a typical VGA daisy chain configuration. A DVI/VGA splitter may be used to distribute the video signal to support larger video wall configurations.

NOTE: *No routing order is required.*
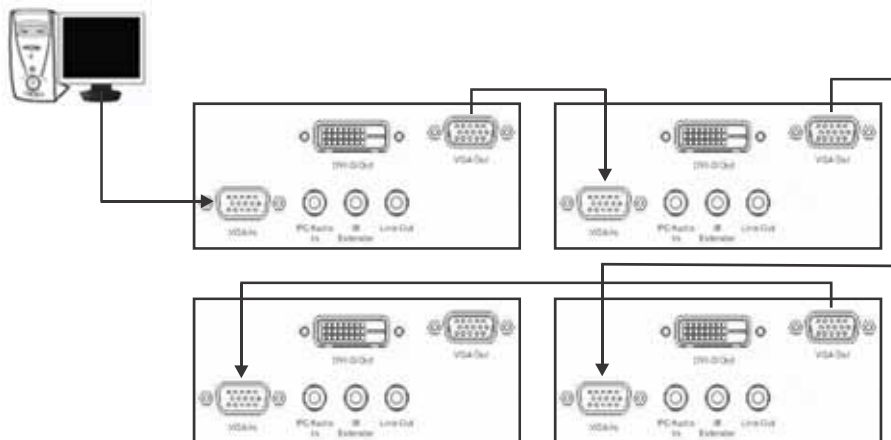
3.5 Cable Tether Kit (for FHD551-X/XG only)

The Cable Tether kit consists of 2 Phillips screws and 2 cable ties. This kit is used to prevent the power cord from accidentally disconnecting. To install, secure the cable tether clip to the LCD panel using the Phillips screws, route the power cord into the channel and secure using the cable ties.
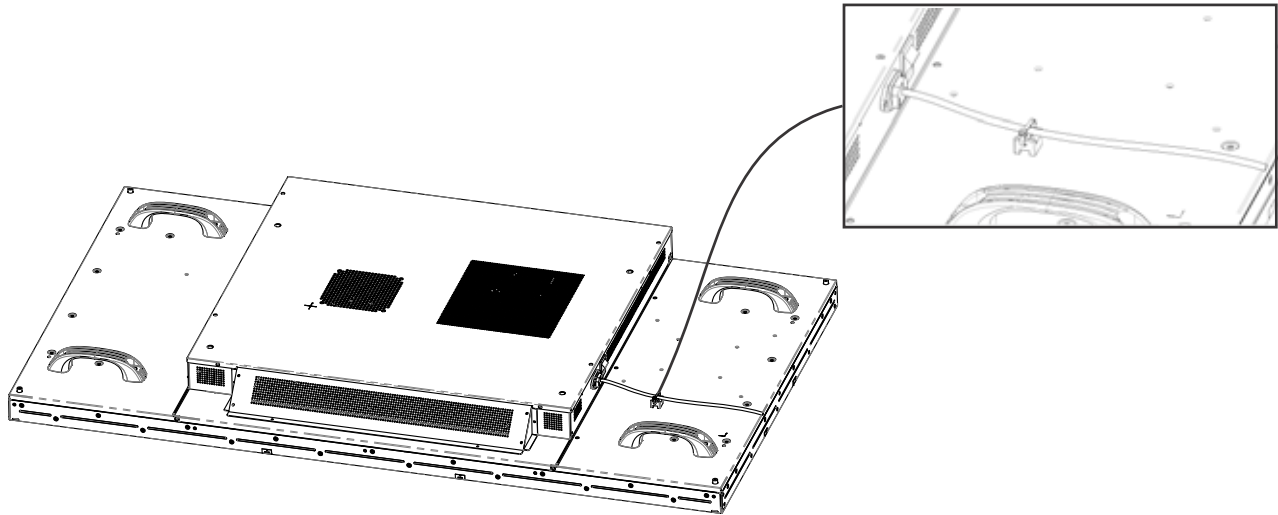
3.6 Cooling Requirements

⚠ WARNING **Failure to comply with the following could result in death or serious injury:**

- **Slots and openings in the back and bottom of the cabinet are provided for ventilation. For reliable operation and to protect from overheating do not obstruct the rear cover vents of the LCD panels.**

- **A minimum clearance is required behind the panels for proper ventilation:**

    FHD551-X/XG, 3.1" (79.3 mm) clearance

    FHD461-X, 0.69" (17.5 mm) clearance

- **Ambient air temperature behind the panel must be maintained at <40° C (104° F). To make sure that the air behind each LCD panel is within the operating range. Large displays may require additional space to maintain ambient temperatures.**

- **A distance of at least 3 ft (914.4 mm) should be maintained between the monitor and any heat source, such as radiator, heater, oven, amplifier, and so on. Do not install the product close to smoke. Operating the product close to smoke or moisture may cause fire or electric shock.**

- **Do not place the LCD panel inside an enclosure (for example, a bookcase or cabinet) unless proper ventilation is provided.**

- **When moving the monitor from an area of low temperature to an area of high temperature, condensation may form on the housing. Do not enable power to the monitor immediately after this to avoid causing fire, electric shock, or component damage.**

3.7 Runtime

Although the power supply and panel components support continuous 24/7 operation, static content must not be displayed over long periods of time (>20h per day) or image retention may occur. Powering the unit off or using power management for 4 hours per day will extend the life of the product and minimize the risk of image retention. In circumstances where a static image must be displayed over long periods of time, activating the Image Retention Frame Motion (IRFM) feature helps to avoid image retention. For details, see *4.3.8 Advanced Settings Menu, on page 4-9*.

3.8 Application Software

To download the Video Wall Toolbox go to www.christiedigital.com. The main features of this software application are automatic panel mapping based on cable routing and the ability to send commands to multiple panels simultaneously. For more information, see *4.6 Video Wall Toolbox, on page 4-15*.

4 Operation

This section explains how to install and connect the LCD panel. Illustrations are graphical representations only and are provided to enhance the understanding of the written material.

4.1 LCD Panel Setup

⚠ **WARNING** **Failure to comply with the following may result in death or serious injury:**

- **The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supplied at your location, consult your dealer or local power company.**
- **Make sure suitable regional line cords for the specific country are used with your setup. Refer to local regulations. See Section 1 Product Overview, for details.**
- **Do not overload power strips and extension cords. Overloading can result in fire or electric shock.**
- **Only the marked power source can be used for the product. Any power source other than the specified one may cause fire or electric shock.**
- **To avoid electric shock, avoid handling the power cord during electrical storms.**
- **To avoid the risk of electric shock or component damage, disable power before connecting other components to the monitor.**

NOTICES: *1) The wall socket must be installed near the equipment and be easily accessible. 2) Before connecting, turn the monitor and any connecting source equipment OFF. After all connections are made, turn the monitor ON before any other devices. 3) When connecting to a computer, make sure that the computer is the last device powered ON, after all connections are made. 4) Read the Operation Manuals of the video source equipment before making the connections.*

4.1.1 Video Source Connections

Connection	Description
Power Cord	Plug the supplied power cord into the AC socket on the side of the monitor.
High Definition Multimedia Interface (HDMI)	Use an HDMI cable when connecting to video sources that utilize HDMI output.
Component (Y, Pb, Pr)	Use Component (Y, Pb, Pr) when connecting to video equipment.
S-video	Use S-video to connect to video equipment.
HD-15 for VGA and DVI	Connect the monitor to the computer using an HD 15-pin VGA/DVI cable. Secure the cable connector by tightening the screws on both sides of the plug.
Video	Use Video to connect to composite video.
Display Port	Use display port cable to connect to video/graphics equipment.

4.2 Enabling Power

⚠ **WARNING**

- **Hold the power connector when removing the power cable. Pulling the power cable itself may damage the wires inside the cable and cause fire or electric shock.**
- **When the product will not be used for an extended period of time, unplug the power connector.**
- **To avoid risk of electric shock, do not touch the connector with wet hands.**

4.2.1 Connect the Power Cable

Connect the power cord to the power cord connector on the side of the monitor. Plug the power cord into an AC wall socket and press the power switch to I to power ON, or O to power OFF the monitor.

NOTE: *To prevent the power cord from accidentally disconnecting, install the Cable Tether Kit. For details, see 3.5 Cable Tether Kit (for FHD551-X/XG only), on page 3-5.*

4.2.2 Enable Power

Once the power switch is On, press the **Power ON** button on the side of the monitor or from the remote control.

4.2.3 Select Input Source

To select the input source for the monitor, press the **Source** button on the control panel or press the required source key on the remote control.

4.2.4 Disable Power

To power the monitor Off, press the **Power OFF** button on the control panel or from the remote control.

4.3   On-screen Display (OSD)

⚠ **CAUTION** **Insert batteries in accordance with the instructions found inside the battery compartment. Incorrect polarities may cause damage and leakage of the batteries, operator injury, and contamination to the remote controller. Failure to comply could result in minor or moderate injury.**

NOTE: *Connect the required external source equipment to the monitor before following the procedures below.*

4.3.1 OSD Remote Control

The controls of the remote can be locked or unlocked by pressing the following keys in sequence: **Enter**, **Enter**, **Exit**, **Exit**, **Enter,** and **Exit**.

#	FUNCTION	DESCRIPTION
A	INFO	Provides source and resolution information.
B	COMP	Selects the Component source.
	AV (Video)	Selects the Composite Video source.
	HDMI 2	Selects the HDMI source 2.
C	PIP	Turns the Picture-In-Picture feature ON and OFF.
	S-V	Selects the S-Video source.
D	SWAP	Swaps the main source and sub-source picture.
E	Enter	Selects the highlighted menu choices.
F	Scaling	Toggles between different aspect ratios (Full Screen, Native, Letter Box, and Pillar Box).
	Freeze	Freezes the current source image.
	Mute	Turns sound OFF.
	Bright	Adjusts brightness.
	Contrast	Adjusts contrast.
	Auto	Auto adjustment VGA source.
	Source	Allows selection of the different sources.
	Volume-	Decreases sound volume.
	Volume+	Increases sound volume.
G	Power	Turns the monitor ON and OFF.
H	VGA	Selects the PC RGB source.
	DVI	Selects the PC DVI source.
	HDMI 1	Selects HDMI source 1.
I	PIP Position	Selects the Picture-In-Picture position.
	Display Port	Selects the display port source.
J	P-Source	Selects the secondary sub-source.
K	Menu/Arrow Keys	Opens the monitor's on-screen menu system. When the menu system is already open, pressing this button selects the previous submenu.
L	Exit	Closes the menu system.

