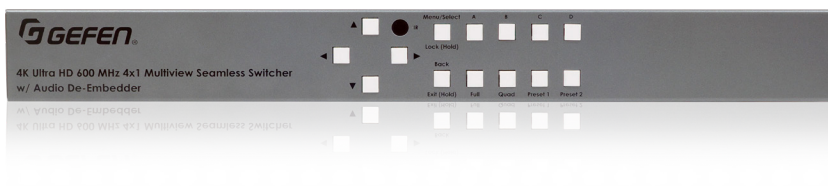




4K Ultra HD 600 MHz 4x1 Multiview Seamless Switcher with Audio De-Embedder



User Manual

Version A3
Firmware v3.73

Important Safety Instructions

General SAFETY INFORMATION

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this product near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. 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 are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

For the latest warranty coverage information, refer to the Warranty and Return Policy under the Connect section of the Gefen website at <http://www.gefen.com/connect/warranty-and-return-policy>

Contacting Gefen Technical Support

Technical Support

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8:00 AM to 5:00 PM Monday - Friday, Pacific Time

Email

support@gefen.com

Web

<http://www.gefen.com>

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Petaluma, CA 94954 USA

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- When using the 4x1 Multiview Seamless Switcher for the first time, it is recommended that the unit be configured using the web interface. Firmware upgrade is handled through Gefen Syner-G Software Suite. Download the application at: <http://www.gefen.com/synerg/>
- When using any 4K Ultra HD (3840 x 21260) output resolution, the following limitations and requirements will be in effect:
 - Only the Default Presets (Full screen and Quad) will be available. All user presets will be disabled.
 - All inputs must use a resolution of 1080p, however frame rates from each source can differ. The EDID for each input will automatically be changed to Internal 1080p 2 Ch.
 - Picture adjustments and Border Tally functions will be disabled.
- This manual has been written and is based on firmware version 3.73.

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- lwIP
- jQuery

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Features*

- Seamless switcher scales and sizes each of the four inputs, and outputs them one at a time or as windows on a single display
- Controllable via front panel controls, IR, IP (web server interface, Telnet, and UDP), and RS-232
- Input resolutions up to 1080p Full HD (60 Hz), with HDCP 1.4
- Output resolutions up to 4K 60 Hz 4:4:4
- User-selectable playback of HDMI audio content from any of the four inputs
- Analog L/R Audio Breakout for use with outboard amplification systems
- Easy to use on-screen Graphical User Interface (GUI) and web server interface
- Handheld IR remote control and IR Extender input on back panel
- HDCP compliant
- Seamless switching ensures no switching delay and no picture loss during transitions
- Easy to use on-screen Graphical User Interface (GUI) and web server interface
- Handheld IR remote control and IR Extender input on back panel
- Field-upgradable firmware using the Gefen Syner-G™ software
- Default pre-configured Multiview window arrangements can be accessed via two front panel preset push-buttons
- Custom user-configurable Multiview window layouts can be accessed via two front panel preset push-buttons and via OSD
- Locking power supply connector
- 1U tall rack-mountable enclosure, rack ears included

Packing List

If any of these items are not present in the package when you first open it, immediately contact Gefen Technical Support as soon as possible:

- (1) 4x1 Multiview Seamless Switcher
- (4) 6 ft. Locking HDMI Cables
- (1) 6 ft. DB-9 Cable
- (1) EXT-RMT-EXTIRN IR Extender Module
- (2) Rack Ears
- (4) Rack-Ear-to-Enclosure Screws
- (1) Handheld IR Remote
- (1) 12V DC Locking Power Supply with US/EU/UK/AU plugs
- (1) Quick-Start Guide

*Features and specifications are subject to change without notice.

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01	Getting Started	
	Panel Layout	2
	Front.....	2
	Back.....	3
	IR Remote Control Unit	4
	Remote Bottom - Installing the Batteries.....	6
	Connecting the 4x1 Multiview Seamless Switcher.....	7
	Sample Wiring Diagram.....	7
	Network Configuration using Syner-G.....	8
02	Operating the Seamless Switcher	
	Introduction	12
	Turning on the 4x1 Multiview Seamless Switcher.....	12
	Window Source.....	13
	Preset Activation.....	14
	Multiple Window Display.....	16
	Window Priority.....	18
	Assigning Window Priority.....	19
	Locking / Unlocking the Switcher	20
	Using the Front Panel Buttons.....	20
	Menu System	22
	Accessing the Menu System.....	22
	Using the Front Panel Controls.....	23
	Main.....	25
	Setup ► Output Resolution.....	26
	Setup ► Window Setup ► Picture.....	27
	Setup ► Window Setup ► Layout.....	28
	Setup ► Window Setup ► Labels.....	29
	Setup ► HPD Control.....	30
	Setup ► HDCP Control.....	31
	Setup ► Background.....	31
	EDID.....	32
	Network.....	33
	System.....	35
	Web Interface	36
	Using the built-in Web Interface.....	36
	Main ► Routing.....	36
	Main ► I/O Status.....	39
	Setup ► Video.....	40
	Setup ► Window Setup.....	41
	Setup ► HPD Control.....	42
	Setup ► HDCP Control.....	42
	Setup ► Background.....	43
	Names ► Preset Names.....	44
	EDID ► Mode.....	44
	EDID ► Copy.....	45
	EDID ► Info.....	46
	EDID ► Upload/Download.....	46
	Network ► Settings.....	47
	System ► Settings.....	49

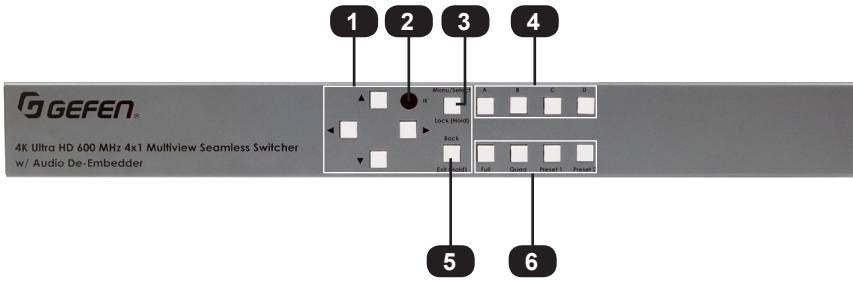
03	Advanced Operation	
	RS-232 and IP Configuration	52
	Using Telnet	52
	Using RS-232	53
	Commands	54
04	Appendix	
	Default Settings	78
	Specifications*	80

4K 600 MHz Ultra HD 4x1 Seamless Switcher

01 Getting Started

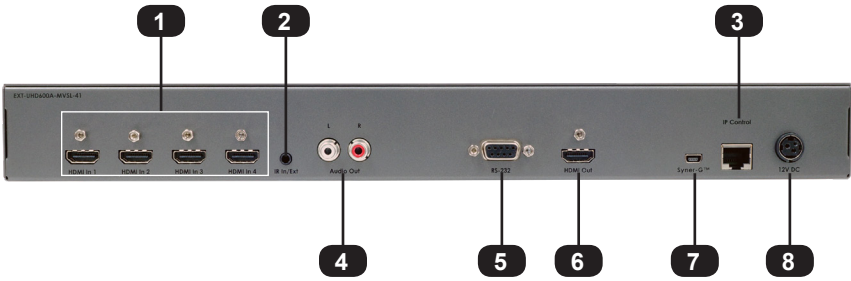
Panel Layout

Front



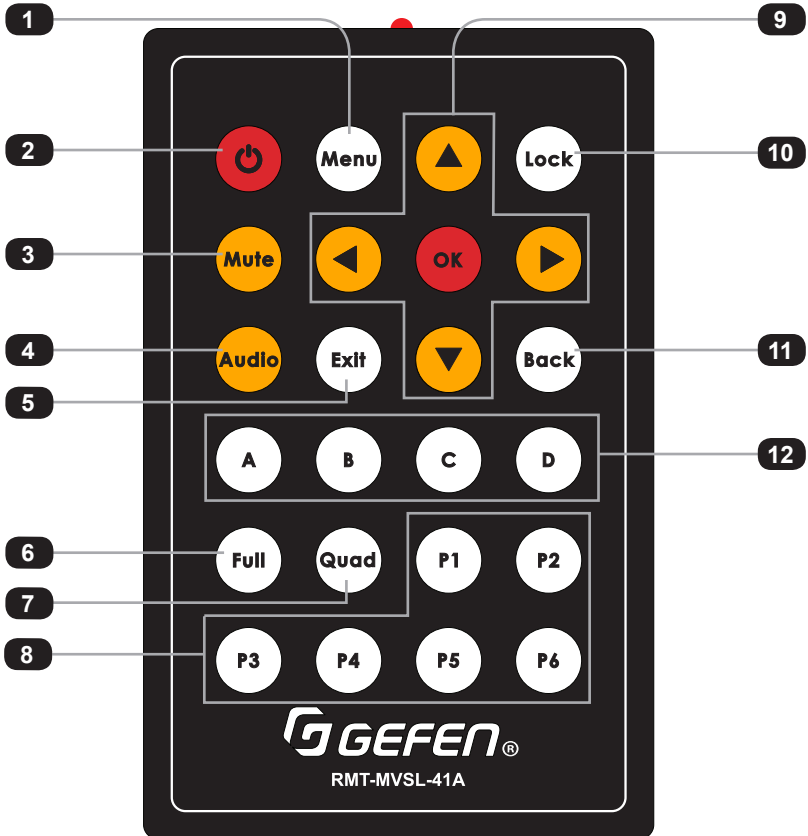
ID	Name	Description
1	Menu and Navigation	The Menu and Navigation keys control the operation of the on screen user interface. Pressing and holding down the Menu key also allows locking and unlocking controls. See Menu System , pg. 28, for details.
2	IR	This IR sensor receives signals from the included IR remote control unit.
3	Menu/Select Lock (HOLD)	Press this button to enter the menu and select and confirm options. Pressing and holding down the Menu button (>3 sec) will lock/unlock the 4x1 Multiview Seamless Switcher and prevent accidental changes.
4	Input and Window Selection	Press these buttons to assign one of the four connected sources to one of the four windows A through D. They also select the input to be displayed when the unit is in full-screen mode.
5	Back Exit (HOLD)	Back, Exit (Hold) is to step back within the menu structure. Hold for quick exit of the menu.
6	Presets	The Presets are used to directly access Full screen, Quad screen, and two of the 18 user-programmed presets.
Any button	Power On	To power-on the unit, press any button on the front panel, or press the power button on the handheld remote.

Back



ID	Name	Description
1	HDMI In (1 - 4)	Connect up to four Full High Definition sources to these inputs using HDMI cables.
2	IR In/Ext	If IR control is required and the unit is not installed in line of sight, connect the included IR extender module EXT-RMT-EXTIRN or electrical IR output from an automation control device to the IR In/Ext port on the back panel of the unit.
3	IP Control	Connect a CAT-5 (or better) cable between this jack and a LAN to use IP control. Refer to RS-232 and IP Configuration , pg. 52, for more information on setting up IP control.
4	L/R Audio Out	If using an outboard amplification system, connect a pair of RCA patch cables from the Audio Out connectors on the unit to your amplifier.
5	RS-232	To control the unit via RS-232, connect the included DB-9 cable from an automation control device to the unit. See RS-232 and IP Configuration , pg. 52, for more information on setting up RS-232 control.
6	HDMI Out	Connect to an HD or 4K display.
7	Syner-G (Mini-USB)	Connection to Syner-G for firmware upgrade
8	12V DC	Connect the included 12V DC power supply from this power receptacle to an available AC electrical outlet.

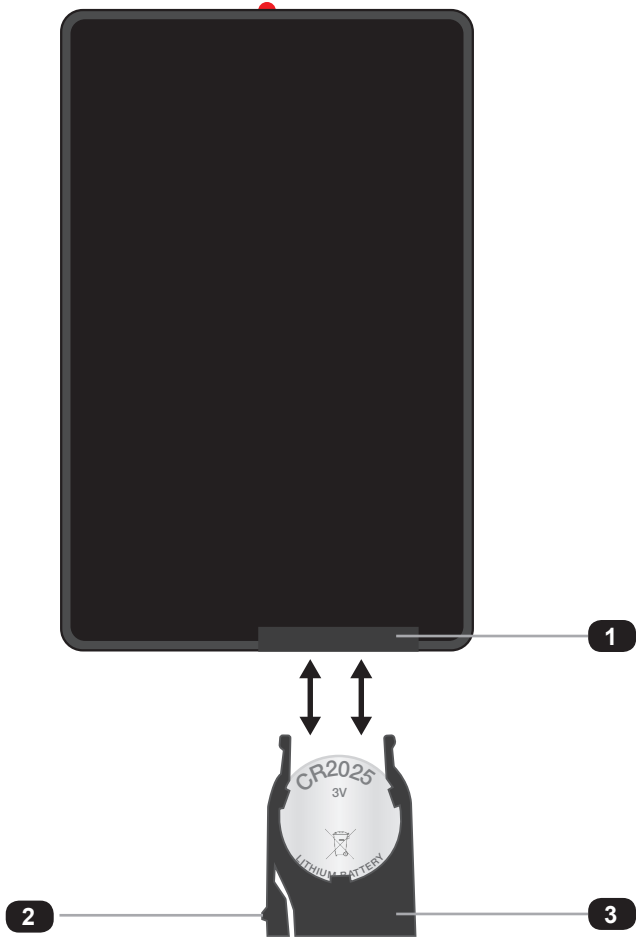
IR Remote Control Unit



ID	Name	Description
1	Menu	Press this button to display the built-in menu system.
2	Power button	Press this button to power-ON or power-OFF the Multiview Seamless Switcher.
3	Mute	Mutes the audio on both HDMI and analog outputs.
4	Audio	Cycles through the four audio sources to be used on the output.
5	Exit	Press this button to quickly exit from anywhere within the menus.
6	Full	Select Full screen display mode then choose A, B, C, or D to complete selection.
7	Quad	Select Quad screen display.
8	P1 - P6 (User Presets)	These buttons are used to recall custom window configuration presets. See Window Basics for more information.
9	◀ / ▶ / ▲ / ▼ / OK	Used to access and change features within the OSD menu system. Use the arrow buttons to select menu options. Press the OK button to make a selection within the menu system.
10	Lock	Press this button to lock or unlock the 4x1 Multiview Seamless Switcher.
11	Back	Go back to the previous menu option or cancel adjustment of a parameter.
12	Input Selection and Full Screen Switching	Press these buttons to assign one of the four connected sources to one of the four windows A through D. They also select the input to be displayed when the unit is in full-screen mode.

IR Remote Control Unit

Remote Bottom - Installing the Batteries

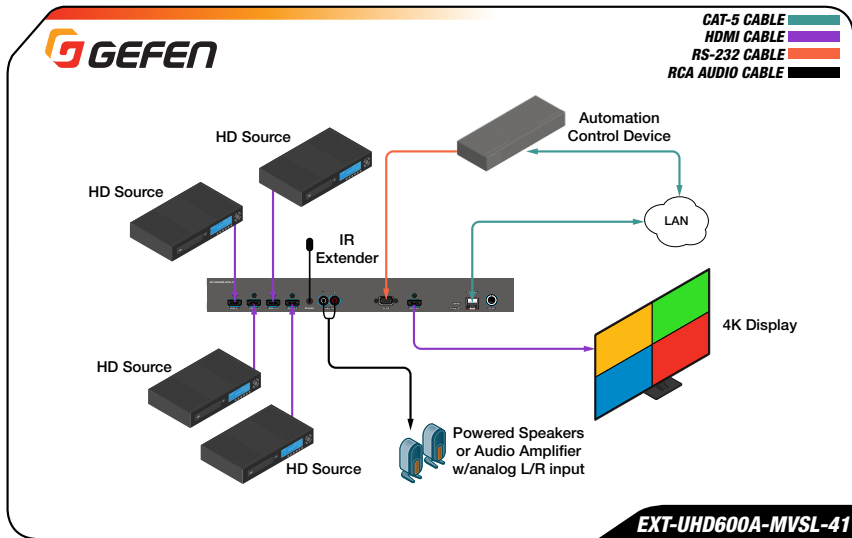


ID	Name	Description
1	Battery slot	Holds battery carriage in place.
2	Release Tab	Press inward with your thumb to release the tab that holds the battery carriage in place. Remove and replace the battery, then slide and snap the battery carriage back in to place.
3	Battery Carriage	Holds the lithium battery for operating the IR remote. Use only a CR2025 3V Lithium Battery.

Connecting the 4x1 Multiview Seamless Switcher

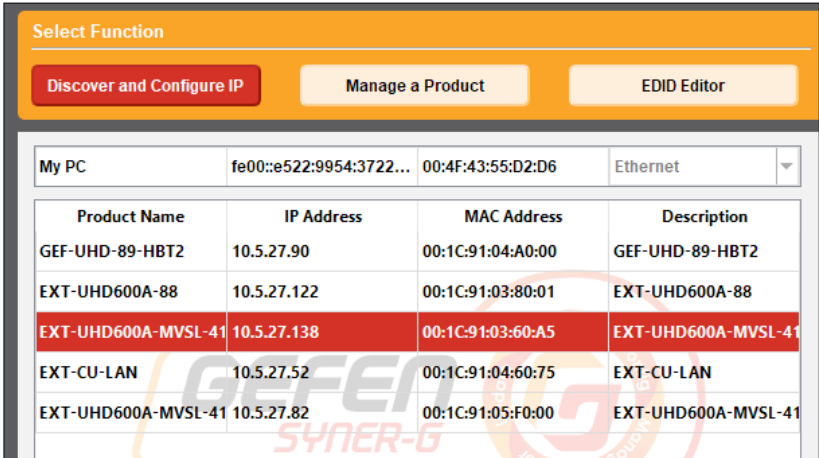
1. Connect up to four Full High Definition sources to the input ports (**HDMI In 1 - 4**) on the 4x1 Multiview Seamless Switcher.
2. Connect an HD or 4K display to the **HDMI Out** port on the 4x1 Multiview Seamless Switcher.
3. OPTIONAL: Connect an RS-232 cable from the **RS-232** port on the 4x1 Multiview Seamless Switcher to the RS-232 connector on the automation controller.
4. OPTIONAL: Connect a CAT-5 (or better) cable from the **IP Control** port on the 4x1 Multiview Seamless Switcher to a Local Area Network (LAN).
5. OPTIONAL: Connect the included IR extender to the **IR In/Ext** port on the 4x1 Multiview Seamless Switcher.
6. Connect the included 12V DC locking power supply to the power receptacle on the 4x1 Multiview Seamless Switcher.
7. Connect the power supply to an available electrical outlet.

