



User Manual

True 4K 4/8-Port Switcher with HDMI Connection

GHSW8441/GHSW8481

PART NO. M1529-a

HDMI®
HIGH DEFINITION MULTIMEDIA INTERFACE

www.iogear.com

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Package Contents

1 x GHSW8441 4-Port 4K HDMI Switch
Or
1 x GHSW8481 8-Port 4K HDMI Switch
1 x Power Adapter
1 x IR Remote Control Unit
1 x User Manual
1 x IR Extender Cable (GHSW8481 only)

Note: Check to make sure that all the components are present and that nothing was damaged in shipping. If you encounter a problem, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damages to the unit, and/or any of the devices connected to it.

Please visit IOGEAR website for any updates that may become available in the future

System Requirement

- Up to 4/8 HDMI Source Devices
- 1 HDMI Display or Projector

1. No cables are included in this package. We strongly recommend that you purchase high-quality cables of the appropriate length since this will affect the quality of the audio and video display.
2. If you wish to utilize the GHSW8441/GHSW8481's high-end serial controller function, you will need to purchase an appropriate RS-232 cable. See hardware installation number 5 for the RS-232 Controller, page 10.

Introduction

The IOGEAR 4/8-Port True 4K Switch with HDMI connection offers smooth, quick switching between four/eight HDMI video sources such as a computer, Blu-ray, media player and cable or satellite receivers and a single HDMI display. Send crystal clear, Cinema 4K video reaching true 4K resolutions to 4096 x 2160 @ 60Hz with 4:4:4 chroma subsampling, High Dynamic Range (HDR) and uncompressed audio/video for any variety of uses including home theater, in lobbies and conference rooms and for digital signage.

Easily switch between each source automatically or manually. Utilize one of three switch modes and auto-cycle through your sources with smooth video transitions to display a variety of content. Manually switch between sources with the included IR remote control, program a universal remote via the RS-232 serial interface or select a source via front panel push-buttons in settings where a remote control is not needed.

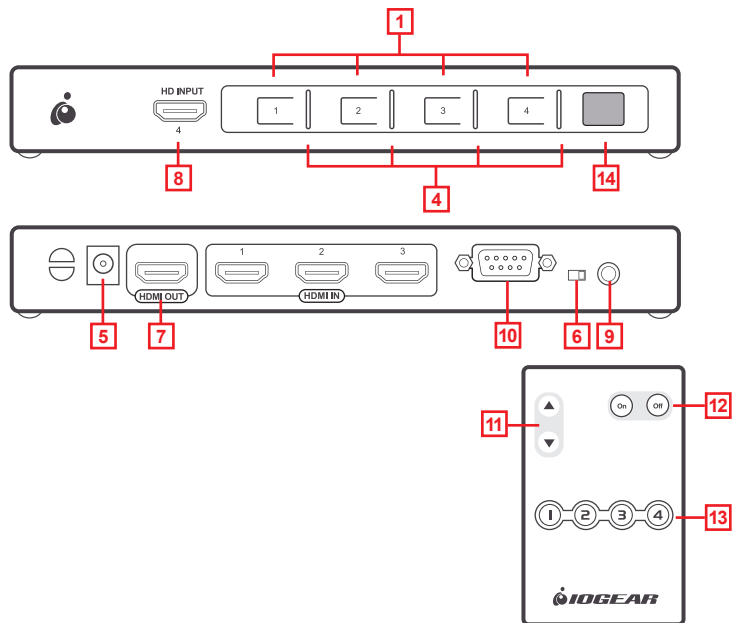
Enjoy clear, superior Cinema 4K video quality with true 4K resolutions to 4096 x 2160 @ 60Hz (4:4:4) and HDR support to the display.