4.3.2 OSD Menu Overview

4.3.3 Image Settings Menu

The Image Settings menu allows you to make common image adjustments.
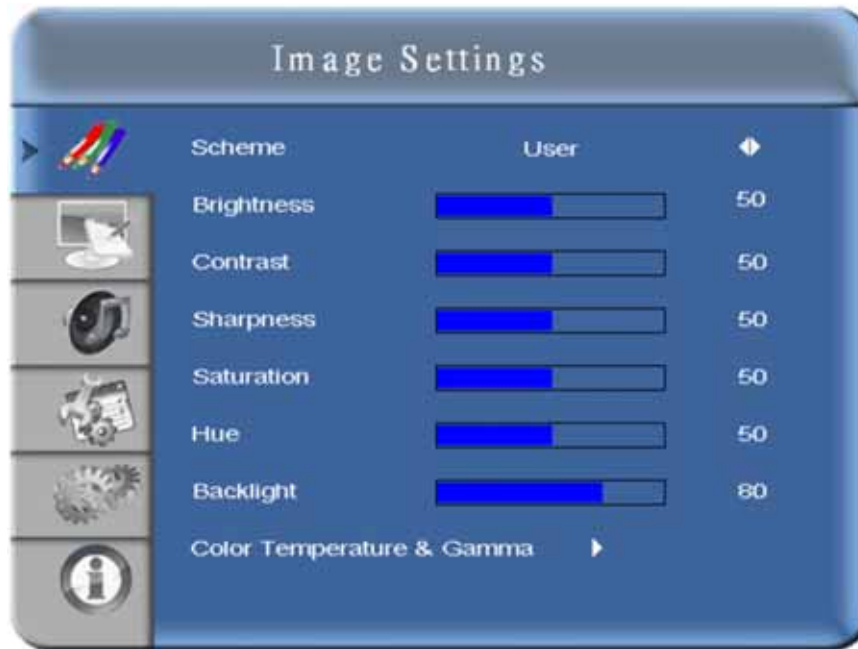
Setting	Description	Range	Default
Scheme	Click the left and right arrow keys to select between **User**, **Vivid**, **Cinema**, **Game,** and **Sport**.		User
Brightness	Increases or decreases picture brightness. Click the left and right arrow keys to specify the required level. To apply the setting, press **Enter.**	0~100	50
Contrast	Increases or decreases picture contrast. To specify the required level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~100	50
Sharpness	Adjusts picture definition. To specify the required level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~24	12
Saturation	Adjusts brilliance and brightness when operating in Video mode only. To specify the required level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~100	50
Hue	Increases or decreases the green hue when operating in Video mode only. To specify the required level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~100	50
Back Light	Adjusts the back light.	0~100	60 - FHD461-X 80 - FHD551-X AND FHD551-XG
Color Temp and Gamma	Adjusts the red, green and blue gains, as well as the red, green, and blue offsets. See *4.3.4 Image Settings—Color Temp and Gamma, on page 4-5*.		

4.3.4 Image Settings—Color Temp and Gamma
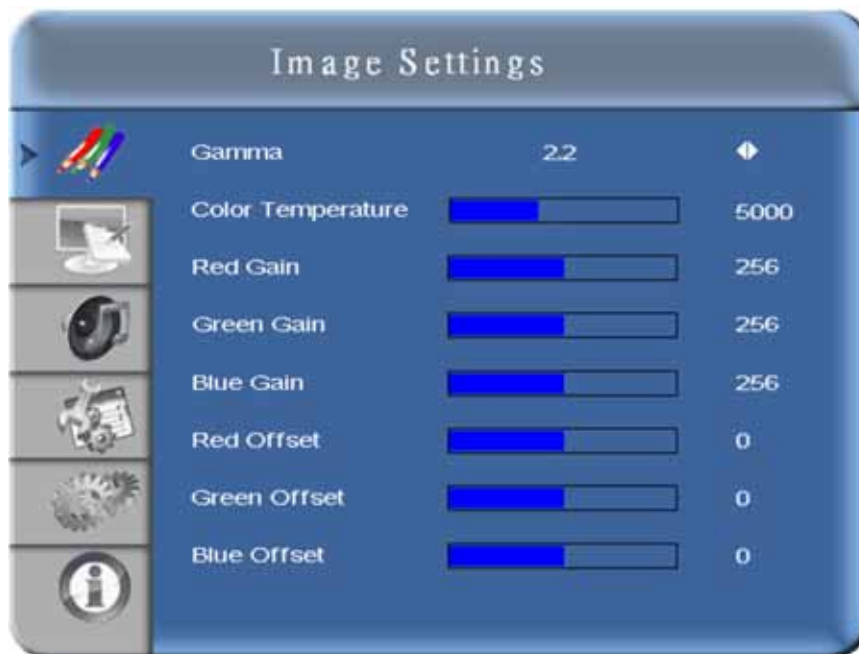
Setting	Description	Range	Default
Gamma	Options include Off and 2.2.		
Color Temperature	Options include User mode and ranges of 3200K to 9600K. Values increment by 100K.		
Red, Green, and Blue Gain	To adjust these settings, make sure **Color Temperature** is set to User mode.	128~383	256
Red, Green and Blue Offset	To adjust these settings, make sure **Color Temperature** is set to User mode.	50~50	0

4.3.5 Display Settings Menu

This menu is used for common source adjustments.
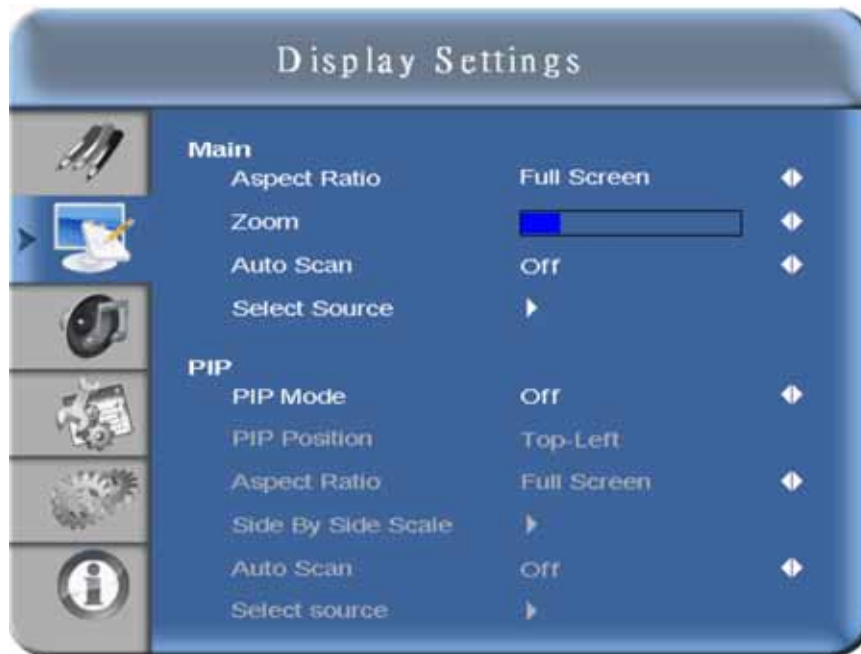
Main

Setting	Description	Range	Default
Aspect Ratio	To change the picture aspect ratio, click the left and right arrow keys. Options include: **Full screen**, **Pillar Box**, **Letter Box,** and **Native**.		Full screen
Zoom	To zoom in and out on the display, click the left and right arrow keys.	0~10	0
Auto Scan	When enabled, the signal is searched automatically by order VGA, HDMI1, HDMI 2, DVI, Display Port, Composite Video, S-video, or Component.		ON
Select Source	Source selections include: VGA, HDMI 1, HDMI 2, DVI, Display Port, S-Video and Video, and Component.		VGA

PIP

Setting	Description	Default
PIP Mode	To scroll through the available PIP modes, click the left and right arrow keys. Modes include: **Off**, **Large PIP**, **Medium PIP**, **Small PIP,** and **Side-by-Side**.	Off
PIP Position	Chose from **Bottom-Right**, **Top-Left**, **Top-Right,** and **Bottom-Left**.	Bottom-Right
Aspect Ratio	To scroll through the available aspect ratios, click the left and right arrow keys. Options include: **Full screen**, **Pillar Box,** and **Letter Box**.	Full screen
Side by Side Scale	Select from **Zoom In**, **Zoom Out**, **Main**, **PIP**, **Default,** and **Return**.	
Auto Scan	Enables or disables Auto Scan.	ON

Setting	Description	Default
Select Source	Source selections for PIP include; **HDMI 1**, **HDMI 2**, **DVI**, **Display Port**, **S-Video and Video**, and **Component**. There are three types of inputs, each containing their own set of PIP sources (see table below). When setting up PIP you must select one of the sources within the input to display PIP. For example, if using Analog you must select from Component, Composite, S-video, or RGB-VGA. If using Analog and with DVI selected the PIP feature will not work	Video

Inputs

Analog Inputs	Digital 1 Inputs	Digital 2 Inputs
Component	DVI	Display Port
Composite	HDMI-1	
S-video	HDMI-2	
RGB-VGA		