Sample Wiring Diagram

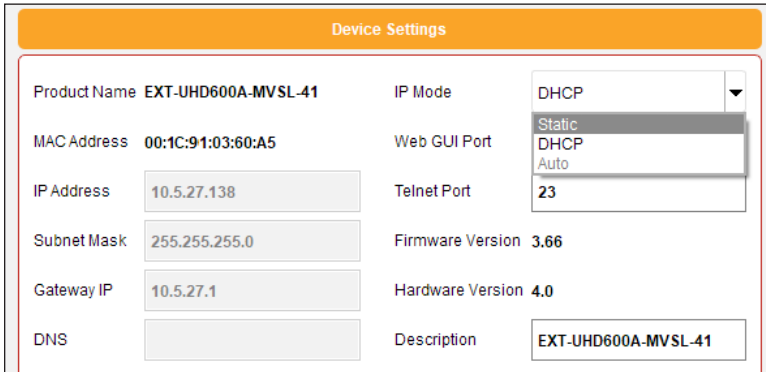


Network Configuration using Syner-G

1. Launch the Gefen Syner-G application.
Download the application here: <http://www.gefen.com/synerg/>
2. Select the EXT-UHD600A-MVSL-41 from the list of products.



3. Under the **Device Settings** section, select either Static or DHCP from the **IP Mode** drop-down list.
 - Select Static to manually enter the IP address, subnet mask, and gateway IP. Consult with your network administrator, if necessary.
 - Select DHCP to let the DHCP server automatically assign the IP address, subnet mask, and gateway IP.
 - Telnet Port is fixed at 80.



- Click the **Save** button at the bottom of the screen.

MAC Address	00:1C:91:03:60:A5	Web GUI Port	Static
IP Address	10.5.27.138	Telnet Port	DHCP
Subnet Mask	255.255.255.0	Firmware Version	Auto
Gateway IP	10.5.27.1	Hardware Version	23
DNS		Description	EXT-UHD600A-MVSL-41
Web GUI		Web Page	
Reboot		Show Me	
Save			

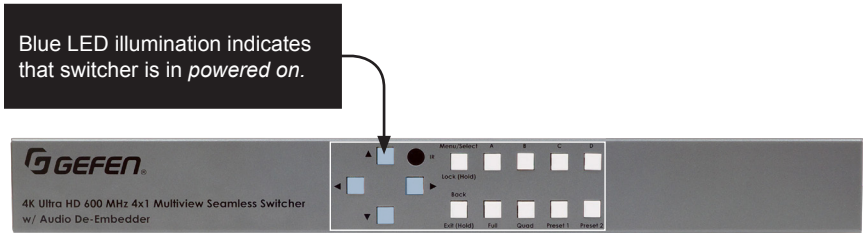
- After saving, select **Reboot** for the new network settings to take effect.
- Use the IP address of the switcher to access the built-in web interface or start a Telnet session. See the following for more information:
 - [Web Interface, pg. 36](#)
 - [RS-232 and IP Configuration, pg. 52](#)

4K 600 MHz Ultra HD 4x1 Seamless Switcher

02 Operating the Seamless Switcher

Turning on the 4x1 Multiview Seamless Switcher

To power-on the unit, press the any button on the front panel, or press the power button on the handheld remote. Navigation button (◀, ▶, ▲, and ▼) LEDs will illuminate when powered up. Power can also be controlled via commands over IP or serial connection.

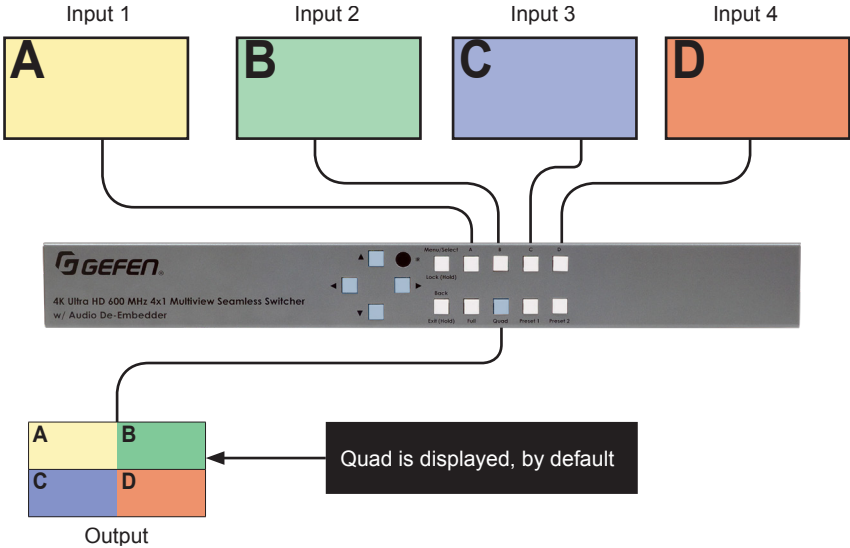


Window Source

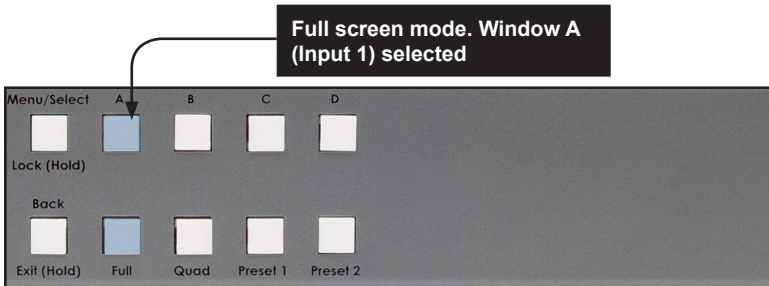
Up to 4 individual windows can be active on-screen at one time. Each window has its own dedicated source button and are labeled in alphabetical order starting with "A" and ending with "D". The source for each window can be any of the 4 inputs.

To switch the current input that is being routed to each window, the user can press any of the window buttons (A – D).

The window's source will advance to the next numerical input in the following order: 1 → 2 → 3 → 4 → 1, etc. Input source cycle is looping.



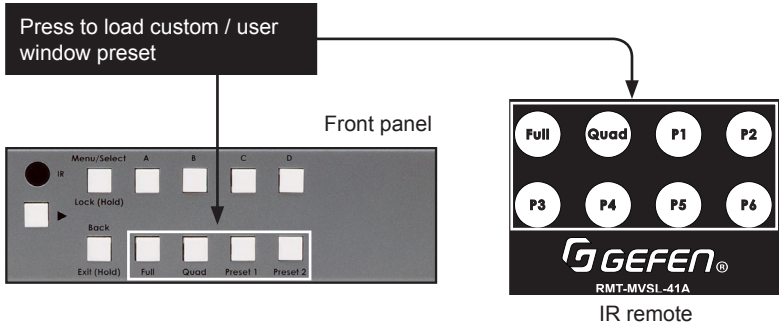
When the unit is in Full Screen mode, each window (A – D) will automatically have an input assigned to it (A = 1, B = 2, C = 3, D = 4). In this mode, the LED for the selected window (displaying its corresponding input) will be illuminated.



Preset Activation

Four preset buttons are present and are available for quick activation from the front panel. Two buttons are dedicated to default presets (**Full** and **Quad**), while the remaining two (**Presel 1** and **2** (front panel) and **P1 - P6** (remote) are user presets that can be set via the web interface.

To activate, press the desired preset button.

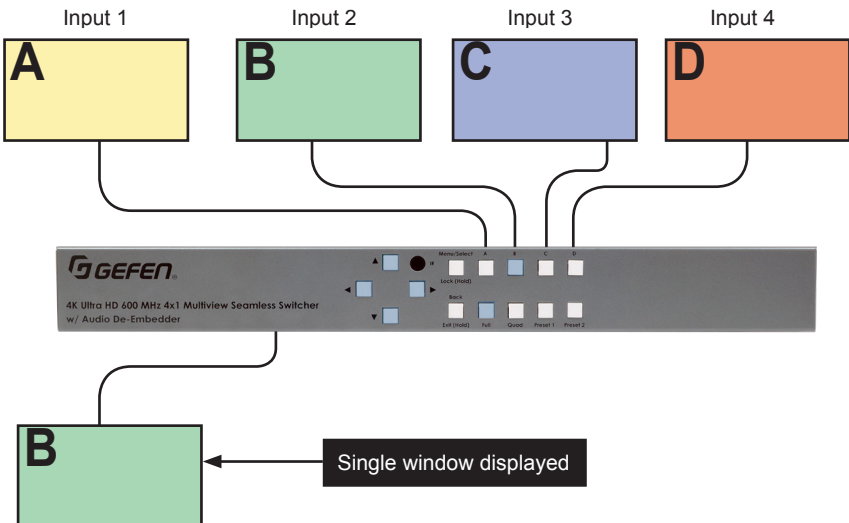


Full screen mode activation

To enter full screen operation when the unit is in a different preset or configuration:

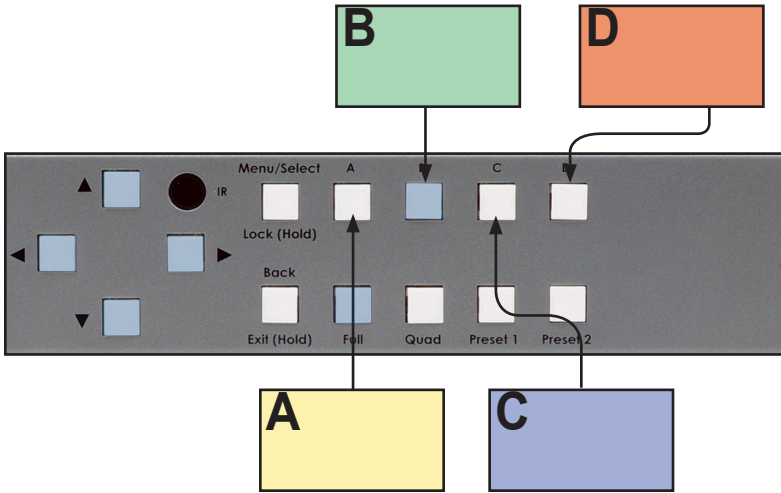
1. Select the **Full** preset button on the front panel or IR remote. The LED for full screen will become active and window buttons A – D will flash.
2. While the buttons are flashing, select a window button on the front panel or IR remote. The buttons will stop flashing and the selected one will remain illuminated, indicating the window is active. Each window (A - D) will automatically be assigned an input in numerical order, starting with input 1 for Window A.

The Full screen preset button LED will remain active while full screen mode is in operation. The image displayed on the output will be dictated by the current routing state of the switcher. In this example, the source that is connected to Input 2 is displayed.

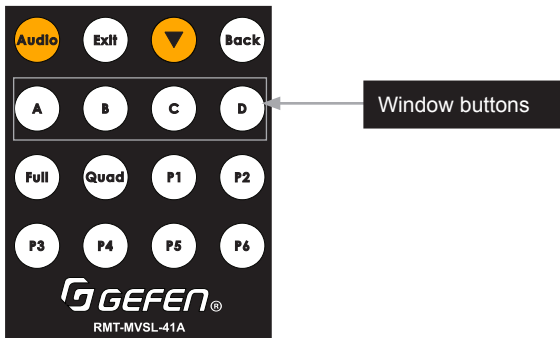


Note that Window B is displayed, because the B button was pressed. The button for the current Window will remain illuminated until another Window button is pressed.

In Full screen mode, each Window button (A - D) on the front panel represents each of the four inputs in numerical order. These four window buttons are used to perform seamless switching between the four sources.



The included IR remote control can also be used to seamlessly switch between the four sources by pressing the Window buttons (A, B, C or D).



Window Basics

Multiple Window Display

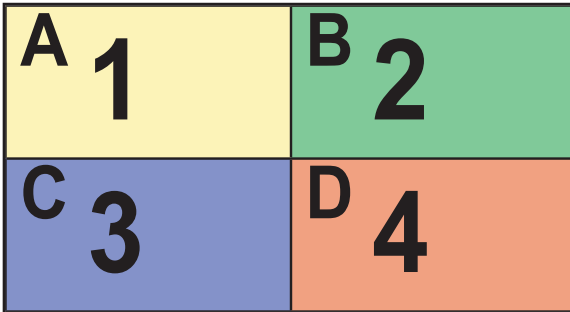
To recap, the unit can display up to four sources on one display. When multiple sources are displayed on the screen, we refer to each source as a window. In general terms, a window is defined as an output. It is recommended that you refer to [Window Source](#), pg. 13, before continuing.

When working with full screen mode, we saw how we could switch windows, allowing us to view different sources, one at a time.

Quad Mode Activation

Quad mode divides the screen into four equal quadrants -- one for each of the four inputs.

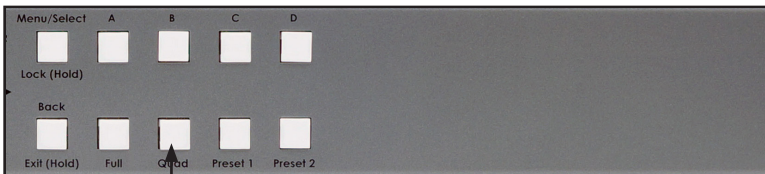
By default, Window A will use Input 1, Window B will use Input 2, and so on.



Of course, any input can be re-assigned to any window.

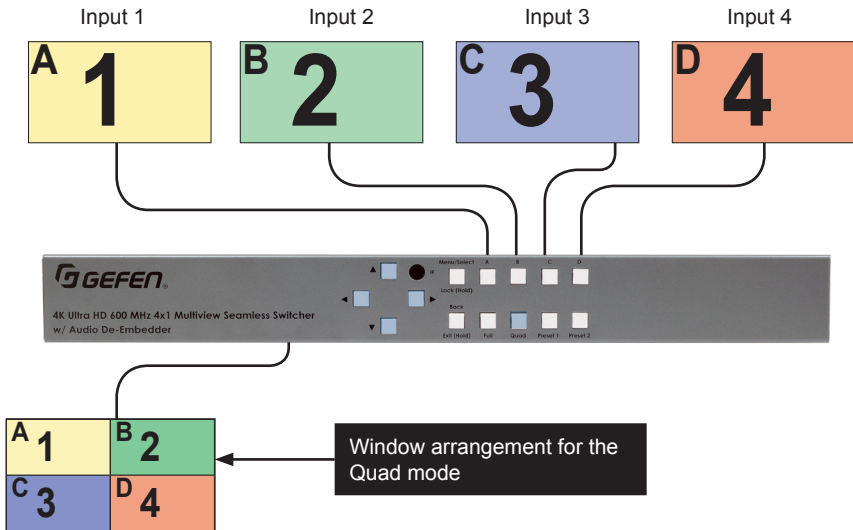
Although the input to each window--can be different, the window ID (A - D) does not change.

1. Press the **Quad** button. This will create a basic 2x2 (Quad) multi-window display.



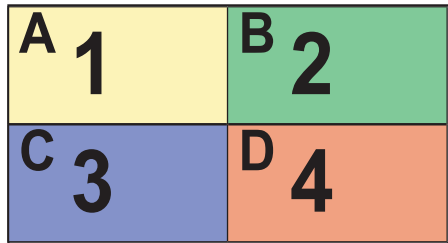
Press the **Quad** button

- The image on the output will be equally divided into four windows. This window arrangement is used by the Quad mode.

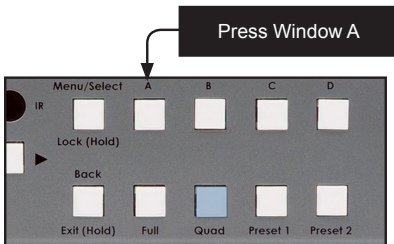


- Now, let's change the routing state so that the source connected to Input 2 covers the top half of the screen.

If we look at our window template for Quad mode, we can see that routing Input 2 to Window A will accomplish this task.

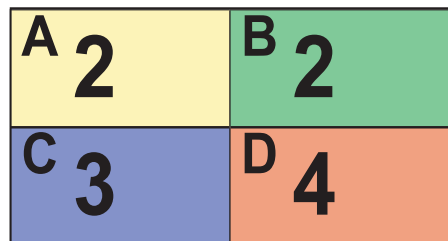


- Press the button for Window A once.



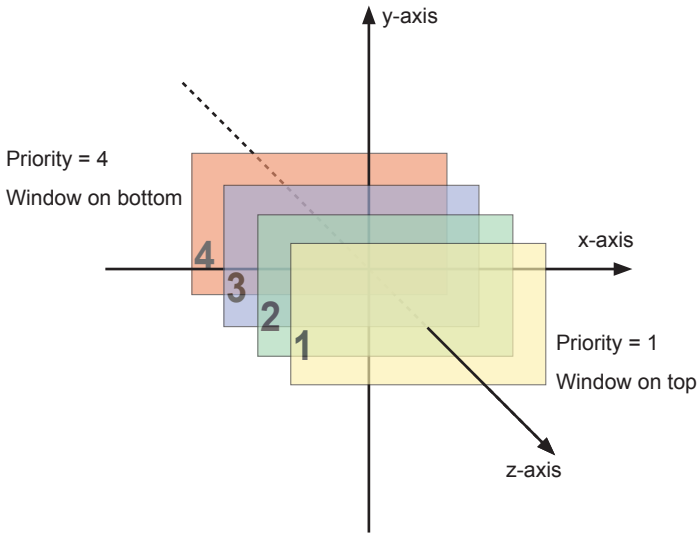
Input 2 is selected

- The output on the display will now appear, as follows:



Window Priority

The built-in Web interface allows windows to be re-sized and arranged in any order. Windows can also be prioritized/layered above or below one another. The ordering of overlapping objects in two-dimensional space is sometimes referred to as the *z-order*.