Features

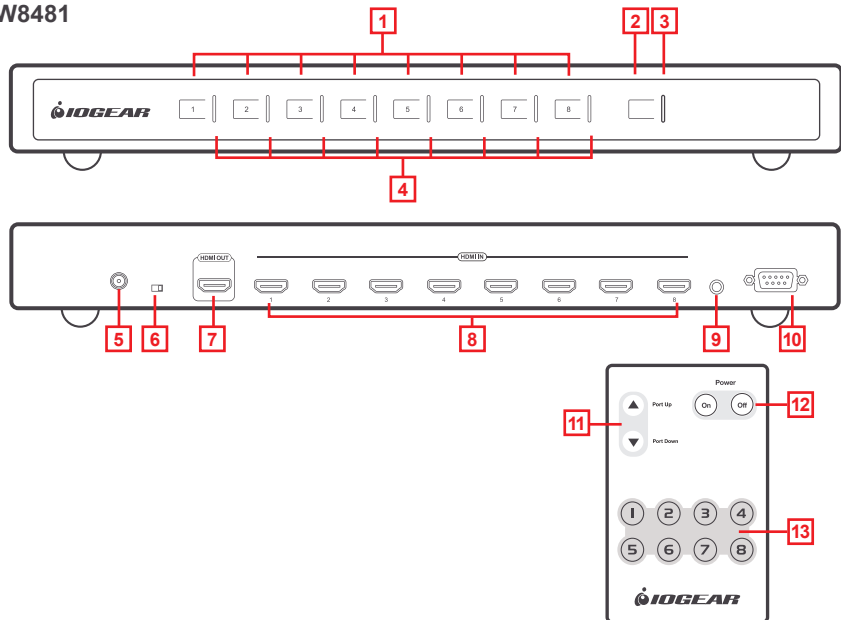
- Connect and switch between 4/8 HDMI sources on 1 HDMI display
- Resolutions up to True 4K of 4096 x 2160 @ 60Hz (4:4:4)
- Distribute uncompressed audio and video formats
- Flexible control via push-button, IR remote & RS-232 serial control
- Bi-directional RS-232 support for universal remotes & touch panels
- Auto-switch mode detects & selects new HDMI port connections
- Supports high-speed data rates up to 18 Gbps
- No-slip locking power supply mechanism
- Cascade up to 3-levels
- HDMI 2.0 and HDCP 2.2 compliant
- CEC compliant
- Plug-n-Play

Overview

GHSW8441



GHSW8481



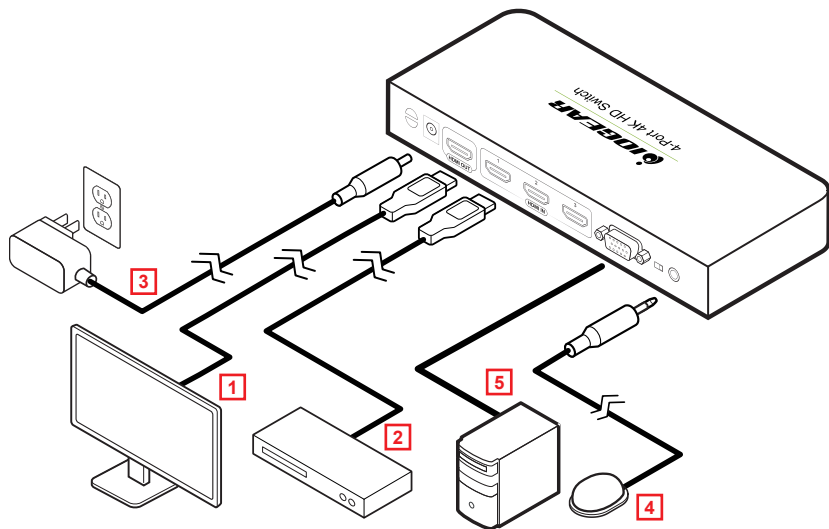
No.	Component	Description
1	Port selection Pushbutton	Selects the corresponding HDMI input
2	Power Button	Power button (GHSW8481 only) to enable/disable Standby mode and will NOT turn the unit on or off. This is a lower power mode that will disable port selection button, port LEDs and IR receiver.
3	Power LED	Lights green to indicate the GHSW8481 in Standby mode (GHSW8481 only)
4	Port LED	Port LED lights green indicating the selected port
5	Power jack	Connects to the power adapter
6	On/Off Auto Switch	This switch enables/disables the next mode. In ON, the RS-232 is turned on. In OFF, the switch will remain in next mode regardless of RS-232 commands
7	HDMI output port	Connects to the HDMI IN port of the display device
8	HDMI input ports	Connects to the HDMI Out port of the Source device(s)
9	IR Extension port	Connects to an IR extender to extend the reception range for IR signals (not included)
10	RS-232 serial port	Connects to a serial controller via a serial cable
11	Port Up/Port Down button	Port Up will cycle to port forward (Port 1 to Port 2) Port Down will cycle to port backward (Port 2 to Port 1)
12	On/Off button	No function on the GHSW8441. For the GHSW8481 this will enable/disable HDMI output
13	Port Selection button	This will select the port by port number
14	IR receiver	Receives IR signals from an IR remote control unit (GHSW8441 only)