4.3.6 Audio Settings Menu

This menu is used to adjust volume settings.
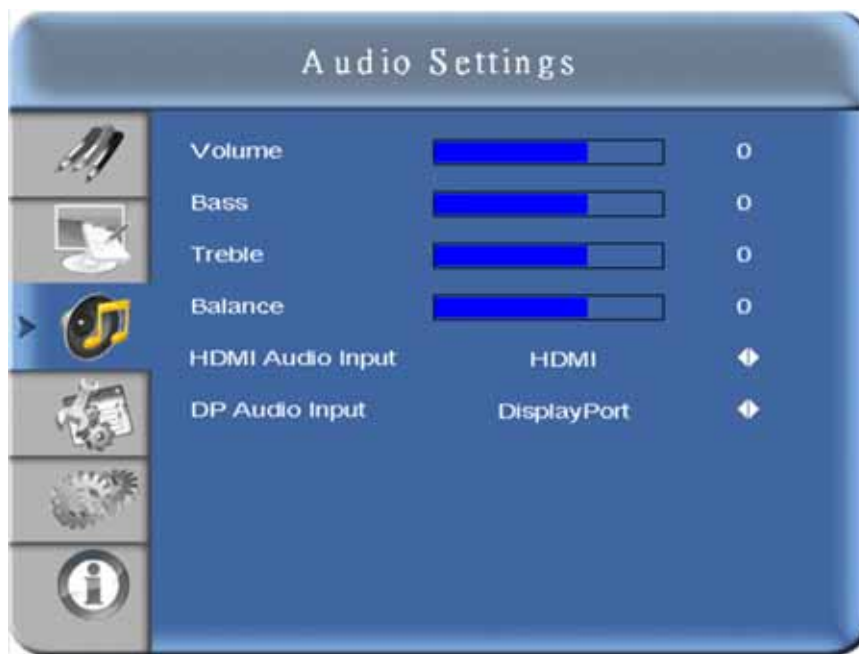
Setting	Description	Range	Default
Volume	To adjust the volume level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~100	50
Bass	To adjust the bass level (low tones), click the left and right arrow keys. To apply the setting, press **Enter**.	0~20	10
Treble	To adjust treble (high tones), click the left and right arrow keys. To apply the setting, press **Enter**.	0~20	10
Balance	To adjust the left and right speakers, click the left and right arrow keys. To apply the setting, press **Enter**.	0~20	10

Setting	Description	Range	Default
HDMI Audio Input	Select between HDMI and PC audio input modes.		HMDI
DP Audio Input	Select between DisplayPort and PC audio input modes. To apply the setting, press Enter.		DisplayPort

4.3.7 Basic Settings Menu

This menu is used for initial setup adjustments to the OSD menu and other on screen features.

Setting	Description	Range	Default
OSD Transparent	To select the required menu transparency level, click the left and right arrow keys. To apply the setting, press **Enter**.	0~100	0
OSD Location	To adjust the position of the OSD on the monitor, use the arrow keys.		
OSD Zoom	Turn OSD Zoom On or Off.		Off
OSD Rotation	To set the OSD rotation to landscape or portrait, click the left and right arrow keys.		Landscape
OSD Language	To set the language of the OSD, click the left and right arrow keys. Available languages include, Simplified Chinese, French, German, Italian, Portuguese, Russian, Spanish, Japanese, and Korean.		English
OSD Timeout	To set OSD timeout, click the left and right arrow keys.	5 to 120 seconds	30
Sleep Timer	To set the time after which the monitor switches to Standby mode, click the left and right arrow keys. Options include, Off, 15, 30, 60, 90, and 120 minutes. When in Standby mode, the panel can be woken through the IR remote, an active VGA, signal or an RS232 command.		Off
Power LED	To turn the power LED On or Off, use this setting.		
Real Time Clock	To set the current time setting, as well as disable/enable the power On timer setup/power Off timer setup, use this setting.		

4.3.8 Advanced Settings Menu

Setting	Description	Range	Default
Auto Adjustment	Forces the monitor to acquire and lock to the input signal. This is useful when the signal quality is marginal. This feature does not continually require the signal.		
Image Position	Adjusts image location (only VGA Mode).		
Phase	Only VGA Mode	0~63	
Clocks	Only VGA Mode	0~100	
VGA ADC Settings	Select from **ADC setting**, **User ADC Calibration**, and **Restore Factory Default ADC** settings.		
Flesh Tone	Options include; **Off**, **Low**, **Medium,** and **High** (only Video Mode)		Off
IRFM	Creates slight frame motion to help avoid image retention.		Off
Baud Rate	Set baud rate to **115200**, **38400**, **19200**, or **9600**.		115200
Wake Up From Sleep	Click the left and right arrow keys to set how the panel wakes up from sleep (Power Savings) mode. • Select **VGA Only** when you want the panel to wake up after receiving a video signal through its VGA input. The panel enters a sleep mode when it has not received a video signal for 5 minutes. • Select **VGA, Digital, RS232** when you want the panel to wake up after receiving a video signal through its DisplayPort, HDMI, DVI, or VGA inputs. **NOTE:** *When in sleep mode, the RS232 port remains active and can receive commands. The panel enters sleep mode when it has not received a video signal for 5 minutes.* • Select **Never Sleep** when you do not want the panel to enter sleep mode.		VGA Only

Setting	Description	Range	Default
Temperature and Fan Status	To display the status of the thermal sensor, set to **Temperature**. To display the status of the cooling fans, set to **Fan 1 Speed** or **Fan 2 Speed**.		
Multi-Display Control	See *4.3.9 Advanced Settings Menu continued, on page 4-10*.		
Factory Reset	Restores all settings to their default.		

4.3.9 Advanced Settings Menu continued

Setting	Description	Default
Monitor ID	Each display must have a unique monitor ID. To set the monitor ID, click the left and right arrow keys.	
Video Wall	Toggles between single display mode and video wall mode, where the source signal can be displayed on up to 9 displays. Options include **Yes** and **No**.	No
DVI Indemnity	Manually compensates for image degradation caused from daisy-chaining too many monitors using DVI cable. It is recommended to enable DVI Indemnity for the 7th~9th monitors within a DVI daisy-chain.	
Power On Delay	To select from 0-30,000 msec (steps in increments of 50msec), click the left and right arrow keys.	
Frame	When set to On, the display adjusts the image to compensate for the width of the display bezels to accurately show the image. Options include **Yes** and **No**.	
Matrix X/Matrix Y	Defines the size of the video wall matrix. To select between 1-5, use the left and right arrow keys.	
Division X/ Division Y	Defines the position of each display within the video wall matrix. To select between 1-5, use the left and right arrow keys.	

4.3.10 System Status Menu

This read-only menu provides information on the active sources and the latest firmware version.

User ADC Calibration

1. When using VGA as a signal source, go to Advanced Settings in the OSD menu and select VGA ADC Settings, then choose User ADC Calibration.

   A warning message appears to make sure the proper image is displayed on screen before ADC calibration begins.

   a. The images in the green boxes, displayed on both sides of the screen, must be white and black to run the calibration accurately.
   NOTE: *The white in the left green box has to be the brightest white and the black in the right green box has to be the darkest black.*

2. After the proper image is displayed, click **Yes** to begin ADC calibration.

3. During the calibration process, the following image appears to notify the user to wait for the calibration.

> User ADC Calibration... Please Wait!

4. After calibration is completed, the display notifies the user if the process was completed successfully or if it failed.

> User ADC Calibration Finish!

> User ADC Calibration Failure!

4.4 Video Wall Matrix Setup

A video wall matrix consists of spanning a single video signal across multiple panels. A DVI source can be stretched across a maximum of 9 panels and a VGA or composite source can be stretched across a maximum of 4 panels. For a DVI source, the maximum matrix dimensions are 3 wide by 3 high and for a VGA or composite source the maximum dimensions are 2 wide by 2 high.

4.4.1 Example: 3x3 Screen Matrix (9 displays)

NOTES: 1) *Number of connecting devices for tiling mode: Max. of DVI=9, VGA=4, Video=4.*
2) *Cable length between displays for tiling mode (Max. 3m).*
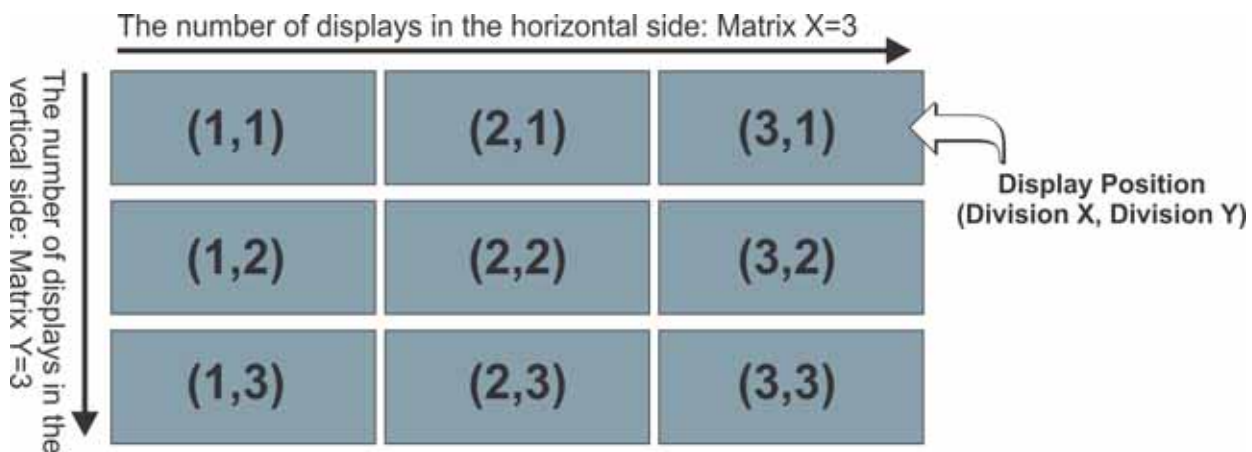
4.4.2 Video Wall Parameters

Parameter	Description
Monitor ID	To control a monitor or multiple monitors daisy-chained by RS232, each monitor should have a unique Monitor ID. Monitor IDs can be assigned from 1-25 for looping function only. It is recommended to number each monitor in a RS232 daisy chain sequentially from 1. **NOTES: 1)** *DVI input can support up to a 3x3 matrix and loop through directly.* **2)** *VGA and video input can support up to 2x2 matrix and loop through directly.*
Video Wall	Enables or disables the video wall feature.
DVI Indemnity	Manually compensates for image degradation caused from daisy-chaining too many monitors using DVI cable. It is recommended to select DVI Indemnity as On for the $7^{th}{\sim}9^{th}$ monitors within a DVI daisy-chain.
Power On Delay	Enable or disable the frame compensation feature. For details, see *4.7 Frame Compensation, on page 4-17*.
Frame	When set to On, the display adjusts the image to compensate for the width of the display bezels to accurately show the image. Options include **Yes** and **No**.
Matrix X	Number of monitors arranged horizontally. Matrix X can range from 1-3 by connecting with a DVI source; 1-2 by VGA or video source of monitor directly.
Matrix Y	Number of monitors arranged vertically. Matrix Y can range from 1-3 by connecting with a DVI source; 1-2 by VGA or video source of monitor directly.
Division X	Select which section in horizontal direction to be located for this monitor.
Division Y	Select which section in vertical direction to be located for this monitor.