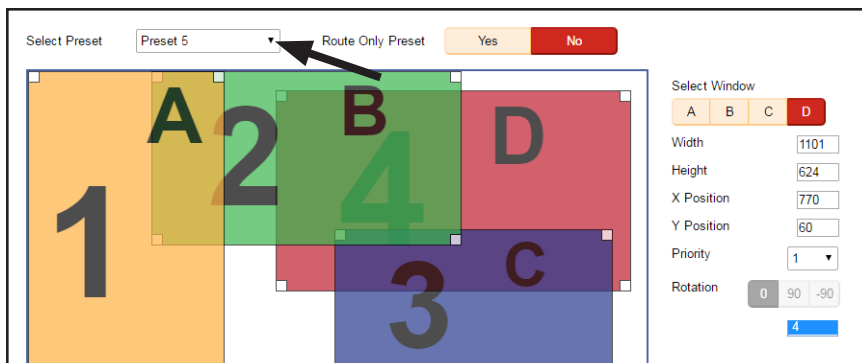


In the illustration above, the yellow window is set to priority 1 and will be displayed on top of all other windows. Setting a window to priority 4 (the red window) will move the window to the bottom-most position. The *smaller* the number, the *higher* priority. Multiple windows *cannot* share the same priority.

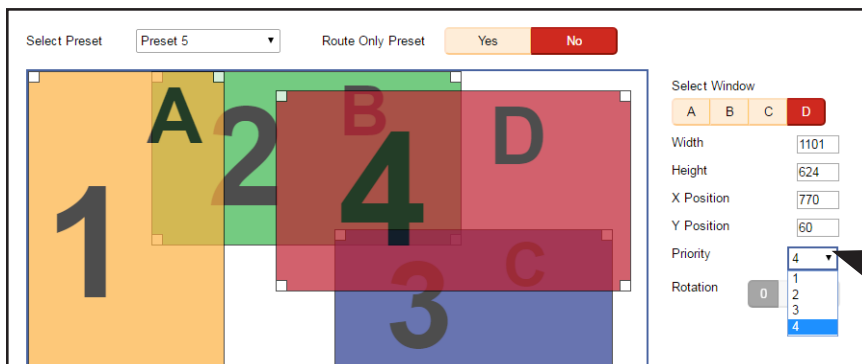
Note that the 4x1 Multiview Seamless Switcher does not allow a window to have a transparency property. This is only used by the diagram above and the web interface on the next page to illustrate how windows can be placed behind or in front of one another.

Assigning Window Priority

1. Access the Web interface for the 4x1 Multiview Seamless Switcher. See [Web Interface](#), pg. 36, for more information.
2. Go to [Window Setup](#), pg. 41, page of the Web interface section.
3. We've selected Preset 8 from the **Select Preset** drop-down list. We've also repositioned and resized the windows, as follows:



4. Select one of the windows by clicking on it or selecting it from the **Select Window** drop-down list. For this example, we are going to select window D and make it the top-most window.
5. The current priority of the selected window will appear in the **Priority** drop-down list.
6. Select 1 from the **Priority** drop-down list.



7. Window D will be the top-most window. This window can be positioned anywhere within the interactive workspace and the window will appear on top of all windows.
8. Choose Preset 8 from the **Save To** drop-down list and click the **Save** button to save any changes to the preset.

Locking / Unlocking the Switcher

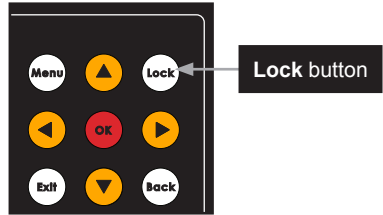
Locking the switcher will prevent any changes by disabling functions (except the **Lock (Hold)** button) on the front panel. Disabled are the front panel, IR, and Web GUI, but API control will remain unlocked. This feature is useful in preventing routing or other changes caused by accidentally bumping or pressing the buttons on the front panel.

Using the Front Panel Buttons

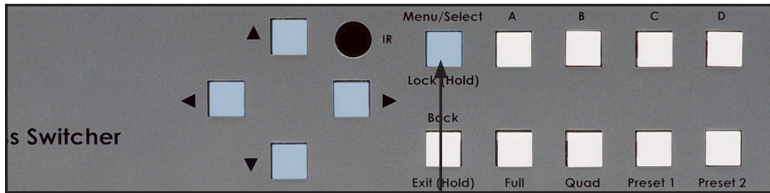
1. Press and hold the **Lock (Hold)** button (3 seconds) on the front panel.

If using the **IR Remote**, press the **Lock** button.

The **Lock (Hold)** button on the console will illuminate.

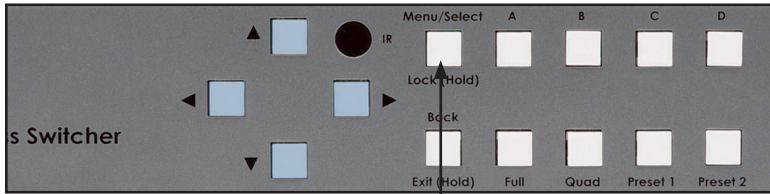


2. The switcher is now locked. The button will remain illuminated as long as the switcher is locked.



Switcher is locked

3. To unlock the switcher, press and hold the **Lock (Hold)** button. The button will no longer be illuminated.
4. The switcher is now unlocked and can be used normally.

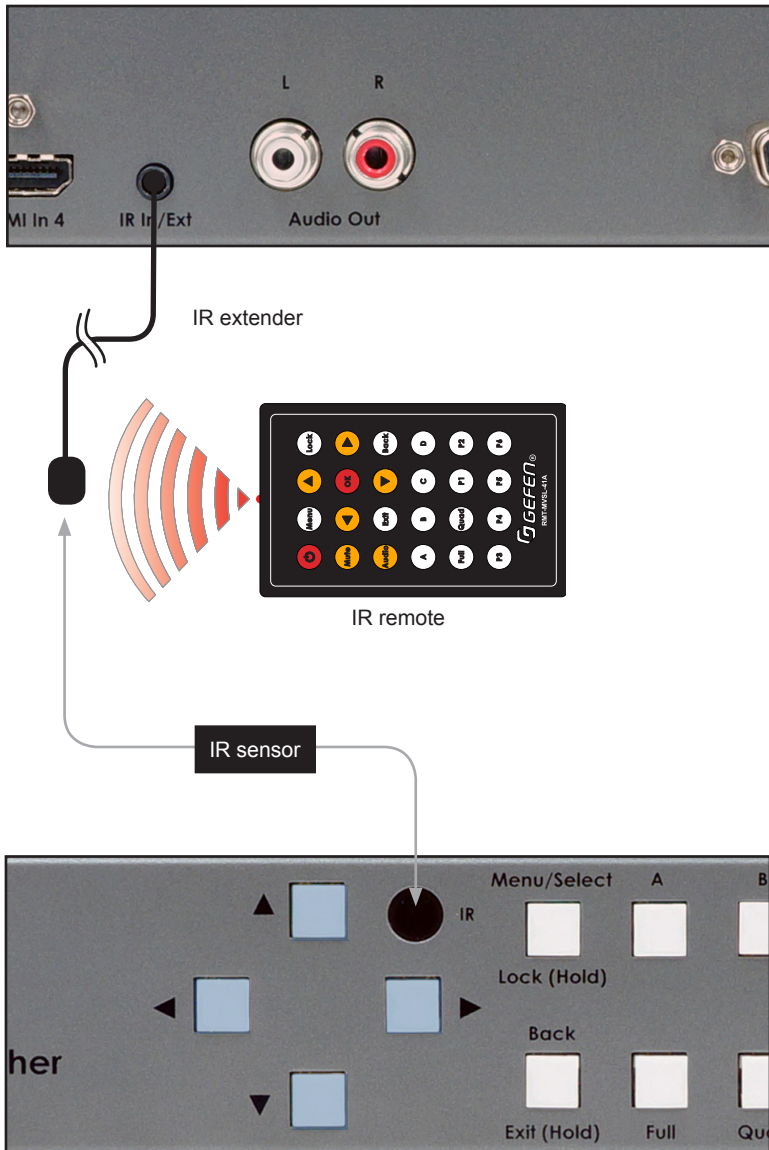


Switcher is unlocked

When the unit is locked, any button press will cause the **Menu/Select/Lock** button to blink in the following pattern one time to indicate that the unit is locked.

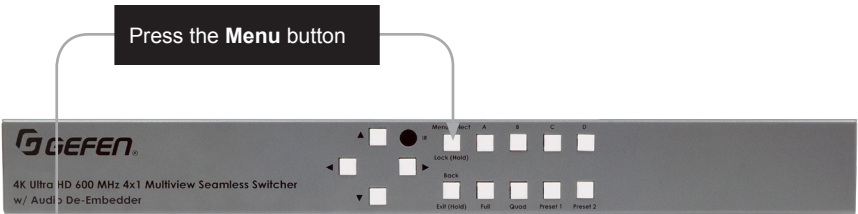
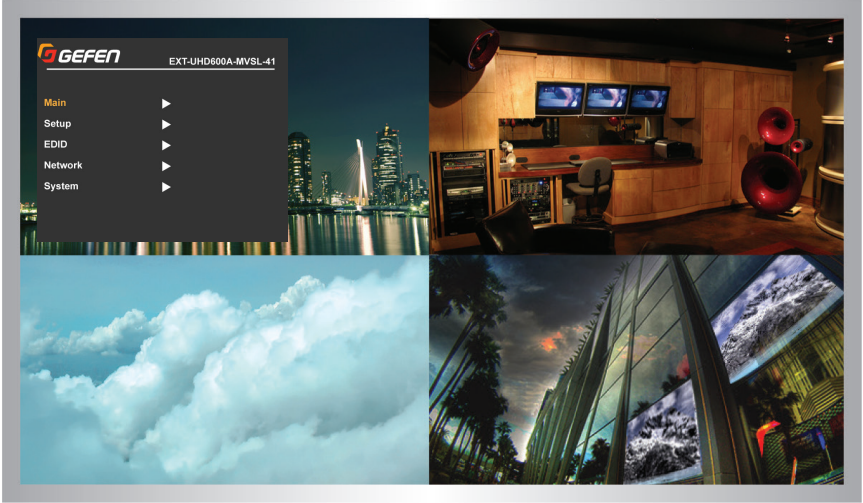
- Menu/Select/Lock button LED inactive (OFF) for 500 ms
- Menu/Select/Lock button LED active (ON) for 500 ms
- Menu/Select/Lock button LED inactive (OFF) for 500 ms
- Menu/Select/Lock button LED active (ON).

There may be situations where the front panel IR sensor is blocked due to being positioned inside a cabinet or other mounting situation. In this case, the included IR extender (Gefen part no. EXT-RMT-EXTIRN) can be connected to the **IR In/Ext** port on the 4x1 Multiview Seamless Switcher. The sensor on the IR extender behaves exactly like the sensor on the front panel of the switcher. Always point the IR remote control in the direction of the IR sensor.



Accessing the Menu System

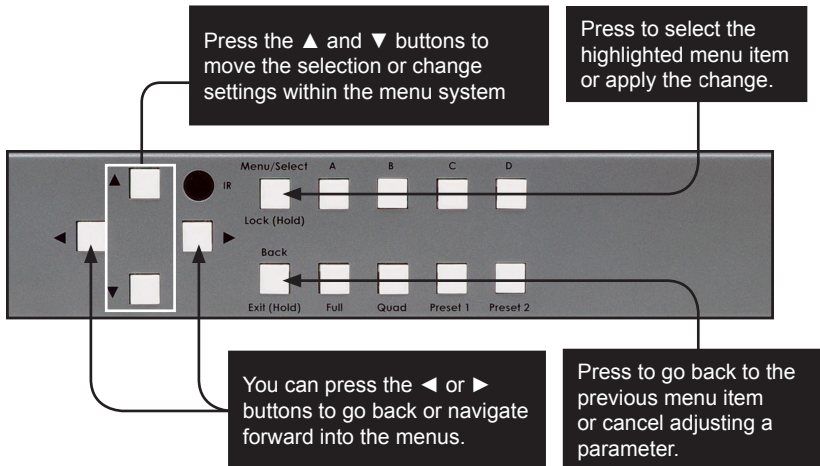
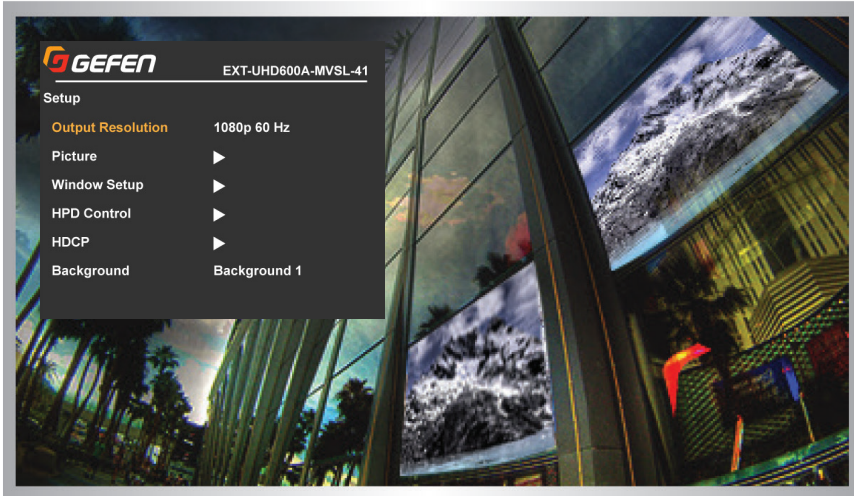
The 4x1 Multiview Seamless Switcher uses a built-in, On Screen Display (OSD) menu system to manage and control all video features. To access the menu system, press the **Menu** button on the front panel or on the included IR remote control.



The OSD time-out value (duration) for the menu system can be changed in the [Menu System](#), pg. 35.

Using the Front Panel Controls

Use the ◀, ▶, ▲, and ▼ buttons on the front panel to move around within the menu system. Press the ▲ and ▼ buttons to move up and down. Press the **Select** button to make the desired selection. The current selection will be highlighted in orange. Press the ▲ and ▼ buttons to change settings. Press the **Select** button to apply the change. You can also press the ◀ or ▶ buttons to go back or navigate forward into the menus.



Using the IR Remote Control

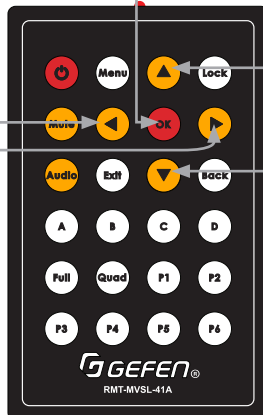
The IR remote control has buttons which represent the controls on the front panel. Press the **▲** and **▼** buttons to navigate and change settings. Press the **OK** button to choose a setting or to apply the change. You can also press the **◀** or **▶** buttons to go back or navigate forward into the menus.



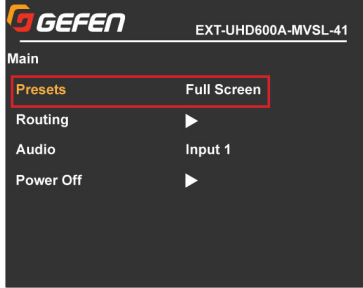
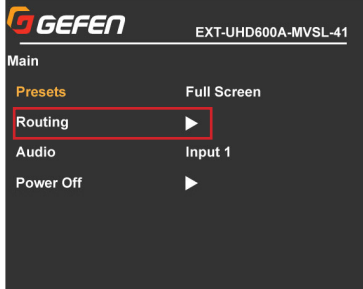
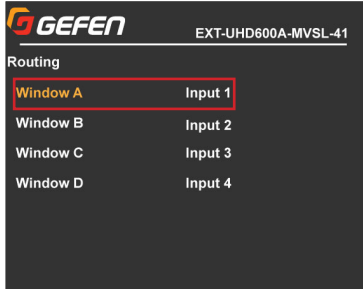
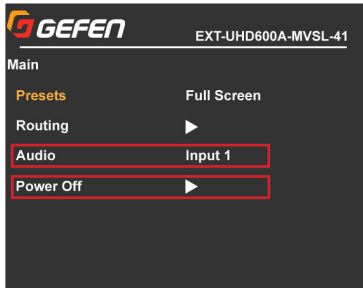
Press OK to choose a setting or to apply the selected setting

Press the ▲ and ▼ buttons to move up and down within the menu system or change settings

Press the ◀ or ▶ buttons to go Back or to Navigate forward into the menus



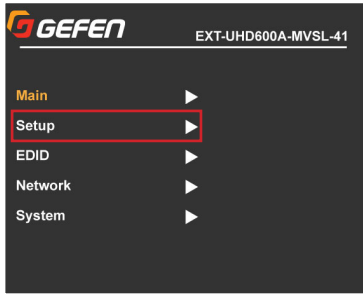
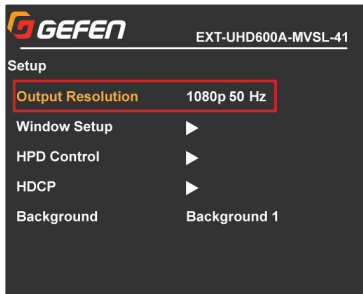
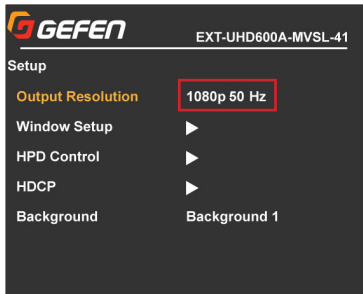
Main