Hardware Installation

To install the switch, refer to the installation diagram as you perform the following steps:

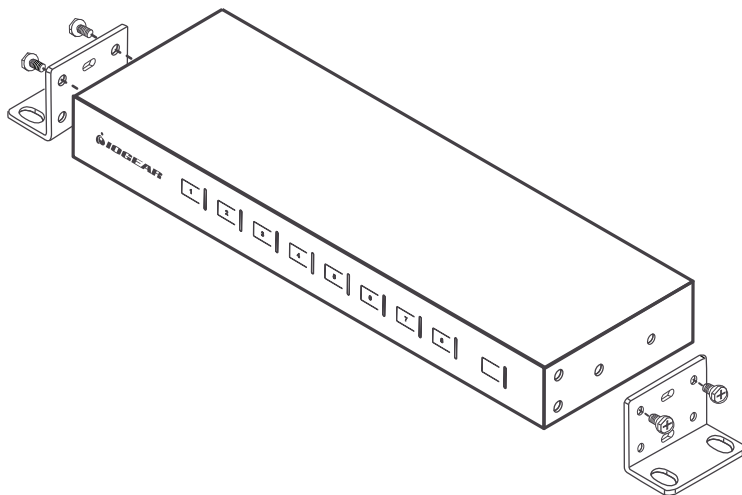
1. Use an HDMI cable to connect the video display device to the HDMI output port on the rear of the GHSW8441/ GHSW8481.
2. Use HDMI cables to connect the video source devices to the HDMI input ports on the rear of the GHSW8441/ GHSW8481.
 - If you are using the serial control function, use an appropriate RS-232 serial cable to connect the computer or serial controller to the GHSW8441/GHSW8481's female RS-232 port.
 - Use a grounding wire to ground the unit by connecting one end of the wire to the grounding terminal and the other end of the wire to a suitable ground.
 - Note: Do not omit this step. Proper grounding helps to prevent damage to the unit from surges or static electricity.
3. Plug the provided power adapter into an appropriate AC power source and plug the power adapter cable into the power jack on the GHSW8441/GHSW8481.
4. Connect an IR extender (not supplied) to the external IR receiver input port (if you will be using this feature, otherwise you can skip this step). This completes the basic installation of the 4/8 port 4K HDMI Switch. You may now power on the display and source devices.
5. In order to use the RS-232 serial interface to attach to a controller (such as a PC) and the GHSW8441/ GHSW8481, use a serial modem cable. The end connecting to the GHSW8441/GHSW8481 should have a 9-pin male connector (DB-9).

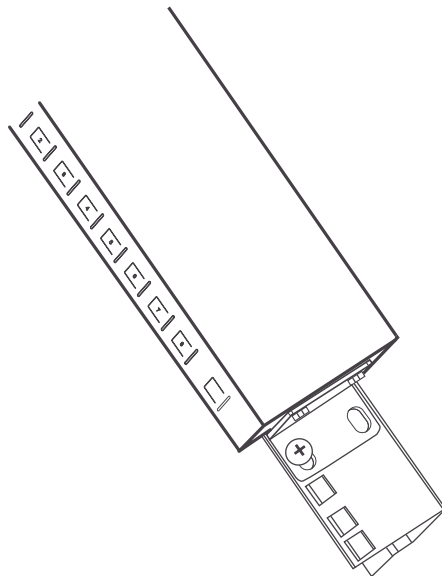
Note: To configure the controller serial port, see page 15.