4.4.3 Setup Video Wall Parameter on OSD Menu

1. To access the OSD menus, press **Menu** from the remote control or the keypad.

2. To navigate to the Advanced Settings page, press the up or down arrow keys.

3. To access the Advanced Settings page, shown below, press the right arrow key.

4. Navigate to the **Multi-Display Control** field.

5. To access the video wall settings, shown below, press the right arrow key.

The Video Wall setting defaults to No.

6. To change the Video Wall setting to Yes, use the right arrow key from the remote control. To navigate through the sub-items, press the up and down arrow keys. To adjust the values, press the left and right arrow keys to adjust the values.

7. To exit, press **Menu**.

4.4.4 Setup Video Wall Parameters using RS232

See *Appendix A RS232 Command Format*.

4.4.5 Setup Video Wall Parameters using Video Wall Toolbox

See *4.6 Video Wall Toolbox, on page 4-15*.

4.5 RS232 Control

NOTICES: 1) *The following procedure should only be performed by advanced users.* **2)** *The Video Wall Toolbox software may be used to send direct commands using RS232, or alternatively a software terminal application may be used, providing it supports transmission of hexadecimal characters.*

You control an array of panels together using a computer with an RS232 terminal or the Video Toolbox application. Controlling the LCD monitors through RS232 is typically used when managing a large array. You can also control the monitors using IR extenders and the remote control; however, this can be inefficient when dealing with large arrays. For details, see *3.2 Remote Requirements, on page 3-1*.

 To function correctly, the RS485 OUT terminal can only be connected to another monitor of the same series model. The maximum that can be connected together in this way is 25 panels. For cabling guidelines, see *3.4 Cabling, on page 3-3*.

For a list of the RS232 commands, see *Appendix A RS232 Command Format*.

• RS232: only supports 9 pin serial straight cable; crossover or Null modem cable are not supported

• RS485: only support Cat-5 straight cable; crossover cable is not supported

4.6 Video Wall Toolbox

Use the Video Wall Toolbox application to control all display parameters for an individual LCD panel or multiple panels within a video wall. The application supports an Auto Setup feature, which automatically configures display ID, matrix size, and positions for each panel within a single source video wall.

NOTE: *Make sure the correct COM port is selected prior to sending commands. If a COM port is not available, a USB to RS232 converter may be used.*

4.6.1 Automatic Video Wall Setup

The Video Wall Toolbox can automatically setup a single source video wall, providing the cable routing adheres to the supported configurations, as described in *3.4 Cabling, on page 3-3*.

Example of a 3x3 Screen Matrix with a Single Source

1. Download the Video Wall Toolbox at www.christiedigital.com.

2. Once the software is loaded, click **Video Wall Setup**.

3. From the **Select Display Matrix** list select **3x3** for RS232 wired from top-left or **3x3B** for RS232 wired from bottom-left.
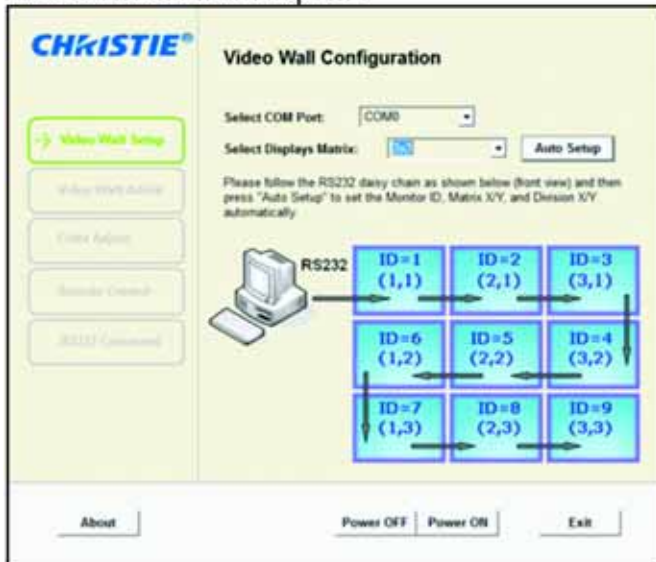
4. To send the information to each panel in your video wall, click **Auto Setup**.
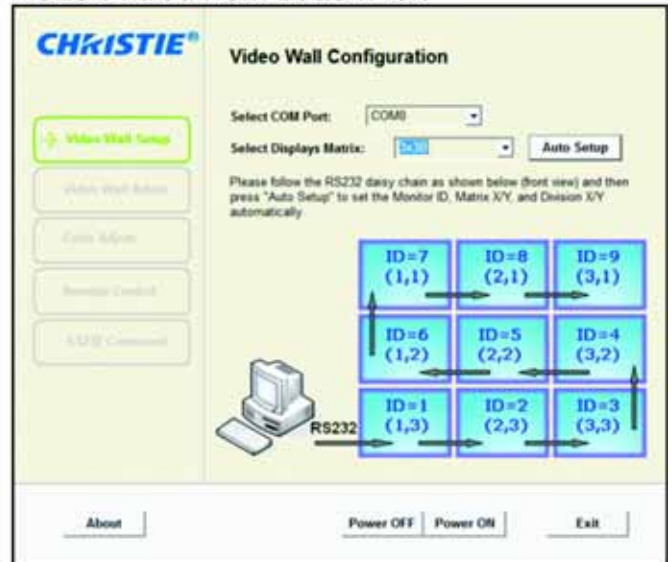
4.6.2 Manual Video Wall Setup

Use the Video Wall Toolbox to configure complex video walls where multiple video sources are required.

Example of a 3x5 Video Wall with 2 DVI Sources

The illustration below depicts a 3x5 video wall with the first source spanning across the top 3x3, and the second source spanning across the bottom 3x2.
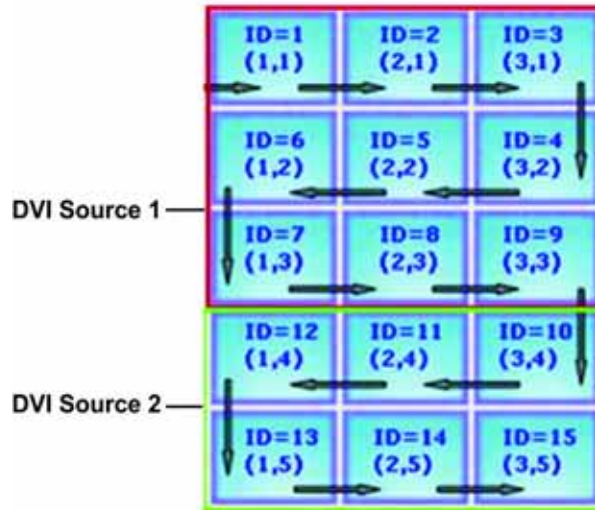
1. To assign unique monitor ID's to each display within the 3x5 video wall, from the Video Wall Toolbox software, click **Auto Setup**.

2. Click **Video Wall Adjust** to configure the Matrix X,Y and Division X,Y parameters for each display by selecting the appropriate display location within the video wall graphic.

    The display location is identified by a red dot. The illustration below gives an example of how to configure the first 2 displays.
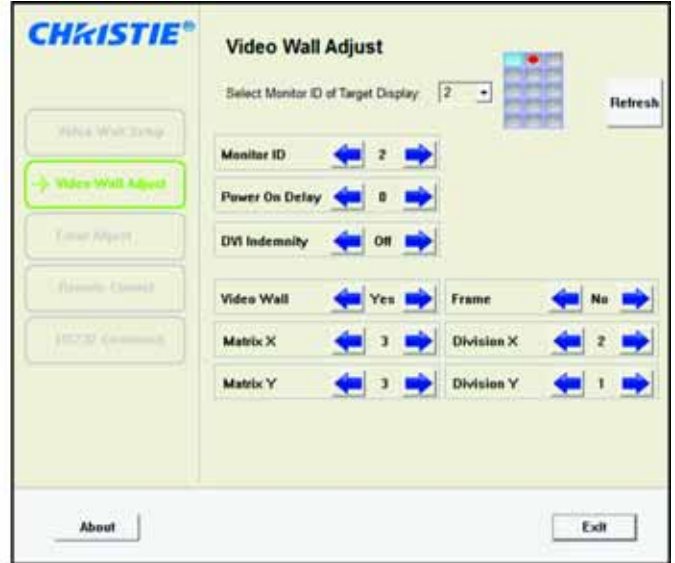
4.7 Frame Compensation

If powered ON, the display adjusts the image to compensate for the width of the display bezels to accurately show the image.

Frame = ON — Part of the signal will go behind the bezel area.

Frame = OFF — To show full signal on each display.

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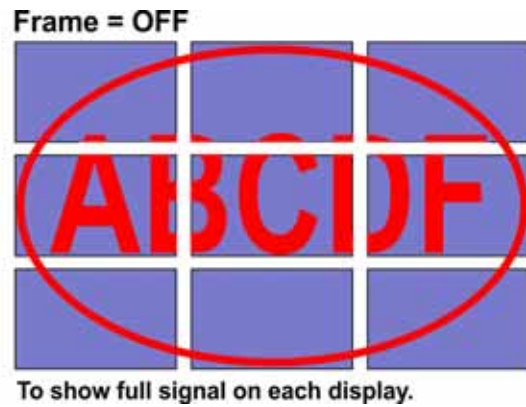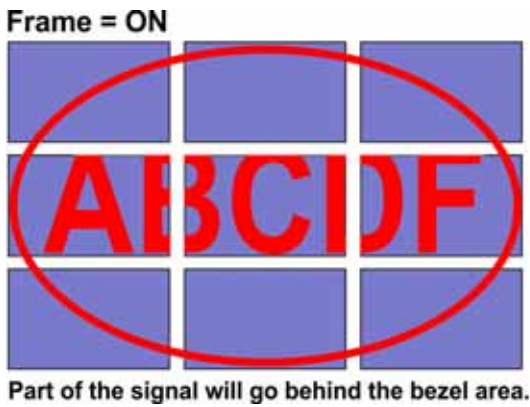
5 Troubleshooting

5.1 No Image

Check	Correction
Is the power cord of the monitor connected?	Check to make sure the power cord is connected properly to the power outlet. Make sure the main power switch is in the "I" position.
Is the power indicator amber?	If yes, press the ON button from the remote control or the control panel.
Are both the S-video input and AV2 input connected?	If yes, remove either the S-video input or AV2 input.