<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed. Select Setup, then select Main.</p> <p>The Presets item shows the current preset (if active). Press the Select button then use the ▲ or ▼ buttons to go through the list of presets. Press Select to recall that preset.</p>	 <p>The screenshot shows the GEFEN logo at the top left and the model number EXT-UHD600A-MVSL-41 at the top right. Below the logo, the word 'Main' is displayed. A list of menu items follows: 'Presets' (highlighted with a red box), 'Full Screen', 'Routing' (with a right-pointing arrow), 'Audio' (with 'Input 1' to its right), and 'Power Off' (with a right-pointing arrow).</p>
<p>2. Select Routing to choose which Input gets routed to each Window.</p>	 <p>The screenshot shows the GEFEN logo and model number at the top. Below 'Main', the 'Routing' option is highlighted with a red box and a right-pointing arrow. Other options include 'Presets', 'Full Screen', 'Audio' (with 'Input 1'), and 'Power Off' (with a right-pointing arrow).</p>
<p>3. Highlight a Window and press the Select button, then use the ▲ or ▼ buttons to go through the list of inputs. Press Select to choose routing from that input.</p>	 <p>The screenshot shows the GEFEN logo and model number at the top. Below the logo, the word 'Routing' is displayed. A list of menu items follows: 'Window A' (highlighted with a red box), 'Input 1', 'Window B' (with 'Input 2' to its right), 'Window C' (with 'Input 3' to its right), and 'Window D' (with 'Input 4' to its right).</p>
<p>4. The Audio item shows the current audio routing. Press the Select button then use the ▲ or ▼ buttons to go through the list of inputs. Press Select to choose audio routing from that input.</p> <p>5. Use the Power Off option to put the unit into standby. Press Select then press the ▶ buttons to highlight Yes. Press Select again to verify you want to power down the unit.</p>	 <p>The screenshot shows the GEFEN logo and model number at the top. Below 'Main', the 'Audio' option is highlighted with a red box and a right-pointing arrow, with 'Input 1' to its right. The 'Power Off' option is also highlighted with a red box and a right-pointing arrow. Other options include 'Presets', 'Full Screen', and 'Routing'.</p>

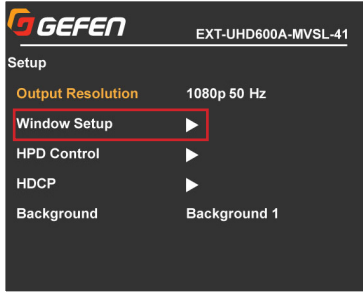
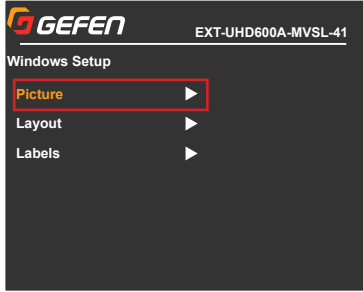

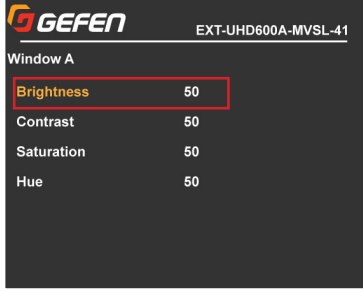
Setup ► Output Resolution



NOTE: Before changing this setting, make sure that the connected display can support the selected output resolution.

<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed.</p> <p>Press ▼ to highlight the Setup option.</p>	 <p>The screenshot shows the GEFEN logo at the top left and the model number 'EXT-UHD600A-MVSL-41' at the top right. The main menu items are: Main, Setup (highlighted with a red box), EDID, Network, and System. Each item has a right-pointing arrow.</p>																								
<p>2. Press the Select button (or IR Remote OK button) to display the Setup menu.</p>	 <p>The screenshot shows the 'Setup' menu with the following options: Output Resolution (highlighted with a red box and showing '1080p 50 Hz'), Window Setup, HPD Control, HDCP, and Background (showing 'Background 1').</p>																								
<p>3. Press the Select button again to select an Output Resolution.</p> <p>Use the ▲ or ▼ buttons to highlight the desired output resolution.</p>	<table border="0"> <tr> <td>640 X 480 60 HZ</td> <td>576P 50 HZ</td> </tr> <tr> <td>800 X 600 60HZ</td> <td>720P 50 HZ</td> </tr> <tr> <td>1024 X 768 60 HZ</td> <td>720P 60 HZ</td> </tr> <tr> <td>1280 X 768 60 HZ</td> <td>1080P 50 HZ</td> </tr> <tr> <td>1280 X 960 60 HZ</td> <td>1080P 60 HZ</td> </tr> <tr> <td>1280 X 1024 60 HZ</td> <td>2160P 24 HZ</td> </tr> <tr> <td>1366 X 768 60 HZ</td> <td>2160P 25 HZ</td> </tr> <tr> <td>1440 X 900 60 HZ</td> <td>2160P 30 HZ</td> </tr> <tr> <td>1600 X 1200 60 HZ</td> <td>2160P 60 HZ 4:2:0</td> </tr> <tr> <td>1680 X 1050 60 HZ</td> <td>2160P 60 HZ 4:4:4</td> </tr> <tr> <td>1920 X 1200 60 HZ</td> <td>NATIVE (default)</td> </tr> <tr> <td>480P 60 HZ</td> <td></td> </tr> </table>	640 X 480 60 HZ	576P 50 HZ	800 X 600 60HZ	720P 50 HZ	1024 X 768 60 HZ	720P 60 HZ	1280 X 768 60 HZ	1080P 50 HZ	1280 X 960 60 HZ	1080P 60 HZ	1280 X 1024 60 HZ	2160P 24 HZ	1366 X 768 60 HZ	2160P 25 HZ	1440 X 900 60 HZ	2160P 30 HZ	1600 X 1200 60 HZ	2160P 60 HZ 4:2:0	1680 X 1050 60 HZ	2160P 60 HZ 4:4:4	1920 X 1200 60 HZ	NATIVE (default)	480P 60 HZ	
640 X 480 60 HZ	576P 50 HZ																								
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1024 X 768 60 HZ	720P 60 HZ																								
1280 X 768 60 HZ	1080P 50 HZ																								
1280 X 960 60 HZ	1080P 60 HZ																								
1280 X 1024 60 HZ	2160P 24 HZ																								
1366 X 768 60 HZ	2160P 25 HZ																								
1440 X 900 60 HZ	2160P 30 HZ																								
1600 X 1200 60 HZ	2160P 60 HZ 4:2:0																								
1680 X 1050 60 HZ	2160P 60 HZ 4:4:4																								
1920 X 1200 60 HZ	NATIVE (default)																								
480P 60 HZ																									
<p>4. Press the Select button to apply the selected resolution.</p> <p>If the display does not support the selected resolution, use the web interface, RS-232 or IP commands to change the resolution.</p> <p>See RS-232 and IP Configuration, pg. 52, for more information on commands.</p>	 <p>The screenshot shows the 'Setup' menu with the following options: Output Resolution (highlighted with a red box and showing '1080p 50 Hz'), Window Setup, HPD Control, HDCP, and Background (showing 'Background 1').</p>																								

Setup ► Window Setup ► Picture

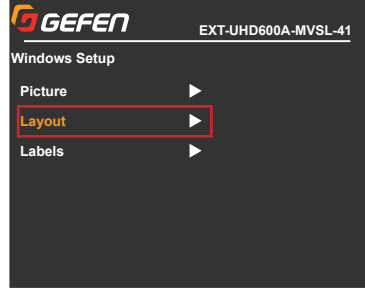
<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed. Select Setup, then select Window Setup.</p>	 <p>GEFEN EXT-UHD600A-MVSL-41</p> <p>Setup</p> <p>Output Resolution 1080p 50 Hz</p> <p>Window Setup ►</p> <p>HPD Control ►</p> <p>HDCP ►</p> <p>Background Background 1</p>
<p>2. Select Picture to view options for a particular window.</p>	 <p>GEFEN EXT-UHD600A-MVSL-41</p> <p>Windows Setup</p> <p>Picture ►</p> <p>Layout ►</p> <p>Labels ►</p>
<p>3. Select the desired Window (A, B, C or D) to access that Window's Brightness, Contrast, Saturation and Hue options.</p>	 <p>GEFEN EXT-UHD600A-MVSL-41</p> <p>Picture</p> <p>Window A ►</p> <p>Window B ►</p> <p>Window C ►</p> <p>Window D ►</p>
<p>4. Press the ▲ or ▼ buttons to highlight an option, then press the Select button.</p> <p>5. Press the ▲ or ▼ buttons to adjust the numeric value, then press the Select button to save the change.</p>	 <p>GEFEN EXT-UHD600A-MVSL-41</p> <p>Window A</p> <p>Brightness 50</p> <p>Contrast 50</p> <p>Saturation 50</p> <p>Hue 50</p>

Setup ► Window Setup ► Layout

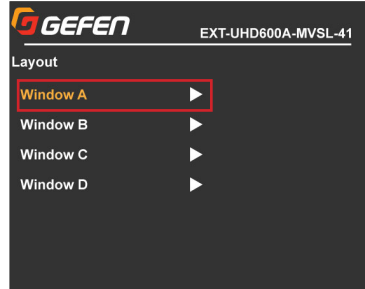
1. Press the **Menu** button on the front panel or on the IR remote control. The menu system will be displayed.

Select **Setup**, then select **Window Setup**.

Select [Layout](#) to view options for a particular window.

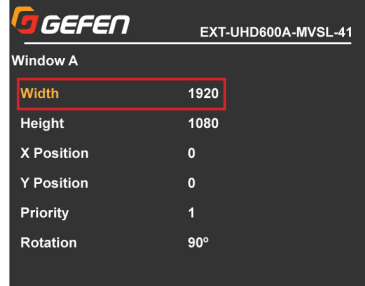


2. Press the **▲** or **▼** buttons to highlight a window, then press the **Select** button.



3. Press the **▲** or **▼** buttons to highlight an option, then press the **Select** button.

Press the **▲** or **▼** buttons to adjust the setting, then press the **Select** button to save the change.

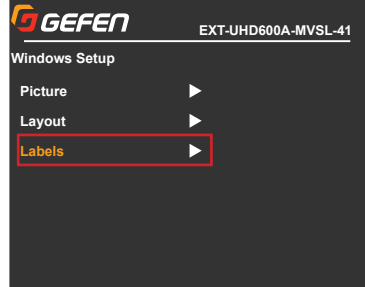


Setup ► Window Setup ► Labels

1. Press the **Menu** button on the front panel or on the IR remote control. The menu system will be displayed.

Select **Setup**, then select **Window Setup**.

Select [Labels](#) to access label and border options for a particular window.

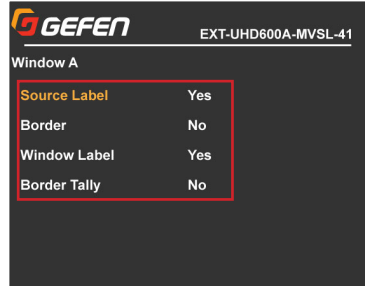


2. Press the **▲** or **▼** buttons to highlight a window, then press the **Select** button.



3. Press the **▲** or **▼** buttons to highlight an option, then press the **Select** button.

Press the **▲** or **▼** buttons to adjust the setting, then press the **Select** button to save the change.



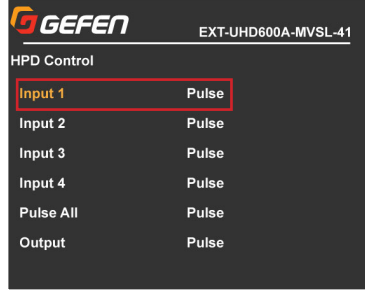
Setup ► HPD Control

1. Press the **Menu** button on the front panel or on the IR remote control. The menu system will be displayed. Select **Setup**, then select [HPD Control](#).



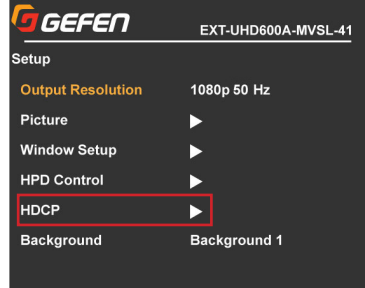
2. Press the ▲ or ▼ buttons to highlight an option, then press the **Select** button.

Press **Select** again to send the HPD pulse.



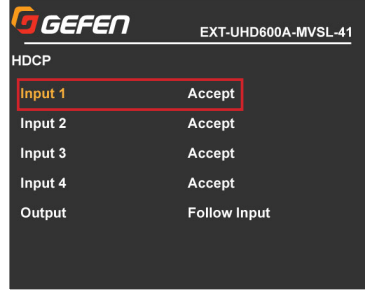
Setup ► HDCP Control

1. Press the **Menu** button on the front panel or on the IR remote control. The menu system will be displayed. Select **Setup**, then select [HDCP](#).



2. Press the ▲ or ▼ buttons to highlight an option, then press the **Select** button.

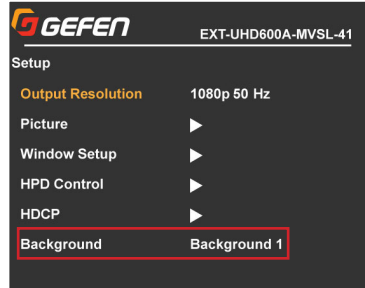
Press the ▲ or ▼ buttons to adjust the setting, then press the **Select** button to save the change.



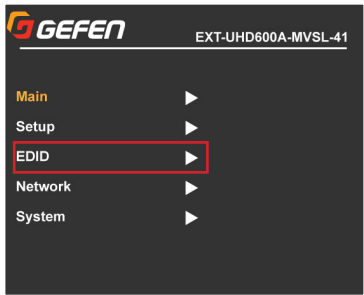
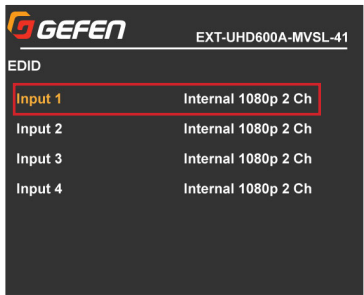
Setup ► Background

1. Press the **Menu** button on the front panel or on the IR remote control. The menu system will be displayed. Select **Setup**, then select [Background](#).

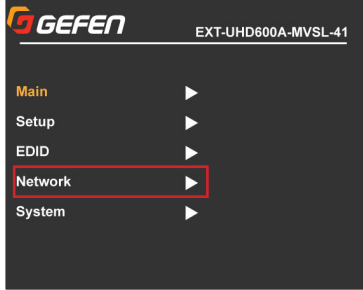
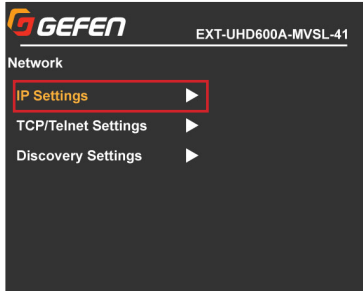
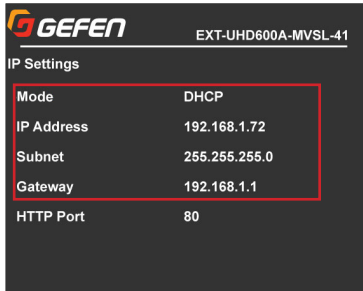
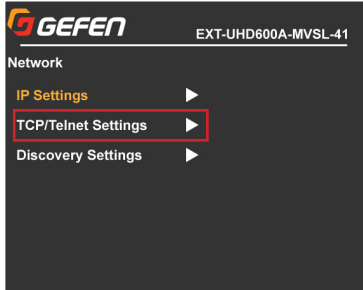
Press the ▲ or ▼ buttons to adjust the setting, then press the **Select** button to save the change.



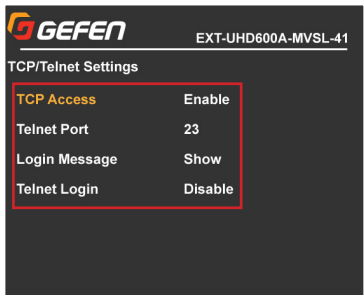
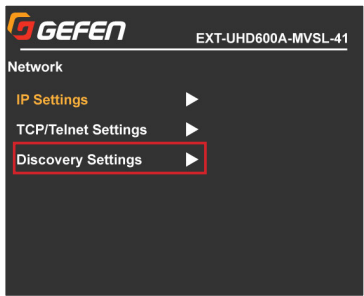
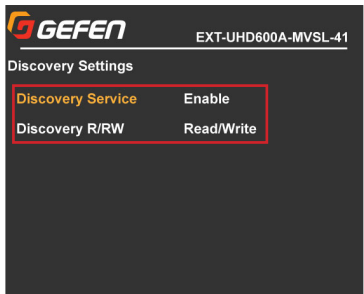
EDID

<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed. Select EDID.</p>	 <p>The screenshot shows the GEFEN menu system interface. At the top left is the GEFEN logo, and at the top right is the model number EXT-UHD600A-MVSL-41. The main menu items are: Main, Setup, EDID (highlighted with a red box), Network, and System. Each item has a right-pointing arrow next to it.</p>
<p>2. Press the ▲ or ▼ buttons to highlight an Input, then press the Select button.</p> <p>Press the ▲ or ▼ buttons to adjust the setting, then press the Select button to save the change.</p>	 <p>The screenshot shows the EDID configuration screen. At the top left is the GEFEN logo, and at the top right is the model number EXT-UHD600A-MVSL-41. Below the GEFEN logo is the text 'EDID'. There are four input options listed: Input 1, Input 2, Input 3, and Input 4. Each input option is followed by the text 'Internal 1080p 2 Ch'. The 'Input 1' option is highlighted with a red box.</p>


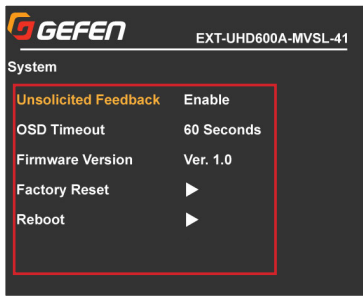
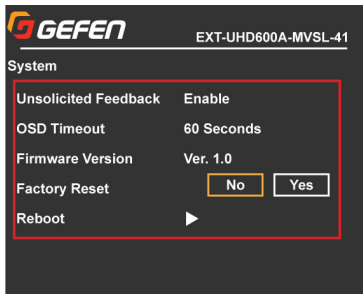
Network