Rack mounting (GHSWS8481 only)

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a device from the rack.
- Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.
- After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Make sure that all equipment used on the rack – including power strips and other electrical connectors – is properly grounded.
- Ensure that proper airflow is provided to devices in the rack.
- Ensure that the operating ambient temperature of the rack environment does not exceed the maximum ambient temperature specified for the equipment by the manufacturer.
- Do not step on or stand on any device when servicing other devices in a rack.





Operation

You can operate the GHSW8441/GHSW8481 using the pushbuttons on the front panel, the IR remote control unit, or an RS-232 serial controller. Below is a table of operation offered between each mode.

Action	Operation Methods		
	Panel Pushbuttons	IR Remote Control Unit	Serial Controller
Switch the port			
Switch the display to a specific source	✓	✓	✓
Switch to the next available port		✓	
Switch to the previous available port		✓	
Set the switch mode			
Enable the off mode	✓		✓
Enable the next mode (default)	✓		✓
Enable the priority mode			✓
Enable/disable the POD mode			✓
Other settings			
Enable/disable the standby mode	✓		
Read (display) the device settings			✓

Source Device Selection

The front panel pushbuttons, the remote control, or the RS-232 serial interface of the GHSW8441/GHSW8481 offers an easy and flexible method to select source devices.

Manual Selection

To manually select an HDMI source for the display, press the port pushbutton that corresponds to the input port of the source device that it is connected to. Pressing the pushbutton will select the attached HDMI source device for the display device.

Note: The input port LEDs light to indicate which source device is currently selected for the display.

Remote Control Operation

The remote control can change the Input source for the display; power on/off (GHSW8481) will enable or disable HDMI output only, but will not power off the switch.

RS-232 Serial Interface

The GHSW8441/GHSW8481's built-in bi-directional RS-232 serial interface allows system control through a high-end controller, PC, and/or home automation.

Note: Make sure to use the IR remote control unit within the effective range of 20 feet. For optimum performance make sure you have a clear line of sight from the remote to the IR extender.

Enabling and disabling the Next Mode

Slide the On/Off switch to enable or disable the Next Mode respectively.

Commands can also be sent through the RS-232 by using commands from the table on page 18.

Enabling and disabling the Priority and POD Mode

Send an RS-232 command from the serial controller. For detailed steps please refer to the table below

Setting the switch mode

Switch mode	Description
Off Mode	No automatic switching. RS-232 function is also turned off in this mode.
Next Mode (Default)	Switch to the next port that has a device connected to it.
Priority Mode	Switch to user-assigned source as soon as the source is detected on that port.
PoD Mode	Power on detection mode allows the switch to automatically switch to the next source port that is powered on when the currently connected source is powered off. The PoD mode functions independently of any other switch modes.

Enabling/Disabling the Standby Mode

Standby mode is a low-power mode where the port selection pushbuttons, Port LEDs and IR receiver are disabled. This is done through the Power button on the device panel. The same button will enable or disable the standby mode. In standby mode all the port LEDs are turned off and the power LED will turn green.

Executing RS-232 Commands

Connect your device to the RS-232 port of the GHSW8441/GHSW8481

Task	Commands	Description
Switch the source		
Switch display to a specific source	sw i<source_number	For example to switch to port 1 type sw i01 or sw
Turn on the output port	sw on	-
Turn off the output port	sw off	-
Change the switch mode		
Enable the next mode (Default)	swmode next	The GHSW8441/GHSW8481 switches to the next port that has a new source device connected to it.
Enable the priority mode	swmode i<source_number> priority	The GHSW8441/GHSW8481 switches to and only displays the source from the user-defined port as soon as the source is detected from the port e.g. to prioritize port 1: swmode i01 priority or swmode priority
Disable the switch mode	swmode off	Disable the switch mode and the GHSW8441/GHSW-8481 will not switch ports automatically.
Enable the POD mode	Swmode pod on	The Power-on-Detection (POD) mode allows the GHSW8441/GHSW8481 to automatically switch to the next port with a powered-on source device when the current connected source device is powered off. The POD mode works independently to other switch modes.