5.2 Screen Color Abnormal

Check	Correction
Is the screen color unstable or monochrome?	Check the source cable connection to make sure there is a proper fit.
Are black dots visible on the screen?	Clean the screen surface using a soft cloth.
Do you see partial blurring on the screen?	This happens due to interference from surrounding magnetic fields, as created when speakers, steel structures, or high-voltage lines are placed near the monitor. Remove such materials from the immediate vicinity and use the OSD menu to adjust the screen.

5.3 Flickering Screen

1. Remove any highly magnetic material away from the monitor.

2. Adjust the graphic interface (PC mode) within allotted frequency parameters.

5.4 Picture is Dark

Adjust the backlight and brightness. It takes several seconds for the monitor to warm up after the power is enabled.

5.5 Picture Ghosting

Make sure the source equipment connection cables are less than 15 meters (50ft). If additional length is required, contact your authorized dealer for a signal amplifier (not provided).

5.6 Picture Size is Incorrect

Adjust picture format to the required image size. For details, see *4.3.5 Display Settings Menu, on page 4-6*.

5.7 White Color is Incorrect

Adjust the color temperature or alter the User settings to preferred settings. For details, see *4.3.3 Image Settings Menu, on page 4-4*.

5.8 Screen Image Not Centered

Adjust picture format to required image size. For details, see *4.3.5 Display Settings Menu, on page 4-6*.

5.9 Remote Control Not Functioning

1. Make sure the IR extended cable is installed correctly.

2. Check the remote key and keypad lock/unlock function.

3. Replace the battery.

6 Specifications

Due to continuing research, specifications are subject to change without notice.

6.1 LCD Panel

Item	FHD551-X	FHD551-XG	FHD461-X	Unit
Resolution	HDTV format 1920x1080			/
Max. Brightness	700	630	700	cd/m2
Contrast Ratio	3000:1	2700:1	4000:1	/
Response Time	Typ. 8		Typ. 6	ms
Aspect Ratio	16:9			/
Driver Element	a-Si TFT active matrix			/
Display Colors	8 bit, 16.7m		10 bit, 1073.7m	Colors
Number of Pixels	1,920 x 1080			Pixel
Pixel Pitch	0.63(H) x 0.63(W)		0.53(H) x 0.53(W)	mm
Pixel Arrangement	RGB vertical stripe			

6.2 Physical Dimensions

	FHD551-X	FHD551-XG
Dimensions	• 1215.5 mm x 686.3 mm x 108.9 mm (W x H x D) • 47.85" x 27.01" x 4.29" (W x H x D)	• 1215.5 mm x 686.3 mm x 111.3 mm (W x H x D) • 47.85" x 27.01" x 4.38" (W x H x D)
Weight	34 kg (75 lbs.)	41 kg (90 lbs.)
Weight with packaging	45 kg (99 lbs.)	52 kg (115 lbs.)

	FHD461-X
Dimensions	• 1023.7 mm x 578.3 mm x 77.2 mm (W x H x D) • 40.30" x 22.77" x 3.04" (W x H x D)
Weight	26.5 kg (58.4 lbs.)
Weight with packaging	30 kg (66.1 lbs.)

6.3 Graphic

Item	Specification
Separate Sync.	LVDS level
Horizontal Sync.	Positive/Negative
Vertical Sync.	Positive/Negative
Input Connector	Display Port/ HDMIx2/ VGA/ DVI/ PC Audio IN/ IR extender/ Component/ Audio IN (for Component)/ S-V/ Video / Audio IN (for S-V or AV)
Output Connector(Notes 1,2)	VGA OUT/ DVI OUT/ Line OUT/Video

NOTES: 1) *Number of connecting devices for tiling mode: Max. of DVI=9, VGA=4, Video=4.*
2) *Cable length between displays for tiling mode (max. 3 m).*

6.4 Scan Rate

Item	Specification	Unit
Horizontal	31~91	KHz
Vertical	56~85	Hz

6.5 Performance

Item	Specification
Auto Adjust	Clock, Phase, H-position and V-position (VGA only)
Screen Scaling	VGA/ SVGA/ XGA/ WXGA/ HDTV Full Screen Display
Power Management	VESA DPMS, DVI DMPM
Color Adjustment	3200K to 9600K (step by 100K), User
OSD Language	English, Simplified Chinese, French, German, Italian, Portuguese, Russian, Spanish, Japanese and Korean

6.6 Power Source

Item	Specification
Power Input	AC100~240V 5A, 50/60Hz (worldwide)
Power Consumption	
FHD551-X/XG	175 typical, ≤ 0.5W STANDBY* 275W maximum
FHD461-X	105W typical, ≤ 0.5W STANDBY** 170W maximum

*NOTE: *To restrict power consumption during STANDBY mode to ≤0.5W, Wake Up from Sleep must be set to VGA only (see 4.3.8 Advanced Settings Menu).*

**NOTE: *For power consumption to be ≤0.5W, Wake Up from Sleep shall be set to VGA Only.*

6.7   LCD Quality Inspection

FHD551-X/XG, FHD461-X utilizes a commercial grade LCD, which is rigorously inspected for quality prior to shipment. Due to the nature of the manufacturing process, some minor inconsistencies may occur in the LCD. The following section describes some of the key quality inspection criteria, and what is considered acceptable.

6.7.1 Pixels

Each pixel in the LCD is comprised of 3 dots: red, green, and blue. With typical content and viewing distances, these dots are too small to detect. Each panel is inspected under specific measurement conditions, as indicated in the table below.

Defect Type	Acceptance Criteria
Bright Dot	
Random	N=3
2 Adjacent	N=1
3 Adjacent	N=0
Dark Dot	
Random	N<=10
2 Adjacent	N<=2 sets
3 Adjacent	N<=1
Distance between dark dots	L<=5mm
Total amount of dots	N<=15

6.7.2 Uniformity

A small area of the screen may include slight variations on uniformity. In particular, due to the narrow bezel on the display, there may be faint shadows on the extreme edge of the screen due to the underlying construction of the LCD panel. With typical content and viewing distances, these variations are not noticeable.

6.8   Environment

- Storage Temperature   Min. -20°C (-4°F) ~ Max. 50°C (122°F)
- Operating Temperature   Min. 5°C (41°F) ~ Max. 40°C (104°F)
- Relative Humidity   20 - 90% non-condensing

6.9   DDC

- Plug & Play   DDC 2Bi Compliance

6.10 Function

- OSD Key   7 keys
- Wall Mount   VESA 600 x 400 mm (23.6" x 15.7")
- Communication Port   D-sub 9 Pin IN, RJ45 IN/OUT

6.11 RS232 1:N Control

- Max. Looping Quality   25 set
- Max. Cable Length of CAT5 between 2 Displays   100m
- System Reboot Time [Note 1]   5 sec.
- "Read" Response Time@Baudrate 115200 [Note 2]   Min. 36/ Typ. 46/Max. 300 ms
- "Write" Response Time@ Baudrate 115200   Min. 36/Typ. 459/Max. 1200 ms
- Transmission Time@ Baudrate 115200 [Note 3]
  - Monitor No. 4   300 (Typ.)
  - Monitor No. 9   800 (Typ.)
  - Monitor No. 16   1500 (Typ.)
  - Monitor No. 25   2400 (Typ.)

NOTES: 1) *System Reboot Time: Waiting time to shutoff or start-up the monitor.* **2)** *Response Time: Time is measured by 1 set with stable signal and without extra IR or keypad control.* **3)** *Transmission Time: Additive delay for serially connecting extra sets. The delay also depends on the baudrate.*

7 Timing Table

	Timing		fH (kHz)	fV (Hz)	Dot clock (MHz)	HD MI	PC	Comp- onent	S- Video	Comp- osite	DVI	Display Port
VESA	VGA 640x480		31.469	59.94	25.175	O	O ▪	/	/	/	O ▪	O
			37.861	72.809	31.5	O	O	/	/	/	O	O
			37.5	75	31.5	O	O	/	/	/	O	O
			43.269	85.008	36	O	O	/	/	/	O	O
	SVGA 800x600		35.156	56.25	36	O	O	/	/	/	O	O
			37.879	60.317	40	O	O ▪	/	/	/	O ▪	O
			48.077	72.188	50	O	O	/	/	/	O	O
			46.875	75	49.5	O	O	/	/	/	O	O
			53.674	85.06	56.25	O	O	/	/	/	O	O
	XGA 1024x768		48.363	60.004	65	O	O ▪	/	/	/	O ▪	O
			56.476	70.069	75	O	O	/	/	/	O	O
			60.023	75.029	78.75	O	O	/	/	/	O	O
			68.677	84.997	94.5	O	O	/	/	/	O	O
	WXGA 1360 x768		47.712	60.015	85.5	O	O ▪	/	/	/	O ▪	O
	1280 x 720		44.444	59.98	64	O	O ▪	/	/	/	O ▪	O
			44.772	59.86	74.5	O	O ▪	/	/	/	O ▪	O
			56.456	74.78	95.75	O	O	/	/	/	O	O
	1280 x 768		47.776	59.87	79.5	O	O ▪	/	/	/	O ▪	O
			47.396	59.995	68.25	O	O ▪	/	/	/	O ▪	O
			68.633	84.837	117.5	O	O	/	/	/	O	O
	1280 x 800		49.306	59.91	71	O	O ▪	/	/	/	O ▪	O
			49.702	59.81	83	O	O ▪	/	/	/	O ▪	O
	SXGA	1152x864	67.5	75	O	/	/	/	/	/	O	O
		1280x1024	63.981	60.02	O	/	/	/	/	/	O	O
			79.976	75.025	O	/	/	/	/	/	O	O
			91.146	85.024	O	/	/	/	/	/	O	O
	SXGA+	1400x1050	64.744	59.95	O	/	/	/	/	/	O	O
			65.317	59.98	O	/	/	/	/	/	O	O
	1440 x 900		55.469	59.901	88.75	O	O	/	/	/	O	O
			55.935	59.88	106.5	O	O	/	/	/	O	O
	WSXGA+ 1680 x 1050		64.674	59.883	119	O	O ▪	/	/	/	O ▪	O
			65.29	59.954	146.25	O	O ▪	/	/	/	O ▪	O
	UXGA 1600 x1200		75	60	162	O	O ▪	/	/	/	O ▪	O
	1920 x 1080		66.587	59.93	138.5	O	O ▪	/	/	/	O ▪	O
SDTV	NTSC		15.734	29.97	13.5	/	/	480i	O	O ▪	/	/
	PAL		15.625	25	13.5	/	/	576i	O	O	/	/
EDTV	480p		31.5	60	27.03	O	/	O	/	/	O ▪	O
	576p		31.25	50	27	O	/	O	/	/	O ▪	O