<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed. Select Network.</p>	
<p>2. Press the ▲ or ▼ buttons to highlight IP Settings, then press the Select button.</p>	
<p>3. Press the ▲ or ▼ buttons to highlight an option, then press the Select button.</p> <p>Press the ▲ or ▼ buttons select an option setting, then press the Select button to save the change.</p> <p>4. To adjust numbers, press the ◀ or ▶ buttons to highlight the digit you wish to change. Press the ▲ or ▼ buttons to change the digit's value, then press the Select button to save the change.</p>	
<p>5. Press the Back button to return to the <i>Network</i> screen.</p> <p>Highlight TCP/Telnet Settings, then press the Select button.</p>	

Network (continued)

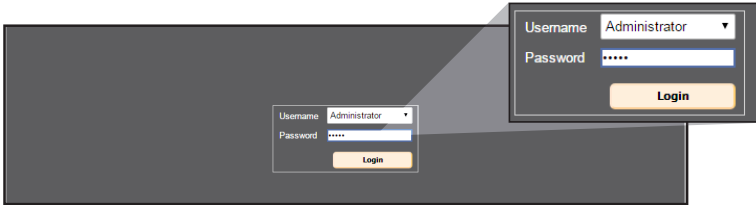
<p>6. Press the ▲ or ▼ buttons to highlight an option, then press the Select button.</p> <p>Press the ▲ or ▼ buttons to adjust the setting, then press the Select button to save the change.</p>	 <p>The screenshot shows the GEFEN network configuration interface. At the top, the GEFEN logo and the device ID 'EXT-UHD600A-MVSL-41' are visible. The main heading is 'TCP/Telnet Settings'. Below this, there are four settings listed in a table:</p> <table border="1"><tr><td>TCP Access</td><td>Enable</td></tr><tr><td>Telnet Port</td><td>23</td></tr><tr><td>Login Message</td><td>Show</td></tr><tr><td>Telnet Login</td><td>Disable</td></tr></table> <p>The 'TCP Access' setting is highlighted with a red box.</p>	TCP Access	Enable	Telnet Port	23	Login Message	Show	Telnet Login	Disable
TCP Access	Enable								
Telnet Port	23								
Login Message	Show								
Telnet Login	Disable								
<p>7. Press the Back button to return to the <i>Network</i> screen.</p> <p>Highlight Discovery Settings, then press the Select button.</p>	 <p>The screenshot shows the GEFEN network configuration interface. At the top, the GEFEN logo and the device ID 'EXT-UHD600A-MVSL-41' are visible. The main heading is 'Network'. Below this, there are three menu items listed with right-pointing arrows:</p> <ul style="list-style-type: none">IP SettingsTCP/Telnet SettingsDiscovery Settings <p>The 'Discovery Settings' menu item is highlighted with a red box.</p>								
<p>8. Press the ▲ or ▼ buttons to highlight an option, then press the Select button.</p> <p>9. Press the ▲ or ▼ buttons to adjust the setting, then press the Select button to save the change.</p>	 <p>The screenshot shows the GEFEN network configuration interface. At the top, the GEFEN logo and the device ID 'EXT-UHD600A-MVSL-41' are visible. The main heading is 'Discovery Settings'. Below this, there are two settings listed in a table:</p> <table border="1"><tr><td>Discovery Service</td><td>Enable</td></tr><tr><td>Discovery R/RW</td><td>Read/Write</td></tr></table> <p>The 'Discovery Service' setting is highlighted with a red box.</p>	Discovery Service	Enable	Discovery R/RW	Read/Write				
Discovery Service	Enable								
Discovery R/RW	Read/Write								

System

<p>1. Press the Menu button on the front panel or on the IR remote control. The menu system will be displayed. Select System.</p>	 <p>The screenshot shows the GEFEN OSD menu with the following items: Main, Setup, EDID, Network, and System. The 'System' option is highlighted with a red rectangular box.</p>
<p>2. Press the ▲ or ▼ buttons to highlight an option, then press the Select button.</p>	 <p>The screenshot shows the 'System' menu with the following items: Unsolicited Feedback (Enable), OSD Timeout (60 Seconds), Firmware Version (Ver. 1.0), Factory Reset, and Reboot. The 'Unsolicited Feedback' option is highlighted with a red rectangular box.</p>
<p>3. For the enable/disable and timeout options, press the ▲ or ▼ buttons to adjust the setting, then press the Select button to save the change.</p> <p>For the No/Yes options, press the ◀ or ▶ buttons to choose, then press the Select button to execute it.</p>	 <p>The screenshot shows the 'System' menu with the following items: Unsolicited Feedback (Enable), OSD Timeout (60 Seconds), Firmware Version (Ver. 1.0), Factory Reset, and Reboot. The 'Factory Reset' option is highlighted with a red rectangular box, and the 'No' button is selected.</p>

Using the built-in Web Interface

This is the login page. Options for login are **Administrator** and **Operator**. Password defaults are 'admin' and 'operator'. The Web interface is divided into six tabs at the top of the screen: **Main**, **Setup**, **Names**, **EDID**, **Network**, **System**. Some tabs have sub-tabs.



Username

Select the username from the drop-down list:

- Operator
- Administrator

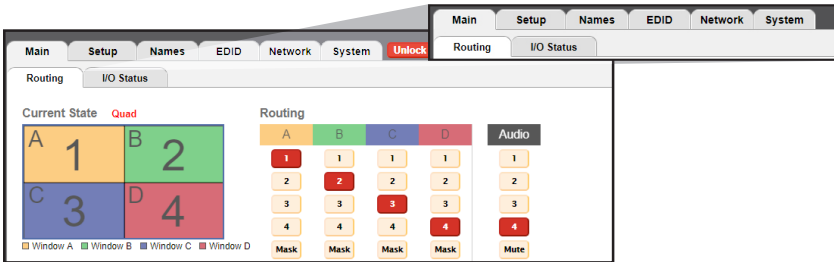
Administrator login provides unrestricted access to all features and settings. *Operator* login limits access to routing features, preset selection, and input/output info (see **Main-Routing** and **Main-I/O Status** sections for more information).

Password

Enter the password for the associated username.

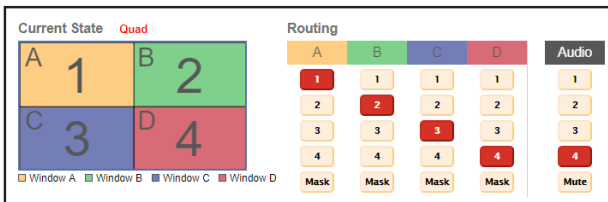
Main ► Routing

This is the MAIN tab and contains day-to-day operational items.



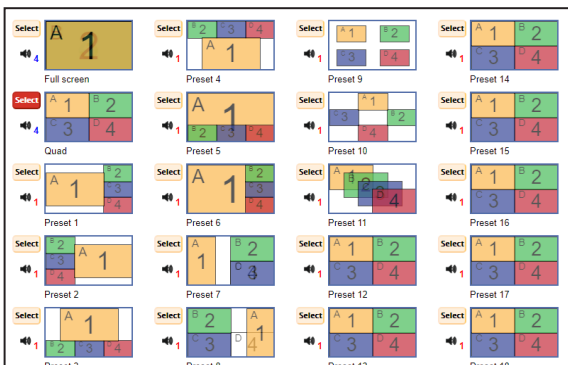
4K Mode Limitations

- No custom presets
- Only 1080p input (EDID auto changes to 1080p 2ch)
- No picture adjustments
- No border tally feature

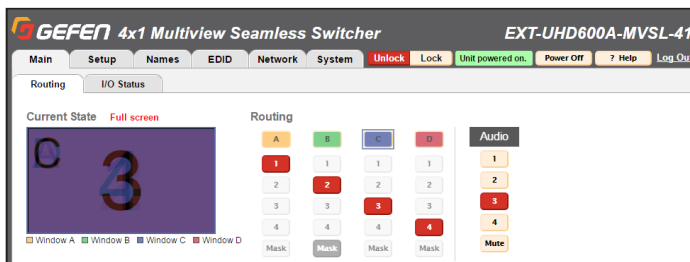


The Current State displays the current layout, the name of the active preset (if applicable), and routing that the unit is currently displaying.

In the Routing table, inputs 1-4 can be routed to each window (A – D), with the ability to mask (hide) each window. The audio source can be chosen from any of the input sources and can also be muted (Mute).

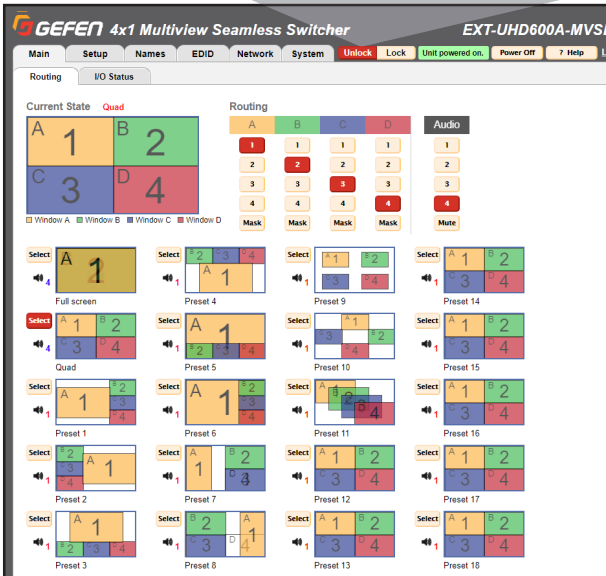
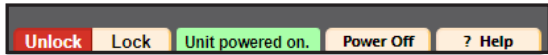


There are two default presets (Full screen and Quad), and 18 user-configurable presets (1 - 11 have basic layout configurations that can be overwritten). They can be activated using the **Select** button (Select) located to the left of each preset preview. The preset preview image to the right of the **Select** button indicates each preset's visual layout, as well as the selected audio source (🔊 2). The muted audio icon (🔇) indicates that the audio is muted for that preset. The input route for each window in each preset is indicated in black numerical text in the center of each window. White numerical text and/or a blue audio source (🔊 4) indicates "Do Not Include", which means that the input or audio source will not change from its current source when that preset is activated.



When selecting the Full screen preset, Window A will be brought to the foreground, and Inputs 1 - 4 will automatically be assigned to Windows A - D in numerical order.

Use the colored Window Buttons at the top of the routing table to select which window is in the foreground. All other windows behind the foreground window will not be visible.

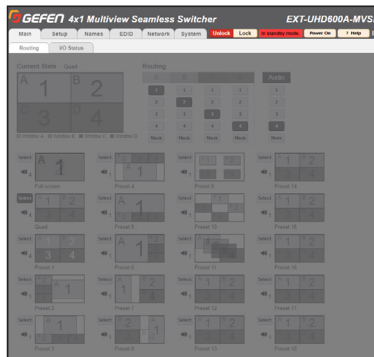


Unlock / Lock Buttons

Lock or unlock the switcher. Once the switcher is locked, settings cannot be changed using the front-panel buttons, IR remote control or through the Web GUI.

Power Off

Toggles the power state of the 4x1 Multiview Seamless Switcher. When the switcher is powered-on, the button will read “Power On”.



? Help

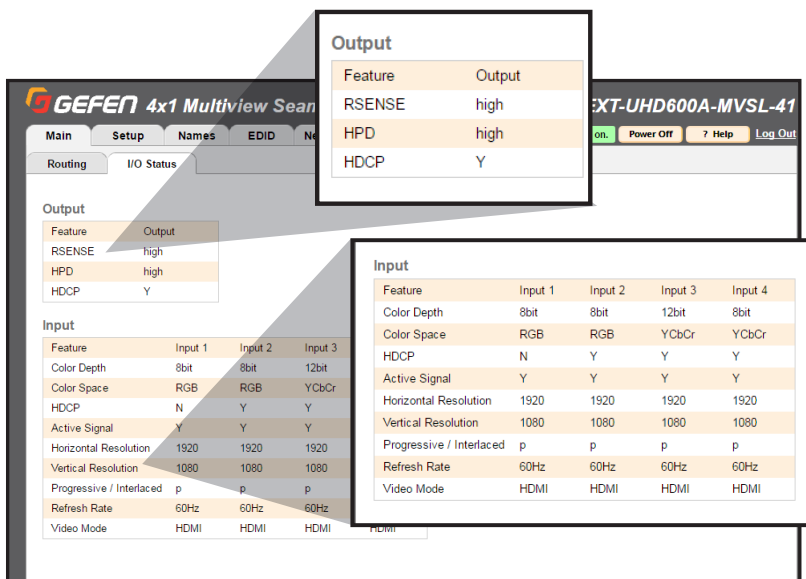
Click the “? Help” button to display context-sensitive help. This button is available on all pages.

Log Out

Click *Log Out* to terminate the current Web session and return to the login page.

Main ► I/O Status

This tab indicates the status of the inputs and outputs.



Output

The Output table displays the *Feature* and *Output* status for:

- RSENSE** : Displays the current Rsense state (On/Off).
- HPD** : Displays the current HPD state.
- HDCP** : Displays the current HDCP state. The HDCP state can be set using the [#set_output_hdcp](#) command or through the **Setup ► HDCP** section of the Web interface or OSD menu.

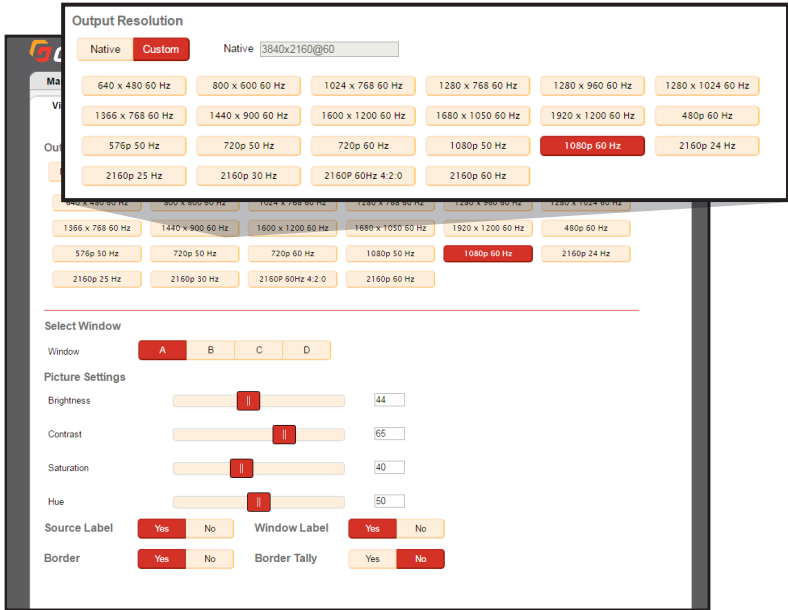
Input

The Input table displays the *Feature* and *Input* (1-4) status for:

- Color Depth** : The color depth of the input signal (8-bit, 10-bit, etc).
- Color Space** : The color space (RGB or YCbCr) of the input signal.
- HDCP** : Displays whether or not HDCP is detected on the input.
- Active Signal** : Detects whether an input signal is present or not.
- Horizontal Resolution** : The horizontal resolution (in pixels) of the input signal.
- Vertical Resolution** : The vertical resolution (in pixels) of the input signal.
- Progressive / Interlaced** : Detects whether the input signal is progressive or interlaced.
- Refresh Rate** : The refresh rate (frequency) of the input signal.
- Video Mode** : The video mode (HDMI or DVI) of the input signal.

Setup ► Video

This tab is the main configuration page for the output and windows. The output resolution modes are **Native** and **Custom**.



Native

The *Native* mode will attempt to set the output of the unit based on the native resolution detected in the EDID of the connected display.

Custom

The *Custom* mode can be set by selecting any of the *Output Resolution* buttons displayed.

Select Window & Picture Settings

To configure a *Window*, select a window from the **A**, **B**, **C** and **D** options displayed. If desired, use the option sliders to set the **Brightness**, **Contrast**, **Saturation** and **Hue**. You can also set them manually by typing in numeric values (0 – 100).

Source Label*

The *Source Label* displays the named source label that is set in the GUI for that window.

Window Label*

Window Label displays the named window label that is set in the GUI for that window.

Border*

The *Border* option displays a color border around the window. The border color is non-configurable and matches the window color displayed in the Routing, Window Setup, and Names tabs.

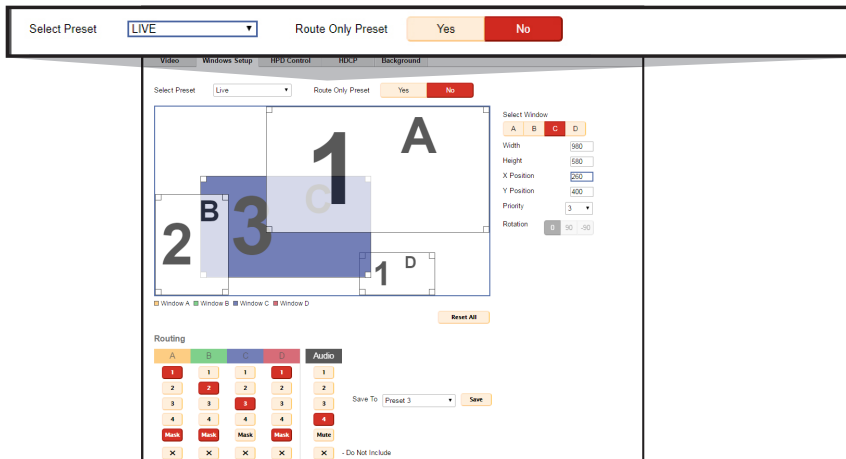
Border Tally*

Border Tally will blink the border On and Off if set to **Yes**. If the *Border* option is NOT set to **Yes**, *Border Tally* option will be grayed out.

* (Yes=Enable; No=Disabled)

Setup ► Window Setup

This tab allows you to configure the window layouts and presets. A preset can be selected from the **Select Preset** pull-down.



Select Preset

The list contains ALL of the default and user presets as shown on the MAIN routing tab.

The **LIVE** option selects what is currently being displayed on the output.

The **Full Screen** and **Quad** presets can also be selected and used as a base to create a user preset. You can then select each individual window from the Select Window section and configure size, position, priority, and rotation.