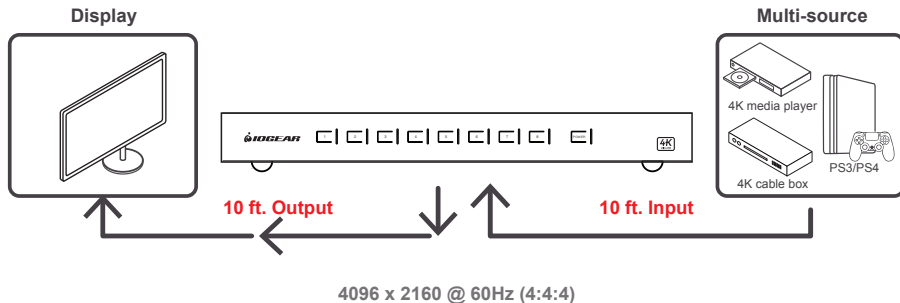
Task	Commands	Description
Other		
Read display the GHSW8441/ GHSW8481 settings	read	-
Note: Separate each command string with a space		

Cascading the GHSW8441 and GHSW8481

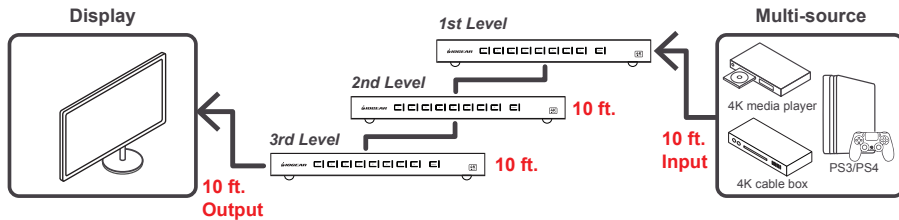
The 4 and 8 port switch can be added to provide additional ports should the need arise by cascading. The switches can be cascaded up to 3 levels. Remember that you will lose 1 port for each switch.

Cascading is done by attaching the first switch output to second switch input and second switch output to third switch input..

Single Level Extension



3-Level Cascade



4096 x 2160 @ 60Hz (4:4:4)

Safety Instructions

- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over. If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; be sure that nothing rests on any cables.
- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
 - » The power cord or plug has become damaged or frayed.
 - » Liquid has been spilled into the device.
 - » The device has been exposed to rain or water.
 - » The device has been dropped, or the cabinet has been damaged.
 - » The device exhibits a distinct change in performance, indicating a need for service.
 - » The device does not operate normally when the operating instructions are followed.
- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.

- This product is for indoor use only.
- Read all of these instructions. Save them for future reference.
- Follow all warnings and instructions marked on the device.
- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- Do not use the device near water.
- Do not place the device near, or over, radiators or heat registers.
- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- Never spill liquid of any kind on the device.
- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- The device is designed for IT power distribution systems with 230V phase-to-phase voltage.
- To prevent damage to your installation it is important that all devices are properly grounded.
- The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.

Specifications

Function	Specifications
Video Input	
Interfaces	GHSW8481: 8 x HDMI Type A Female (Black) or GHSW8441: 4 x HDMI Type A Female (Black)
Impedance	100 Ω
Max. Distance	15 ft. (3m)
Video Output	
Interfaces	1 x HDMI Type A Female (Black)
Impedance	100 Ω
Video	
Max. Data Rate	18 Gbps (6 Gbps per lane)
Max. Pixel Clock	600 MHz
Compliance	HDMI 2.0 (3D, Deep Color)
	HDCP 2.2
	Consumer Electronics Control (CEC)
Max. Resolutions	Up to 4096 x 2160 / 3840 x 2160 @ 60Hz (4:4:4)
Max Distance	Up to 15 ft. (3 m)
Audio	
Input	8 x HDMI Type A Female (Black)
Output	1 x HDMI Type A Female (Black)