Timing		fH (kHz)	fV (Hz)	Dot clock (MHz)	HD MI	PC	Comp-onent	S-Video	Comp-osite	DVI	Display Port
HDTV	720p 1280x720	37.5	50	74.25	O	/	O	/	/	O ■	O
		44.995	59.94	74.176	O	/	O	/	/	O ■	O
		45	60	74.25	O	/	O	/	/	O	O
	1080i 1920x1080	28.13	50	74.25	O	/	O	/	/	O ■	O
		33.716	59.94	74.176	O	/	O	/	/	O ■	O
		33.75	60	74.25	O	/	O	/	/	O	O
	1080p 1920x1080	27	24	74.25	O	/	/	/	/	/	O
		28.125	25	74.25	/	/	/	/	/	/	/
		33.176	29	74.18	/	/	/	/	/	/	/
		33.75	30	74.25	/	/	/	/	/	/	/
		56.25	50	148.5	O	/	O	/	/	O ■	O
		67.433	59.94	148.352	O	/	O	/	/	O ■	O
		67.5	60	148.5	O	/	O	/	/	O ■	O

NOTES: 1) *480i means supported 480i@60Hz (YPbPr) and 576i means supported 576i@50Hz (YPbPr).*
2) *O represents compliant timing for single display and ■ represents compliant timing for video wall.*

![Christie logo]

A RS232 Command Format

A.1 RS232 Command Format

STX(1byte) + IDT(1byte) + Type(1byte) + CMD(3bytes) + [Value/Reply(1byte)] + ETX(1byte)

STX	Start byte = 07
IDT	00 (Hex Num) for broadcast mode, 01~19 (Hex Num) for single control mode
Type	Read or Write command, 01: read/action, 02: write; 00: return to host (from monitor)
CMD	as following tables
Value	Setting Value of "Write Command"
Reply	Return Value of monitor
ETX	End byte = 08

- Transmit from PC (Host)
- Read command: 07 IDT 01 CMD 08 (7bytes)
- Write/Setting command: 07 IDT 02 CMD VAL 08 (8bytes)
- Return from Monitor: Return CMD is the same with received CMD, the return command is sent after action. In broadcast mode, no return is sent.

A.2 Serial Port Setting

Baud Rate	Data Bit	Parity Bit	Stop Bit
115200	8	none	1

Baud rate can be set to 38400, 19200, and 9600 to match the monitor baud rate setting.

Baud rate 115200 is the default setting.

Explanation of symbols

● : Optional commands for advanced A/D board option

▲ : Valid command on Power saving/ off mode

Table A.1 RS232 Commands

Main Item	Control Item	CMD	Type	Value (DEC)	Reply (DEC)	Content	CMD (HEX)	Remark
Power Control & Input Source	Power Control	POW	W/R	00	00	Off (soft power)	50 4F 57	▲
				01	01	On (soft power)		▲
	Input Source	MIN	W/R	00	00	VGA	4D 49 4E	
				01	01	Digital DVI		
				02	02	S-Video		
				03	03	Video		
				04	04	COMP		
				09	09	HDMI		
				10	10	HDMI2		
				13	13	Display Port		

Table A.1 RS232 Commands

Main Item	Control Item	CMD	Type	Value (DEC)	Reply (DEC)	Content	CMD (HEX)	Remark
Display Adjustment	Display Adjustment	BRI	W/R	0~100	Current Value	Back Light Brightness	42 52 49	
		BRL	W/R	0~100	Current Value	Digital Brightness Level	42 52 4C	
		BLC	W/R	00	00	Off (Back Light)	42 4C 43	
				01	01	On (Back Light)		
		CON	W/R	0~100	Current Value	Contrast	43 4F 4E	
		HUE	W/R	0~100	Current Value	Hue	48 55 45	
		SAT	W/R	0~100	Current Value	Saturation	53 41 54	
		CCT	W/R	0~64	Current Value	Color Temperature (3200K~9600K)	43 43 54	
		GAC	W/R	00	00	Off (Gamma)	47 41 43	
				01	01	2.2 (Gamma)		
		USR	W/R	0~255	Current Value	Red Gain (128~383)	55 53 52	
		USG	W/R	0~255	Current Value	Green Gain (128~383)	55 53 47	
		USB	W/R	0~255	Current Value	Blue Gain (128~383)	55 53 42	
		UOR	W/R	0~100	Current Value	Red Offset (-50~50)	55 4F 52	
		UOG	W/R	0~100	Current Value	Green Offset (-50~50)	55 4F 47	
		UOB	W/R	0~100	Current Value	Blue Offset (-50~50)	55 4F 42	
		RXY	R		25 bytes	Read Luminance & Color Chromaticity for 9300K	52 58 59	*Note 1*
	Adjustment	PHA	W/R	0~63	Current Value	Phase	50 48 41	
		CLO	W/R	0~100	Current Value	Clock	43 4C 4F	
		HOR	R		Current Value	Horizontal Position	48 4F 52	
		VER	R		Current Value	Vertical Position	56 45 52	
		ADJ	W	00	00	Auto Adjust	41 44 4A	
	Video Mode	SHA	W/R	0~24	Current Value	Sharpness	53 48 41	

Table A.1 RS232 Commands

Main Item	Control Item	CMD	Type	Value (DEC)	Reply (DEC)	Content	CMD (HEX)	Remark
Other Control	PIP Adjust	PSC	W/R	00	00	PIP OFF	50 53 43	
				01	01	PIP Small		
				02	02	PIP Medium		
				03	03	PIP Large		
				04	04	PIP side-by-side		
	PIP Source Selection	PIN	W/R	00	00	VGA	50 49 4E	
				01	01	Digital DVI		
				02	02	S-Video		
				03	03	Video		
				04	04	COMP		
				09	09	HDMI 1		
				10	10	HDMI 2		
				13	13	Display Port		
	PIP Position	PPO	W/R	00	00	PIP Position Bottom-Left	50 50 4F	
				01	01	PIP Position Bottom-Right		
				02	02	PIP Position Top-Left		
				03	03	PIP Position Top-Right		
	PIP/Main Swap	SWA	W	00	00	Swap main and PIP	53 57 41	
	Scaling	ASP	W/R	00	00	Native	41 53 50	
				01	01	Full Screen		
				02	02	Pillar Box		
				03	03	Letter Box		
		ZOM	W	00	00	Zoom In	5A 4F 4D	
				01	01	Zoom Out		
	Baud Rate Adjustment	BRA	W/R	00	00	115200	42 52 41	
				01	01	38400		
				02	02	19200		
				03	03	9600		

Table A.1 RS232 Commands

Main Item	Control Item	CMD	Type	Value (DEC)	Reply (DEC)	Content	CMD (HEX)	Remark
Other Control	Other Control	RCU	W	00	00	Menu Key	52 43 55	
				01	01	Info Key		
				02	02	Up Key		
				03	03	Down Key		
				04	04	Left Key		
				05	05	Right Key		
				06	06	Enter Key		
				07	07	Exit Key		
				08	08	VGA Key		
				09	09	DVI Key		
				10	10	HDMI 1 Key		
				11	11	HDMI 2 Key		
				12	12	Display Port Key		
				13	13	COMP Key		
				14	14	S-V Key		
				15	15	AV Key		
				18	18	Source Key		
				19	19	P-Source Key		
				20	20	PIP Key		
				21	21	P-Position Key		
				22	22	Swap Key		
				23	23	Scaling Key		
				24	24	Freeze Key		
				25	25	Mute Key		
				26	26	Bright Key		
				27	27	Contrast Key		
				28	28	Auto Key		
				29	29	Volume+ Key		
				30	30	Volume - Key		
		ALL	W	00	00	Reset All	41 4C 4C	
		KLC	W/R	00	00	Unlock Keys	4B 4C 43	
				01	01	Lock Keys		
		SER	R		13 bytes	Read Serial Number	53 45 52	
		MNA	R		13 bytes	Read Model Number	4D 4E 41	
		GVE	R		6 bytes	Read Firmware Version	47 56 45	
		RTV	R		Current Value	Read RS232 Table Version	52 54 56	
		RTT	R		Current Value	Read temperature of internal thermal sensor (-128 ~127°C)	52 54 54	