Select Window

Width & Height values can be typed in here or the corners of the windows in the preview area can be dragged to resize the windows.

X Position & Y Position values can be typed in here or the windows in the preview area can be dragged to move them.

The **Priority** option is only valuable if windows are overlaid on top of another. They have a numbered priority of 1 – 4 (with 1 being the forefront).

The **Rotation** option is ONLY applicable to Window A.

Reset All

This option will ignore any unsaved changes, and return all options to their previously saved state. If the selected preset is LIVE, this button will have no effect.

Routing

This table is used to determine the input to window routing that will be saved with the preset. The 'X' buttons are used to set a *Do Not Include* for that window, which will not change the current routing of that window or audio when the preset is activated.

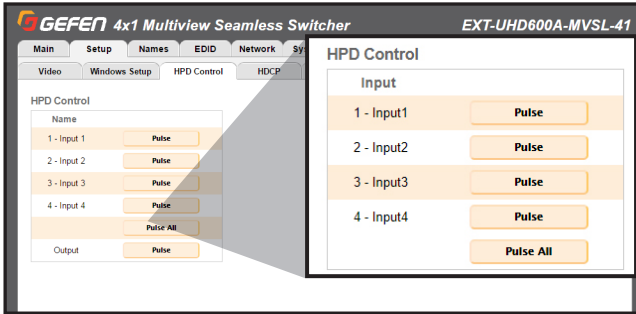
For example, saving a preset with 'X' (Do Not Include) for audio routing will not change the current audio routing when recalling/activating this preset.

Save To

After configuration, you can use the **Save To** option to select the preset in which to save the changes, with the only selectable presets being the user configurable presets (1~18).

Setup ► HPD Control

This tab is used to perform **HPD** (*Hot Plug Detect*) pulse events.

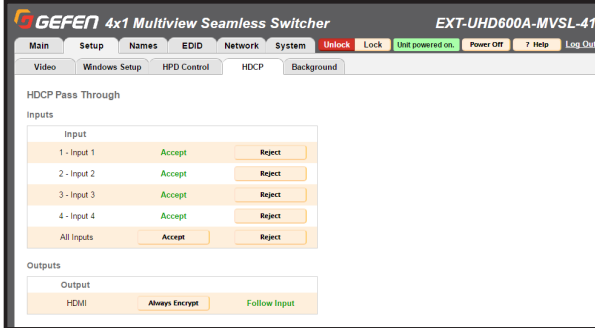


HPD is a low voltage pin in the HDMI cable that is set either HIGH or LOW that indicated the presence of a cable connection.

Momentarily changing this voltage from HIGH to LOW and then back to HIGH creates a *Pulse* that *disconnects* and *reconnects*, triggering a connection reset between the unit and the input source(s) without unplugging and plugging in the HDMI cable(s).

Setup ► HDCP Control

This tab will configure the **HDCP** (*High-bandwidth Digital Content Protection*) options available for this switcher.



Accept / Reject

Click the **Accept** button to allow HDCP content to pass on the input. Click the **Reject** button to prevent HDCP content from being transmitted to the input.

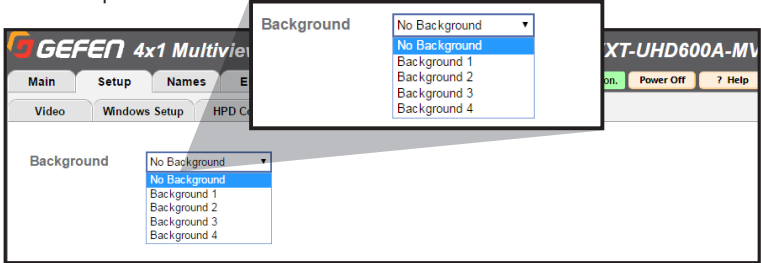
Click **Accept** or **Reject** adjacent to *All Inputs* to accept or reject all inputs simultaneously.

Always Encrypt / Follow Input

Click the **Always Encrypt** button to force HDCP encryption on the output regardless of the inputs. Click the **Follow Input** button to let output HDCP turn off if none of the inputs are HDCP encrypted.

Setup ► Background

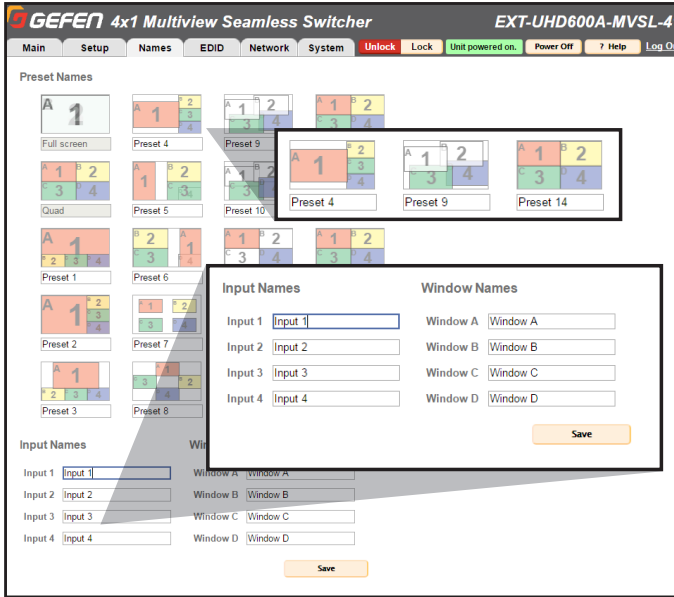
The Background tab allows you to configure the background image that will be shown behind the window layers of the display. It can be used to show information or provide a pleasant backdrop.



Select a Background (1–4) from the pulldown menu.

Names ► Preset Names

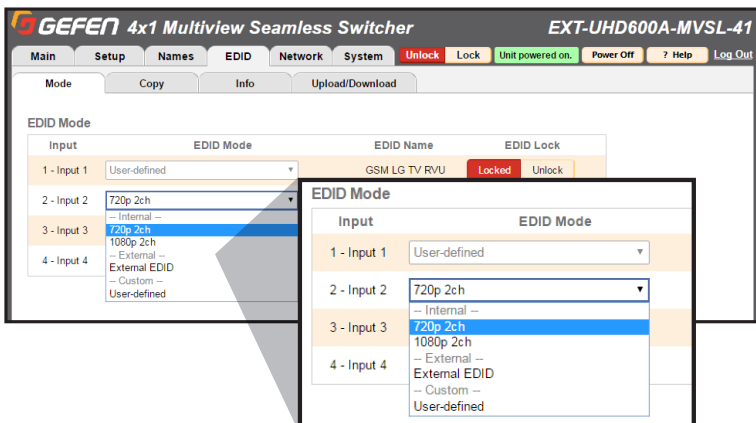
The **Names** tab allows you to Label/Name each of the user *Presets*, *Input* source and *Window* labels that appear in the web interface and optionally on screen.



The names chosen are displayed as the Window Label and Source Label on screen (option to display is in the Setup>Video tab). Preset names are limited to 12 alphanumeric characters. Input and Window names are limited to 20 alphanumeric characters.

EDID ► Mode

The EDID Mode tab is used to configure the EDID (Extended Display Identification Data), typically a 256 byte file that is hosted on a sink (display or other endpoint device) that contains video and audio capability information for that device.



There are 3 EDID modes:

Internal

Preconfigured and non-customizable EDIDs that have specific limitations on the resolution and number of allowable audio channels.

External

An EDID that is “pass-through” from a connected display through the unit and directly to the source with little to no modification.



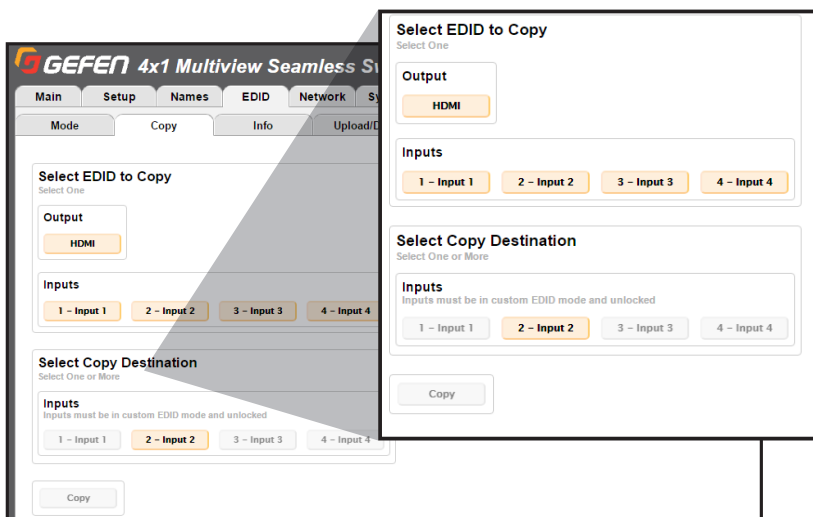
NOTE: The MVSL inputs cannot accept more than 1080P or 1920x1200 so this external EDID mode could result in a 4k signal from a source when a 4k TV is connected. The source's 4k signal will not be displayed.

Custom

The **User Defined** EDID can be uploaded, and each input has a memory location that stores the selected EDID. When using the Custom EDID mode, the EDID Lock function will be available to prevent accidental overwrite of the EDID that has been uploaded.

EDID ► Copy

The EDID Copy option provides the ability to copy the Output or any EDID that is currently stored in an input's memory to another input.

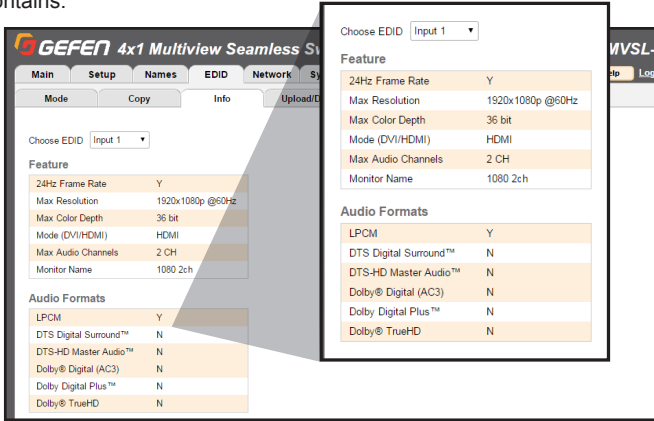


When a custom EDID has been uploaded to an input, use this option to copy it to the other inputs. Select an EDID to copy, then select the copy destination.

NOTE: The EDID Mode of the destination must be set to *Custom*, and the EDID Lock must be turned off to allow the copy procedure. The **Copy** button will then be available.

EDID ► Info

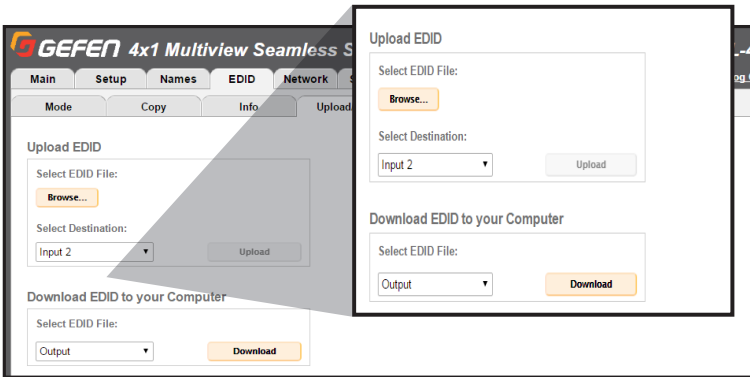
The EDID Info tab is an information page where the user can see features that the selected EDID contains.



Select the output or any of the 4 inputs to view the EDID information. Information is sourced from the input's local memory, so the information displayed depends on which mode is currently in use.

EDID ► Upload/Download

The EDID Upload/Download tab is used to download an EDID to the computer or to upload an externally sourced EDID .bin file for use with an input.



To upload an externally sourced EDID, select the **Browse** button and then select an EDID .bin file from the computer. Once selected, the filename will be displayed. You can then select an input as the destination and click **Upload**.

NOTE: The desired input EDID mode must be set to **Custom** to enable the option in the destination dropdown menu.

You can also download an EDID to your computer by selecting an option from the **Select EDID File** dropdown menu. Options include the *Output, any of the 4 inputs or the 2 internal EDIDs*. A downloaded EDID may be loaded into the Gefen Syner-G™ or other EDID modification software to then customize and re-upload back to the unit.

Network ► Settings

The Network tab is used to configure all of the network related options on the switcher. Once revisions have been made, select **Save**. Select the **Set Network Defaults** option to return to default network settings.

The screenshot shows the 'Network' configuration page for a GEFEN switcher. The interface includes a top navigation bar with tabs for 'Main', 'Setup', 'Names', 'EDID', 'Network', and 'System'. The 'Network' tab is selected. The page title is 'EXT-UHD600A-MVSL-41'. The settings are organized into four main sections:

- IP Settings:** Includes fields for MAC Address (00:1c:91:03:60:a5), HTTP Port (80), Mode (Static/DHCP), IP Address (10.5.27.138), Subnet (255.255.255.0), and Gateway (10.5.27.1).
- TCP/Telnet Settings:** Includes TCP Access (Enabled/Disable), TCP Port (23), Login Message on Connect (Show/Hide), Require Password on Connect (Enabled/Disable), User Name (Admin), Old Password, New Password, and Confirm New Password.
- Web Login Settings:** Includes Username (Operator/Administrator), Old Password, New Password, and Confirm New Password.
- Discovery Protocol Settings:** Includes Enable Discovery (Enabled/Disable), Discover Read Only (Read Only/Read/Write), Find Your Device (Show Me), and Product Description (EXT-UHD600A-MVSL-41).

At the bottom of the page, there are two buttons: 'Set Network Defaults' and 'Save'.

IP Settings

MAC Address

The MAC address of the switcher. The MAC address cannot be changed.

Mode

The network mode setting.

Options

Static

DHCP

IP Address

Enter the new IP address of the switcher in this field. This option is only available if the network mode is set to **Static**.

Subnet

Enter the new subnet mask of the switcher in this field. This option is only available if the network mode is set to **Static**.

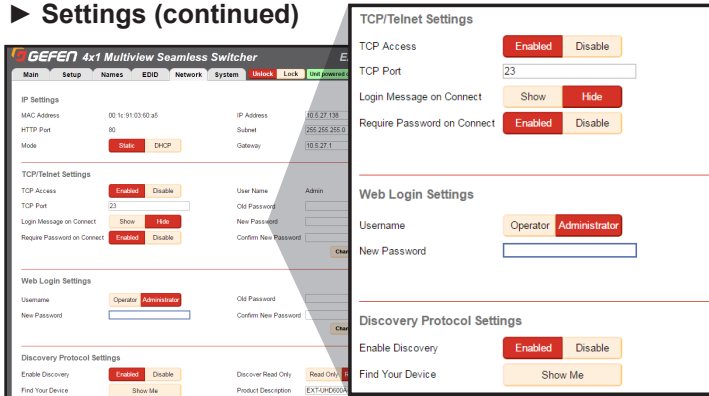
Gateway

Enter the new gateway (router) address in this field. This option is only available if the network mode is set to **Static**.

HTTP Port

Shows the port used by HTTP (web interface).

Network ► Settings (continued)



TCP/Telnet Settings

Enable TCP Access

Click **Enable** to make TCP available, or click **Disable** to disable TCP access.

TCP Port

Type in the a TCP port number. Default is set to 23.

Login Message on Connect

Click **Show** to display the Telnet Welcome Message. Click **Hide** to disable the Telnet Welcome Message.

Require Password on Connect

Click **Enable** to force the password prompt at the beginning of a Telnet session. Click to **Disable** to disable the password prompt. See [page 36](#) for the default password.

Web Login Settings

Username

Select **Operator** or **Administrator**.

Old Password

Enter the current (old) password in this field. See [page 36](#) for default passwords.

New Password

Enter the new password in this field.

Confirm New Password

Enter the new password in this field.

Discover Protocol Settings

Enable Discovery

Select **Enable** to find and perform simple IP configuration over a network using Syner-G.

Find Your Device

Click **Show Me** to have the front panel blink all LEDs to help find this device in an equipment rack.

Discover Read Only

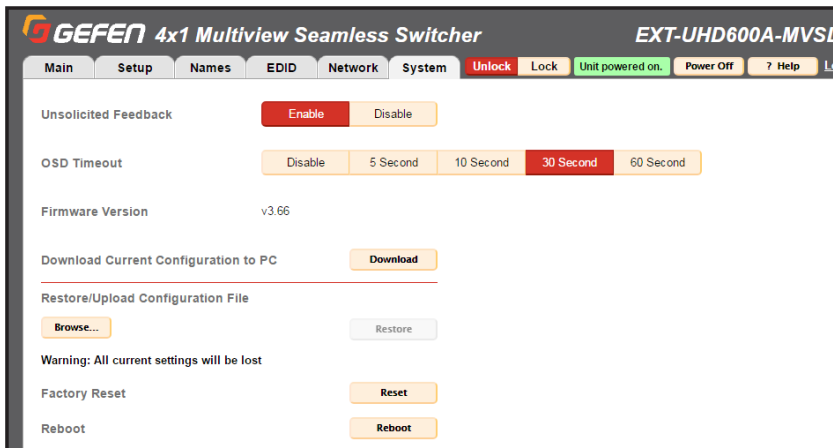
The **Read Only** and **Read/Write** option dictates whether or not changes can be made to the switcher's IP settings remotely via Syner-G.

Product Description

By default the part number is used as the description. If desired, type a new description.

System ► Settings

The System tab is used to configure settings that relate to operational functions or factory default and rebooting operations.



Unsolicited feedback

This option controls feedback information on both the Serial and TCP/IP interfaces and is used to relay the status of any changes made to options through any of the interfaces. This includes front panel, GUI, TCP, Serial, and IR remote control. It informs any serial or TCP connected control device of changes that have NOT been made through those interfaces. It allows any external control GUI to remain in sync with the unit.

OSD Timeout

Timeout is the duration, in seconds, when the OSD menu will be automatically dismissed. Select the amount of seconds (5 – 60 seconds). If set to **Disable**, the OSD must be hidden manually by pressing the **Exit** button on the front panel or IR remote control.