Function		Specifications
Control		
	Connection	1 x DB-9
	Baud Rate	19200
	Data Bits	8
	Stop Bits	1
	Parity	No
	Flow Control	No
IR		1 x Mini Stereo Jack Female (Black)
Power		
Connectors		1 x DC Jack (Black)
Consumption		5 VDC, 14.84W
Environmental		
Operating Temperature		0 - 40°C
Storage Temperature		-20 - 60°C
Humidity		0 x 80% RH, Non-Condensing
Physical Properties		
Housing		Metal
Weight		GHSW8481: 4.72 lb. (2.14 Kg) HGSW8441: 1.04 lb. (0.47 kg)
Dimensions (L x W x H)		GHSW8481: 19.0 x 6.2 x 1.7 in (48.3 x 15.8 x 4.4 cm) GHSW8441: 7.87 x 3.23 x 0.98 in (20.00 x 8.21 x 2.50 cm)

FAQ

1. How do I reset the GHSW8441/GHSW8481?

To reset the unit, please do the following:

1. Connect a RS232 cable (male to female, DB9) between your computer and the GHSW8441/GHSW8481.
If your computer does not have a Com port, you will need a USB to RS-232 converter.
2. Use a terminal program.
3. Type reset in the terminal window to reset the unit. Once the reset procedure is finished, reboot the unit.

NOTE: If the issue cannot be solved by resetting, please contact IOGEAR Tech Support.

2. What is the maximum distance for GHSW8441/GHSW8481 cable length?

The maximum distance is 3 meters (10 ft).

3. What is the default serial setting?

Here are the default serial settings:

Baud rate: 19200

Data bits: 8

Parity: None

Stop bits: 1

Flow Control: None

NOTE: You will need a terminal program.

4. Which 4K resolutions do GHSW8441/GHSW8481 support?

The GHSW8441/GHSW8481 supports 4K resolutions of UHD (3840x2160) and DCI (4096x2160) with refresh rates of 60 Hz (Subsampling 4:4:4).

Default EDID mode:			
640 x 480 @ 60 Hz	1024 x 768 @ 60 Hz	1366 x 60 Hz	480p
640 x 480 @ 67 Hz	1024 x 768 @ 70 Hz	1400 x 900 @ 60 Hz	576p
640 x 480 @ 72 Hz	1024 x 768 @ 75 Hz	1440 x 1050 @ 60 Hz	720p 50 Hz
640 x 480 @ 75 Hz	1280 x 720 @ 60 Hz (Native)	1600 x 1200 @ 60 Hz	720p 60Hz
800 x 600 @ 56 Hz	1280 x 800 @ 60 Hz	1680 x 1050 @ 60 Hz	1080i 50 Hz
800 x 600 @ 60 Hz	1280 x 1024 @ 60 Hz	1920 x 1080 @ 60 Hz	1080i 60 Hz
800 x 600 @ 72 Hz	1280 x 1024 @ 75 Hz	1920 x 1200 @ 60 Hz	1080p 60 Hz
800 x 600 @ 75 Hz			

5. What HDMI/HDCP version is the GHSW8441/GHSW8481 in compliant to?

The GHSW8441/GHSW8481 is HDMI 2.0/HDCP 2.2 compliant

Compliance Information

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

CE Compliance

This equipment has been tested and found to comply with the following European Union directives: Electromagnetic Capability (2004/108/EC), Low Voltage (2006/95/EC) and R&TTED (1999/5/EC).

Limited Warranty

This product carries a 3 Year Limited Warranty.

For the terms and conditions of this warranty, please go to <https://www.iogear.com/support/warranty>

Register online at <https://www.iogear.com/register>

Important Product Information

Product Model _____

Serial Number _____

Contact

WE'RE HERE TO HELP YOU! NEED ASSISTANCE SETTING UP THIS PRODUCT?

Make sure you:

1. Visit www.iogear.com for more product information
2. Visit www.iogear.com/support for live help and product support

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