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Table A.1 RS232 Commands

Main Item	Control Item	CMD	Type	Value (DEC)	Reply (DEC)	Content	CMD (HEX)	Remark
Other Control		RSF	R		Current Value	Read the Fan 1 speed. (RPM = 30 x Reply Value)	52 53 46	
		RSF	W	00	0-255	Read the Fan 1 speed (RPM=30 x Reply Value)		
		RSF		01	0-255	Read the Fan 2 speed (RPM = 30 x Reply Value)		
	Wake up from sleep selection	WFS	W/R	00	00	VGA Only	57 46 53	
				01	01	VGA, Digital, RS232		
				02	02	Never Sleep		
	Audio	VOL	W/R	0~100	Current Value	Volume	56 4F 4C	
		MUT	W/R	00	00	Mute Off	4D 55 54	
				01	01	Mute On		
	Scheme Selection	SCM	W/R	00	00	User	53 43 4D	
				01	01	Sport		
				02	02	Game		
				03	03	Cinema		
				04	04	Vivid		
	Multi Display	SID	W	00	00	Show Monitor ID	53 49 44	
		CID	W	1~25	00	Change Monitor ID	43 49 44	*Note 2*
		VWS	W/R	00	00	Video Wall Switch Off	56 57 53	
				01	01	Video Wall Switch On		
		VWF	W/R	00	00	Video Wall Frameless Off	56 57 46	
				01	01	Video Wall Frameless On		
		MAT	W/R	X: 1~5 Y: 1~5	Current Value	Matrix X,Y value High quarter is X: 7~4 bit Low quarter is Y: 3~ 0 bit	4D 41 54	
		DIV	W/R	X: 1~5 Y: 1~5	Current Value	Matrix X,Y value High quarter is X: 7~4 bit Low quarter is Y: 3~ 0 bit	44 49 56	*Note 3*
		DID	W/R	00	00	DVI Indemnity Off	44 49 44	
				01	01	DVI Indemnity On		
		POD	W/R	0~30	Current Value	Integral part of Power On Delay (0,1,2,..., 30 sec)	50 4F 44	
		POE	W/R	0~19	Current Value	Fractional part of Power On Delay (0, 0.05, 0.10, ..., 0.95 sec)	50 4F 45	

NOTES: 1) *The 25 Reply Bytes are defined: bD1, bD2, bD3, ..., bD25*

Where:

*bD1=High byte of RY*16, bD2=Low byte of RY*16.*

*bD3=High byte of Rx*10000, bD4=Low byte of Rx*10000.*

*bD5=High byte of Ry*10000, bD6=Low byte of Ry*10000.*

*bD7=High byte of GY*16, bD8=Low byte of GY*16.*

*bD9=High byte of Gx*10000, bD10=Low byte of Gx*10000.*

*bD11=High byte of Gy*10000, bD12=Low byte of Gy*10000.*

*bD13=High byte of BY*16, bD14=Low byte of BY*16.*

*bD15=High byte of Bx*10000, bD16=Low byte of Bx*10000.*

*bD17=High byte of By*10000, bD18=Low byte of By*10000.*

*bD19=High byte of WY*16, bD20=Low byte of WY*16.*

*bD21=High byte of Wx*10000, bD22=Low byte of Wx*10000.*

*bD23=High byte of Wy*10000, bD24=Low byte of Wy*10000.*

bD25: checksum (bD1+bD2+...+bD25=0x00).

RY, GY, BY, and WY are the Luminance (cd/m2) of all pixel red, green, blue, and white respectively.

(Rx, Ry), (Gx, Gy), (Bx, By), and (Wx, Wy) are the Color Chromaticity of all pixel red, green, blue, and white respectively.

2) *In broadcast setting mode, this command auto sorts the Monitor ID sequentially. (The Value Byte must be 0x01.)*

3) *In broadcast setting mode, this command auto arranges the Division X/Y. (The Value Byte must be 0x11.)*

A.3 Configuring a 2x2 Video Wall (DVI Input Source)
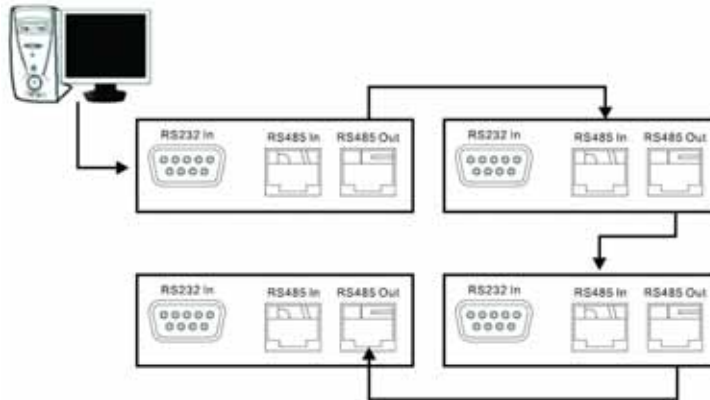
1. Turn all (00) monitor power on [CMD: POW]

   [Transmit]: PC → 07 00 02 50 4F 57 01 08 → Monitor

   [Return]: Monitor (ID1) → 07 00 02 50 4F 57 01 08 → PC

2. Automatically set monitor IDs [CMD CID]

   [Transmit]: PC → 07 00 02 43 49 44 01 08 → Monitor

   [Return]: Monitor (ID1) → 07 00 02 43 49 44 02 08 → PC

3. Set source to DVI [CMD MIN]

   [Transmit]: PC → 07 00 02 4D 49 4E 01 08 → Monitor

   [Return]: Monitor (ID1) → 07 00 02 4D 49 4E 01 08 → PC

4. Set matrix size to 2x2 [CMD MAT]

   [Transmit]: PC → 07 00 02 4D 41 54 22 08 → Monitor

   [Return]: Monitor (ID1) → 07 00 02 4D 41 54 22 08 → PC

5. Set monitor ID1 to (1,1) [CMD DIV]

   [Transmit]: PC → 07 01 02 44 49 56 11 08 → Monitor

   [Return]: Monitor (ID1) → 07 01 00 44 49 56 11 08 → PC

6. Set monitor ID2 to (2,1) [CMD DIV]

   [Transmit]: PC → 07 02 02 44 49 56 21 08 → Monitor

   [Return]: Monitor (ID1) → 07 02 02 44 49 56 21 08 → PC

   Monitor (ID2) → 07 02 00 44 49 56 21 08 → PC

7. Set monitor ID3 to (2,2) [CMD DIV]

   [Transmit]: PC → 07 03 02 44 49 56 22 08 → Monitor

   [Return]: Monitor (ID1) → 07 03 02 44 49 56 22 08 → PC

   Monitor (ID3) → 07 03 00 44 49 56 22 08 → PC

8. Set monitor ID4 to (1,2) [CMD DIV]

   [Transmit]: PC → 07 04 02 44 49 56 12 08 → Monitor

   [Return]: Monitor (ID1) → 07 04 02 44 49 56 12 08 → PC

Monitor (ID4) → 07 04 00 44 49 56 12 08 → PC

A.4 Additional Examples

Power Control and Input Source

1. Turn (01) monitor power off [CMD: POW]

    [Transmit]: PC → 07 01 02 50 4F 57 00 08 → Monitor

    [Return]: Monitor → 07 01 00 50 4F 57 00 08 → PC

2. Turn (01) monitor power on [CMD: POW]

    [Transmit]: PC → 07 01 02 50 4F 57 01 08 → Monitor

    [Return]: Monitor → 07 01 00 50 4F 57 01 08 → PC

3. Read Power Status from (01) monitor [CMD: POW]

    [Transmit]: PC → 07 01 01 50 4F 57 08 → Monitor

    [Return]: Monitor → 07 01 00 50 4F 57 XX 08 → PC

    XX = 0, the set is off. XX = 1, the set is on.