Download Current Configuration to PC

Click the **Download** button to download the current settings and configuration to a file.

Restore/Upload Configuration File

Click the **Browse** button to select the desired configuration file to upload to the switcher. Any current settings will be overwritten when uploading a configuration file.



NOTE: Background Images are not included in the configuration file backup.

Factory Reset

Click the **Reset** button to set the switcher to factory-default settings. The IP settings are preserved to allow this to be executed remotely through TCP/IP or web interface without losing the connection. To reset IP settings, use the **Set Network Defaults** button in the Network tab.

Reboot

Click the **Reboot** button to reboot the switcher.

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4K 600 MHz Ultra HD 4x1 Seamless Switcher

03 Advanced Operation

Using Telnet

1. Launch the desired terminal application. For example, on the Windows operating system, we can use Hyperterminal; on Mac OS X, we can use the Terminal application.
2. In this example, we will use Terminal in Mac OS X. At the command prompt, type the following:

```
telnet IP_address
```

where `IP_address` is the IP address of the 4x1 Multiview Seamless Switcher.

3. After correct settings have been used in the terminal program, information similar to the following will be displayed:

```
*****Welcome to the EXT-UHD600A-MVSL-41*****  
          Firmware Version: v3.66  
*****  
  
>
```

4. Type `#help` for a list of commands or refer to the tables on the following pages.

Using RS-232

1. Launch the desired terminal application.
2. Selected the assigned COM port.
3. Configure the RS-232 port to the following settings.

Description	Setting
Baud rate	115200
Data bits	8
Parity	None
Stop bits	1
Hardware flow control	None

4. Connect to the RS-232 port (DB-9 connector). Only TxD, RxD, and GND pins are used.
5. Type `#help` for a list of commands or refer to the tables on the following pages.



NOTE: Depending upon the network, all related IP and Telnet settings will need to be assigned. Consult your network administrator to obtain the proper settings.

Commands

Name	Command(s)	Description(s)
Audio Source	SA	GET or SET Audio Source
	A	
Background	#GET_BACKGROUND	GET or SET background image
	#SET_BACKGROUND	
Brightness	#GET_BRIGHTNESS	GET or SET brightness adjustment value for one or more windows
	#SET_BRIGHTNESS	
Contrast	#GET_CONTRAST	GET or SET contrast adjustment value for one or more windows
	#SET_CONTRAST	
Custom EDID	#GET_CUSTOM_EDID	Download a custom user EDID from an input
	#SEND_CUSTOM_EDID	Upload a custom user EDID to an input for use with custom mode (after entering the command, while "waiting" is shown, send the EDID as hex values with no spaces and no hard returns until the end)
Device Description	#GET_DEVICE_DESC	GET or SET the device description
	#SET_DEVICE_DESC	
Discovery	#GET_DISCOVERY	GET or SET the current status of the discovery service
	#SET_DISCOVERY	
Discovery Mode	#GET_DISCOVERY_MODE	GET or SET the discovery read/write mode
	#SET_DISCOVERY_MODE	
Display Border	#GET_DISP_BORDER	GET or SET the current status of display border
	#SET_DISP_BORDER	
Display Source Label	#GET_DISP_SOURCE	GET or SET the current status of display source label
	#SET_DISP_SOURCE	
Display Tally	#GET_DISP_TALLY	GET or SET the current status of display tally
	#SET_DISP_TALLY	
Display Window Label	#GET_DISP_WINDOW	GET or SET the current status of display window label
	#SET_DISP_WINDOW	
EDID Lock	#GET_EDID_LOCK	GET or SET input EDID lock status
	#SET_EDID_LOCK	
EDID Mode	#GET_EDID_MODE	GET or SET input EDID mode
	#SET_EDID_MODE	
External EDID	#GET_EXTERNAL_EDID	Download external (bypass) EDID
Feedback	#GET_FEEDBACK	GET or SET status of feedback
	#SET_FEEDBACK	
Firmware version	#GET_FIRMWARE_VERSION	GET or SET firmware version
	#SET_FIRMWARE_VERSION	
Gateway	#GET_GATEWAY	Get the current gateway address
	#SET_GATEWAY	Set the gateway address

Name	Command(s)	Description(s)
Help	#HELP	Lists all available TCP/UDP commands. If a command is specified then both the description and syntax will be listed for the command.
HPD	#SEND_HPD	Send hpd (hot plug detect) pulse to one or all hdmi inputs
Hue	#GET_HUE	Get hue adjustment value for one or more windows
	#SET_HUE	
Input HDCP	#GET_INPUT_HDCP	Get or set get input HDCP handshake mode
	#SET_INPUT_HDCP	
Internal EDID	#GET_INTERNAL_EDID	Download a preset internal EDID
IO Name	#GET_IO_NAME	Get the name of an input or output
	#SET_IO_NAME	Modify the name of an input or window
IP Address	#GET_IP_ADDRESS	Get the current IP mode
	#SET_IP_ADDRESS	Set the IP mode to static or DHCP
IP Mode	#GET_IP_MODE	GET or SET the discovery read/write mode
	#SET_IP_MODE	
IP Configuration	#GET_IPCONFIG	Get the current IP configuration
Lock	#GET_LOCK	Get the current status control lock
	#SET_LOCK	Enable/Disable control lock
MAC Address	#GET_MAC_ADDR	Print the MAC address to the screen
Mute	#GET_MUTE	Get output audio mute status
	#SET_MUTE	Set output audio mute
OSD Timeout	#GET_OSD_TIMEOUT	GET or SET the OSD timeout
	#SET_OSD_TIMEOUT	
Output HDCP	#GET_OUTPUT_HDCP	GET or SET output HDCP encoding mode
	#SET_OUTPUT_HDCP	
Output Resolution	#GET_OUTPUT_RES	Get the output resolution status
	#SET_OUTPUT_RES	Set output resolution
Power	#GET_POWER	Get current power state
Power ON/OFF	#POWER	Power the unit on/off
Preset	#SET_PRESET_NAME	Set current window settings to a preset
Preset Name	#GET_PRESET_NAME	Get the preset name
	#SET_PRESET_NAME	Modify the preset name
Route Input Source	R	Route input sources to windows
Reboot	#REBOOT	Reboot the unit
Recall Preset	P	Recall a preset
Rotation	#GET_ROTATION	Get rotation adjustment value for window A
	#SET_ROTATION	Set rotation adjustment for window A (will not affect full screen or quad mode)
Routing Status	S	Get routing status

Commands

Name	Command(s)	Description(s)
Saturation	#GET_SATURATION	Get saturation adjustment value for one or more windows
	#SET_SATURATION	Set saturation adjustment for one or more windows
Showme	#GET_SHOWME	Get the status of the discovery 'show me' feature
	#SET_SHOWME	Enable/Disable the discovery 'show me' feature
Subnet Mask	#GET_SUBNET	Get the current subnet mask
	#SET_SUBNET	Set the subnet mask
Telnet Access	#GET_TELNET_ACCESS	Get the current status of Telnet access
	#SET_TELNET_ACCESS	Enable/Disable Telnet access
Telnet Login	#GET_TELNET_LOGIN	Get the current status of the Telnet login process
	#SET_TELNET_LOGIN	Enable/Disable the Telnet login process
Telnet Message	#GET_TELNET_MESSAGE	Get the current Telnet login welcome message status
	#SET_TELNET_MESSAGE	Enable/Disable the Telnet login welcome message
Telnet Port	#GET_TELNET_PORT	Get the current Telnet communication port
	#SET_TELNET_PORT	Set the Telnet communication port
Web Interface Port Number	#GET_WEB_PORT	Get the current web interface port number
	#SET_WEB_PORT	Set the web interface port number
Window	#GET_WINDOW	GET or SET window adjustment values
	#SET_WINDOW	

Audio Source (A / SA)

Set Audio Source.

Syntax	A PARAM1
Parameters (param1)	PARAM1 = 1 ~ 4 1 ~ 4 - HDMI INPUTS
Example	A 1
Get Audio Source.	SA (NO PARAMETER)
Example	SA

Background (#SET_ / #GET_)

Set the background image.

Syntax	#SET_BACKGROUND PARAM1
Parameters (param1)	[0 ~ 4] 0 - NO IMAGE 1 ~ 4 - BACKGROUND IMAGE 1 ~ 4
Examples	#SET_BACKGROUND 1

Get the background image.

Syntax	#GET_BACKGROUND
---------------	-----------------

Brightness (#SET_ / #GET_)

Set brightness adjustment for one or more windows.

Syntax	#SET_BRIGHTNESS PARAM1 PARAM2 (OPTIONAL PARAM1 PARAM2 PARAM1 PARAM2...)
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 0 ~ 100 0 ~ 100 - BRIGHTNESS VALUE
Examples	#SET_BRIGHTNESS A 50 #SET_BRIGHTNESS A 50 B 50 #SET_BRIGHTNESS A 50 B 50 C 50 D 50

Get brightness adjustment value for one or more windows.

Syntax	#GET_BACKGROUND
Parameters	GET_BRIGHTNESS PARAM1 PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS A ~ D
Examples	#GET_BRIGHTNESS A #GET_BRIGHTNESS A B #GET_BRIGHTNESS 0

Contrast(#SET_ / #GET_)

Set contrast adjustment for one or more windows.

Syntax	<code>#SET_CONTRAST PARAM1 PARAM2 (OPTIONAL PARAM1 PARAM2 PARAM1 PARAM2...)</code>
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 0 ~ 100 0 ~ 100 - CONTRAST VALUE
Examples	<code>#SET_BRIGHTNESS A 50</code> <code>#SET_BRIGHTNESS A 50 B 50</code> <code>#SET_BRIGHTNESS A 50 B 50 C 50 D 50</code>

Get contrast adjustment value for one or more windows.

Syntax	<code>#GET_CONTRAST PARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS A ~ D
Examples	<code>#GET_CONTRAST A</code> <code>#GET_CONTRAST A B</code> <code>#GET_CONTRAST 0</code>

Contrast(#SET_ / #GET_)

Set contrast adjustment for one or more windows.

Syntax	<code>#SET_CONTRAST PARAM1 PARAM2 (OPTIONAL PARAM1 PARAM2 PARAM1 PARAM2...)</code>
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 0 ~ 100 0 ~ 100 - CONTRAST VALUE
Examples	<code>#SET_BRIGHTNESS A 50</code> <code>#SET_BRIGHTNESS A 50 B 50</code> <code>#SET_BRIGHTNESS A 50 B 50 C 50 D 50</code>

Get contrast adjustment value for one or more windows.

Syntax	<code>#GET_CONTRAST PARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS A ~ D
Examples	<code>#GET_CONTRAST A</code> <code>#GET_CONTRAST A B</code> <code>#GET_CONTRAST 0</code>

Custom EDID (#SEND_ / #GET_)

Upload a custom user EDID to an input for use with custom mode (after entering the command, while "waiting" is shown, send the EDID as hex values with no spaces and no hard returns until the end)

Syntax	#SEND_CUSTOM_EDID PARAM1
Parameters	PARAM1 = 1 ~ 4 1 ~ 4 - HDMI INPUTS
Examples	#SEND_CUSTOM_EDID 1

Download a custom user EDID from an input

Syntax	#GET_CUSTOM_EDID PARAM1
Parameters	PARAM1 = 1 ~ 4 1 ~ 4 - HDMI INPUTS
Examples	#GET_CUSTOM_EDID 1

Device Description (#SET_ / #GET_)

Set the device description

Syntax	#SET_DEVICE_DESC PARAM1
Parameters	PARAM1 = ABCDEFGH... (29 CHARACTERS MAX, NO SPECIAL CASE OR CHARACTER LIMIT)
Examples	#SET_DEVICE_DESC DEVICE

Get the device description

Syntax	#GET_DEVICE_DESC
---------------	------------------

Discovery (#SET_ / #GET_)

Enable/Disable the Discovery service.

Syntax	#SET_DISCOVERY PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	#SET_DISCOVERY 0 #SET_DISCOVERY 1

Get the current status of the Discovery service.

Syntax	#GET_DISCOVERY
---------------	----------------

Discovery Mode (#SET_ / #GET_)

Set the Discovery Read/Write mode

Syntax	<code>#SET_DISCOVERY_MODE PARAM1</code>
Parameters	PARAM1 = 0 ~ 1 0 - READ ONLY 1 - READ/WRITE
Examples	<code>#SET_DISCOVERY_MODE 0</code> <code>#SET_DISCOVERY_MODE 1</code>

Get the Discovery Read/Write mode

Syntax	<code>#GET_DISCOVERY_MODE</code>
---------------	----------------------------------

Display Border (#SET_ / #GET_)

Enable/Disable the display border

Syntax	<code>#SET_DISP_BORDER PARAM1 PARAM2</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS PARAM2 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	<code>#SET_DISP_BORDER 0 1</code> <code>#SET_DISP_BORDER A 1</code>

Get the current status of the display border.

Syntax	<code>#GET_DISP_BORDER PARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS
Examples	<code>#GET_DISP_BORDER 0</code> <code>#GET_DISP_BORDER A</code>

Display Source Label (#SET_ / #GET_)

Enable/Disable the display source label.

Syntax	<code>#SET_DISP_SOURCE PARAM1 PARAM2</code>
Parameters	<p>PARAM1 = 0, A ~ D</p> <p>0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D)</p> <p>A ~ D - WINDOWS</p> <p>PARAM2 = 0 ~ 1</p> <p>0 - DISABLED</p> <p>1 - ENABLED</p>
Examples	<pre>#SET_DISP_SOURCE 0 1 #SET_DISP_SOURCE A 1</pre>

Get the current status of the display source label.

Syntax	<code>#GET_DISP_SOURCE PARAM1</code>
Parameters	<p>PARAM1 = 0, A ~ D</p> <p>0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D)</p> <p>A ~ D - WINDOWS</p>
Examples	<pre>#GET_DISP_SOURCE 0 #GET_DISP_SOURCE A</pre>

Display Tally (#SET_ / #GET_)

Enable/Disable display tally.

Syntax	<code>#SET_DISP_TALLY PARAM1 PARAM2</code>
Parameters	<p>PARAM1 = 0, A ~ D</p> <p>0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D)</p> <p>A ~ D - WINDOWS</p> <p>PARAM2 = 0 ~ 1</p> <p>0 - DISABLED</p> <p>1 - ENABLED</p>
Examples	<pre>#SET_DISP_TALLY 0 1 #SET_DISP_TALLY A 1</pre>

Get the current status of the display tally.

Syntax	<code>#GET_DISP_TALLY PARAM1</code>
Parameters	<p>PARAM1 = 0, A ~ D</p> <p>0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D)</p> <p>A ~ D - WINDOWS</p>
Examples	<pre>#GET_DISP_TALLY 0 #GET_DISP_TALLY A</pre>

Display Window Label (#SET_ / #GET_)

Enable/Disable display window label.

Syntax	<code>#SET_DISP_WINDOW PARAM1 PARAM2</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS PARAM2 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	<code>#SET_DISP_WINDOW 0 1</code> <code>#SET_DISP_WINDOW A 1</code>

Get the current status of the display window label.

Syntax	<code>#GET_DISP_WINDOW PARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS
Examples	<code>#GET_DISP_WINDOW 0</code> <code>#GET_DISP_WINDOW A</code>

EDID Lock (#SET_ / #GET_)

Set input EDID Lock (prevents accidental custom EDID overwrite and valid only when EDID mode is set to custom mode).

Syntax	<code>#SET_EDID_LOCK PARAM1 PARAM2</code>
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4) PARAM2 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	<code>#SET_EDID_LOCK 1 0</code> <code>#SET_EDID_LOCK 0 0</code>

Get input EDID Lock status.

Syntax	<code>#GET_EDID_LOCK PARAM1</code>
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4)
Examples	<code>#GET_EDID_LOCK 1</code> <code>#GET_EDID_LOCK 0</code>

EDID Mode (#SET_ / #GET_)

Set input EDID Mode.

Syntax	#SET_EDID_MODE PARAM1 PARAM2
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4) PARAM2 = 1 ~ 4 1 - INTERNAL - 720P 2 CH 2 - INTERNAL - 1080P 2 CH 3 - EXTERNAL (BYPASS MODE) 4 - CUSTOM MODE - USER
Examples	#SET_EDID_MODE 1 1 #SET_EDID_MODE 0 1

Get input EDID mode.

Syntax	#GET_EDID_MODE PARAM1
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4)
Examples	#GET_EDID_MODE 1 #GET_EDID_MODE 0

External EDID

Download External (Bypass) EDID.

Syntax	#GET_EXTERNAL_EDID
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Feedback (#SET_ / #GET_)

Turn all unsolicited Feedback ON or OFF for RS-232 and IP Interfaces.

Syntax	#SET_FEEDBACK PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - OFF 1 - ON
Examples	#SET_FEEDBACK 1

Get status of Feedback.

Syntax	#GET_FEEDBACK
---------------	---------------

Firmware Version

Get Firmware version.

Syntax	#GET_FIRMWARE_VERSION
---------------	-----------------------

Gateway (#SET_ / #GET_)

Set the Gateway address.

Syntax	#SET_GATEWAY PARAM1
Parameters (param1)	PARAM1 = XXX.XXX.XXX.XXX XXX - 0 ~ 255
Examples	#SET_GATEWAY 192.168.1.1

Get the current Gateway address.

Syntax	#GET_GATEWAY
---------------	--------------

Help

Lists all available TCP/UDP commands. If a command is specified then both the description and syntax will be listed for the command.

Syntax	#HELP (OPTIONAL PARAM1)
Parameters (param1)	PARAM1 = ANY TCP/UDP COMMAND (NO '#')
Example	#HELP GET_IPCONFIG

HPD

Send HPD (Hot Plug Detect) pulse to one or all HDMI inputs.

Syntax	<code>#SEND_HPDPARAM1</code>
Parameters (param1)	PARAM1 = 1 ~ 5, 0 1 ~ 4 - HDMI INPUTS 5 - HDMI OUTPUT 0 - ALL HDMI INPUTS
Example	<code>#SEND_HPDP 1</code> <code>#SEND_HPDP 5</code> <code>#SEND_HPDP 0</code>

Hue (#SET_ / #GET_)

Set Hue adjustment for one or more windows.

Syntax	<code>#SET_HUEPARAM1PARAM2(OPTIONALPARAM1PARAM2PARAM1PARAM2...)</code>
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 0 ~ 100 0 ~ 100 - HUE VALUE
Examples	<code>#SET_HUEA50</code> <code>#SET_HUEA50B50</code> <code>#SET_HUEA50B50C50D50</code>

Get Hue adjustment value for one or more windows.

Syntax	<code>#GET_HUEPARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS A ~ D
Examples	<code>#GET_HUEA</code> <code>#GET_HUEAB</code> <code>#GET_HUE0</code>

Internal EDID (#SET_ / #GET_)

Download a preset Internal EDID.

Syntax	<code>#SET_EDID_MODE PARAM1 PARAM2</code>
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4) PARAM2 = 1 ~ 4 1 - INTERNAL - 720P 2 CH 2 - INTERNAL - 1080P 2 CH 3 - EXTERNAL (BYPASS MODE) 4 - CUSTOM MODE - USER
Examples	<code>#SET_EDID_MODE 1 1</code> <code>#SET_EDID_MODE 0 1</code>

Get Input EDID mode.

Syntax	<code>#GET_EDID_MODE PARAM1</code>
Parameters	PARAM1 = 1 ~ 4, 0 1 ~ 4 - HDMI INPUTS 0 - ALL HDMI INPUTS (FEEDBACK LISTS ALL INPUTS IN ORDER 1 ~ 4)
Examples	<code>#GET_EDID_MODE 1</code> <code>#GET_EDID_MODE 0</code>

IO Name (#SET_ / #GET_)

Modify the name of an input or window.

Syntax	<code>#SET_IO_NAME PARAM1 PARAM2</code>
Parameters	PARAM1 = 1 ~ 4, A ~ D 1 ~ 4 - HDMI INPUTS A ~ D - WINDOWS PARAM2 = 1 ~ 12 ALPHANUMERIC CHARACTERS ALLOWED CHARACTERS = A-Z, a-z, 0-9, and spaces (NO SPECIAL CHARACTERS)
Examples	<code>#SET_IO_NAME 1 BLURAY</code> <code>#SET_IO_NAME A WINDOW 1</code>

Get the name of an input or output.

Syntax	<code>#GET_IO_NAME PARAM1</code>
Parameters	PARAM1 = 1 ~ 4, A ~ D 1 ~ 4 - HDMI INPUTS A ~ D - WINDOWS
Examples	<code>#GET_IO_NAME 1</code> <code>#GET_IO_NAME A</code>

IP Address (#SET_ / #GET_)

Set the IP Address.

Syntax	#SET_IP_ADDRESS PARAM1
Parameters	PARAM1 = XXX.XXX.XXX.XXX XXX - 0 ~ 255
Examples	#SET_IP_ADDRESS 192.168.1.72

Get the current IP Address.

Syntax	#GET_IP_ADDRESS
---------------	-----------------

IP Mode (#SET_ / #GET_)

Set the IP Mode to STATIC or DHCP.

Syntax	#SET_IP_ADDRESS PARAM1 #SET_IP_MODE PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - STATIC 1 - DHCP
Examples	#SET_IP_MODE 0

Get the current IP mode.

Syntax	#GET_IP_MODE
---------------	--------------

IP Configuration

Get the current IP Configuration.

Syntax	#GET_IPCONFIG
---------------	---------------

Lock (#SET_ / #GET_)

Enable/Disable Control Lock.

Syntax	#SET_LOCK PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - UNLOCK 1 - LOCK
Examples	#SET_LOCK 1 #SET_LOCK 0

Get the current status of the Control Lock.

Syntax	#GET_LOCK
---------------	-----------

MAC Address

Print the MAC address to the screen.

Syntax	#GET_MAC_ADDR
---------------	---------------

Mute (#SET_ / #GET_)

Set output audio Mute.

Syntax	#SET_MUTE PARAM1
---------------	------------------

Parameters	PARAM1 = 0 ~ 1 0 - UNMUTE 1 - MUTE
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Examples	#SET_MUTE 0
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Get output audio Mute status.

Syntax	#GET_MUTE
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OSD Timeout (#SET_ / #GET_)

Set the OSD Timeout.

Syntax	#SET_OSD_TIMEOUT PARAM1
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Parameters	PARAM1 = 0 ~ 4 0 - OFF 1 - 5 SECONDS 2 - 10 SECONDS 3 - 30 SECONDS 4 - 60 SECONDS
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Examples	#SET_OSD_TIMEOUT 3
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Get the OSD Timeout.

Syntax	#GET_OSD_TIMEOUT
---------------	------------------

Output HDCP (#SET_ / #GET_)

Set output HDCP encoding mode.

Syntax	#SET_OUTPUT_HDCP PARAM1
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Parameters	PARAM1 = 0 ~ 1 0 - FOLLOW INPUT 1 - ALWAYS ENCRYPT (1.4)
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Examples	#SET_OUTPUT_HDCP 0
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Get output HDCP encoding mode.

Syntax	#GET_OUTPUT_HDCP
---------------	------------------

Output Resolution (#SET_ / #GET_)

Set Output Resolution.

Syntax	#SET_OUTPUT_RES PARAM1
Parameters	PARAM1 = 1 ~ 23 1 - 640 X 480 60 HZ 2 - 800 X 600 60HZ 3 - 1024 X 768 60 HZ 4 - 1280 X 768 60 HZ 5 - 1280 X 960 60 HZ 6 - 1280 X 1024 60 HZ 7 - 1366 X 768 60 HZ 8 - 1440 X 900 60 HZ 9 - 1600 X 1200 60 HZ 10 - 1680 X 1050 60 HZ 11 - 1920 X 1200 60 HZ 12 - 480P 60 HZ 13 - 576P 50 HZ 14 - 720P 50 HZ 15 - 720P 60 HZ 16 - 1080P 50 HZ 17 - 1080P 60 HZ 18 - 2160P 24 HZ 19 - 2160P 25 HZ 20 - 2160P 30 HZ 21 - 2160P 60 HZ 4:2:0 22 - 2160P 60 HZ 4:4:4 23 - NATIVE
Examples	#SET_OUTPUT_RES 23

Get the Output Resolution status.

Syntax	#GET_OUTPUT_RES
---------------	-----------------

Power (ON_OFF / #GET_)

Power the unit On/Off.

Syntax	#POWER PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - OFF 1 - ON
Examples	#POWER 0 #POWER 1

Get the current Power state.

Syntax	#GET_POWER
---------------	------------

Preset (#SET_)

Set current window settings to a preset.

Syntax	#SET_PRESET PARAM1 (OPTIONAL PARAM2)
Parameters	PARAM1 = 1 ~ 18 1 ~ 18 - PRESETS PARAM2 = R R - SAVE INPUT ROUTES ONLY
Examples	#SET_PRESET 1 #SET_PRESET 2 R

Preset Name (#SET_ / #GET_)

Modify the Preset Name.

Syntax	#SET_PRESET_NAME PARAM1 PARAM2...
Parameters	PARAM1 = 1 ~ 18 1 ~ 18 - PRESETS PARAM2 = 1 ~ 12 ALPHANUMERIC CHARACTERS ALLOWED CHARACTERS = A-Z, a-z, 0-9, and spaces (NO SPECIAL CHARACTERS)
Examples	#SET_PRESET_NAME 1 QUAD

Get the Preset Name.

Syntax	#GET_PRESET_NAME PARAM1
Parameters	PARAM1 = 1 ~ 18 1 ~ 18 - PRESETS
Examples	#GET_PRESET_NAME 1

R

Route input sources to windows.

Syntax	R PARAM1 PARAM2 (OPTIONAL PARAM1 PARAM2 PARAM1 PARAM2...)
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 1 ~ 4, M 1 ~ 4 - HDMI INPUTS 1 ~ 4 M - MASK
Examples	RA 1 RA 1 B 2 RA 1 B 2 C 3 RA 1 B 2 C 3 D 4 RAM

Reboot

Reboot the unit.

Syntax #REBOOT

P

Recall a Preset.

Syntax P PARAM1

Parameters

PARAM1 = A, B, C, D, Q, 1 ~ 18
 A - FULLSCREEN PRESET WINDOW A INPUT 1
 B - FULLSCREEN PRESET WINDOW B INPUT 2
 C - FULLSCREEN PRESET WINDOW C INPUT 3
 D - FULLSCREEN PRESET WINDOW D INPUT 4
 Q - QUAD DEFAULT PRESET
 1 ~ 18 - PRESETS 1 ~ 18

Examples

P 1
 P Q
 P B

Rotation (#SET_ / #GET_)

Set rotation adjustment for window a (will not affect full screen or quad mode).

Syntax #SET_ROTATION PARAM1

Parameters

PARAM1 = N, C, CC
 N - NORMAL
 C - CLOCKWISE (+90 DEGREES)
 CC - COUNTERCLOCKWISE (-90 DEGREES)

Example #SET_ROTATION C

Get rotation adjustment value for window A.

Syntax #GET_ROTATION

S

Get Routing status.

Syntax S (NO PARAMETER)

Example S

Saturation (#SET_ / #GET_)

Set saturation adjustment for one or more windows.

Syntax	<code>#SET_SATURATION PARAM1 PARAM2 (OPTIONAL PARAM1 PARAM2 PARAM1 PARAM2...)</code>
Parameters	PARAM1 = A ~ D A ~ D - WINDOWS A ~ D PARAM2 = 0 ~ 100 0 ~ 100 - SATURATION VALUE
Examples	<code>#SET_SATURATION A 50</code> <code>#SET_SATURATION A 50 B 50</code> <code>#SET_SATURATION A 50 B 50 C 50 D 50</code>

Get saturation adjustment value for one or more windows.

Syntax	<code>#GET_SATURATION PARAM1</code>
Parameters	PARAM1 = 0, A ~ D 0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D) A ~ D - WINDOWS A ~ D
Examples	<code>#GET_SATURATION A</code> <code>#GET_SATURATION A B</code> <code>#GET_SATURATION 0</code>

Showme (#SET_ / #GET_)

Enable/Disable the discovery 'SHOW ME' feature.

Syntax	<code>#SET_SHOWME PARAM1</code>
Parameters	PARAM1 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	<code>#SET_SHOWME 1</code> <code>#SET_SHOWME 0</code>

Get the status of the discovery 'SHOW ME' feature.

Syntax	<code>#GET_SHOWME</code>
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Subnet (#SET_ / #GET_)

Set the Subnet Mask.

Syntax	#SET_SUBNET PARAM1
Parameters	PARAM1 = XXX.XXX.XXX.XXX XXX - 0 ~ 255
Examples	#SET_SUBNET 255.255.255.0

Get the current Subnet Mask.

Syntax	#GET_SUBNET
---------------	-------------

Telnet (#SET_ / #GET_)

Enable/Disable Telnet Access

Syntax	#SET_TELNET_ACCESS PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	#SET_TELNET_ACCESS 1

Get the current status of Telnet access.

Syntax	#GET_TELNET_ACCESS
---------------	--------------------

Telnet Login (#SET_ / #GET_)

Enable/Disable the Telnet login process.

Syntax	#SET_TELNET_LOGIN PARAM1
Parameters	PARAM1 = 0 ~ 1 0 - DISABLED 1 - ENABLED
Examples	#SET_TELNET_LOGIN 0

Get the current status of Telnet login process.

Syntax	#GET_TELNET_LOGIN
---------------	-------------------

Telnet Message (#SET_ / #GET_)

Enable/Disable the Telnet login welcome message.

Syntax	#SET_TELNET_MESSAGE PARAM1
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Parameters	PARAM1 = 0 ~ 1 0 - HIDE 1 - SHOW
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Examples	#SET_TELNET_MESSAGE 0
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Get the current Telnet login welcome message status.

Syntax	#GET_TELNET_MESSAGE
---------------	---------------------

Telnet Port (#SET_ / #GET_)

Set the Telnet communication port.

Syntax	#SET_TELNET_PORT PARAM1
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Parameters	PARAM1 = 1 ~ 65535
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Example	#SET_TELNET_PORT 23
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Get the current Telnet communication port.

Syntax	#GET_TELNET_PORT
---------------	------------------

Telnet Port (#SET_ / #GET_)

Enable/Disable UDP access.

Syntax	#SET_UDP_ACCESS PARAM1
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Parameters	PARAM1 = 0 ~ 1 0 - DISABLED 1 - ENABLED
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Example	#SET_UDP_ACCESS 0
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Get the current status of UDP access.

Syntax	#GET_UDP_ACCESS
---------------	-----------------

Web Interface Port Number (#SET_ / #GET_)

Set the web interface port number.

Syntax	#SET_WEB_PORT PARAM1
Parameters	PARAM1 = 1 ~ 65535
Examples	#SET_WEB_PORT 80

Get the current web interface port number.

Syntax	#GET_WEB_PORT
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Window (#SET_ / #GET_)

Set window adjustment values.

Syntax	#SET_WINDOW PARAM1 PARAM2 PARAM3 PARAM4 PARAM5 PARAM6
Parameters	<p>PARAM1 = A ~ D A ~ D - WINDOWS A ~ D</p> <p>PARAM2 = 1 ~ 1920 1 ~ 1920 - WINDOW WIDTH</p> <p>PARAM3 = 1 ~ 1080 1 ~ 1080 - WINDOW HEIGHT</p> <p>PARAM4 = 1 ~ 1920 1 ~ 1920 - WINDOW X POSITION</p> <p>PARAM5 = 1 ~ 1080 1 ~ 1080 - WINDOW Y POSITION</p> <p>PARAM6 = 1 ~ 4 1 ~ 4 - WINDOW PRIORITY</p>
Examples	#SET_WINDOW A 960 540 1 1 1 #SET_WINDOW B 960 540 961 1 2

Get window adjustment values.

Syntax	<p>PARAM1 = 0, A ~ D</p> <p>0 - ALL WINDOWS (FEEDBACK LISTS ALL WINDOWS IN ORDER A ~ D)</p> <p>A ~ D - WINDOWS A ~ D</p>
Examples	#GET_WINDOW 0 #GET_WINDOW A

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4K 600 MHz Ultra HD 4x1 Seamless Switcher

04 Appendix

Default Settings

Description	Setting
MAC Address	Device-dependent (cannot be modified)
IP Address	192.168.1.72
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
HTTP Listening Port	80
Telnet Listing Port	23
Telnet / TCP Access	Enabled
Gefen Syner-G Discovery	Enabled
Gefen Syner-G Discovery Mode	Read / Write
Gefen Syner-G Show Device	Hide Me

Description	Setting
Input Names	Input 1 - Input 4
Input HDCP	Allow
Window Names	Window 1 - Window 4
Output HDCP	Follow Input
Output Resolution	Native (preferred resolution in display's EDID)
Preset Names (excluding Full and Quad)	Preset 1 - Preset 18



Firmware upgrading for this product will be managed by Gefen Syner-G™ software. For instructions on upgrading firmware on this product, please download the software from:

<http://www.gefen.com/technology/gefen-syner-g-software>

IMPORTANT: *DO NOT* power-off or disconnect the AC power cord from the switcher, at any time, during the firmware upgrade process.

Maximum Resolutions	
Inputs	<ul style="list-style-type: none"> • 1080p Full HD (1920 x 1080, 60 Hz, 4:4:4; 1920 x 1200 60 Hz, 4:4:4)
Output	<ul style="list-style-type: none"> • 4K Ultra HD (3840 x 2160) 60 Hz, 4:4:4

Electrical	
Maximum Pixel Clock	<ul style="list-style-type: none"> • 600 MHz
Default Preset buttons	<ul style="list-style-type: none"> • 2x Tact-type, blue backlight
Custom User Preset buttons	<ul style="list-style-type: none"> • 2x Tact-type, blue backlight
Input/Window selector buttons	<ul style="list-style-type: none"> • 4x Tact-type, blue backlight
Menu Navigation buttons	<ul style="list-style-type: none"> • 6x Tact-type, blue backlight
On Indicator	<ul style="list-style-type: none"> • ▲, ▼, ◀ and ▶ buttons illuminate

Connectors	
Video Inputs	<ul style="list-style-type: none"> • 4 x HDMI Type A 19-pin, female, locking
Video Output	<ul style="list-style-type: none"> • 1 x HDMI Type A 19-pin, female, locking
RS-232	<ul style="list-style-type: none"> • 1 x DB-9, female
IP Control	<ul style="list-style-type: none"> • 1 x RJ-45
USB	<ul style="list-style-type: none"> • Mini-B
IR In/Ext (for EXT-RMT-EXTIRN)	<ul style="list-style-type: none"> • 1 x 3.5mm mini-stereo
Analog Audio Outputs	<ul style="list-style-type: none"> • 2 x RCA, female
Power	<ul style="list-style-type: none"> • 1 x 3-pin Locking-type

Operational	
Power Supply	<ul style="list-style-type: none"> • 12V DC
Power Consumption	<ul style="list-style-type: none"> • 15W
IR Remote Battery	<ul style="list-style-type: none"> • 1x CR2025, Lithium
Operating Temperature	<ul style="list-style-type: none"> • +32 to +122 °F (0 to +50 °C)
Operating Humidity	<ul style="list-style-type: none"> • 5% to 90% RH, non-condensing
Storage Temperature	<ul style="list-style-type: none"> • -4 to +185 °F (-20 to +85 °C)
Storage Humidity (RH)	<ul style="list-style-type: none"> • 0% to 95% RH, non-condensing
MTBF	<ul style="list-style-type: none"> • 50000 hours

Physical	
Dimensions (W x H x D, not including the connectors)	<ul style="list-style-type: none"> • Without rack ears: 15.3" x 1.7" x 8.9" (389mm x 43mm x 226mm) • With rack ears: 18.9" x 1.7" x 8.9" (480mm x 43mm x 226mm)
Unit Weight	<ul style="list-style-type: none"> • 5.4 lbs (2.5 kg)

* Features and specifications are subject to change without notice.

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