Display Adjustment

1. Read back light from (15) monitor [CMD: BRI] (If the setting of back light is 80)

    [Transmit]: PC → 07 0F 01 42 52 49 08 → Monitor

    [Return]: Monitor → 07 0F 00 42 52 49 50 08 → PC

2. Set back light 80 to (15) monitor [CMD: BRI]

    [Transmit]: PC → 07 0F 02 42 52 49 50 08 → Monitor

    [Return]: Monitor → 07 0F 00 42 52 49 50 08 → PC

3. Set Contrast 30 to (02) monitor [CMD: CON]

    [Transmit]: PC → 07 02 02 43 4F 4E 1E 08 → Monitor

    [Return]: Monitor → 07 02 00 43 4F 4E 1E 08 → PC

4. Read Contrast from (02) monitor [CMD: CON] (If the monitor contrast setting is 50)

    [Transmit]: PC → 07 02 01 43 4F 4E 08 → Monitor

    [Return]: Monitor → 07 02 00 43 4F 4E 32 08 → Monitor

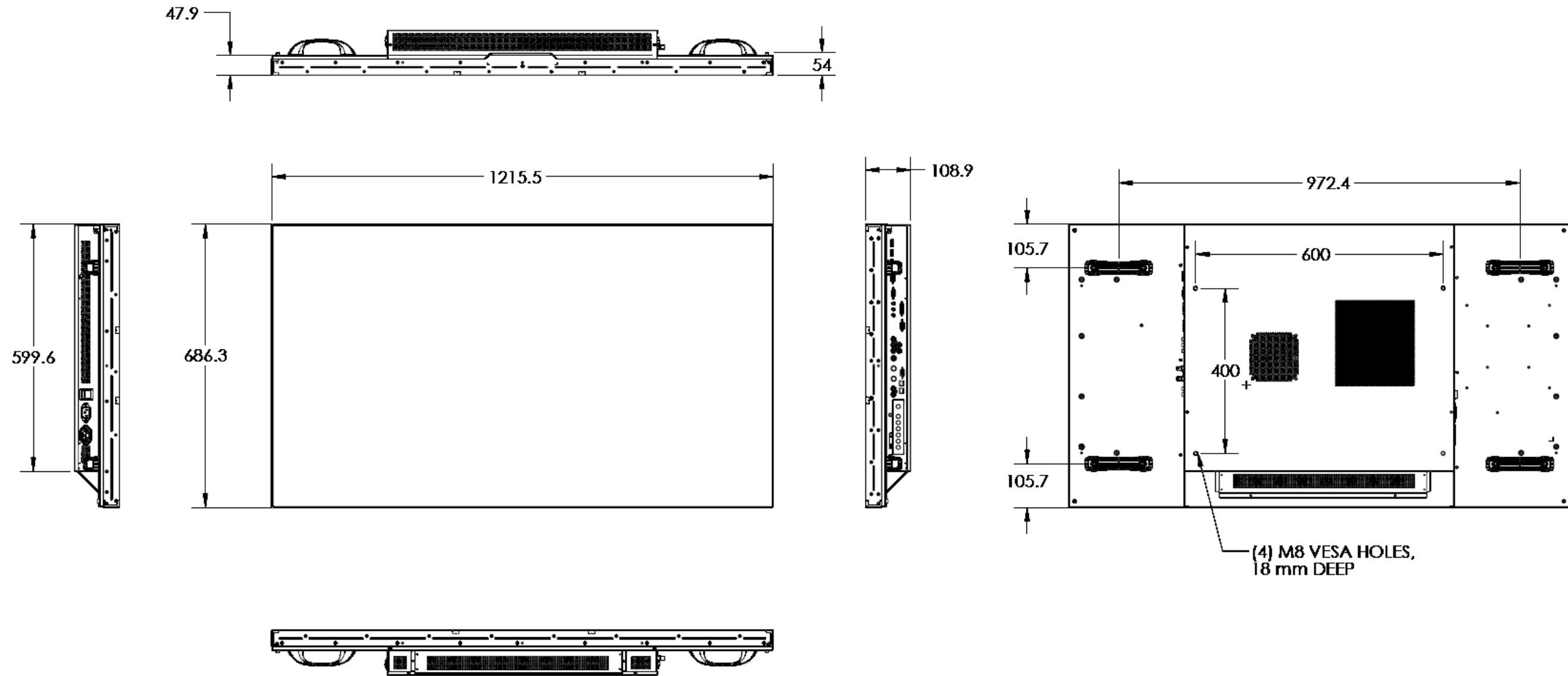### PIP and Scaling Adjustment

1. Set (25) monitor PIP to large [CMD: PSC]

    [Transmit]: PC → 07 19 02 50 53 43 03 08 → Monitor

    [Return]: Monitor → 07 19 00 50 53 43 03 08 → PC

2. Set (25) monitor to Pillar box [CMD: ASP]

    [Transmit]: PC → 07 19 02 41 53 50 02 08 → Monitor

    [Return]: Monitor → 07 19 00 41 53 50 02 08 → PC

Other Control

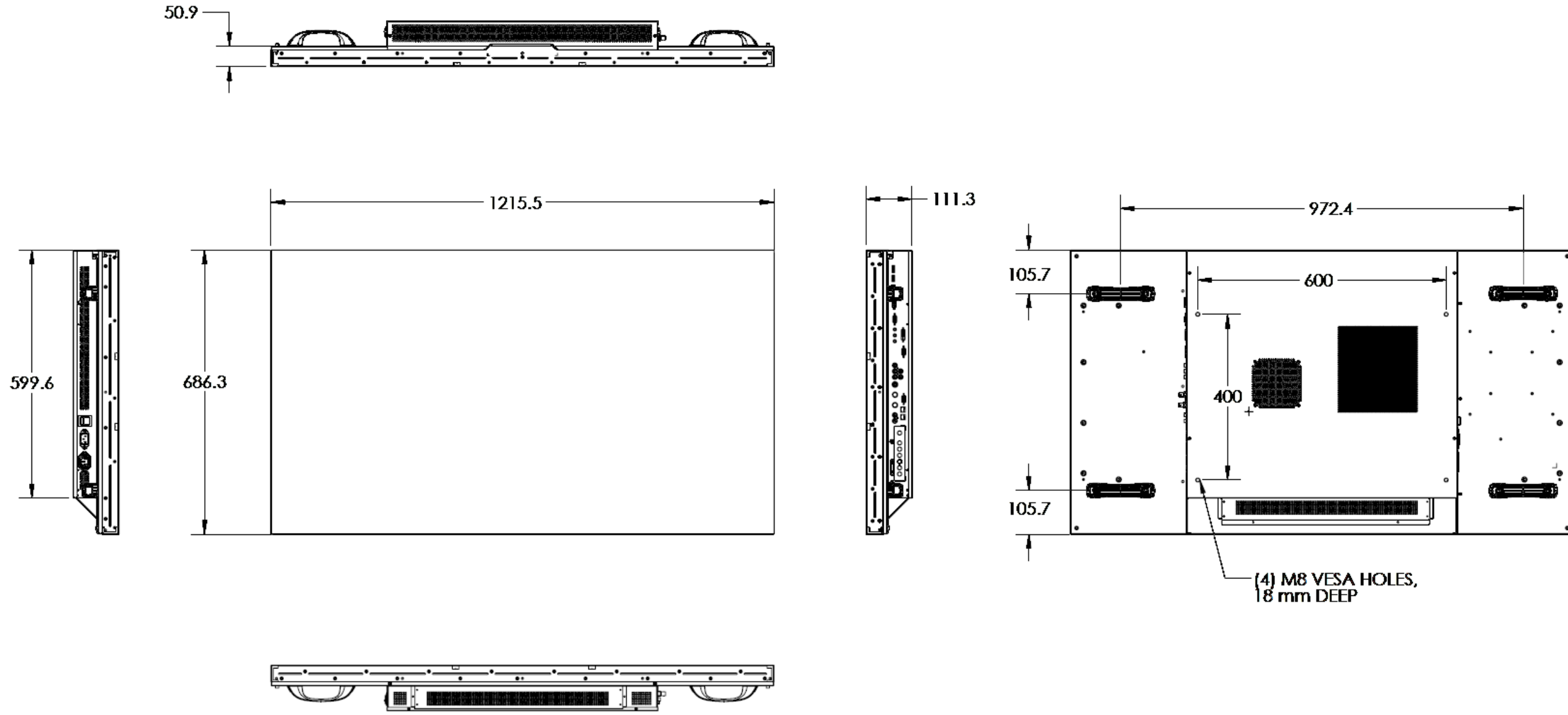1. Adjust up to (02) monitor [CMD: RCU]

    [Transmit]: PC→ 07 02 02 52 43 55 02 08 → Monitor

    [Return]: Monitor → 07 02 00 52 43 55 02 08 → PC

2. Reset all to (02) monitor [CMD: ALL]

    [Transmit]: PC → 07 02 02 41 4C 4C 00 08 → Monitor

    [Return]: Monitor → 07 02 00 41 4C 4C 00 08 → PC

3. Read serial number (01) monitor [CMD: SER]

    [Transmit]: PC → 07 01 01 53 45 52 08 → Monitor

    [Return]: Monitor → 07 01 00 53 45 52 S(0) … S(12) 08 → PC, S(0) ~ S(12): serial number in ASCII

4. Read firmware version (01) monitor [CMD: GVE]

    [Transmit]: PC → 07 01 01 47 56 45 08 → Monitor

    [Return]: Monitor → 07 01 00 47 56 45 S(0) … S(5) 08 → PC, S(0) ~ S(5): firmware version in ASCII

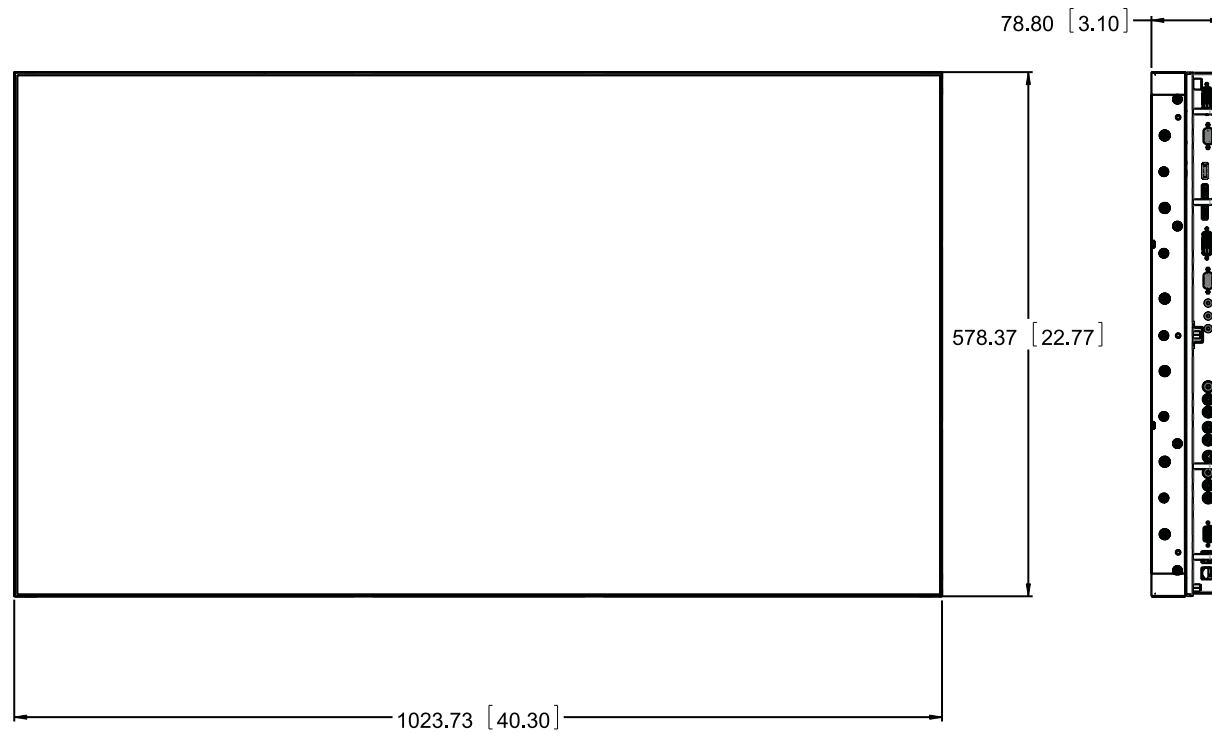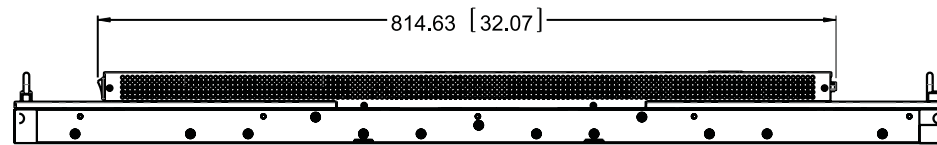# B   Mechanical Drawings

B.1   FHD551-X

(4) M8 VESA HOLES,
18 mm DEEP

B.2 FHD551-XG

(4) M8 VESA HOLES,
18 mm DEEP

B.3 FHD461-X

NOTE: *Install the LCD panel using M8 x 15 mm mounting screws.*

For the most current technical documentation, please visit www.christiedigital.com

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